



User's Guide

Acronis True Image 9.0 Home



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Chapter 1. Introduction

1.1 What is Acronis True Image Home?

Acronis True Image Home solves all backup problems, ensuring the safety of all information on your PC. Using it, you can back up selected files and folders, or entire disks and partitions.

If failures occur that block access to information or affect system operation, or if you accidentally delete necessary files, you'll be able to easily restore the system and lost data.

The unique technology developed by Acronis and implemented in Acronis True Image Home allows you to create exact, sector-by-sector disk backups, including all operating systems, applications and configuration files, software updates, personal settings and all of your data.

You can store backups on almost any PC storage device: local hard drives, network drives or a variety of IDE, SCSI, FireWire (IEEE-1394), USB (1.0, 1.1 and 2.0) and PC Card (formerly called PCMCIA) removable media drives, as well as CD-R/RW, DVD-R/RW, DVD+R/RW, magneto-optical, Iomega Zip and Jaz drives.

If you are going to install a new hard disk drive, Acronis True Image Home will help you transfer information from the old one in minutes, including operating systems, applications, documents and personal settings.

Wizards and a user-friendly, Windows XP-styled interface will make your work more convenient. Just answer a few simple questions and let Acronis True Image Home take care of everything else! When a system problem occurs, the software will get you up and running in short order.

1.2 New in Acronis True Image 9.0 Home

- **Support for Windows XP Professional x64 Edition**
- **Direct backup to DVD and bootable DVD creation**
- **User-editable default restore options** – Users can configure and save restore parameters, such as files overwriting mode, the original or current date and time for restored files etc.
- **File-level security settings** - preserving files' security settings in the archive, storing encrypted files in encrypted or decrypted state
- **Read-write mode** of mounting images
- **Including MBR in partition images**, an option to restore MBR from a disk or partition image
- **Bootable backup media** – When backing up to removable media, users can make this media bootable in the same manner as a rescue CD, so separate recover media is not required
- **One bootable media for all Acronis products** - Writing standalone versions of other Acronis products to bootable media
- **Bootable disks ISOs** – In addition to burning a bootable rescue disk, users can save its ISO image for burning later

1.4 System requirements and supported media

1.4.1 Minimum system requirements

Acronis True Image Home requires the following hardware:

- Pentium processor or higher
- 128 MB RAM
- FDD or CD-RW drive for bootable media creation
- Mouse (recommended).

1.4.2 Supported operating systems

- Windows® 98 SE
- Windows® Me
- Windows® NT 4.0 Workstation SP 6
- Windows® 2000 Professional SP 4
- Windows® XP SP 2
- Windows XP Professional x64 Edition

Acronis True Image Home also enables creating a bootable diskette or CD-R/W that can back-up and restore a disk/partition on a computer running any PC-based operating system including Linux®.

1.4.3 Supported file systems

- FAT16/32
- NTFS
- Ext2/Ext3
- ReiserFS
- Linux SWAP

If a file system is not supported or is corrupted, Acronis True Image Home can copy data using a sector-by-sector approach.

1.4.4 Supported storage media

- Hard disk drives
- Networked storage devices
- CD-R/RW, DVD-R/RW, DVD+R (including double-layer DVD+R), DVD+RW, DVD-RAM*
- USB 1.0 / 2.0, FireWire (IEEE-1394) and PC card storage devices
- Floppy disks, ZIP®, Jaz® and other removable media

* - DVD burning is not supported in Windows 98/Me, burned DVDs cannot be read in Windows 98/Me. Burned write-once discs cannot be read in Windows NT 4 without third-party software. Burned rewritable discs cannot be read in Linux without kernel patch.

1.5 Technical support

Users of legally purchased copies of Acronis True Image Home are entitled to free technical support from Acronis. If you experience problems installing or using Acronis products that you can't solve yourself by using this guide, then please contact Acronis Technical Support.

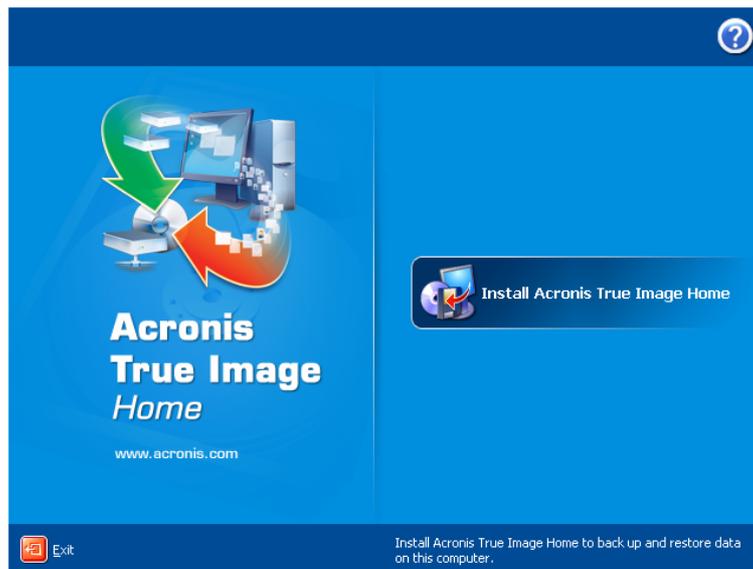
More information about contacting Acronis Technical Support is available at the following link: <http://www.acronis.com/homecomputing/support/>

Chapter 2. Acronis True Image Home installation and starting

2.1 Installing Acronis True Image Home

To install Acronis True Image Home:

- run the Acronis True Image Home setup file
- in the Install Menu, select the program to install: Acronis True Image Home
- follow the Install Wizard instructions on the screen.



Typical, **Custom** and **Complete** installation is available. Having pressed **Custom**, you can choose to install, besides Acronis True Image Home, **Rescue Media Builder** and **Bart PE plug-in**.

With **Rescue Media Builder** you can create bootable rescue disks (see details in *Chapter 9. Creating bootable media*). You might not need this tool if you purchased a boxed product that contains a bootable CD. Installing the **Bootable Rescue Media Builder** will allow you to create bootable media or its ISO image at any time from the main program window or running **Bootable Rescue Media Builder** on its own.

The well-known **Bart PE** utility is used to boot into a Windows-like environment from CD. Applications are installed into Bart PE in the form of plug-ins. Choosing Bart PE plug-in installation (disabled by default) provides the ability to include Acronis True Image Home into a Bart PE plug-in tab. The plug-in files will be placed to the installation folder along with other program files.



When installed, Acronis True Image Home creates a new device in the Device Manager list (**Control Panel -> System -> Hardware -> Device Manager -> Acronis Devices -> Acronis TrueImage Backup Archive Explorer**). Do not disable or uninstall this device, as it is necessary for connecting image archives as virtual disks (see *Chapter 11. Mounting an image as a virtual drive*).

2.2 Extracting Acronis True Image Home

When installing Acronis True Image Home, you can save the setup (.msi) file on a local or network drive. This will help when modifying or recovering the existing component installation.

To save a setup file:

- run the Acronis True Image Home setup file;
- in the Install Menu, right-click on the program name and select **Extract**;
- select a location for the setup file and click **Save**.

2.3 Running Acronis True Image Home

You can run Acronis True Image Home in Windows by selecting **Start -> Programs -> Acronis -> Acronis True Image Home -> Acronis True Image Home** or clicking on the appropriate shortcut on the desktop.

If your operating system does not load for some reason, you can run Acronis Startup Recovery Manager. However, this must be activated prior to use; see *3.4 Acronis Startup Recovery Manager* to learn more about this procedure. To run the program, press F11 during the computer bootup, when you see a corresponding message that tells you to press that key. Acronis True Image Home will be run in the standalone mode, allowing you to recover the damaged partitions.

If your disk data is totally corrupted and you cannot boot (or if you have not activated Acronis Startup Recovery Manager), load the standalone Acronis True Image Home version from the bootable media, supplied with the retail box or created by you using Rescue Media Builder. Then you will be able to restore the disk from its previously created image.

2.4 Upgrading Acronis True Image Home

If you already have Acronis True Image Home installed, the new version will simply update it; there is no need to remove the old version and reinstall the software.

2.5 Removing Acronis True Image Home

Select **Start -> Settings -> Control panel -> Add or remove programs -> <Acronis True Image Home> -> Remove**. Then follow instructions on the screen. You may have to reboot your computer afterwards to complete the task.

Chapter 3. General information and proprietary Acronis technologies

3.1 The difference between file archives and disk/partition images

A backup archive is a file or a group of files (also called in this Guide “backups”), that contains a copy of selected files/folders data or a copy of all information stored on selected disks/partitions.

When you back up files and folders, only the data, along with the folder tree, are compressed and stored.

Backing up disks and partitions is performed in a different way: Acronis True Image Home stores a sector-by-sector snapshot of the disk, which includes the operating system, registry, drivers, software applications and data files, as well as system areas hidden from the user. This procedure is called “creating a disk image,” and the resulting backup archive is often called a disk/partition image.



Acronis True Image Home stores only those hard disk parts that contain data (for supported file systems). Further, it does not back up swap file information (win386.swp under Windows 98/Me and pagefile.sys under Windows NT/2000/XP) and hiberfil.sys (a file that keeps RAM contents when the computer goes into hibernation). This reduces image size and speeds up image creation and restoration.



A partition image includes all files and folders independent of their attributes (including hidden and system files), boot record, FAT (file allocation table), root and the zero track of the hard disk with master boot record (MBR).



A disk image includes images of all disk partitions as well as the zero track with master boot record (MBR).

By default, files in all Acronis True Image Home archives have a “.tib” extension.

It is important to note that you can restore files and folders not only from file archives, but from disk/partition images, too. To do so, mount the image as a virtual disk (see *Chapter 11. Mounting an image as a virtual drive*) or start the image restoration and select **Restore specified files or folders**.

3.2 Full, incremental and differential backups

Acronis True Image Home can create full, incremental and differential backups.

A **full backup** contains all data at the moment of backup creation. It forms a base for further incremental or differential backup or is used as a standalone archive. A full backup has the shortest restore time as compared to incremental or differential ones.

An **incremental backup** file only contains data changed since the last full or incremental backup creation. Therefore, it is smaller and takes less time to create. But as it doesn't contain all data, all the previous incremental backups and the initial full backup are required for restoration.

Unlike incremental backup, when every backup procedure creates the next file in a “chain,” a **differential backup** creates an independent file, containing all changes against the initial full archive. Generally, a differential backup will be restored faster than an incremental one, as it does not have to process through a long chain of previous backups.

A standalone full backup may be an optimal solution if you often roll back the system to the initial state (like in a gaming club or Internet café, to undo changes made by the guests). In this case, you need not re-create the initial full image, so the backup time is not crucial, and the restore time will be minimal.

Alternatively, if you are interested in saving only the last data state to be able to restore it in case of system failure, consider the differential backup. It is particularly effective if your data changes tend to be little as compared to the full data volume.

The same is true for incremental backup. In addition, it is most useful when you need frequent backups and possibility to roll back to any of stored states. Having created a full backup once, if you then create an incremental backup each day of a month, you will get the same result as if you created full backups every day. However, the cost in time and disk space (or removable media usage) will be as little as one tenth as much.

It is important to note that the above arguments are nothing but examples for your information. Feel free to make up your own backup policy in accordance with your specific tasks and conditions. Acronis True Image Home is flexible enough to meet any real-life demands.



An incremental or differential backup created after a disk is defragmented might be considerably larger than usual. This is because the defragmentation program changes file locations on disk and the backups reflect these changes. Therefore, it is recommended that you re-create a full backup after disk defragmentation.

3.3 Acronis Secure Zone

The Acronis Secure Zone is a special hidden partition for storing archives on the computer system itself. For archive security purposes, ordinary applications cannot access it. In the Acronis True Image Home Wizards' windows the zone is listed along with all partitions available for storing archives. Acronis Secure Zone is necessary for using Acronis Startup Recovery Manager and Acronis Snap Restore features (see below).

Acronis Secure Zone is always available for archive creation as long as there is space for the backup file. If there is not enough space, older archives will be deleted to create space.

Acronis True Image Home uses the following scheme to clean up Acronis Secure Zone:

- If there is not enough free space in the zone to create a backup, the program deletes the oldest full backup with all subsequent incremental/differential backups.
- If there is only one full backup (with subsequent incremental/differential backups) left and a full backup is in progress, then the old full backup and incremental/differential backups are deleted.
- Otherwise, (only one full backup left, and an incremental/differential backup is in progress) you will get a message about space error. In that case you will have to either re-create the full backup or increase Acronis Secure Zone.

Thus, you can back up data automatically on a schedule (see *Chapter 7. Scheduling tasks*), and not worry about zone overflow issues. However, if you keep long chains of incremental backups, it will be a good practice to periodically check the zone free space, indicated on the second page of the **Manage Acronis Secure Zone** wizard.

For information on how to create, resize or delete Acronis Secure Zone using this wizard, see in *Chapter 8. Managing Acronis Secure Zone*.

3.4 Acronis Startup Recovery Manager

3.4.1 How it works

The Acronis Startup Recovery Manager enables starting Acronis True Image Home without loading the operating system. With this feature, if the operating system won't load for some reason, you can run Acronis True Image Home by itself to restore damaged partitions. As opposed to booting from Acronis removable media, you will not need a separate media or network connection to start Acronis True Image Home.

3.4.2 How to use

To be able to use Acronis Startup Recovery Manager at boot time, prepare as follows:

1. Install Acronis True Image Home.
2. Create Acronis Secure Zone on the hard disk (see *Chapter 8. Managing Acronis Secure Zone*).
3. Activate Acronis Startup Recovery Manager. To do so, click **Activate Acronis Startup Recovery Manager** and follow the Wizard's instructions.

If you try to activate Acronis Startup Recovery Manager while Acronis Secure Zone is missing from the system, you will be prompted to create the zone, then Acronis Startup Recovery Manager will be activated. Otherwise, Acronis Startup Recovery Manager will be activated immediately.



When Acronis Startup Recovery Manager is activated, it overwrites the master boot record (MBR) with its own boot code. If you have any third-party boot managers installed, you will have to reactivate them after activating the Startup Recovery Manager. For Linux loaders (e.g. LILO and GRUB), you might consider installing them to a Linux root (or boot) partition boot record instead of MBR before activating Acronis Startup Recovery Manager.

If failure occurs, turn on the computer and press F11 when you see the "Press F11 for Acronis Startup Recovery Manager" message. This will run a standalone version of Acronis True Image Home that only slightly differs from the complete version. For information on restoring damaged partitions, see *Chapter 6. Restoring the backup data*.



Be careful! Disk letters in standalone Acronis True Image Home might sometimes differ from the way Windows identifies drives. For example, the D: drive identified in the standalone Acronis True Image might correspond to the E: drive in Windows.

3.5 Acronis Snap Restore

With this feature you can boot the OS on a crashed computer before the system is completely restored from an image, and start work seconds after the restoration is launched. The restoration will be continued in the background.

This feature is currently available for images being restored from the Acronis Secure Zone (see above). Naturally, Acronis Snap Restore cannot be used if the image contains no operating system (a logical partition or disk image) or when restoring file archives. Also, Snap Restore of Windows 98/Me systems is not supported.

3.5.1 How it works

When the restoration procedure is started, Acronis True Image Home:

1. Finds the sectors in the image which contain system files, and restores these sectors first. Thus, the OS is restored and can be started in a very short timeframe. Having started the

OS, the user sees the folder tree with files, though file contents still is not recovered. Nevertheless, the user can start working.

2. Writes on the hard disk its own drivers, which intercept system queries to the files. When the user opens files or launches applications, the drivers receive the system queries and restore the sectors that are necessary for the current operation.

3. At the same time, Acronis True Image Home proceeds with the complete sector-by-sector image restoration in the background. However, the system requested sectors have the highest priority.

Finally, the image will be fully restored even if the user performs no actions at all. But if you choose to start working as soon as possible after the system failure, you will gain at least several minutes, considering that restoration of a 10-20 GB image (most common image size) takes about 10 minutes. The larger the image size, the more time you save.

3.5.2 How to use

To be able to use Acronis Snap Restore in case of system crash, prepare as follows:

1. Install Acronis True Image Home.
2. Create Acronis Secure Zone on the hard disk (see *Chapter 8. Managing Acronis Secure Zone*).
3. Activate Acronis Startup Recovery manager (see *3.4 Acronis Startup Recovery Manager*) and create bootable media with Acronis True Image Home (see *Chapter 9. Creating bootable media*).
4. Back up (image) the system disk to Acronis Secure Zone (see *5.2 Backing up disks and partitions (image backup)*). You can back up other disks/partitions as well, but the system image is mandatory.



When performing Snap Restore, the current Acronis True Image Home version always restores the entire system disk. Therefore, if your system disk consists of several partitions, all of them must be included into the image. Any partitions which are missing from the image will be lost.

If failure occurs, boot the computer from the bootable media or using F11. Start the recovery procedure (see *6.3 Restoring disks/partitions or files from images*), select the system disk image from Acronis Secure Zone, choose **Use Snap Restore** and in the next window click **Proceed**. In a few seconds the computer will reboot to the restored system. Log in and start work – no more reboots or other actions are required.

You can perform Snap Restore running Acronis True Image Home in supported Windows operating systems as well. However, it is mandatory to have bootable media in case Windows cannot boot.

3.6 Viewing disk and partition information

You can change the way of data representation in all schemes you see in various wizards.

To the right are three icons: **Arrange Icons by**, **Choose Details** and **i (Display the properties of the selected item)**, the last duplicated in the context menu invoked by right-clicking objects.

To sort messages by a particular column, click the header (another click will switch the messages to the opposite order) or **Arrange Icons by** button and select the column.

To select columns to view, right-click the headers line or left-click the **Choose Details** button. Then flag the columns you want to display.

If you click the **i (Display the properties of the selected item)** button, you will see the selected partition or disk properties window.

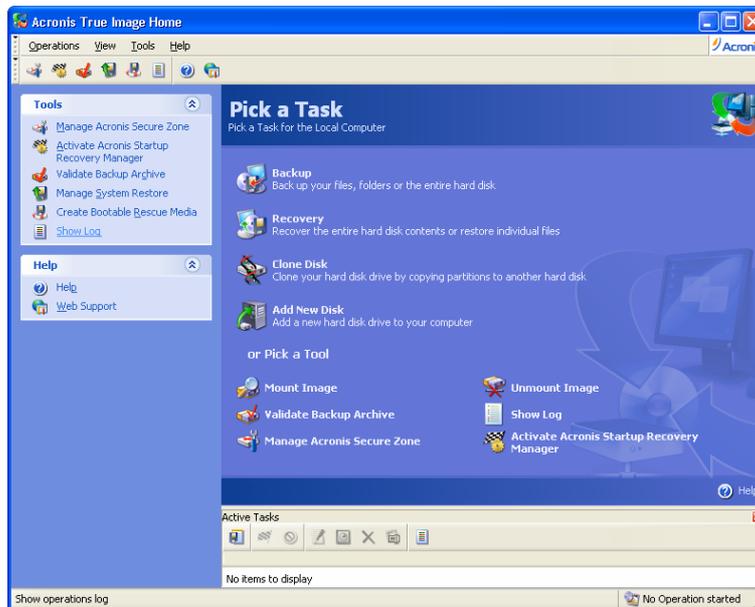
This window contains two panels. The left panel contains the properties tree and the right describes the selected property in detail. The disk information includes its physical parameters (connection type, device type, size, etc.); partition information includes both physical (sectors, location, etc.), and logical (file system, free space, assigned letter, etc.) parameters.

You can change the width of a column by dragging its borders with the mouse.

Chapter 4. Using Acronis True Image Home

4.1 Main program window

The main program window contains the menu, the toolbar, the sidebar, the **Active Tasks** pane and the main area. The main area contains operation icons, while the sidebar features **Tools** and **Help** panels.



Most of the operations are represented two or even three times in different window areas, providing several ways to select them for more convenience. For example, you can start the necessary operation or tool by clicking its icon in the main area or by selecting the same item from the **Operations** or **Tools** menu.

The main window contains operation icons divided into two groups.

The **Task** group contains the following operations:

- **Backup** – create a backup archive
- **Recovery** – restore data from a previously created archive
- **Clone Disk** – transfer the OS, applications and data from the old disk to the new one
- **Add New Disk** – add a new disk for data storage leaving the OS and applications on the old one.

The **Tools** group contains the following items:

- **Mount Image** – connect a disk/partition image as a virtual drive
- **Unmount Image** – disconnect the connected virtual drive
- **Validate Backup Archive** – run the archive integrity checking procedure
- **Show Log** – open the Log Viewer window
- **Manage Acronis Secure Zone** – create, delete and resize a special hidden partition for storing archives (Acronis Secure Zone)
- **Activate Acronis Startup Recovery Manager** – activate the boot restoration manager (F11 key).

-
- **Manage System Restore** – turn on/off Microsoft Windows System Restore tool and set its options directly from Acronis True Image Home

Program menu

The program menu bar features the **Operations, View, Tools** and **Help** items.

The **Operations** menu contains a list of the available operations, including scheduling tasks.

The **View** menu contains items for managing the program window look:

- **Toolbars** – contains commands that control toolbar icons
- **Common Task Bar** – enables/disables the sidebar
- **Status Bar** – enables/disables the status bar
- **Active tasks** – enables/disables the Active Tasks pane at the bottom of the main area.

The **Tools** menu contains the following items:

- **Manage Acronis Secure Zone** – create, delete and resize a special hidden partition for storing archives (Acronis Secure Zone)
- **Activate Acronis Startup Recovery Manager** – activate the boot restoration manager (F11 key)
- **Validate Backup Archive** – run the archive integrity checking procedure
- **Create Bootable Rescue Media** – run the bootable media creation procedure
- **Show Log** – open the Log Viewer window
- **Options** – open a window for editing default backup/restore options, setting text appearance (fonts), configuring email/Winpopup notifications etc.

The **Help** menu is used to invoke help and obtain information about Acronis True Image Home.

Active Tasks pane

The **Active Tasks** pane displays the scheduled and currently-being-executed tasks. It features its own toolbar. You can customize this toolbar view by right-clicking on it and selecting the desired options.

Status bar

At the bottom of the main window, there is a status bar divided into two parts. The left side briefly describes the selected operation; the right side indicates operation progress and results. If you double-click on the operation results, you will see the logs window.

Taskbar notification area icon

During most of the operations, a special indicator icon appears in the Windows taskbar notification area (the right portion of the status bar with the clock). If you mouse over the icon, you will see a tool tip indicating the operation's progress. This icon doesn't depend on the main program window being open. It is present for background execution of scheduled tasks as well.

4.2 Available operations

You can perform the following operations on the computer.

- **Backup and restore data, including system disks/partitions**

Click **Backup** or **Recovery**, then follow the Wizard's instructions. See details in *Chapter 5. Creating backup archives* and *Chapter 6. Restoring the backup data*.

- **Schedule backup operations**

Click the very left button on a tasks pane toolbar, then follow the Wizard's instructions. See details in *Chapter 7. Scheduling tasks*.

- **Set up backup/restore options**, such as backup process priority or files overwriting mode.

Select **Tools -> Options -> Default backup options** or **Default restoration options** and make settings. See details in *5.3 Setting backup options* and *6.4 Setting restore options*.

- **Validate backup archives wherever they reside, be it local, network or removable media**

Click **Validate Backup Archive**, then follow the Wizard's instructions. See details in *10.1 Validating backup archives*.

- **Browse logs of Acronis True Image Home operation**

Click the very right button on a tasks pane toolbar at the bottom of the window. See details in *10.2 Viewing logs*.

- **Manage Acronis Secure Zone**

Click **Manage Acronis Secure Zone**, then follow the Wizard's instructions. See details in *Chapter 8. Managing Acronis Secure Zone*.

- **Activate Acronis Startup Recovery Manager**

Click **Activate Acronis Startup Recovery Manager**, then follow the Wizard's instructions. See details in *3.4 Acronis Startup Recovery Manager*.

- **Mount partitions' images to explore and modify their contents, or to restore individual files**

Click **Mount image**, then follow the Wizard's instructions. See details in *Chapter 11. Mounting an image as a virtual drive*.

- **Unmount previously mounted partition images**

Click **Unmount image**, then follow the Wizard's instructions. See details in *11.2 Unmounting an image*.

- **Transfer the system to a new hard disk**

See *Chapter 12. Transferring the system to a new disk*.

- **Format partitions on a new hard disk**

See *Chapter 13. Adding a new hard disk*.

- **Turn on/off Windows System Restore tool**

See *10.3 Managing System Restore*.

- **Create bootable rescue media or its ISO image**

See *Chapter 9. Creating bootable media*.

Chapter 5. Creating backup archives

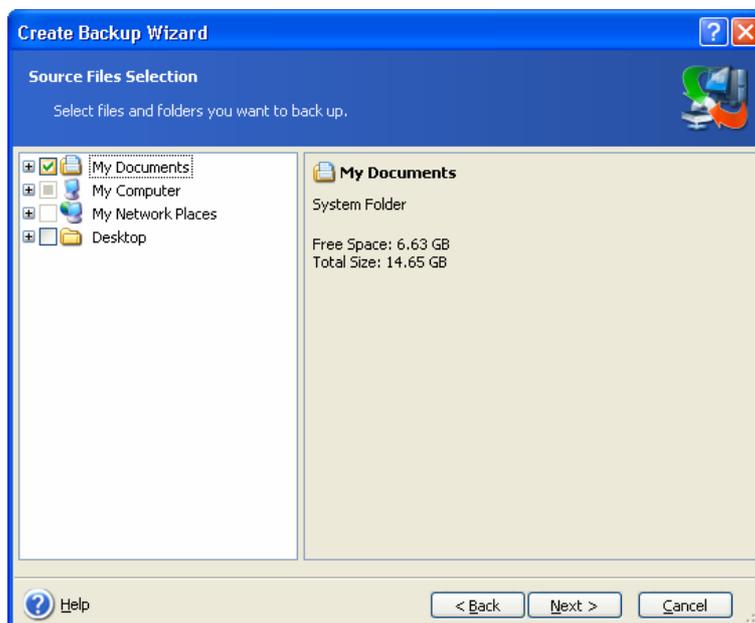
To be able to restore the lost data or roll back your system to a predetermined state, you should first create a data or entire-system backup file.

If you are not concerned about restoration of your operating system along with all settings and applications, but plan to keep safe only certain data (the current project, for example), choose file/folder backup. This will reduce the archive size, thus saving disk space and possibly reducing removable media costs.

Backing up the entire system disk (creating a disk image) takes more disk space but enables you to restore the system in minutes in case of severe data damage or hardware failure. Moreover, the imaging procedure is much faster than copying files, and may significantly speed the backup process when it comes to backing up large volumes of data (see details in *3.1 The difference between file archives and disk/partition images*).

5.1 Backing up files and folders (file backup)

1. Invoke the **Create Backup Wizard** by clicking on the backup operation icon in the main program window.
2. Click **Next**.
3. Select **Backup files** and click **Next**.
4. From the tree pane, select files and folders to back up. You can select a random set of files, folders, partitions, disks and even computers.

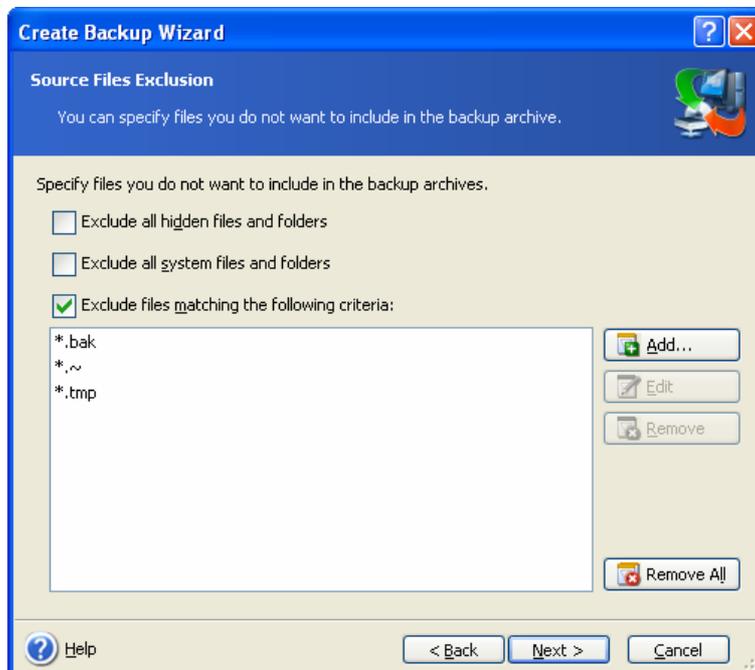


If you select a partition, disk or computer, and archive all its files, including system and hidden files, the bare-metal restore of that disk (partition, computer) still will not be possible. You also may not be able to boot the restored operating system. Therefore, it is recommended that you select only files and folders containing user data. To back up a disk or partition, use image backup.

5. Click **Next**.

6. Set filters for the specific types of files you do not wish to back up. For example, you may want hidden and system files and folders, as well as files with **.~, .tmp and .bak** extensions, not to be stored in the archive.

You can also apply custom filters, using the common Windows masking rules. For example, to exclude all files with extension **.exe**, add ***.exe** mask. **My???.exe** mask will reject all **.exe** files with names consisting of five symbols and starting with "my".



All of these settings will take effect for the current task. For information on how to set the default filters that will be called each time you create a file backup task, see *5.3.2 Source files exclusion*.

7. Click **Next**.

8. Select the name and location of the archive file.

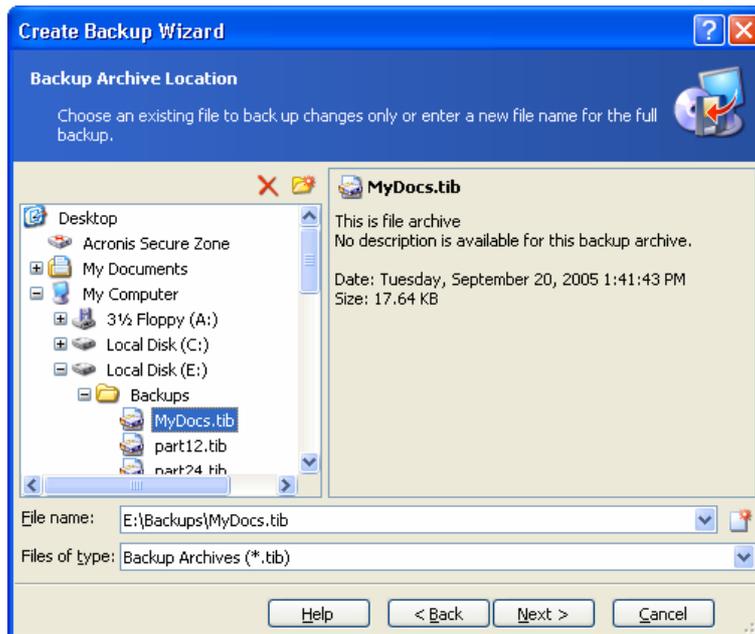
If you are going to create a full backup, type the file name in the **File Name** line, or use the file name generator (a button to the right of the line). If you select an existing archive, it will be overwritten.

If you are going to create an incremental backup (see *3.2 Full, incremental and differential backup*), select the latest full or incremental backup you have.



In fact, if all incremental backup files are stored together, it doesn't matter which one you select, as the program will recognize them as a single archive. If you stored the files on several removable disks, you must provide the latest archive file; otherwise, restoration problems might occur.

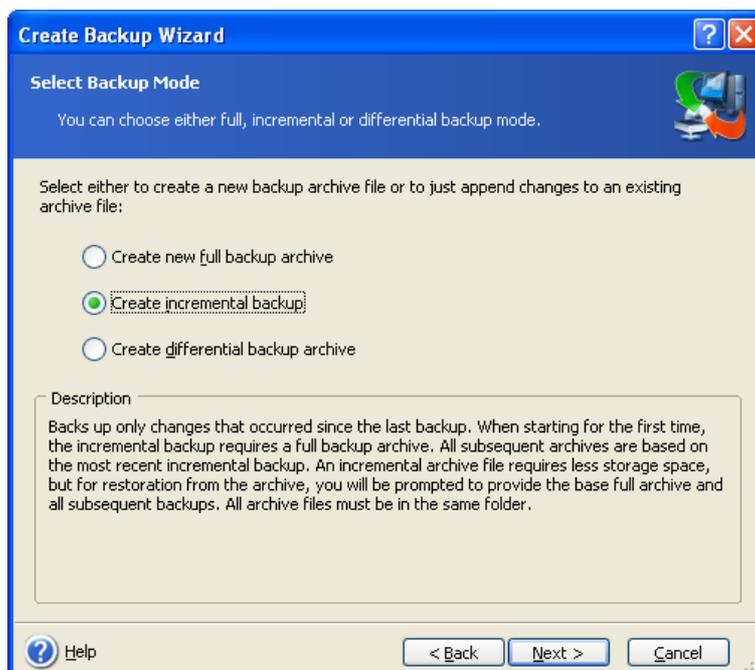
If you are going to create a differential backup, select the full backup which will be a base, or any of the existing differential archives. Either way, the program will create a new differential archive file.



The “farther” you store the archive from the original folders, the safer it will be in case of data damage. For example, saving the archive to another hard disk will protect your data if the primary disk is damaged. Data saved to a network disk or removable media will survive even if all your local hard disks are down. You can also use Acronis Secure Zone (see details in *3.3 Acronis Secure Zone*) for storing backups. In that case, you need not provide the file name.

9. Click **Next**.

10. Select whether you want to create a full, incremental or differential backup. If you have not backed up the selected files/folders yet, or the full archive seems too old to append incremental changes to it, choose full backup. Otherwise it is recommended that you create an incremental or differential backup (see *3.2 Full, incremental and differential backup*).



11. Click **Next**.

12. Select the backup options (that is, backup file splitting, compression level, password protection etc.). You may **Use default options** or **Set the options manually**. If the latter is the case, the settings will be applied only to the current backup task. Alternatively, you can edit the default options from the current screen. Then your settings will be saved as the defaults. See *5.3 Setting backup options* for more information.

13. Click **Next**.

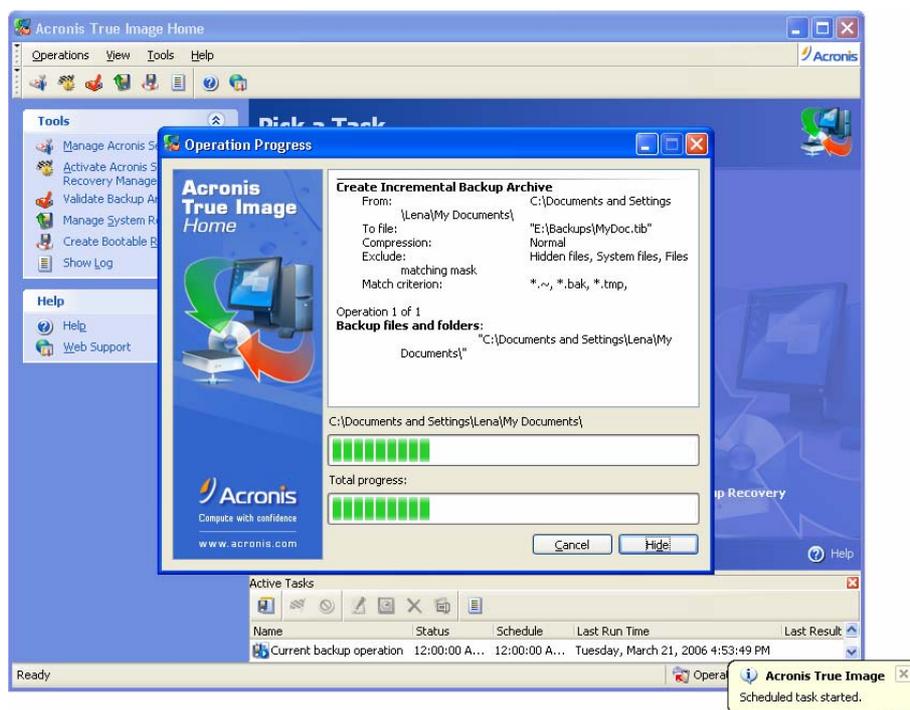
14. Provide a comment for the archive. This can help prevent you from restoring the wrong files. However, you can choose not to make any notes. The backup file size and creation date are automatically appended to the description, so you do not need to enter this information.

15. Click **Next**.

16. At the final step, the backup task summary is displayed. Up to this point, you can click **Back** to make changes in the created task. Clicking **Proceed** will launch the task execution.

17. The task will appear on the **Active tasks** pane of the main window. The task progress will be shown in a special window. You can stop the procedure by clicking **Cancel**.

You can also close the progress window by clicking **Hide**. The backup creation will continue, but you will be able to start another operation or close the main program window. In the latter case, the program will continue working in the background and will automatically close once the backup archive is ready. If you prepare some more backup operations, they will be queued after the current one.



You may want to adjust the backup process priority. To do so, click on the process icon in the System Tray and select Low, Normal, or High priority from the menu that appears. For information on how to set the default priority, see *5.3.5*.

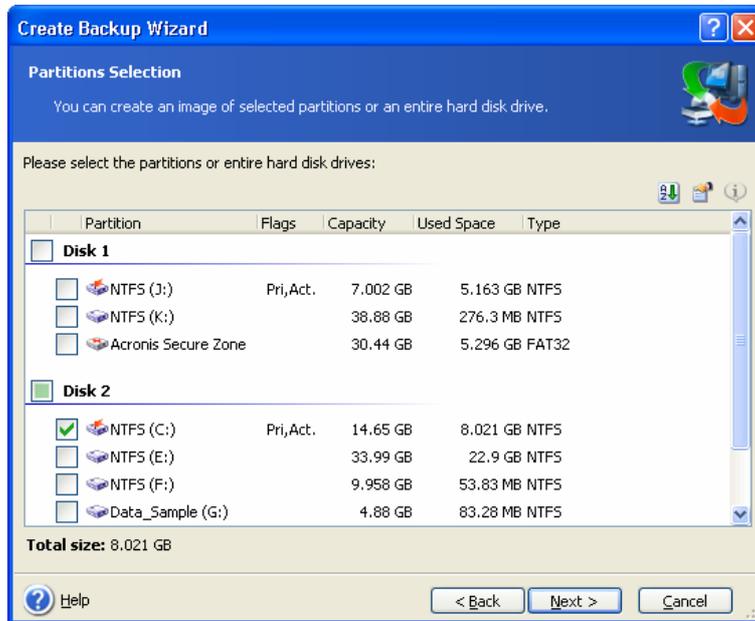


If you burn an archive to several removable media, be sure to number them, since you will have to insert them in order during the restoration.

18. You may want to see the log when the task is completed. To view the log, click the **Show Operation Logs** button on the toolbar.

5.2 Backing up disks and partitions (image backup)

1. Invoke the **Create Backup Wizard** by clicking on the backup operation icon in the main program window.
2. Click **Next**.
3. Select **Backup disks** and click **Next**.
4. Select disks or partitions to back up. You can select a random set of disks and partitions.



5. Click **Next**.
6. Select the name and location of the archive file.

If you are going to create a full archive, type the file name in the **File Name** line, or use the file name generator (a button to the right of the line). If you select an existing archive, it will be overwritten.

If you are going to create an incremental backup (see *3.2 Full, incremental and differential backup*), select the latest full or incremental backup you have.



In fact, if all incremental backup files are stored together, it doesn't matter which one you select, as the program will recognize them as a single archive. If you stored the files on several removable disks, you must provide the latest archive file; otherwise, restoration problems might occur.

If you are going to create a differential backup, select the full backup which will be a base, or any of existing differential archives. Either way, the program will create a new differential archive file.

The "farther" you store the archive from the original partition, the safer it will be in case of data damage. For example, saving the archive to another hard disk will protect your data if your primary disk is damaged. Data saved to a network disk or removable media will survive even if all your local hard disks are down. You can also use Acronis Secure Zone (see details in *3.3 Acronis Secure Zone*) for storing backups. In that case, you need not provide the file name.

7. Click **Next**.

8. Select whether you want to create a full or incremental backup. If you have not backed up the selected disks/partitions yet, or the full archive seems too old to append incremental changes to it, choose full backup. Otherwise it is recommended that you create an incremental or differential backup (see *3.2 Full, incremental and differential backup*).

9. Click **Next**.

10. Select the backup options (that is, backup file splitting, compression level, password protection etc.). You may **Use default options** or **Set the options manually**. If the latter is the case, the settings will be applied only to the current backup task. Alternatively, you can edit the default options from the current screen. Then your settings will be saved as the defaults. See *5.3 Setting backup options* for more information.

11. Click **Next**.

12. Provide a comment for the archive. This can help prevent you from restoring the wrong disk/partition. However, you can choose not to make any notes. The backup file size and creation date are automatically appended to the description, so you do not need to enter this information.

13. Click **Next**.

14. At the final step, the backup task summary is displayed. Up to this point, you can click **Back** to make changes in the created task. Clicking **Proceed** will launch the task execution.

15. The task will appear on the **Active tasks** pane of the main window. The task progress will be shown in a special window. You can stop the procedure by clicking **Cancel**.

You can also close the progress window by clicking **Hide**. The backup creation will continue, but you will be able to start another operation or close the main program window. In the latter case, the program will continue working in the background and will automatically close once the backup archive is ready. If you prepare some more backup operations, they will be queued after the current.



You may want to adjust the backup process priority. To do so, click on the process icon in the System Tray and select Low, Normal, or High priority from the menu that appears. For information on how to set the default priority, see *5.3.5*.



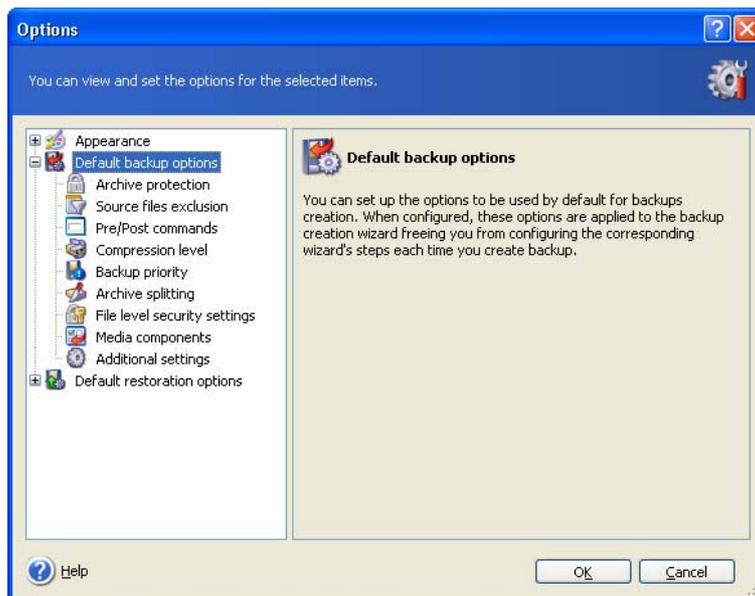
If you burn an archive to several removable media, be sure to number them, since you will have to insert them in order during the restoration.

16. You may want to see the log when the task is completed. To view the log, click the **Show Operation Logs** button on the toolbar.

5.3 Setting backup options

To view or edit the default backup options, select **Tools -> Options -> Default Backup Options** from the main program menu.

You can edit the default (or set the temporary) backup options while creating a backup task as well.



5.3.1 Archive protection

The default setting – **no password**.

An archive can be protected with a password. To protect the archive from being restored by anybody except you, enter a password and its confirmation into the text fields. A password should consist of at least eight symbols and contain both letters (in the upper and lower cases preferably) and numbers to make it more difficult to guess.

If you try to restore data from a password-protected archive, or append an incremental/differential backup to such an archive, Acronis True Image Home will ask for the password in a special window, allowing access only to authorized users.

5.3.2 Source files exclusion

The default setting – **all files from the selected folders will be included into the archive**.

You can set default filters for the specific types of files you do not wish to back up. For example, you may want hidden and system files and folders, as well as files with **.~**, **.tmp** and **.bak** extensions, not to be stored in the archive.

You can also apply custom filters, using the common Windows masking rules. For example, to exclude all files with extension **.exe**, add ***.exe** mask. **My???.exe** mask will reject all **.exe** files with names consisting of five symbols and starting with "my".

This option is effective for file/folders backup only. When creating a disk/partition image, you cannot filter out any files.

5.3.3 Pre/post commands

You can specify commands or batch files to be automatically executed before and after the *backup procedure*. For example, you may want to remove some tmp files from the disk before starting backup or configure a third-party antivirus product to be started each time before the backup starts. Click **Edit** to open the **Edit Command** window where you can easily input the command, its arguments and working directory or browse folders to find a batch file.

Unchecking the **Do not perform operations until the commands execution is complete** box, checked by default, will permit the backup process to run concurrently with your commands execution.

5.3.4 Compression level

The default setting – **Normal**.

If you select **None**, the data will be copied without any compression, which may significantly increase the backup file size. However, if you select **Maximum** compression, the backup will take longer to create.

The optimal data compression level depends on the type of files stored in the archive. For example, even maximum compression will not significantly reduce the archive size if the archive contains essentially compressed files, like .jpg, .pdf or .mp3.

Generally, it is recommended that you use the default **Normal** compression level. You might want to select **Maximum** compression for removable media to reduce the number of blank disks required.

5.3.5 Backup priority

The default setting – **Low**.

The priority of any process running in a system determines the amount of CPU usage and system resources allocated to that process. Decreasing the backup priority will free more resources for other CPU tasks. Increasing the backup priority may speed up the backup process due to taking resources from the other currently running processes. The effect will depend on total CPU usage and other factors.

5.3.6 Archive splitting

Sizeable backups can be split into several files that together make the original backup. A backup file can be split for burning to removable media.

The default setting – **Automatic**. With this setting, Acronis True Image Home will act as follows.

When backing up to the hard disk: If the selected disk has enough space and its file system allows the estimated file size, the program will create a single archive file.

If the storage disk has enough space, but its file system does not allow the estimated file size, Acronis True Image Home will automatically split the backup into several files.



FAT16 and FAT32 file systems have a 4 GB file size limit. At the same time, the existing hard drive's capacity may reach as much as 2 TB. Therefore, an archive file might easily exceed this limit, if you are going to back up the entire disk.

If you do not have enough space to store the image on your hard disk, the program will warn you and wait for your decision as to how you plan to fix the problem. You can try to free some additional space and continue or click **Back** and select another disk.

When backing up to a diskette, CD-R/RW or DVD±R/RW: Acronis True Image Home will ask you to insert a new disk when the previous one is full.

Alternatively, you can select **Fixed size** and enter the desired file size or select it from the drop-down list. The backup will then be split into multiple files of the specified size. That comes in handy when backing up to a hard disk with a view to burning the archive to CD-R/RW or DVD±R/RW later on.



Creating images directly on CD-R/RW or DVD±R/RW might take considerably more time than it would on a hard disk.

5.3.7 File-level security settings

Preserve files' security settings in archives

By default, files and folders are saved in the archive with their original Windows security settings (i.e. permissions for read, write, execute and so on for each user or user group, set in file **Properties -> Security**). If you restore a secured file/folder on a computer without user, specified in the permissions, you may not be able to read or modify this file.

To completely eliminate this kind of problem, you can disable preserving files' security settings in archives. Then the restored files/folders will always inherit the permissions from the folder to which they are restored (parent folder or disk, if restored to the root).

Alternatively, you can disable files' security settings during restoration, even if they are available in the archive (see 6.4.4 *File-level security* settings below). The result will be the same.

In archives, store encrypted files in decrypted state

The default setting – **disabled**.

If you do not use the encryption feature available in Windows XP operating systems, simply ignore this option. (Files/folders encryption is set in **Properties -> General -> Advanced Attributes -> Encrypt contents to secure data**).

Check the option if there are encrypted files in the backup and you want them to be accessed by any user after restore. Otherwise, only the user who encrypted the files/folders will be able to read them. Decryption may also be useful if you are going to restore encrypted files on another computer.

These options relate only to file/folders backup.

5.3.8 Media components

The default setting – **disabled**.

When backing up to removable media, you can make this media bootable by writing to it additional components. Thus, you will not need a separate rescue disk.

Choose the basic components, necessary for boot and restoring data, on the **General** tab.

The **Acronis One-Click Restore** is a minimal addition to your rescue media, allowing one-click data recovery from an image archive, stored on this media. This means that at boot from the media and clicking "restore" all data will be silently restored to the original place. No options or selections like resizing partitions will be possible.

If you want more functionality during restoration, write a standalone version of **Acronis True Image Home** to the rescue disk. Then you will be able to configure the restore task using Restore Data Wizard, use Acronis Snap Restore etc.

Under **Advanced** tab you can select full, safe or both Acronis True Image Home loader version. The safe version does not have USB, PC card or SCSI drivers and is useful only in case the full version does not load. If you have other Acronis products, such as Acronis Disk Director Suite, installed on your computer, the bootable versions of these programs' components will be offered as **Advanced** as well.

In case you check **Do not place additional components if there is no free space** box, the program will try to write at least Acronis True Image Home to media, short of space.

5.3.9 Additional settings

1. Validate backup archive upon operation completion

The default setting – **disabled**.

You can choose to check the backup data integrity. Verification will be performed immediately after the archive is created.



To check data from an incremental backup, you must have all previous incremental backup files and the initial full backup. If any of successive backups is missing, validation is not possible.

To check data from a differential backup, you must have the initial full backup as well.

However, if you created several differential or both incremental and differential backups based on the same full backup (and therefore, in the same folder), you will need ALL of these successive backups to validate the archive.

2. Ask for first media while creating backup archives on removable media

The default setting – **enabled**.

You can choose whether to display the **Insert First Media** prompt when backing up to removable media. With the default setting, backing up to removable media may be not possible if the user is away, because the program will wait for pressing **OK** in the prompt box. Therefore, you should disable the prompt when scheduling a backup to removable media. Then, if the removable media is available (for example, CD-R/RW inserted) the task can run unattended.

Chapter 6. Restoring the backup data

6.1 Restore under Windows or boot from CD?

As mentioned above (see *2.3 Running Acronis True Image Home*), Acronis True Image Home can be run in several ways. We recommend that you first try to restore data running Acronis True Image Home under Windows, because this method provides more functionality. Boot from the bootable media or use the Startup Recovery Manager (see *3.4 Acronis Startup Recovery Manager*) only if Windows does not load.

The boot CD from which you loaded the program does not keep you from using other CDs with backups. Acronis True Image Home is loaded entirely into RAM, so you can remove the bootable CD to insert the archive disk.

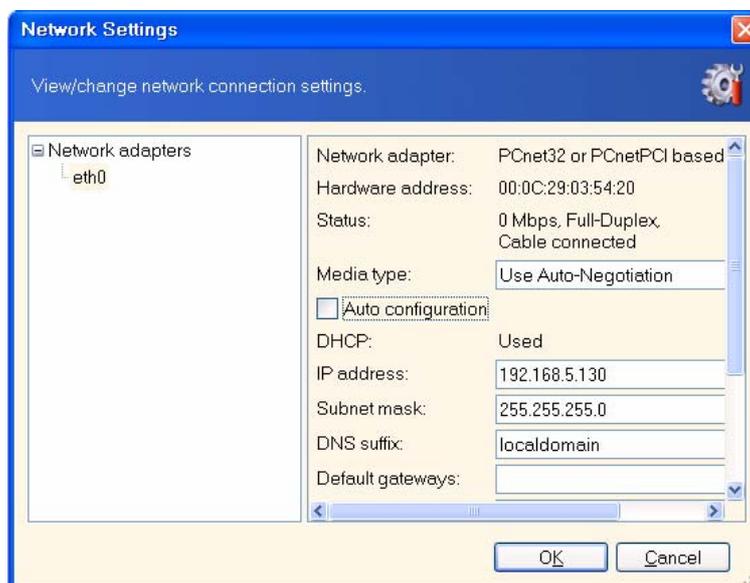


Be careful! Disk letters in standalone Acronis True Image Home might sometimes differ from the way Windows identifies drives. For example, the D: drive identified in the standalone Acronis True Image Home might correspond to the E: drive in Windows.

6.1.1 Network settings in rescue mode

When booted from removable media or by Startup Recovery Manager, Acronis True Image Home may not detect the network. Such might be the case if there is no DHCP server in your network or your computer address was not identified automatically for some reason.

To enable connection, specify network settings manually in the window, available at **Tools -> Options -> Network adapters**.



6.2 Restoring files and folders from file archives

Here we describe how to restore file/folders from a file backup archive. You can restore the desired files/folders from a disk/partition image as well. To do so, mount the image (see *Chapter 11. Mounting an image as a virtual drive*) or start the image restoration and select **Restore specified files or folders** (see *6.3 Restoring disks/partitions or files from images*).

1. Invoke the **Restore Data Wizard** by clicking on the restore operation icon in the main program window.

2. Click **Next**.

3. Select the archive. If the archive is located in Acronis Secure Zone, select it to choose the archive on the next step.



If the archive is located on removable media, e.g. CD, first insert the last CD and then insert disks in reverse order when Restore Data Wizard prompts.

If you added a comment to the archive, it will be displayed to the right of the drives tree. If the archive was protected with a password, Acronis True Image Home will ask for it. The comment and the **Next** button will be unavailable until you enter the correct password.

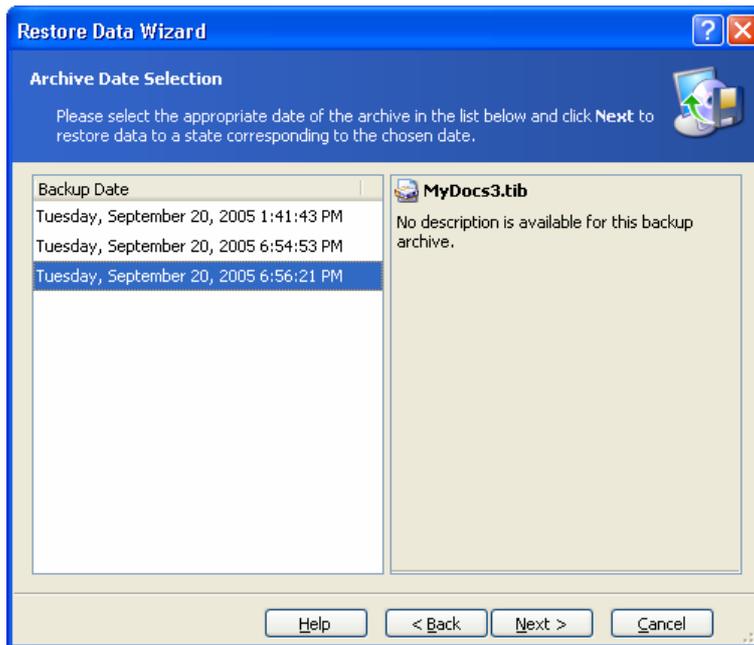
4. Click **Next**.

5. If you are to restore files from an archive containing incremental backups, Acronis True Image Home will suggest that you select one of successive incremental backups by its creation date/time. Thus, you can roll back the files/folders state to a certain date.



To restore data from an incremental backup, you must have all previous incremental backup files and the initial full backup. If any of successive backups is missing, restoration is not possible.

To restore data from a differential backup, you must have the initial full backup as well.

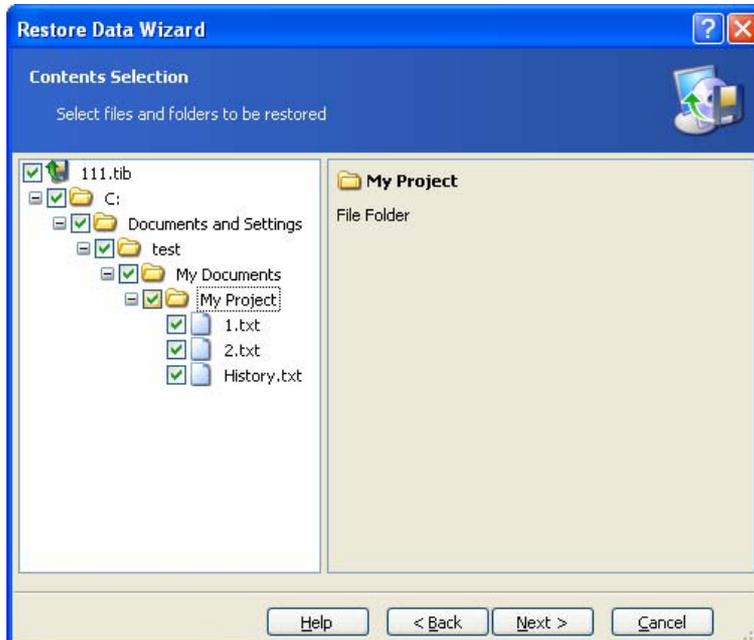


6. Click **Next**.

7. Select a folder on your computer where you want to restore selected folders/files (a target folder). You can restore data to their original location or choose another folder, if necessary.

8. Click **Next**.

9. Select files and folders to restore. You can choose to restore all data or browse the archive contents and select the desired folders or files.

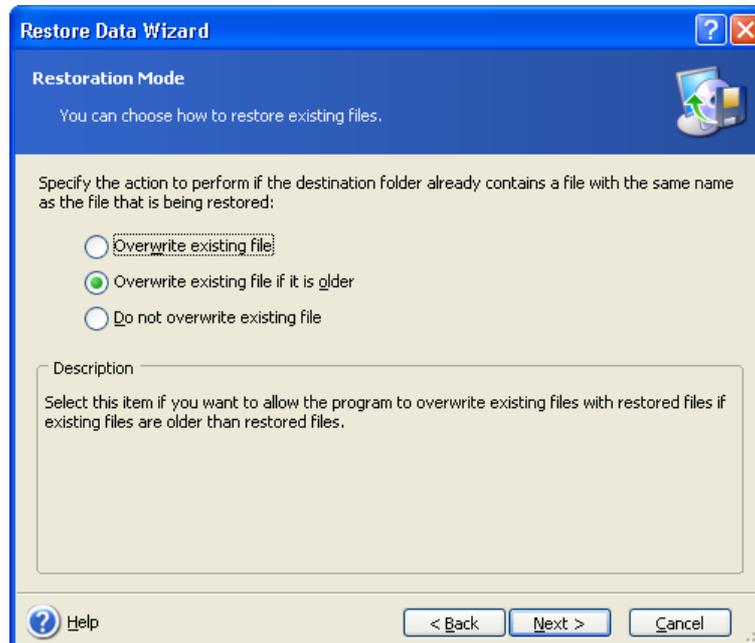


10. Click **Next**.

11. Select the options for the restoration process (that is, restoration process priority, file-level security settings etc.). You may **Use default options** or **Set the options manually**. If the latter is the case, the settings will be applied only to the current restore task. Alternatively, you can edit the default options from the current screen. Then your settings will be saved as default. See *6.4 Setting restore options* for more information.

12. Click **Next**.

13. The next selection allows you to keep useful data changes made since the selected backup was created. Choose what to do if the program finds in the target folder a file with the same name as in the archive.



Overwrite existing file – this will give the archived file unconditional priority over the file on the hard disk.

Overwrite existing file if it is older – this will give the priority to the most recent file modification, whether it be in the archive or on the disk

Do not overwrite existing file – this will give the file on the hard disk unconditional priority over the archived file.

14. At the final step, the restoration summary is displayed. Up to this point, you can click **Back** to make changes in the created task. Clicking **Proceed** will launch the task execution.

15. The task will appear on the **Active tasks** pane of the main window. The task progress will be shown in a special window. You can stop the procedure by clicking **Cancel**. Please keep in mind that the aborted procedure still may cause changes in the destination folder.

6.3 Restoring disks/partitions or files from images

To restore a partition (disk) from an image, Acronis True Image Home must obtain **exclusive access** to the target partition (disk). This means no other applications can access it at that time. If you receive a message stating that the partition (disk) can not be blocked, close applications that use this partition (disk) and start over. If you can not determine which applications use the partition (disk), close them all.

6.3.1 Starting the Restore Data Wizard

1. Invoke the **Restore Data Wizard** by clicking on the restore operation icon in the main program window.

2. Click **Next**.

6.3.2 Archive selection

1. Select the archive. If the archive is located in Acronis Secure Zone, select it to choose the archive at the next step.



If the archive is located on removable media, e.g. CD, first insert the last CD and then insert disks in reverse order when Restore Data Wizard prompts.

If you added a comment to the archive, it will be displayed to the right of the drives tree. If the archive was protected with a password, Acronis True Image Home will ask for it. The partitions layout, the comment and the **Next** button will be unavailable until you enter the correct password.

2. Click **Next**.

3. If you are to restore data from an archive, containing incremental backups, Acronis True Image Home will suggest that you select one of successive incremental backups by its creation date/time. Thus, you can roll back the disk/partition state to a certain date.



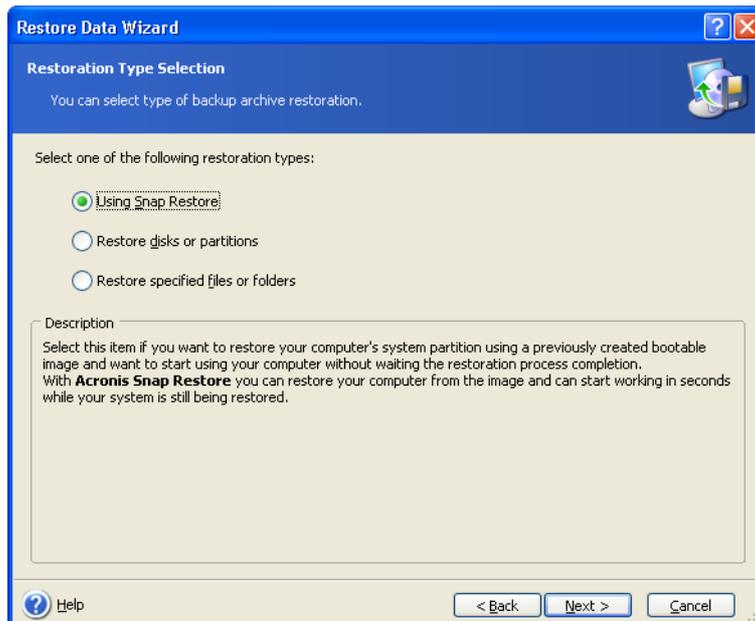
To restore data from an incremental backup, you must have all previous incremental backup files and the initial full backup. If any of successive backups is missing, restoration is not possible.

To restore data from a differential backup, you must have the initial full backup as well.

4. Click **Next**.

6.3.3 Restoration type selection

1. Select what you want to restore:



Restore specified files or folders

With this selection, you will be further offered to select where to restore selected folders/files (original or new location), choose files/folders to be restored and so on. These steps look like those in file archive restore. However, watch your selection: if you are to restore files instead of disk/partition, uncheck the unnecessary folders. Otherwise you will restore a lot of excessive files. Then you will be taken directly to Restoration Summary screen (6.3.12 *Restoration summary and executing restoration*).

Restore disks or partitions

Having selected a usual way of disks/partitions recovery, you will have to make all settings described below.

Using Snap Restore

When restoring a system disk/partition image from Acronis Secure Zone, you will have the third choice – to use **Acronis Snap Restore**. Having selected this option, you will proceed directly to the summary window (6.3.12 *Restoration summary and executing restoration*). In a few seconds after pressing **Proceed** the computer will reboot to the restored system. Log in and start work – no more reboots or other actions are required. For more about Acronis Snap Restore, see 3.5 *Acronis Snap Restore*.



When performing Snap Restore, the current Acronis True Image Home version always restores the entire system disk. Therefore, if your system disk consists of several partitions and you are planning to use Acronis Snap Restore, all partitions must be included into the image. Any partitions which are missing from the image will be lost.



Snap Restore of Windows 98/Me systems is not available.

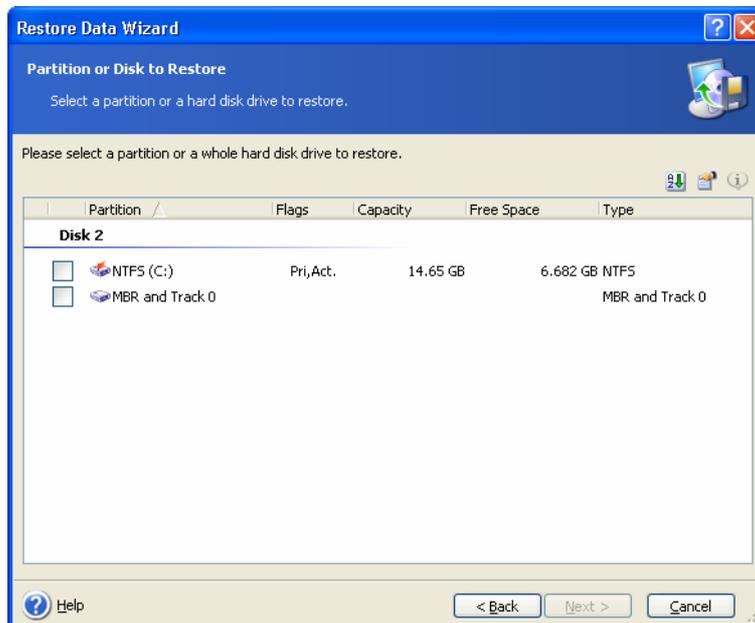
However, you can choose an ordinary way of restoration for that image. This will allow you to make changes to the restored partition that would not be possible when using Acronis Snap Restore.

Finally, if you are not going to recover the system, but only want to repair damaged files, select **Restore specified files or folders**.

2. Click **Next**.

6.3.4 Selecting a disk/partition to restore

1. The selected archive file can contain images of several partitions or even disks. Select which disk/partition to restore.



Disks and partitions images contain a copy of track 0 along with MBR (Master Boot Record). It appears in this window in a separate line. You can choose whether to restore MBR and track 0 by checking the respective box. Restore MBR if it is critical to your system boot.

2. Click **Next**.

6.3.5 Selecting a target disk/partition

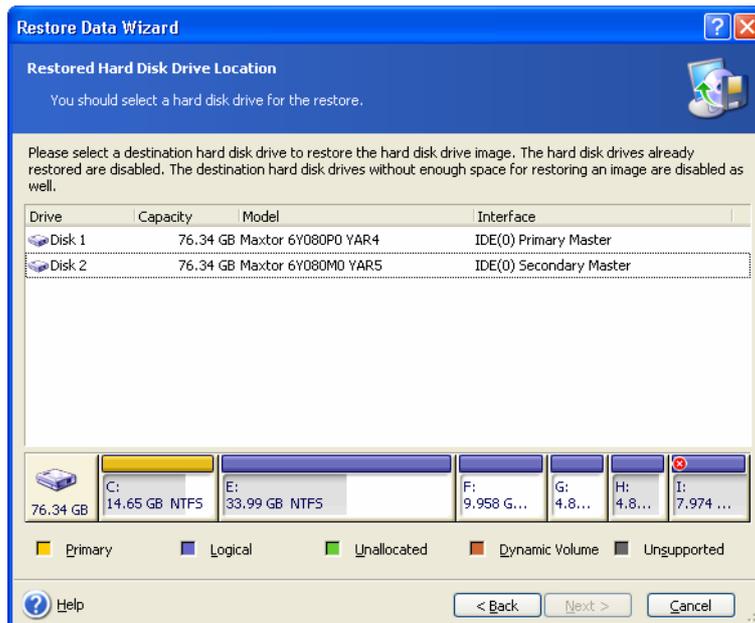
1. Select a target disk or partition where you want to restore the selected image. You can restore data to their initial location, to another disk/partition or to an unallocated space. The target partition should be at least the same size as the uncompressed image data.



All the data stored on the restored partition will be replaced by the image data, so be careful and watch for non-backed-up data that you might need.

2. Click **Next**.

3. When restoring an entire disk, the program will analyze the target disk structure to see if the disk is free.



If there are partitions on the target disk, you will be prompted by the **Nonempty Destination Hard Disk Drive** window stating that the destination disk contains partitions, perhaps with data.

You will have to select between:

- **Yes, I want to delete all the partitions on the destination hard disk before restoring** – all existing partitions will be deleted and all their data will be lost.
- **No, I do not want to delete partitions** – no existing partition will be deleted, discontinuing the recovery operation. You will only be able to cancel the operation or return to select another disk.



Note that no real changes or data destruction will be performed at this time! For now, the program will just map out the procedure. All changes will be implemented only when you click **Proceed** in the wizard's final window.

To continue, select the first choice and click **Next**. You will be taken directly to step *6.3.10 Restoring several disks or partitions at once*.

6.3.6 Changing the restored partition type

1. When restoring a partition, you can change its type, though it is not required in most cases.

To illustrate why you might need to do this, let's imagine that both the operating system and data were stored on the same primary partition on a damaged disk.

If you are restoring a system partition to the new (or the same) disk and want to load an operating system from it, you will select **Active**.

If you restore a system partition to another hard disk with its own partitions and OS, most probably you will need only the data. In this case, you can restore the partition as **Logical** to access the data only.

By default, the original partition type is selected.



Selecting **Active** for a partition without an installed operating system could prevent your computer from booting.

2. Click **Next**.

6.3.7 Changing the restored partition file system

1. Though seldom required, you can change the partition file system during its restoration. Acronis True Image Home can make the following file system conversions: **FAT 16 -> FAT 32, Ext2 -> Ext3**. For partitions with other native file systems this option is not available.



Let us imagine you are to restore a partition from an old, low-capacity FAT16 disk to a newer disk. FAT16 would not be effective and might even be impossible to set on the high-capacity hard disk. That's because FAT16 supports partitions up to 4 GB, so you will not be able to restore a 4 GB FAT16 partition to a partition that exceeds that limit without changing the file system. It would make sense here to change the file system from FAT16 to FAT32.

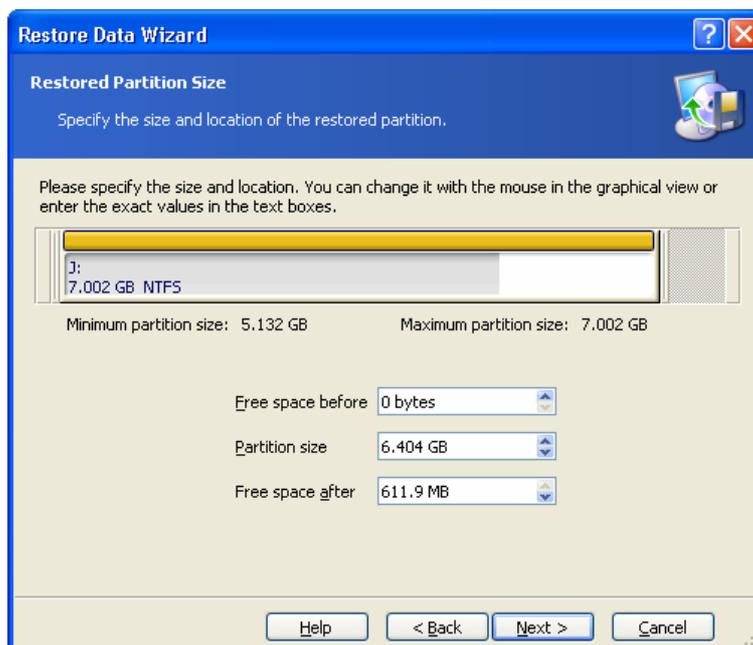
However, keep in mind that not all operating systems support FAT32. MS-DOS, Windows 95 and Windows NT 3.x, 4.x do not support FAT32 and will not be operable after you restore a partition and change its file system. These can be normally restored on a FAT16 partition only.

2. Click **Next**.

6.3.8 Changing the restored partition size and location

1. You can resize and relocate a partition by dragging it or its borders with a mouse or by entering corresponding values into the appropriate fields.

Using this feature, you can redistribute the disk space between partitions being restored. In this case, you will have to restore the partition to be reduced first.



These changes might be useful if you are to copy your hard disk to a new high-capacity one by creating its image and restoring it to a new disk with larger partitions. This way of cloning is used if it is not possible to connect the second hard disk to the computer (for more details about cloning see *12.1 General information*).

2. Click **Next**.

6.3.9 Assigning a letter to the restored partition

1. In Windows NT SP6/2000/XP, Acronis True Image Home will assign an unused letter to a restored partition. You can select the desired letter from a drop-down list. If you set the switch to **No**, no letters will be assigned to the restored partition, hiding it from OS. Under Windows 98/Me, this step is bypassed since letters are assigned automatically.

You should not assign letters to partitions inaccessible to Windows, such as to those other than FAT and NTFS.

2. Click **Next**.

6.3.10 Restoring several disks or partitions at once

1. During a single session, you can restore several partitions or disks, one by one, by selecting one disk and setting its parameters first and then repeating these actions for every partition or disk to be restored.

If you want to restore another disk (partition), select **Yes, I want to restore another partition or hard disk drive**. Then you will return to the partition selection window (6.3.4) again and will have to repeat the above steps. Otherwise, don't set this switch.

2. Click **Next**.

6.3.11 Setting restore options

1. Select the options for the restoration process (that is, restoration process priority etc.). You may **Use default options** or **Set the options manually**. If the latter is the case, the settings will be applied only to the current restore task. Alternatively, you can edit the default options from the current screen. Then your settings will be saved as default. See *6.4 Setting restore options* for more information.

2. Click **Next**.

6.3.12 Restoration summary and executing restoration

1. At the final step, the restoration summary is displayed. Up to this point, you can click **Back** to make changes in the created task. If you click **Cancel**, no changes will be made to disk(s). Clicking **Proceed** will launch the task execution.

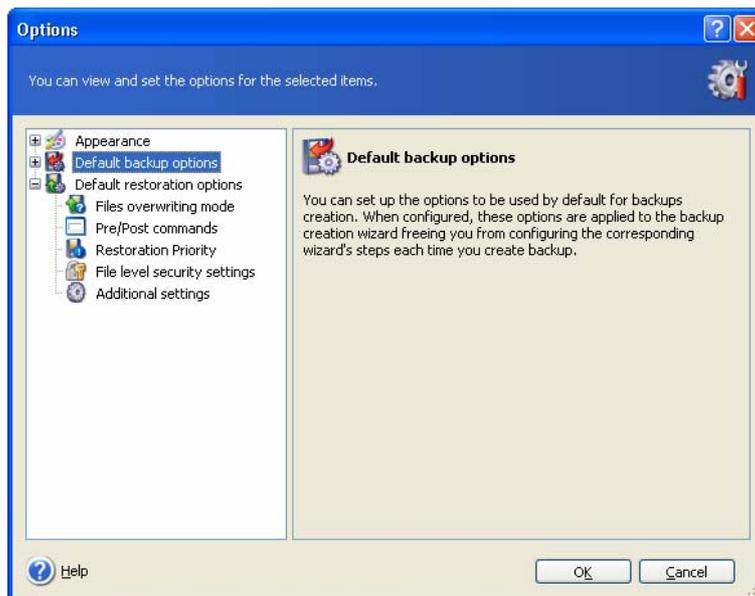
2. The task will appear on the **Active tasks** pane of the main window. The task progress will be shown in a special window.

You can stop the procedure by clicking **Cancel**. However, it is critical to note that the target partition will be deleted and its space unallocated – the same result you will get if the restoration is unsuccessful. To recover the “lost” partition, you will have to restore it from the image again.

6.4 Setting restore options

To view or edit the default restore options, select **Tools -> Options -> Default Restoration Options** from the main program menu.

You can edit the default (or set the temporary) restore options while creating a restore task as well.



6.4.1 Files overwriting mode

This option allows you to keep useful data changes made since the backup being restored was done. Choose what to do if the program finds in the target folder a file with the same name as in the archive.

Overwrite existing file – this will give the archived file unconditional priority over the file on the hard disk.

Overwrite existing file if it is older – this will give the priority to the most recent file modification, whether it be in the archive or on the disk.

Do not overwrite existing file – this will give the file on the hard disk unconditional priority over the archived file.

This option is effective only when restoring files from file/folders archives.

6.4.2 Pre/post commands

You can specify commands or batch files to be automatically executed before and after the restore procedure. Click **Edit** to open the **Edit Command** window where you can easily input the command, its arguments and working directory or browse folders to find a batch file.

Unchecking the **Do not perform operations until the commands execution is complete** box, checked by default, will permit the restore procedure to run concurrently with your commands execution.

6.4.3 Restoration priority

The default setting – **Low**.

The priority of any process running in a system determines the amount of CPU usage and system resources allocated to that process. Decreasing the restoration priority will free more resources for other CPU tasks. Increasing of restoration priority may speed up the restore process due to taking resources from the other currently running processes. The effect will depend on total CPU usage and other factors.

6.4.4 File-level security settings

The default setting – **Restore files with their security settings**.

If the files' security settings were preserved during backup (see 5.3.7 *File-level security settings*), you can choose whether to restore files' security settings or let the files inherit the security settings of the folder where they will be restored.

This option is effective only when restoring files from file/folders archives.

6.4.5 Additional settings

1. You can choose whether to restore files' date and time from the archive or assign the files the current date and time.

2. Before data is restored from the archive, Acronis True Image Home can check its integrity. If you suspect that the archive might have been corrupted, select **Validate backup archive before restoration**.



To check data from an archive containing incremental backups, you must have all incremental backup files and the initial full backup. If any successive backups are missing from the archive, validation is not possible.

To check data from a differential backup, you must have the initial full backup as well.

However, if you created several differential or both incremental and differential backups based on the same full backup (and therefore, in the same folder), you will need ALL of these successive backups to validate the archive.

3. Having restored a disk/partition from an image, Acronis True Image Home can check the integrity of the file system. To do so, select **Check file system after restoration**.



Verification of the file system is available only when restoring disk/partitions under Windows NT SP6/2000/XP and for FAT16/32 and NTFS file systems.

Chapter 7. Scheduling tasks

Acronis True Image Home allows you to schedule periodic backup tasks. Doing so will give you peace of mind, knowing that your data are safe.

You can create more than one independently scheduled task. For example, you can back up your current project daily and back up the application disk once a week.

All the scheduled tasks appear in the **Active Tasks** area of the main window. You can start, stop, edit, delete and rename the scheduled tasks.

7.1 Creating scheduled tasks

1. To invoke the **Schedule Task Wizard**, click on its icon on the **Active Tasks** toolbar or select **Operations -> Schedule Task** from the main menu.
2. Click **Next**.
3. Configure a backup task in the usual way (see *Chapter 5. Creating backup archives*). If you choose to create the backup archive on a network drive, you will have to enter a user name and a password for network access.
4. Set the task execution periodicity.



- **Do not start automatically** – the task will be saved, but not launched automatically. You will be able to launch it later by clicking the start button on the Active Tasks pane
- **Daily** – the task will be executed once a day or once in several days
- **Weekly** – the task will be executed once a week or once in several weeks on the selected day
- **Monthly** – the task will be executed once a month on the selected day
- **One time only** – the task will be executed once at the specified time and day
- **When my computer starts** – the task will be executed at every OS startup
- **When I log on** – the task will be executed each time the current user logs in to the OS

- **When my computer shuts down** – the task will be executed before every computer shutdown or reboot
- **When I log off** – the task will be executed each time the current user logs off of the OS.



Some of these options might be disabled depending on the operating system.

5. Click **Next**.
6. Specify the task start time and other schedule parameters, according to the selected periodicity (see 7.1.1 - 7.1.4).
7. Click **Next**.
8. Next you will have to specify the name of the user who owns the executed task; otherwise no scheduled execution will be available.

Schedule Task Wizard

User Information

Select the user name and password.

Enter the name and password of a user. The task will run as if it was started by that user. Please note that the domain name must be specified if the user is a member of a domain.

Enter the user name:

Enter the password:

Confirm password:

If a password is not entered, the scheduled tasks might not run.

Help < Back Next > Cancel

In the upper field, enter a user name. Enter a password twice in two fields below.

9. At the final step, the task configuration is displayed. Up to this point, you can click **Back** to make changes in the created task. If you click **Cancel**, all settings will be lost. Click **Finish** to save the task.
10. The task schedule and default name appear on the **Active tasks** pane of the main window. You are prompted to rename the task just now. If you do not want to do so, press the **Esc** key.

7.1.1 Setting up daily execution

If you select daily execution, set the Start time and days on which you want to execute the task:

- **Every day**
- **Weekdays**
- **Every x days** – once in several days (specify the interval).



If the computer is off when the scheduled time comes, the task won't be performed, but you can force the missed task to launch at the next system startup by checking a box under the **Start time** fields.

7.1.2 Setting up weekly execution

If you select weekly execution, set the **Start time**, specify the task execution periodicity in the **Every x weeks** box (every week, every two weeks, etc.) and check the days on which to execute the task.



If the computer is off when the scheduled time comes, the task won't be performed, but you can force the missed task to launch at the next system startup by checking a box under the **Start time** fields.

7.1.3 Setting up monthly execution

If you select monthly execution, set the **Start time** and days on which to execute the task:

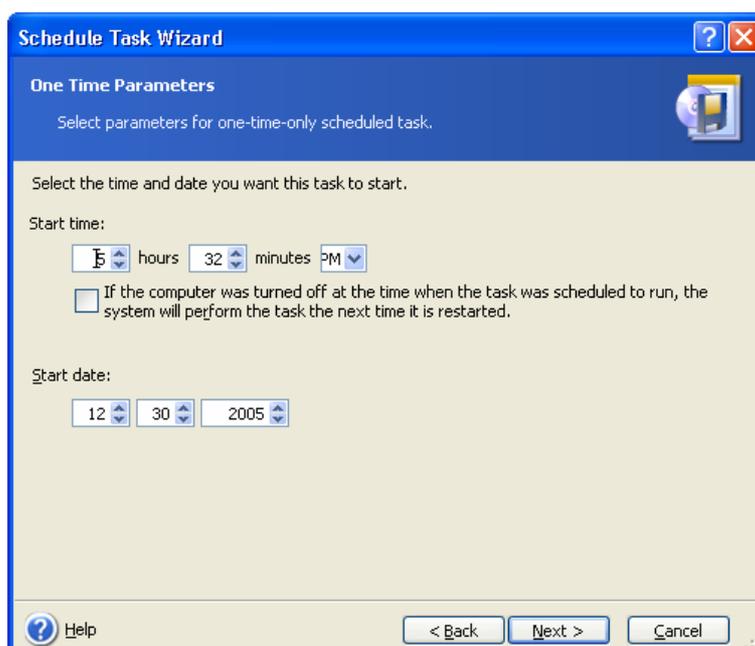
- **Day** – on the specified date
- **The <specify a day>** – on the specified day (e.g. on second Tuesday or fourth Friday); select this from the drop-down lists.



If the computer is off when the scheduled time comes, the task won't be performed, but you can force the missed task to launch at the next system startup by checking a box under the **Start time** fields.

7.1.4 Setting up one-time execution

If you select the one-time execution, set the **Start time** and date on which to execute the task:



If the computer is off when the scheduled time comes, the task won't be performed, but you can force the missed task to launch at the next system startup by checking a box under the **Start time** fields.

7.2 Managing scheduled tasks

The task Status, Schedule, Last Run Time and Last Result are shown on the **Active tasks** pane of the main window. To view the other task details, right-click on its name.

There are two ways of changing the task parameters. Editing allows you to change any task parameters. This is performed in the same way as creation, however, the earlier selected options will be set, so you have to enter only the changes. To edit a task, select it and click **Edit the Selected Task** on the **Active tasks** toolbar.

If you want to change only periodicity and/or start time, click **Schedule the Selected Task** on the **Active tasks** toolbar. Then you will have to perform only scheduling steps, leaving the backup settings the same.

To delete a task with confirmation, select it and click **Delete the Selected Task** on the **Active tasks** toolbar.

To rename a task, select it, click **Rename the Selected Task** on the **Active tasks** toolbar, enter the new task name and press Enter.

Chapter 8. Managing Acronis Secure Zone

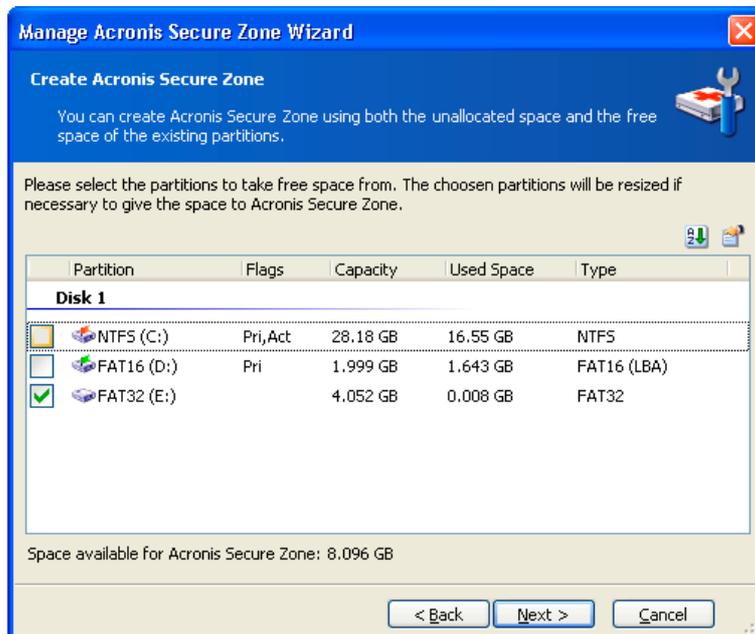
The Acronis Secure Zone is a special partition for storing archives on the computer system itself. Acronis Secure Zone is necessary for using Acronis Startup Recovery Manager. For more information about these functions see *3.3 Acronis Secure Zone* and *3.4 Acronis Startup Recovery Manager*.

8.1 Creating Acronis Secure Zone

Acronis Secure Zone can be located on any local disk. It is created using unallocated space, if available, or at the expense of free space on a partition. A computer can have only one secure zone. To create a zone on another disk, you must first delete an existing zone.

When you click **Manage Acronis Secure Zone** in the menu, the program searches for the zone on all local drives. If a zone is found, the wizard will offer to delete or resize it. If there is no zone, you'll be prompted to create it.

1. Before creating the Acronis Secure Zone, you may want to estimate its size. To do so, start a backup and select all data you are going to backup into the Acronis Secure Zone. At the **Set Backup Options** step choose **Set the options manually**, then set the compression level. You will see the estimated full backup size. Multiply this by about 1.5 to be able to create incremental or differential archives.
2. If there are several disks installed, select one on which to create Acronis Secure Zone.
3. Select the partitions from which space will be used to create the zone.



4. In the next window, enter the size of the zone or drag the slider.
5. You can set a password to restrict access to Acronis Secure Zone. The program will ask for the password at any operation relating to Acronis Secure Zone such as data backup and recovery, mounting images or validating archives on the ASZ, resizing and deleting the ASZ.



Acronis True Image Home repair or update will not affect the password. However, if the program is removed and then installed again while keeping the Acronis Secure Zone on the disk, the password to ASZ will be reset.

6. After this, you will be prompted to activate Acronis Recovery Manager, which will enable you to start Acronis True Image Home at boot time by pressing F11 key. Alternatively, you can activate this feature later from main program window.

7. Then you will see a list of operations to be performed on partitions (disks).

After you click **Proceed**, Acronis True Image Home will start creating the zone. Progress will be reflected in a special window. If necessary, you can stop zone creation by clicking **Cancel**. However, the procedure will be canceled only after the current operation is finished.

Acronis Secure Zone creation might take several minutes or more. Please wait until the whole procedure is finished.

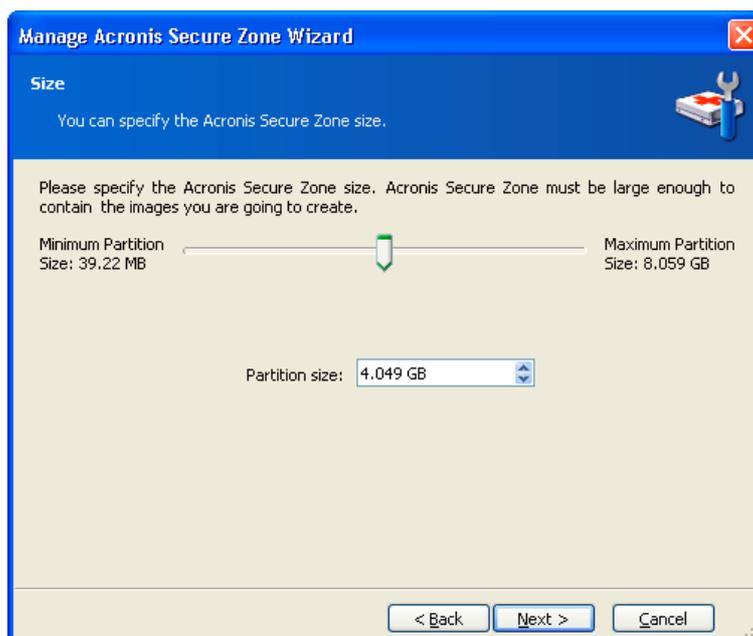
8.2 Resizing Acronis Secure Zone

1. When prompted by the wizard, select **Manage Acronis Secure Zone**.

2. If the ASZ is password protected, the proper password must be entered before any operation can take place.

3. Select to increase or decrease the zone. You might need to increase it to provide more space for archives. The opposite situation might arise if either partition lacks free space.

4. Select partitions from which free space will be used to increase Acronis Secure Zone or that will receive free space after the zone is reduced.



5. Enter the new size of the zone or drag the slider.

6. Next you will see a list of briefly described operations to be performed on partitions (disks).

After you click **Proceed**, Acronis True Image Home will start resizing the zone. Progress will be reflected in a special window. If necessary, you can stop the procedure by clicking **Cancel**. However, the procedure will be canceled only after the current operation is finished.

Zone resizing can take several minutes or longer. Please wait until the whole procedure is finished.

8.3 Deleting Acronis Secure Zone

1. When prompted by the wizard, select **Remove Acronis Secure Zone**.
2. If the ASZ is password protected, the proper password must be entered before any operation can take place.
3. Select the partitions to which you want to add the space freed from the secure zone. If you select several partitions, the space will be distributed proportionally to each partition's size.
4. Next, you will see a list of briefly described operations to be performed on partitions (disks).

After you click **Proceed**, Acronis True Image Home will start deleting the zone. Progress will be reflected in the opened window. If necessary, you can stop the procedure by clicking **Cancel**. However, the procedure will be canceled only after the current operation is finished.

Zone deletion might take several minutes or more. Please wait until the whole procedure is finished.



Acronis Secure Zone deletion will automatically disable Acronis Startup Recovery Manager if it is activated and destroy all backups stored in the zone.

Chapter 9. Creating bootable media

You can run Acronis True Image Home on a bare metal or on a crashed computer that cannot boot. You can even back up disks on a non-Windows computer, copying all its data sector-by-sector into the backup archive. To do so, you will need bootable media with the standalone Acronis True Image Home version.

If you purchased the boxed product, you already have such a bootable CD, because the installation CD contains, besides the program installation files, the Acronis True Image Home standalone bootable version.

If you purchased Acronis True Image Home on the Web, you can create bootable media using the Bootable Media Builder. For this, you will need a CD-R/RW blank, DVD±R/RW blank, several formatted diskettes (the wizard will tell you the exact number), or any other media your computer can boot from, such as a Zip drive.

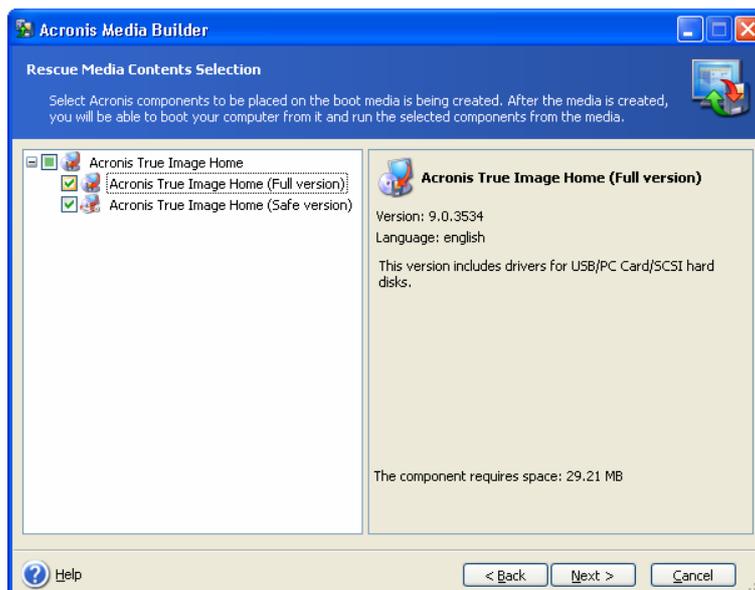
Acronis True Image Home also provides the ability to create an ISO image of a bootable disk on the hard disk.

If you have other Acronis products, such as Acronis Disk Director, installed on your computer, you can include standalone versions of these programs on the same bootable disk as well.



If you have chosen not to install the Bootable Media Builder during Acronis True Image Home installation, you will not be able to use this feature.

1. Click **Create Bootable Rescue Media** on the toolbar or the sidebar, or select **Create Bootable Rescue Media** from the **Tools** menu. You can also run the Bootable Rescue Media Builder without loading Acronis True Image Home by selecting **Programs -> Acronis -> Acronis True Image Home -> Bootable Rescue Media Builder** from the **Start menu**.
2. Select which components of Acronis programs you want to place on the bootable media.



Acronis True Image Home offers the following components:

- **Acronis True Image Home full version**

Includes support of USB, PC Card and SCSI interfaces along with the storage devices connected via them, and therefore is highly recommended.

- **Acronis True Image Home safe version**

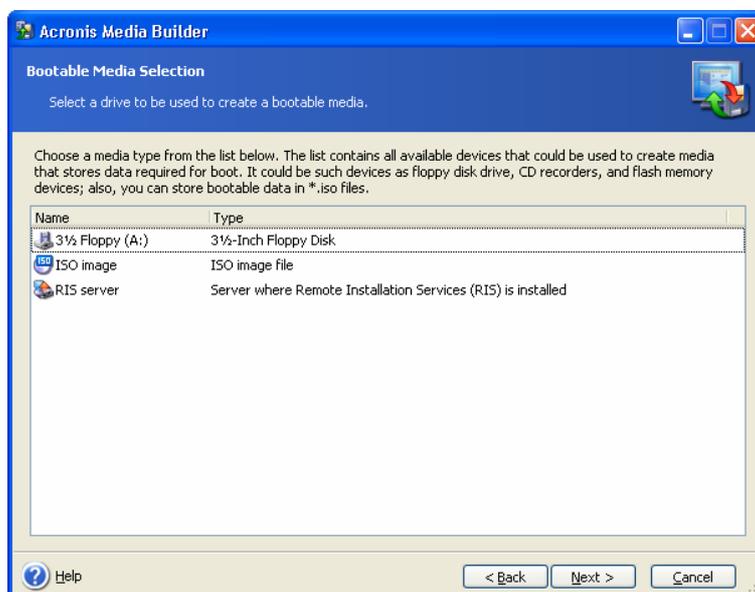
Does not include USB, PC Card, or SCSI drivers. Recommended for use in case of problems with running Full version

To find more about components of other Acronis products, see the respective user guides.

3. Select the type of bootable media (CD-R/RW, DVD±R/RW or 3.5" diskettes) to create. If your BIOS has this feature, you can create other bootable media such as removable USB flash drives. You can also choose to create a bootable disk ISO image.



When using 3.5" diskettes, you will be able to write on a diskette (or a set of the diskettes) only one component at a time (for example, Acronis True Image Home). To write another component, start Bootable Media Builder once again.



4. If you are creating CD, DVD or any removable media, insert the blank disk so the program can determine its capacity. If you chose to create a bootable disk ISO image, specify the ISO file name and the folder in which to place it.

5. Next, the program will calculate how many blank disks are required (in case you have not chosen ISO or CD) and give you time to prepare them. When you are finished, click **Proceed**.

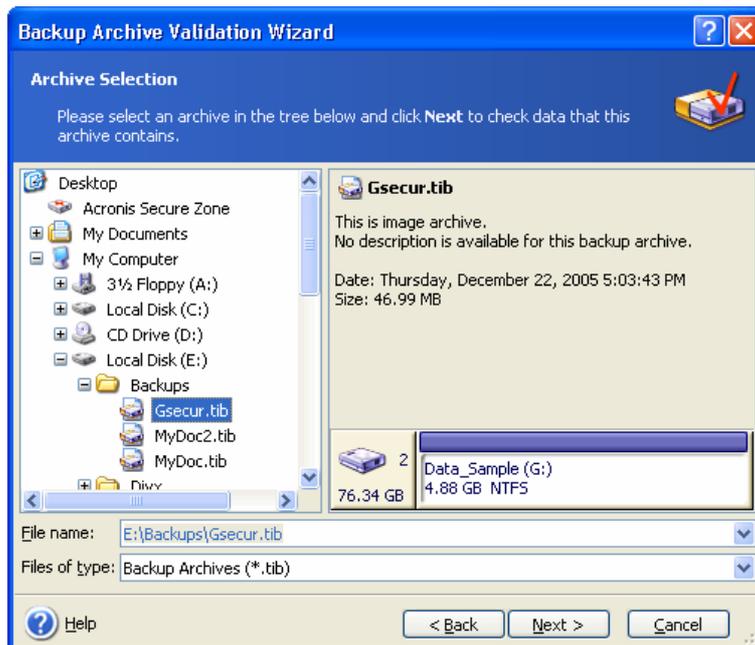
After you create a boot disk, identify it and keep it in a safe place.

Chapter 10. Other operations

10.1 Validating backup archives

To be certain that your archives are not damaged, you can check their integrity.

1. To invoke the **Backup Archive Validation Wizard**, select **Validate Backup Archive** in the main window or in the **Tools** group or click **Validate Backup Archive** on the toolbar.
2. Click **Next**.
3. Select the archive to validate. If the archive is located in Acronis Secure Zone, select it to choose the archive on the next step.



4. Click **Next**.
5. Clicking **Proceed** will launch the validation procedure. After the validation is complete, you will see the results window. You can cancel checking by clicking **Cancel**.



To check data from an archive containing incremental backups, you must have all incremental backup files and the initial full backup. If any successive backups are missing from the archive, the validation is not possible.

To check data from a differential backup, you must have the initial full backup as well.

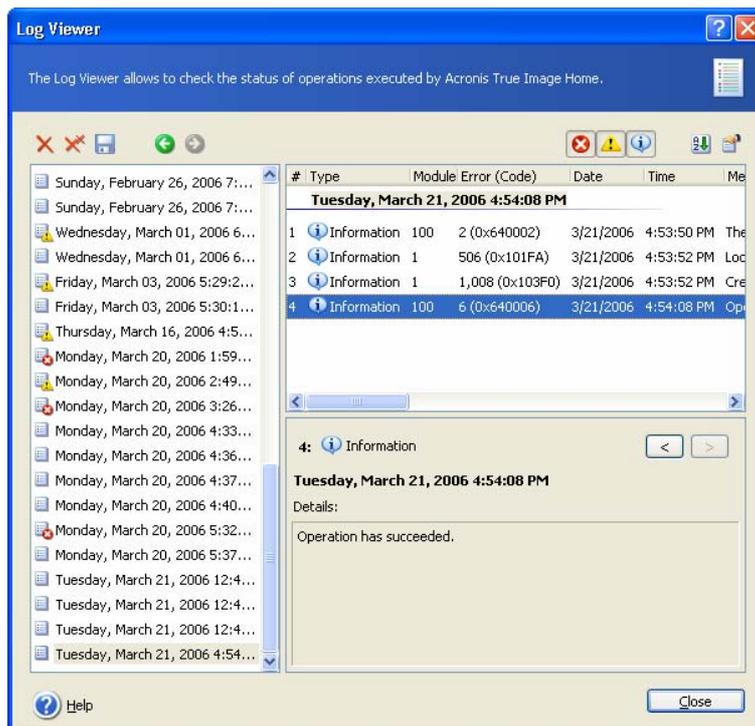
However, if you created several differential or both incremental and differential backups based on the same full backup (and therefore, in the same folder), you will need ALL of these successive backups to validate the archive.

10.2 Viewing logs

Acronis True Image Home allows users to view its working logs. They can provide information about scheduled backup tasks results, including reasons for failure, if any.

To invoke the log window, select **Show log** on the toolbar or from the **Tools** menu.

The log browsing window contains two panes: the left one features the log list, while the right one shows selected log contents.



The left panel can contain up to 50 logs. If there are more, you can browse the list using the **More** and **Less** buttons with the left and right arrows.

To delete a log, select it and click **Delete**.

If any step was terminated by an error, the corresponding log will be marked with a red circle with a white cross inside.

The right window features the list of steps contained in the selected log. The three buttons to the right control message filters: the white cross in the red circle filters error messages, the exclamation sign in a yellow triangle filters warnings, and the "i" in the blue circle filters information messages.

To select columns (step parameters) to display, right-click the headers line or left-click the **Choose Details** button. Then check the desired parameters.

To sort messages by a particular parameter, click its header (click again to reverse order) or the **Arrange Icons by** button (the second from the right) and select the desired parameter.

You can also change column width by dragging the borders with a mouse.

10.3 Managing System Restore

Microsoft Windows System Restore tool, available in Windows XP operating system, is used to undo harmful changes to the system without losing recently changed or created user data. To run the System Restore tool or find out more about it, select **Start -> Programs -> Accessories -> System Tools -> System Restore**. (Please be aware that the older Windows versions do not feature System Restore, therefore, under these operating systems **Manage System Restore** tool is unavailable.)

If you run Acronis True Image Home regularly, this feature in your operating system is redundant. You can turn it off, freeing up to 12% of your hard disk space, directly from Acronis True Image Home.

1. To invoke the **System Restore Management Wizard**, click the **Manage System Restore** icon in the main program window.

2. Click **Next**.

3. Now you can turn on/off System Restore on all your hard disk(s) partitions at once or do it individually for each partition.



Note that you cannot turn off System Restore on the system disk (partition), yet keep it on other disks (partitions).

4. Click **Next**.

5. The program lists the configured changes. You can click **Back** to choose different settings. If you click **Cancel**, all new settings will be lost. Click **Proceed** to apply the changes.



If you turn off System Restore on any disk or partition, all previously created restore points for that disk (partition) will be deleted. Please make sure you do not need those restore points before proceeding.

Chapter 11. Mounting an image as a virtual drive

Acronis True Image Home can **mount partition images as virtual drives**, thus letting you access them as though they were physical drives. This means that:

- A new disk with its own letter will appear in the drives list
- Using Windows Explorer and other file managers, you can view the image contents as if they were located on a physical disk or partition
- You will be able to use the virtual disk in the same way as the real one: open, save, copy, move, create, delete files or folders. If necessary, the image can be mounted in read-only mode.



Please keep in mind that, though both file archives and disk/partition images have a default ".tib" extension, only **partition images** can be mounted. If you want to view file archive contents, use the Restore Data Wizard (see 6.2 *Restoring files and folders from file archives*, steps 1-9).



The current version of Acronis True Image Home can mount an image archive only if all its volumes reside in the same directory. If your archive spans several CD-R/RW discs and you wish to mount the image, you should copy all volumes to a hard disk drive or network drive.

11.1 Mounting an image

1. Invoke the **Mount Image Wizard** by clicking on the **Mount Image** operation icon in the main program window.
2. Click **Next**.
3. Select the archive from the drives tree. If the archive is located in Acronis Secure Zone, select it to choose the archive at the next step.



If you added a comment to the archive, it will be displayed to the right of the drives tree. If the archive was protected with a password, Acronis True Image Home will ask for it. Neither

the partitions layout, nor the **Next** button will be enabled until you enter the correct password.

4. Click **Next**.

5. If you selected an archive containing incremental images, Acronis True Image Home will suggest that you select one of the successive incremental images by its creation date/time. Thus, you can explore the partition state to a certain moment.



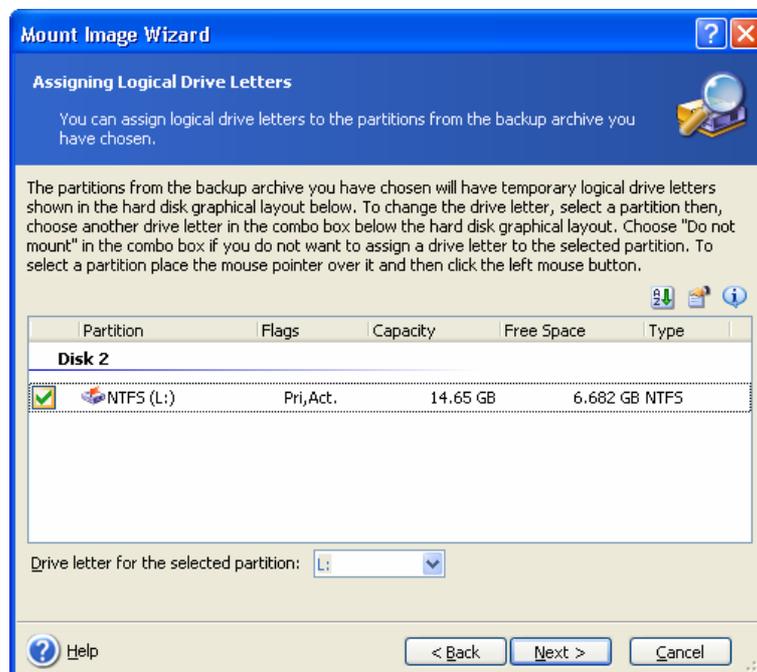
To mount an incremental image, you must have all previous incremental images and the initial full image. If any of the successive images are missing, mounting is not possible.

To mount a differential image, you must have the initial full image as well.

6. Click **Next**.

7. Select a partition to mount as a virtual disk. (Note that you cannot mount the entire disk.)

You can also select a letter to be assigned to the virtual disk from the **Drive letter** drop-down list. If you do not want to assign a letter to the virtual drive, select **Do not assign**.



8. Click **Next**.

9. Select whether you want to mount image in **Read-only** or **Read/Write** mode.

10. Click **Next**.

11. If you select **Read/Write** mode, the program assumes that the connected image will be modified, and creates an incremental archive file to capture the changes. It is strongly recommended that you list the forthcoming changes in the comment to this file.

12. The program displays a summary containing a single operation. Click **Proceed** to connect the selected partition image as a virtual disk.

13. After the image is connected, the program will run Windows Explorer, showing its contents. Now you can operate with files or folders as if they were located on a real disk.

You can connect multiple partition images. If you want to connect another partition image, repeat the procedure.

11.2 Unmounting an image

We recommend that you unmount the virtual disk after all necessary operations are finished, as keeping up virtual disks takes considerable system resources. If you do not, the virtual disk will disappear after your computer is turned off.

To disconnect the virtual disk, click **Unmount Image** and select the disk to unmount. You can also unmount the disk in Windows Explorer by right-clicking on its icon and selecting **Unmount**.

Chapter 12. Transferring the system to a new disk

12.1 General information

Sooner or later any computer user finds out that the hard disk is too small. If you just don't have space for more data, you can add another disk just for data storage as described in the following chapter.

However, you might find that your hard disk does not have enough space for the operating system and installed applications, preventing you from updating your software. In this case, you have to transfer the system to a higher-capacity hard disk.

To transfer the system, you must first install the disk in the computer. If your computer doesn't have a bay for another hard disk, you can temporarily install it in place of your CD drive. If that is not possible, you can clone a hard disk by creating its image and restoring it to a new hard disk with larger partitions.

There are two transfer modes available: automatic and manual.

In the automatic mode, you will only have to take some simple actions to transfer all the data, including partitions, folders and files, to a newer disk, making it bootable if the original disk was bootable.

There will be only one difference between these disks – partitions on the newer disk will be larger. Everything else, including the installed operating systems, data, disk labels, settings, software and everything else on the disk, will remain the same.



This is the only result available in the automatic mode. The program can only duplicate the original disk layout to the new one. To obtain a different result, you will have to answer additional questions about cloning parameters.

The manual mode will provide more data transfer flexibility.

1. You will be able to select the method of partition and data transfer:

- as is
- new disk space is proportionally distributed between the old disk partitions
- new disk space is distributed manually

2. You will also be able to select operations to perform on the old disk:

- leave partitions (and data!) on the old disk
- remove all information from the old disk
- create new partitions on the old disk (and remove all the older information)



On program screens, damaged partitions are marked with a red circle and a white cross inside in the upper left corner. Before you start cloning, you should check such disks for errors using the appropriate operating system tools.

12.2 Security

Please note the following: if the power goes out or you accidentally press **RESET** during the transfer, the procedure will be incomplete and you will have to partition and format or clone the hard disk again.

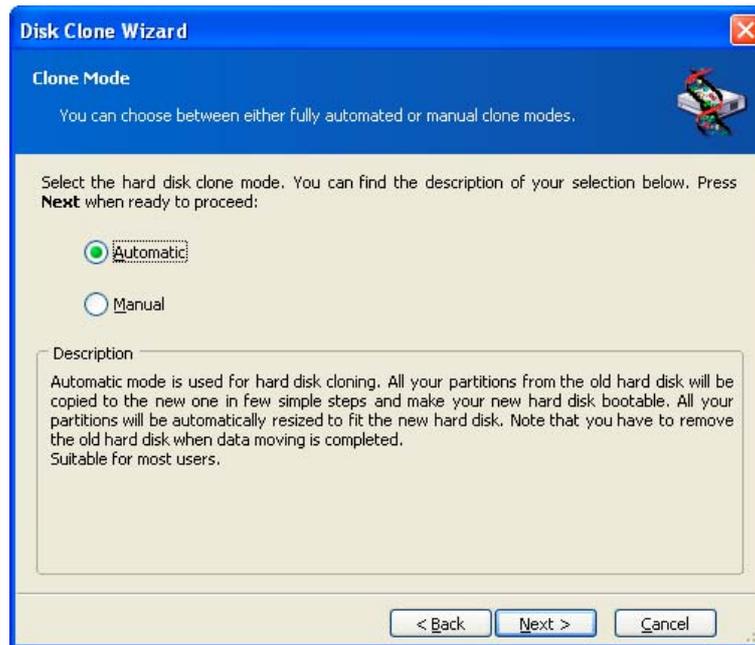
No data will be lost because the original disk is only being read (no partitions are changed or resized) until data transfer is completed.

Nevertheless, we do not recommend that you delete data from the old disk until you are sure it is correctly transferred to the new disk, the computer boots up from it and all applications work.

12.3 Executing transfers

12.3.1 Selecting Clone mode

You will see the **Clone mode** window just after the welcome window.

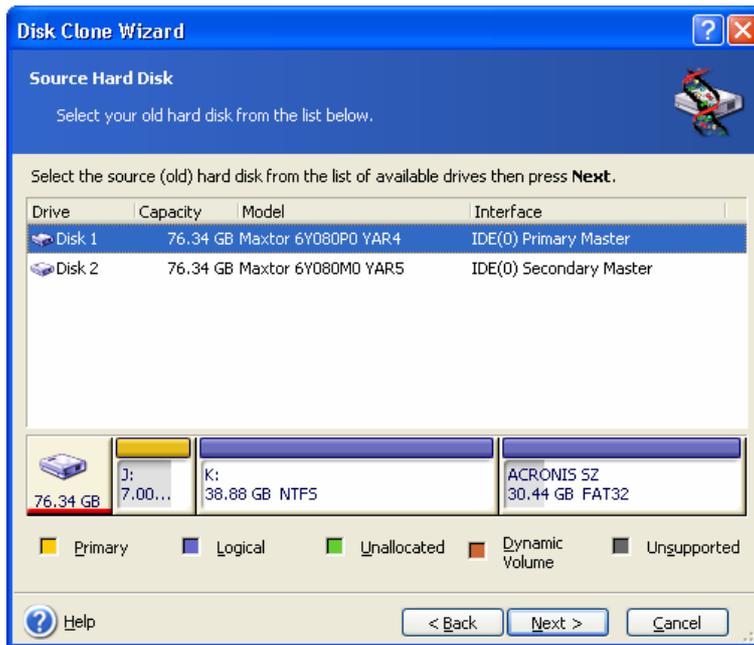


We recommend using automatic mode in most cases. The manual mode can be useful if you need to change the disk partition layout.

If the program finds two disks, one partitioned and another unpartitioned, it will automatically recognize the source disk as the partitioned disk and the destination disk as the unpartitioned disk, so the next two steps will be bypassed.

12.3.2 Selecting source disk

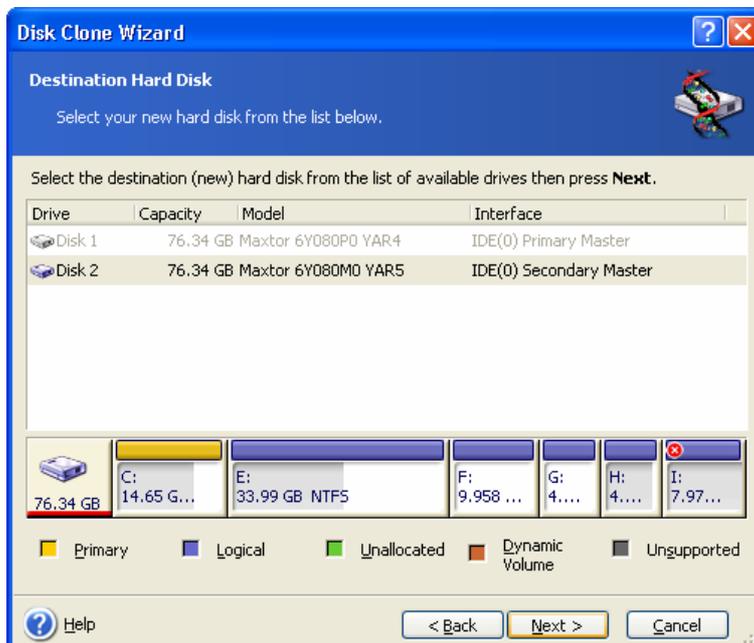
If the program finds several partitioned disks, it will ask you which is the source (i.e. the older data disk).



You can determine the source and destination using the information provided in this window (disk number, capacity, label, partition and file system information).

12.3.3 Selecting destination disk

After you select the source disk, you have to select the destination where the disk information will be copied.



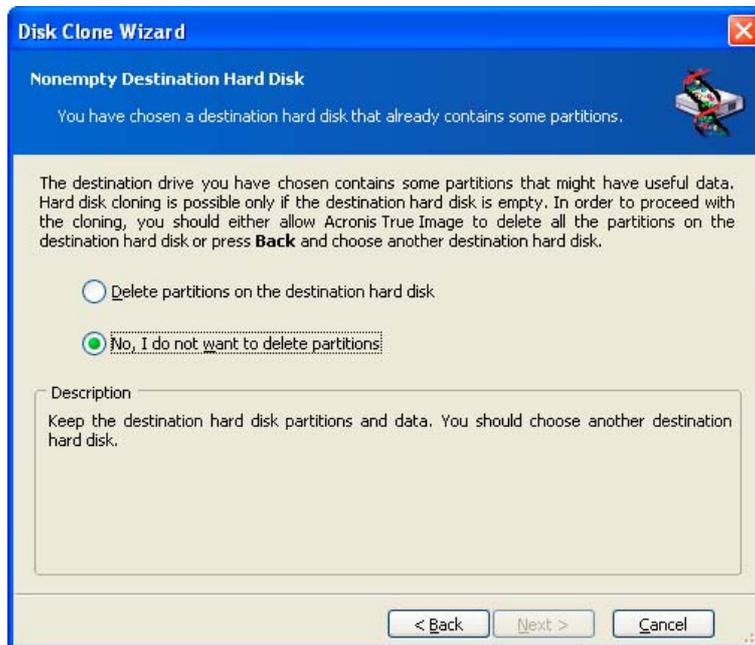
The previously selected source becomes grayed-out and disabled for selection.



If either disk is unpartitioned, the program will automatically recognize it as the destination and bypass this step.

12.3.4 Partitioned destination disk

At this point, the program checks to see if the destination disk is free. If not, you will be prompted by the **Nonempty Destination Hard Disk** window stating that the destination disk contains partitions, perhaps with data.



You will have to select between:

- **Delete partitions on the destination hard disk** – all existing partitions will be deleted during cloning and all their data will be lost.
- **No, I do not want to delete partitions** – no existing partition will be deleted, discontinuing the cloning operation. You will only be able to cancel this operation and return to select another disk.

To continue, select the first choice and click **Next**.



Note that no real changes or data destruction will be performed at this time! For now, the program will just map out cloning. All changes will be implemented only when you click **Proceed**.

12.3.5 Old and new disk partition layout

If you selected the automatic mode before, the program will ask you for nothing further. You will see the window graphically illustrating information (as rectangles) about the source disk (partitions and unallocated space) and the destination disk layout.

Along with the disk number, some additional information is provided: disk capacity, label, partition and file system information. Partition types — primary, logical — and unallocated space are marked with different colors.

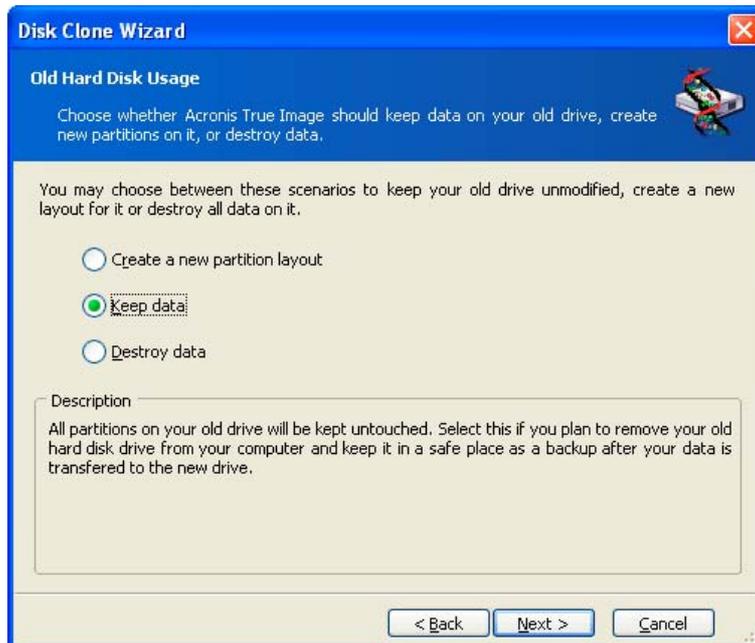
Next you will see the cloning summary.

12.3.6 Old disk data

If you selected the manual mode, the program will ask you what to do with the old disk:

- **Create a new partition layout** – All existing partitions and their data will be deleted (but they will also be cloned to the new disk, so you won't lose them)

- **Keep data** – leave the old disk partitions and data intact
- **Destroy data** – destroy all data on the old disk.



If you are going to sell or give away your old disk, we recommend that you make sure you destroyed the data on it.

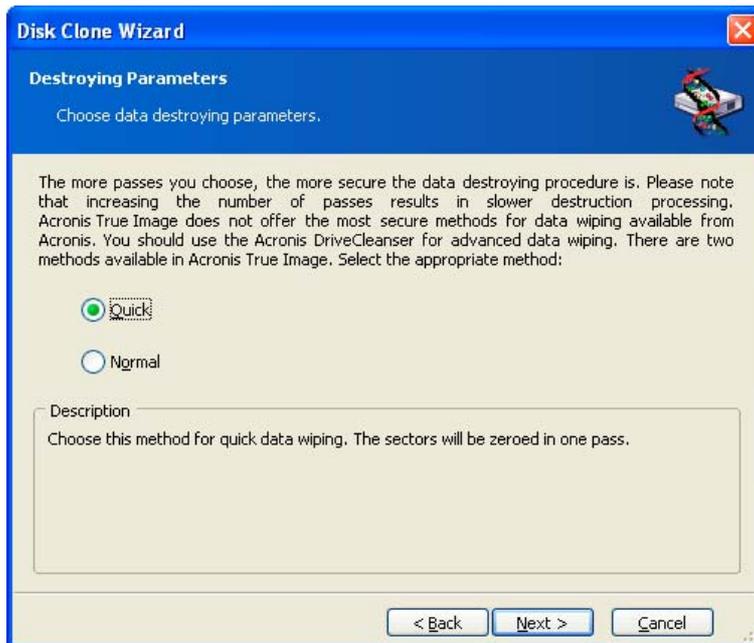
If you are going to keep it for data storage, you can create a new partition layout on it. In this case, the disk will be ready right after cloning is complete.

To protect yourself from unforeseen consequences, it would be better to leave the old disk data intact, as you will be able to delete it later.

12.3.7 Destroying the old disk data

If you elected to destroy the old disk data in the previous step, you will have to select the destruction method now:

- **Quick** – quick one-pass destruction
- **Normal** – multipass destruction



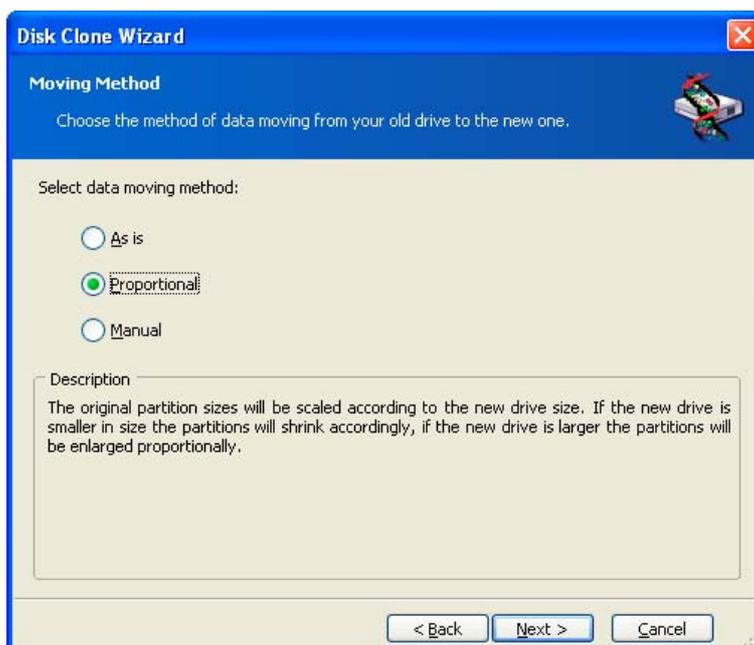
The second method takes more time, but makes it impossible to recover data afterwards, even with special equipment.

The first method is less secure, but is still suitable for most cases.

12.3.8 Selecting partition transfer method

Acronis True Image Home will offer you the following data transfer methods:

- **As is**
- **Proportional** – the new disk space will be proportionally distributed among cloned partitions
- **Manual** – you will specify the new size and other parameters yourself



If you elect to transfer information "as is," a new partition will be created for every old one with the same size and type, file system and label. The unused space will become

unallocated. Further, you will be able to use the unallocated space to create new partitions or to enlarge the existing partitions with special tools, such as Acronis Disk Director Suite.

As a rule, "as is" transfers are inexpedient, as they leave much unallocated space on the new disk. Using the "as is" method, Acronis True Image Home transfers unsupported and damaged file systems.

If you transfer data proportionally, each partition will be enlarged, according to the proportion of the old and new disk capacities.

FAT16 partitions are enlarged less than others, as they have a 4 GB size limit.

Depending on the selected combination, you will proceed to either the old disk partitioning window, or the disk partition layout window (see below).

12.3.9 Partitioning the old disk

If you selected **Create a new partition layout** earlier in the process, it is now time to repartition your old disk.

During this step, you will see the current disk partition layout. Initially, the disk has unallocated space only. This will change when you create new partitions.

Having completed the required steps, you will add a new partition. To create another one, simply repeat those steps.

If you make a mistake, click **Back** to redo.

After you create the necessary partitions, uncheck the **Create new partition in unallocated space** box and click **Next**.

12.3.10 Old and new disk partition layouts

In the next window, you will see rectangles indicating the source hard disk, including its partitions and unallocated space, as well as the new disk layout.



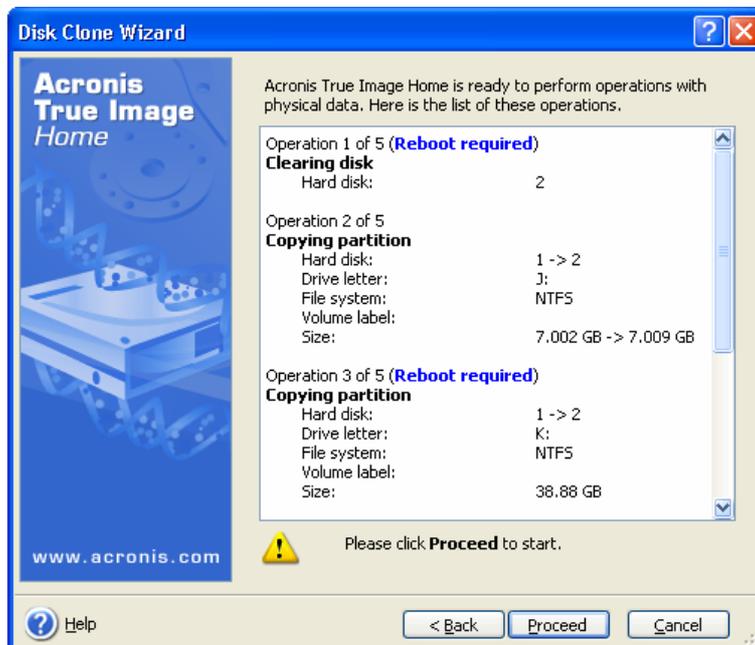
Along with the hard disk number, you will also see disk capacity, label, partition and file system information. Different partition types, including primary, logical and unallocated space are marked with different colors.



If you selected manual partition creation earlier, the partition layout will look different. This partitioning method is described below.

12.3.11 Cloning summary

In the next window, you will see a list of briefly described operations to be performed on the disks.



Cloning a disk containing the currently active operating system will require a reboot. In that case, after clicking **Proceed** you will be asked to confirm the reboot. Canceling the reboot will cancel the entire procedure.

Cloning a non-system disk or a disk containing an operating system, but one that is not currently active, will proceed without reboot. After you click **Proceed**, Acronis True Image Home will start cloning the old disk to the new disk, indicating the progress in a special window. You can stop this procedure by clicking **Cancel**. In that case, you will have to repartition and format the new disk or repeat the cloning procedure. After the operation is complete, you will see the results message.

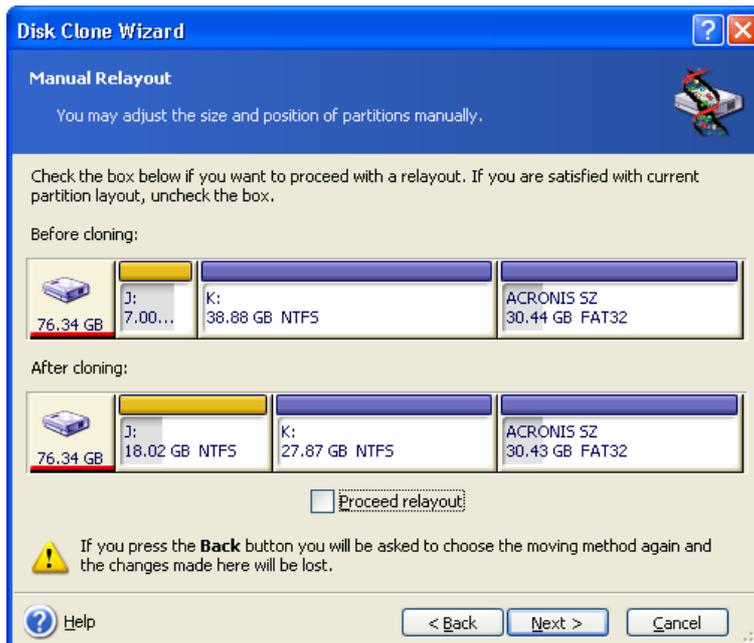
12.4 Cloning with manual partitioning

12.4.1 Old and new disk partition layouts

The manual transfer method enables you to resize partitions on the new disk. By default, the program resizes them proportionally.

In the next window, you will see rectangles indicating the source hard disk, including its partitions and unallocated space, as well as the new disk layout.

Along with the hard disk number, you will see disk capacity, label, partition and file system information. Different partition types, including primary, logical and unallocated space are marked with different colors.



To resize either partition, check the **Proceed relayout** box. If you are satisfied with the partition layout shown, uncheck this box (if checked). Clicking **Next**, you will proceed to the cloning summary window.



Be careful! Clicking **Back** in this window will reset all size and location changes that you've selected, so you will have to specify them again.

First, select a partition to resize. It will be underlined in red.

Resize and relocate it on the next step.

You can do this by entering values to **Unallocated space before, Partition size, Unallocated space after** fields, by dragging partition borders or the partition itself.

If the cursor turns to two vertical lines with left and right arrows, it is pointed at the partition border and you can drag it to enlarge or reduce the partition's size. If the cursor turns to four arrows, it is pointed at the partition, so you can move it to the left or right (if there's unallocated space near it).

Having provided the new location and size, click **Next**. You will be taken two steps back to the partition layout. You might have to perform some more resizing and relocation before you get the layout you need.

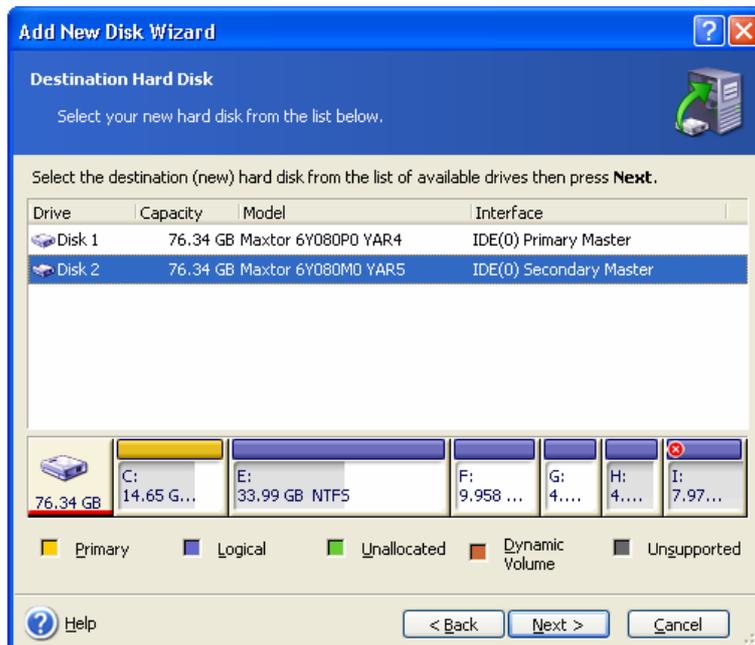
Chapter 13. Adding a new hard disk

If you don't have enough space for your data, you can either replace the old disk with a new higher-capacity one (data transfers to new disks are described in the previous chapter), or add a new disk only to store data, leaving the system on the old disk. If the computer has space for another disk, it would be easier to add a data disk drive than to clone a system one.

To add a new disk, you must first install it in your computer.

13.1 Selecting a hard disk

Select the disk that you've added to the computer.



This window might be bypassed if the program detects the new disk itself. In this case, you will immediately proceed to the new partition creation.

If there are any partitions on the new disk, they must be deleted first.

Select **Delete partitions on the destination hard disk** and click **Next** to continue.

13.2 Creating new partitions

Next you will see the current partition layout. Initially, all disk space will be unallocated. This will change after you add new partitions.

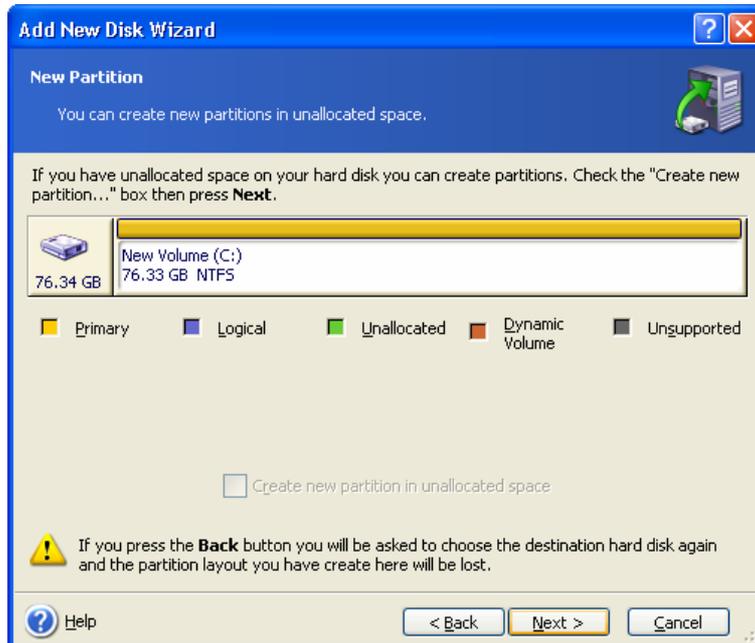
To create a partition, select **Create new partition in unallocated space** and click **Next** to perform steps required by the partition creation wizard.

You will be prompted to set the new partition location and size. You can do this by both entering values to **Unallocated space before, Partition size, Unallocated space after** fields, by dragging partition borders or the partition itself.

If the cursor turns to two vertical lines with left and right arrows, it is pointed at the partition border and you can drag it to enlarge or reduce the partition size. If the cursor turns to four arrows, it is pointed at the partition, so you can move it to the left or right (if there is

unallocated space near it). Having provided the new partition location and size, you can input a label for the new partition.

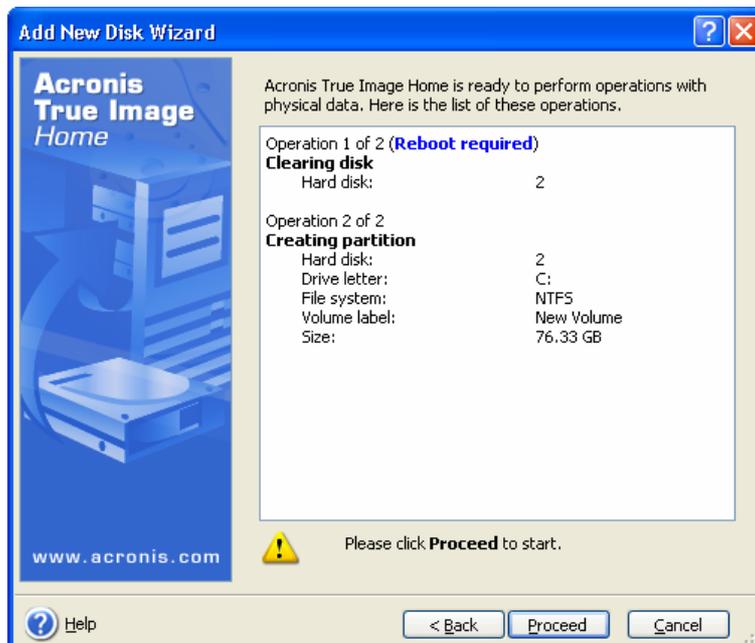
If you make a mistake at partitioning, click **Back** to redo the process.



Finally, you will be taken back to the partition layout screen. Check the resulting partitions layout and start creating another partition or move on by unchecking **Create new partition in unallocated space** and clicking **Next**.

13.3 Disk add summary

The disk add summary contains a list of operations to be performed on disks.



After you click **Proceed**, Acronis True Image Home will start creating and formatting new partitions, indicating the progress in a special window. You can stop this procedure by clicking **Cancel**. In that case, you will have to repartition and format the new disk or repeat the disk add procedure.

Appendix A. Partitions and file systems

A.1 Hard disk partitions

The mechanism that allows you to install several operating systems on a single PC or to carve up a single physical disk drive into multiple “logical” disk drives is called **partitioning**.

Partitioning is performed by special applications. In MS-DOS and Windows, these are FDISK and Disk Administrator.

Partitioning programs perform the following:

- create a primary partition
- create an extended partition that can be split into several logical disks
- set an active partition (applied to a single primary partition only)



Information about partitions on a hard disk is stored in a special disk area – in the 1st sector of cylinder 0, header 0, which is called the partition table. This sector is called the master boot record, or MBR.



A physical hard disk might contain up to four partitions. This limit is forced by the partition table that is suitable for four strings only. However, this does not mean you can have only four operating systems on your PC! Applications called disk managers support far more operating systems on disks. For example, Acronis OS Selector, a component of Acronis Disk Director Suite, enables you to install up to 100 operating systems!

A.2 File systems

An operating system gives the user the ability to work with data by supporting some type of **file system** on a partition.

All file systems are made of structures that are necessary to store and manage data. These structures are usually composed of operating system boot sectors, folders and files. File systems perform the following basic functions:

- track occupied and free disk space (and bad sectors, if any)
- support folders and file names
- track physical location of files on disks

Different operating systems use different file systems. Some operating systems are able to work with only one file system while others can use several of them. Here are some of the most widely used file systems:

A.2.1 FAT16

The FAT16 file system is widely used by DOS (DR-DOS, MS-DOS, PC-DOS, PTS-DOS and other), Windows 98/Me, and Windows NT/2000/XP operating systems and is supported by most other systems.

Main features of FAT16 are the file allocation table (FAT) and clusters. FAT is the core of the file system. To increase data safety, it is possible to have several copies of the FAT (there are usually two of them) on a single disk. A cluster is a minimum data storage unit in FAT16 file system. One cluster contains a fixed number of sectors. FAT stores information about what clusters are free, what clusters are bad, and also defines in which clusters files are stored.

The FAT16 file system has a 2GB limit that permits a maximum 65,507 clusters that are 32Kb in size. (Windows NT/2000/XP support partitions up to 4GB with up to 64Kb clusters). Usually the smallest cluster size is used to make the total cluster amount within the 65,507 range. The larger a partition is, the larger its clusters are.



Usually the larger the cluster size, the more disk space is wasted. A single byte of data could use up one cluster, whether the cluster size is 32Kb or 64Kb.

Like many other file systems, the FAT16 file system has a root folder. Unlike others, however, its root folder is stored in a special place and is limited in size (standard formatting produces a 512-item root folder).

Initially, FAT16 had limitations on file names. They could only be eight characters long, plus a dot, plus three characters of name extension. However, long-name support in Windows 95 and Windows NT bypasses this limitation. The OS/2 operating system also supports long names, but does so in a different way.

A.2.2 FAT32

The FAT32 file system was introduced in Windows 95 OSR2. It is also supported by Windows 98/Me/2000/XP. FAT32 is an evolved version of FAT16. Its main differences from FAT16 are 28-bit cluster numbers and a more flexible root, whose size is unlimited. The reasons FAT32 appeared are the support of large hard disks (over 8GB in capacity) and the impossibility to implement any more complex file system into MS-DOS, which is still the base for Windows 98/Me.

The maximum FAT32 disk size is 2 terabytes (1 terabyte, or TB, is equal to 1024 gigabytes, or GB).

A.2.3 NTFS

NTFS is the main file system for Windows NT/2000/XP. Its structure is closed, so no other operating system is fully supported. The main structure of NTFS is the MFT (master file table). NTFS stores a copy of the critical part of the MFT to reduce the possibility of data damage and loss. All other NTFS data structures are special files. NTFS stands for NT File System.

Like FAT, NTFS uses clusters to store files, but cluster size does not depend on partition size. NTFS is a 64-bit file system. It uses unicode to store file names. It is also a journaling (failure-protected) file system, and supports compression and encryption.

Files in folders are indexed to speed up file search.

A.2.4 Linux Ext2

Ext2 is one of the main file systems for the Linux operating system. Ext2 is a 32-bit system. Its maximum size is 16TB. The main data structure that describes a file is an i-node. A place to store the table of all i-nodes has to be allocated in advance (during formatting).

A.2.5 Linux Ext3

Officially introduced with its version 7.2 of the Linux operating system, Ext3 is the Red Hat Linux journaling file system. It is forward and backward compatible with Linux ext2. It has multiple journaling modes and broad cross-platform compatibility in both 32- and 64-bit architectures.

A.2.6 Linux ReiserFS

ReiserFS was officially introduced to Linux in 2001. ReiserFS overcomes many Ext2 disadvantages. It is a 64-bit journaling file system that dynamically allocates space for data substructures.

Appendix B. Hard disks and BIOS setup

The appendices below provide you with extra information on the hard disk organization, how information is stored on disks, how disks should be installed in the computer and plugged into the motherboard, configuring disks with BIOS, partitions and file systems, and how operating systems interact with disks.

B.1 Installing hard disks in computers

B.1.1 Installing a hard disk, general scheme

To install a new IDE hard disk, you should do the following (**we will assume you have powered OFF your PC before you start!**):

1. Configure the new hard disk as **slave** by properly installing jumpers on the board of its controller. Disk drives generally have a picture on the drive that shows the correct jumper settings.
2. Open your computer and insert the new hard disk into a 3.5" or 5.25" slot with special holders. Fasten down the disk with screws.
3. Plug the power cable into the hard disk (four-threaded: two black, yellow and red; there is only one way you can plug in this cable).
4. Plug the 40- or 80-thread flat data cable into sockets on the hard disk and on the motherboard (plugging rules are described below). The disk drive will have a designation on the connector or next to it that identifies Pin 1. The cable will have one red wire on an end that is designated for Pin 1. Make sure that you place the cable in the connector correctly. Many cables also are "keyed" so that they can only go in one way.
5. Turn your computer on and enter BIOS setup by pressing the keys that are displayed on the screen while the computer is booting.
6. Configure the installed hard disk by setting the parameters **type, cylinder, heads, sectors** and **mode** (or **translation mode**; these parameters are written on the hard disk case) or by using the IDE autodetection BIOS utility to configure the disk automatically.
7. Set the boot sequence to A:, C:, CD-ROM or some other, depending on where your copy of Acronis True Image Home is located. If you have a boot diskette, set the diskette to be first; if it is on a CD, make the boot sequence start with CD-ROM.
8. Quit BIOS setup and save changes. Acronis True Image Home will automatically start after reboot.
9. Use Acronis True Image Home to configure hard disks by answering the wizard's questions.
10. After finishing the work, turn off the computer, set the jumper on the disk to the **master** position if you want to make the disk bootable (or leave it in **slave** position if the disk is installed as additional data storage).

B.1.2 Motherboard sockets, IDE cable, power cable

There are two slots on the motherboard to which the hard disks can be connected: **primary IDE** and **secondary IDE**.

Hard disks with an IDE (Integrated Drive Electronics) interface are connected to the motherboard via a 40- or 80-thread flat marked cable: one of the threads of the cable is red.

Two IDE hard disks can be connected to each of the sockets, i.e. there can be up to four hard disks of this type installed in the PC. (There are three plugs on each IDE cable: two for hard disks and one for the motherboard socket.)

As noted, IDE cable plugs are usually designed so that there is only one way to connect them to the sockets. Usually, one of the pinholes is filled on the cable plug, and one of the pins facing the filled hole is removed from the motherboard socket, so it becomes not possible to plug the cable in the wrong way.

In other cases, there is a jut on the plug on the cable, and an indentation in the socket of the hard disk and of the motherboard. This also ensures that there only one way to connect the hard disk and the motherboard.

In the past, this design of plug did not exist, so there was an empirical rule: **the IDE cable is connected to the hard disk socket so that the marked thread is the closest to the power cable**, i.e. the marked thread connected to pin #1 of the socket. A similar rule was used for connecting cables with the motherboard.

Incorrect connection of the cable with either the hard disk or the motherboard does not necessarily damage the electronics of the disk or the motherboard. The hard disk is simply not detected or initialized by BIOS.



There are some models of hard disks, especially the older ones, for which incorrect connection damaged the electronics of the drive.



We will not describe all the types of hard disks. Currently the most widespread are those with IDE or SCSI interfaces. Unlike IDE hard disks, there can be from six to 14 SCSI hard disks installed in your PC. However, you need a special SCSI controller (called a host adapter) to connect them. SCSI hard disks are not usually used in personal computers (workstations), but are found mostly in servers.

Aside from an IDE cable, a four-thread power cable must be connected to the hard disks. There is only one way to plug in this cable.

B.1.3 Installation modes, jumpers

A hard disk can be installed in a computer as **master** or as **slave**. The mode of hard disk installation is defined by the position of special connectors (called jumpers) on the hard disk.

The jumpers are either located on the electronic board of the hard disk or a special socket that provides for the connection of the hard disk and the motherboard.

There is usually a sticker on the drive that explains the markings. Typical markings are **DS**, **SP**, **CS** and **PK**.

Each jumper position corresponds to one hard disk(s) installation mode:

- **DS – master/factory default**
- **SP – slave (or no jumper required)**
- **CS – cable select for master/slave:** the purpose of the hard disk is determined by its physical position with respect to the motherboard
- **PK – jumper parking position:** the position where one can put the jumper if it is not necessary in the existing configuration

The hard disk with the jumper in **master** position is treated by the basic input/output system (BIOS) as bootable.

The jumpers on hard disks that are connected to the same cable can be in the **select for master/slave** position. In this case, BIOS will deem as «master» the disk that is connected to the IDE cable closer to the motherboard than the other one.



Unfortunately, hard disk markings were never standardized. You might well find that markings on your hard disk differ from the ones described above. Moreover, for the old types of hard disks, their purpose could be defined by two jumpers instead of one. You should study the markings carefully before installing your hard disk in the computer.

It is not enough to physically connect the hard disk to the motherboard and set the jumpers properly for the hard disk to function — hard disks have to be properly configured with the motherboard BIOS.

B.2 BIOS

When you turn on your computer, you often see a number of short text messages before you see the splash screen of your operating system. These messages are from the POST (power-on self test) program that belongs to BIOS and is executed by the processor.

BIOS, or the basic input/output system, is a program that resides in the permanent memory chip (ROM or flash BIOS) on the motherboard of your computer and is its key element. The version of BIOS that you use «knows» all the peculiarities of all the components of the motherboard: processor, memory, integrated devices. BIOS versions are provided by the manufacturers of motherboards.

Main BIOS functions are:

- POST checking of processor, memory and I/O devices
- initial configuring of all software-manageable parts of the motherboard
- initialization of operating system (OS) booting process

Among numerous components of the computer, initial configuration is necessary for the external memory subsystem that controls hard disk drives, floppy disk drives, CD-ROM drives, DVDs and other devices.

B.2.1 Setup utility

BIOS has a built-in setup utility for initial computer configuration. To enter it, you have to press a certain combination of keys (**Del**, **F1**, **Ctrl+Alt+Esc**, **Ctrl+Esc**, or some other, depending on your BIOS) during the POST sequence that starts right after you turn your computer on. Usually the message with the required combination of keys is displayed during the startup testing. Pressing this combination takes you to the menu of the setup utility that is included in your BIOS.

The menu can differ in appearance and sets of items and their names, depending on the BIOS manufacturer. The most widely known BIOS makers for PC motherboards are Award/Phoenix and AMI. Moreover, while items in the standard setup menu are mostly the same for various BIOSes, items of the extended setup heavily depend on computer and BIOS version.

Below we describe the general principles of initial hard disk configuration, and then configuration (sample) in AwardBIOS.



Large PC manufacturers like Dell and Hewlett-Packard produce motherboards themselves, and develop their own BIOS versions. You should always refer to the documentation that came with your computer for instructions on proper BIOS configuration.

B.2.2 Standard CMOS setup menu

Parameters in the standard CMOS setup menu usually define the geometry of the hard disk. The following parameters (and values) are available for each hard disk installed in your PC:

Parameter	Value	Purpose
Type	1-47, Not Installed, Auto	Type 0 or Not Installed is used when there is no hard disk installed (to uninstall it). Type 47 is reserved for user-defined parameters or for parameters detected by the IDE Auto detection utility. Auto value allows for automatic detection of IDE disk parameters during the boot sequence.
Cylinder (Cyl)	1-65535	The number of cylinders on a hard disk. For IDE disks, a logical number of cylinders is specified.
Heads (Hd)	1-16	The number of heads on a hard disk. For IDE disks, a logical number of heads is specified.
Sectors (Sec)	1-63	The number of sectors per track of a hard disk. For IDE disks, a logical number of sectors is specified.
Size (Capacity)	MBytes	The capacity of the disk in megabytes. It is calculated according to the following formula: $Size = (Cyl \times Hds \times Sct \times 512) / 1024 / 1024$.
Mode (Translation Method)	Normal/LBA/ Large/Auto	Method of translation of sector addresses.

For example, to demonstrate the main features of Acronis True Image Home, we used a Quantum™ Fireball™ TM1700A hard disk as one of the disks in our examples. Its parameters have the following values:

Parameter	Value
Type	Auto
Cylinder (Cyl)	827
Heads (Hd)	64
Sectors (Sec)	63
Mode	Auto
CHS	1707 MB
Maximum LBA Capacity	1707 MB

In BIOS setup, you can set the Type parameter to User Type HDD (user-defined type). In this case, you also have to specify the value of the translation mode parameter, which can be Auto/Normal/LBA/Large.



Translation mode is how sector addresses are translated. This parameter appeared because in BIOS versions, there were limitations to the maximum address capacity of disks, which is 504 MB (1024 cylinders x 16 heads x 63 sectors x 512 bytes). There are two ways to bypass this limitation: (1) switch from physical to logical sector addresses (LBA), (2) use mathematics to reduce the number of addressed sectors (cylinders) and increase the number of heads; this method is called Large Disk (Large). The simplest decision is to set the value of this parameter to Auto.

If there are several hard disks connected to your motherboard, but you do not want to use some of them at the moment, you have to set the Type of these disks to Not Installed.

Parameters of hard disks can be set manually with the help of information provided by the hard disk manufacturer on its case, but it is easier to use the IDE autodetection utility that is usually included in modern BIOS versions.

The utility is sometimes a separate BIOS menu item and sometimes is included in the standard CMOS setup menu.



Please note that in 0, «Appendix B. Hard disks and BIOS setup», we have described the general details of **physical** hard disk structure. Built-in IDE hard disk controls mask the physical disk structure. As a result, the BIOS of the motherboard «sees» **logical** cylinders, heads and sectors. We are not going to elaborate on this issue here, but knowing about this can sometimes be useful.

B.2.3 Arranging boot sequence, advanced CMOS setup menu

Aside from standard CMOS setup, BIOS menu usually has an **advanced CMOS setup** item. Here you can adjust the **boot sequence**: C:; A:; CD-ROM:.



Please note that **boot sequence** management differs for various BIOS versions, e.g. for AMI BIOS, AWARD BIOS and brand-name hardware manufacturers.

Several years ago, the operating system boot sequence was hard-coded into the BIOS. An operating system could be booted either from a diskette (drive A:), or from the hard disk C:. That was the sequence in which the BIOS queried external drives: if drive A: was ready, BIOS attempted to boot an operating system from a diskette. If the drive was not ready or there was no system area on diskette, BIOS tried to boot an operating system from hard disk C:.

At present, BIOS allows booting operating systems not only from diskettes or hard disks, but also from CD-ROMs, DVDs and other devices. If there are several hard disks installed in your computer labeled as C:, D:, E:, and F:, you can adjust the boot sequence so that an operating system is booted from, for example, disk E:. In this case, you have to set the boot sequence to look like E:, CD-ROM:, A:, C:, D:.



This does not mean that booting is done from the first disk in this list; it only means that the **first attempt** to boot an operating system is to boot it from this disk. There may be no operating system on disk E:, or it can be inactive. In this case, BIOS queries the next drive in the list. Errors can happen during booting, see B.2.5 «Hard disk initialization errors».

The BIOS numbers disks according to the order in which they are connected to IDE controllers (primary master, primary slave, secondary master, secondary slave); next go the SCSI hard disks.

This order is broken if you change the boot sequence in BIOS setup. If, for example, you specify that booting has to be done from hard disk E:, numbering

starts with the hard disk that would be the third in usual circumstances (it is usually the secondary master).

After you have installed the hard disk in your computer and have configured it in BIOS, one can say that the PC (or the motherboard) «knows» about its existence and its main parameters. However, it is still not enough for an operating system to work with the hard disk.

B.2.4 AwardBIOS

Below, we provide an example of configuring hard disks in AwardBIOS.

The **Main** AwardBIOS menu, which is responsible for configuring hard disks on motherboards for Celeron, Pentium II-III and AMD-K6/K7 processors usually looks like this:

AwardBIOS Setup Utility				
Main	Advanced	Power	Boot	Exit
System Time		[16:16:35]		Item Specific Help:
System Date		[01/10/2001]		
Legacy Diskette A		[1.44M, 3.5in]		<Enter> to go to sub-menu.
Legacy Diskette B		[None]		
Floppy 3 Mode Support		[Disabled]		
Primary Master		[Auto]		
Primary Slave		[Auto]		
Secondary Master		[Auto]		
Secondary Slave		[Auto]		
Language		[English]		
Supervisor Password		[Disabled]		
User Password		[Disabled]		
Halt On		[All but Disk/Keyboard]		
Installed Memory		[Disabled]		
F1 Help ↓ Select Item -/+ Change Values F5 Setup Defaults				
Esc Exit ←→ Select Menu Enter Select Sub-Menu F10 Save and Exit				

Place the marker on the Primary Master line and press the **Enter** key to get to the screen that looks like this:

AwardBIOS Setup Utility		
Main		
	Primary Master [Auto]	Item Specific Help:
Type	[Auto]	<Enter> to select the type of the IDE drive.
		[User Type HDD] allows you to set each entry on your own.
		Warning: Ultra DMA Mode 3/4/5 can be enabled only when BIOS detects

	Shielded 80-pin cable.
F1 Help ↓	Select Item -/+ Change Values F5 Setup Defaults
Esc Exit ←→	Select Menu Enter Select Sub-Menu F10 Save and Exit

Place the marker on the value of the Type parameter ([Auto] in this case) and press the **Enter** key to open the list of possible values of this parameter; for example:

None
Auto
User Type HDD
CD-ROM
LS-120
ZIP-100
MO
Other ATAPI Device

Use the **Up** and **Down** keys to select the User Type HDD value and press the **Enter** key to get to the following screen:

AwardBIOS Setup Utility		Item Specific Help:
Main		
Primary Master [User Type HDD]		
Type	[User Type HDD]	<Enter> to select the type of the IDE drive.
Translation Mode	[LBA]	[User Type HDD] allows you to set each entry on your own.
Cylinders	[.....0]	Warning: Ultra DMA Mode 3/4/5 can be enabled only when BIOS detects Shielded 80-pin cable.
Head	[.....0]	
Sector	[...0]	
CHS Capacity	OMB	
Maximum LBA Capacity	OMB	
Multi Sector Transfer	[Maximum]	
SMART Monitoring	[Disabled]	
PIO Mode	[4]	
Ultra DMA Mode	[5]	
F1 Help ↓		Select Item -/+ Change Values F5 Setup Defaults
Esc Exit ←→		Select Menu Enter Select Sub-Menu F10 Save and Exit

Enter the values of Translation Mode, Cylinders, Head and Sector parameters (you can find them on the case of the hard disk) to finish the initial configuration of the hard disk with BIOS.

Translation Mode parameter can have the following values:

LBA
Large
Normal
Match Partition Table
Manual

New versions of AwardBIOS menu have the **Boot** item. The screen of the **Boot** menu, which is responsible for adjusting the boot sequence, looks like this:

AwardBIOS Setup Utility	
Main	Advanced Power Boot Exit
1. ATAPI CD-ROM	[None] Boot Sequence:

2. Removable Device	[Legacy Floppy]	
3. IDE Hard Drive	[IBM-DTLA-307020]	<Enter> to select the device To select the boot sequence, use up or down Arrow.
4. Other Boot Drive	[Disabled]	
Plug & Play O/S	[No]	Press <+> to move the Device up the list, or <-> to move it down the list
Boot Virus Detection	[Enabled]	
Quick Power On Self Test	[Enabled]	
Boot up Floppy Seek	[Enabled]	
Full Screen Logo	[Enabled]	
F1 Help ↓ Select Item -/+ Change Values F5 Setup Defaults Esc Exit ←→ Select Menu Enter Select Sub-Menu F10 Save and Exit		

Place the marker on the field to the right of the 3. IDE Hard Drive item and press the **Enter** key to open the list of all hard disks connected to your computer and detected by BIOS, together with the Disabled line; for example:

Disabled
Quantum FireBALL_1700A
IBM DTLA-307020
Quantum FireBALL_1700A

This device sequence in the upper left corner of the screen means that when looking for a boot disk, the BIOS will first query the CD-ROM (1. ATAPI CD-ROM), but there is no CD-ROM in the current configuration. Next it queries the floppy disk drive (2. Removable Device). Only if none of these disks contains an operating system, does BIOS query the hard disk (3. IDE Hard Drive) that has been selected from the list.

Select an item of the list with the **Up** or **Down** keys and move the device up the list or down it with help of **+** or **-** keys. This will change the boot sequence. For example, you can select the boot sequence as the one shown below:

AwardBIOS Setup Utility				
Main	Advanced	Power	Boot	Exit
1. Removable Device		[Legacy Floppy]		Boot Sequence:
2. ATAPI CD-ROM		[None]		
3. IDE Hard Drive		[IBM-DTLA-307020]		<Enter> to select the device To select the boot sequence, use up or down Arrow.
4. Other Boot Drive		[Disabled]		
Plug & Play O/S		[No]		Press <+> to move the Device up the list, or <-> to move it down the list
Boot Virus Detection		[Enabled]		
Quick Power On Self Test		[Enabled]		
Boot up Floppy Seek		[Enabled]		
Full Screen Logo		[Enabled]		

F1	Help	↓	Select Item	-/+	Change Values	F5	Setup Defaults
Esc	Exit	←→	Select Menu	Enter	Select Sub-Menu	F10	Save and Exit

After setting the specified parameters, use the **Left** or **Right** keys to select the **Exit** menu item. Reply positively to the prompt on saving the specified parameters.

For AwardBIOS for motherboards for Pentium, Pentium Pro processors (i.e the ones older than those described above) and AMD-K5/K6, the standard CMOS setup screen looks like this:

```

ROM PCI/ISA BIOS (2A69JA2A)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Fri, May 15 1998
Time (hh:mm:ss) : 11: 33: 53

HARD DISKS : TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE
Primary Master : Auto 0 0 0 0 0 0 Auto
Primary Slave : Auto 0 0 0 0 0 0 Auto
Secondary Master : None 0 0 0 0 0 0 0
Secondary Slave : None 0 0 0 0 0 0 0

Drive A : 1.44 M
Drive B : None

Video : EGA/VG
Halt On: All Errors

Base Memory: 0K
Extended Memory: 0K
Other Memory: 512K
Total Memory: 512K

ESC : Quit
F1 : Help
↓→←-: Select Item
(Shift) F2 Change Color
PU/PD/+/- : Modify

```

The Type parameter can have Auto, Not Installed or User Defined values. In the latter case, you have to specify the values of other parameters manually (except MODE) according to the information on the case of the hard disk.



The purpose of the MODE and LANDZ parameters is described in the note above. The PRECOMP parameter is the so-called precompensation parameter and is important only for the older hard disks (MFM and RLL). IDE disks ignore this parameter.

In earlier BIOS versions, the boot sequence was set in the BIOS FEATURES setup section in the Boot Sequence line where you could select the most typical boot sequences, for example C:; A:;CD-ROM: or CD-ROM:; C:; A:, and other.

B.2.5 Hard disk initialization errors

Devices are usually initialized successfully, but sometimes errors can happen. Typical errors related to hard disks are reported by the following messages:

```
PRESS A KEY TO REBOOT
```

This error message is not directly related to errors during hard disk initialization. However, it appears, for example, when the boot program finds no operating system on the hard disk, or when the primary partition of the hard disk is not set as active.

```
DISK BOOT FAILURE,
INSERT SYSTEM DISK AND
PRESS ENTER
```

This message appears when the boot program finds no available boot device, be that a floppy or a hard disk, or a CD-ROM.

```
C: DRIVE ERROR  
C: DRIVE FAILURE  
ERROR ENCOUNTERED  
INITIALIZATION HARD DRIVE
```

This message appears when it is not possible to access the C: disk. If the disk is known to be functional, the reason for this error message is probably incorrect settings/connections of:

- hard disk parameters in BIOS setup
- jumpers on the controller (master/slave)
- interface cables

It is also possible that the device is out of order, or the hard disk is not formatted.