User's Guide

Acronis®
True Image Echo
Server for Linux

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Chapter 1. Introduction

1.1 Acronis® True Image Echo Server – a complete solution for corporate users

You have come to rely on your servers to run your business and retain key enterprise data. Acronis True Image Echo Server provides comprehensive, reliable, and cost-effective system protection and recovery for corporate servers, running Linux. With Acronis True Image Echo Server you have peace of mind knowing you are protected and can recover from any situation.

Minimizes downtime

Acronis True Image Echo Server for Linux enables you to restore systems in minutes, not hours or days. An entire system can be restored from an image that includes everything the system needs to run: the operating system, applications, databases, and configurations. No reinstallation or reconfiguration is required. Moreover, complete system restoration can be performed to an existing system or to a new system with different hardware or to virtual machines. File-based backups provide you with the flexibility to only backup selected critical files.

Eases Administration

Wizards guide users through backup and recovery tasks, ensuring the product can be implemented with minimal user training.

Automates Backup

With the scheduling capability in Acronis True Image Echo Server, you simply create backup tasks, tailored by group, at certain times or at certain events, automating backups.

To ensure that backups have occurred, or user intervention is required, you can request notifications via email or pop-up. You can view events in Acronis own log.

The product also supports the creation of custom commands before and after backups. For example, users can automatically run anti-virus products before an image is created and verify the validity of backups after they have been created.

Ensures 24 X 7 Uptime

With the Acronis Drive Snapshot systems can be imaged while they are in use, supporting 24 by 7 availability. This technology enables the product to backup and image critical operating system files, the master boot record and any partition-based boot records without requiring a reboot. A CPU allocation feature allows you to limit the amount of CPU usage for the application to maximize the CPUs available for mission critical applications. Moreover, users can control hard disk drive writing speeds and control network bandwidth used during backups, allowing you minimally disrupt business operations.

For correct backup of mission critical databases, Acronis True Image Echo Server will execute your custom commands, that suspend and resume database processing, before and after data capture.

Supports Cutting Edge Technology

Businesses today are moving to leverage the latest technologies, dual-core 64 bit processors and 64 bit operating systems. With Acronis True Image Echo Server, you can protect these new machines, as well as legacy ones, running one solution.

Leverages Existing Technology Investments

The product can leverage your current storage infrastructure by supporting a wide variety of storage media, so you can avoid costly hardware purchases to implement the solution. The product supports key storage technologies such as: Direct Attached Storage (DAS), Network Attached Storage (NAS), Storage Area Networks (SAN), Redundant Arrays of Independent Disks (RAID) devices, tapes, USB and IEEE-1394 (FireWire) compliant storage devices, CDs, removable drives (Floppy, Zip, etc.) and shared storage. Moreover, the product ensures that you maximize the space on these resources with four levels of compression.

Disk cloning and new disk deployment

Acronis True Image Echo Server can be used to clone an image onto multiple servers. For example, a company purchased several servers and needs similar environments on each of them. Traditionally, an IT manager should install the operating system and programs on every server. With Acronis True Image Echo Server, the IT manager can create a disk image of the first system deployed. That image can then be duplicated onto multiple servers.

If you need to upgrade the server hard disk drive, Acronis True Image Echo Server simplifies the task to few mouse clicks creating the exact copy of your old disk to a new one and adjusting partitions size to fit a new hard disk.

1.2 Acronis True Image Echo Server key features

Backup

Creating a system image without system shutdown

Imaging only the sectors that contain data (for supported file systems)

File-level backup with exclude files feature

Full, incremental and differential backups

Restore

OS-independent operation of Acronis True Image Echo Server from bootable CD or Acronis Secure Zone (Startup Recovery manager), including restore over NFS or Samba Network

Restore of individual files and directories from disk images

Backup and restore options

Data compression level

CPU/Network bandwidth/Disk write speed throttling

Splitting image

Password protection for backup archives

Hardware compatibility

x86_64-bit processors support

Backup and restore all hard disks, regardless of capacity

Backup and restore software RAIDs (md devices) both on running system and with bootable CD

Backup Archive Store Places

A wide variety of IDE, SCSI, USB, FireWire, and PC Card (formerly PCMCIA) storage media. CD-R/RW and tape drives are supported as well (except for console mode)

Acronis Secure Zone

FTP servers

Placing backup archives on Bootable Acronis CD

Hard disk management

The ability to migrate data from one drive to another (disk cloning)

The ability to change a partition type, file system, size and location during recovery or disk cloning

Ease of use

Transparent NFS and Samba network drives access (in X Window mode NFS and Samba appear among available devices, in console mode a path to the network drive may be specified)

Mounting images in X Window environment in Read-Only or R/W mode

Scheduling backups in X Window environment

Scheduled and periodical image creation using cron jobs utility

Notifications (e-mail, Winpopup)

Viewing logs

Comprehensive wizards in X Window environment simplify complex operations

Context Help

1.3 New in Acronis True Image Echo Server

Backup

Encrypting backups with industry-standard AES cryptographic algorithm (key size 128, 192, 256 bit)

Control network bandwidth usage when backing up to FTP

Error handling: ignore bad sectors, silent mode (no pop-ups, continue on all errors)

Generating time-based names for backup files

Scheduling

Schedule archive validation

Cloning a task

Notification via e-mail

Multiple e-mail addresses

From and Subject fields

Logon to incoming mail server

Operations with archives

Consolidate backup files (create a consistent copy of archive while deleting selected backups)

CLI features

MBR restore

Backup to FTP server

Allow logs on net share

1.4 Supported file systems and storage media

1.4.1 Supported file systems

- Ext2/Ext3
- ReiserFS
- Reiser4
- Linux SWAP
- XFS
- JFS

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

For XFS and Reiser4 file systems the partition resizing feature is not supported.

1.4.2 Supported storage media

- Hard disk drives
- SCSI tape drives
- FTP-servers*
- 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
- ZIP®, Jaz® and other removable media

* - an FTP-server must allow passive mode for file transfers. Data recovery directly from FTP-server requires the archive to consist of files no more than 2GB in size. It is recommended that you change the source computer firewall settings to open ports 20 and 21 for both TCP and UDP protocols.

** - Burned rewritable discs cannot be read in Linux without kernel patch.

1.5 Technical support

Users of legally purchased copies of Acronis True Image Echo Server 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/enterprise/support/

Chapter 2. Acronis True Image Echo Server installation and startup

2.1 System requirements

2.1.1 Minimum hardware requirements

Acronis True Image Echo Server requires the following hardware:

- Pentium processor or higher
- 256MB RAM
- CD-RW drive for bootable media creation
- Mouse (recommended).

2.1.2 Supported operating systems

- Linux 2.4.18 or later kernel (including 2.6.x kernels).
- SuSE 8.0, 8.1, 8.2, 9.0, 9.1, 9.2, 9.3, RedHat 9.0, Advanced Server 2.1, Advanced Server 3.0, Advanced Server 4.0, Fedora Core 1, Fedora Core 2, Fedora Core 3, Fedora Core 4, Enterprise Server 3.0, Mandrake 8.0, 9.2, 10.0, 10.1, Slackware 10, Debian stable and unstable (sarge), ASPLinux 9.2, ASPLinux 10, ASPLinux 11, ASPLinux Server II, ASPLinux Server IV, Virtuozzo 2.6.x, Gentoo, UnitedLinux 1.0, Ubuntu 4.10, TurboLinux 8.0, TurboLinux 10.0
- x64 versions of the above Linux distributions and some others Linux distributions are also supported

To obtain the up-to-date information about distributions, supported by your copy of Acronis True Image Echo Server, see the readme.txt file supplied with the program.

Acronis True Image Echo Server bootable version enables disk-level backup and recovery on a computer running any PC-based operating system.

2.2 Installing Acronis True Image Echo Server

To install Acronis True Image Echo Server for Linux:

- Assign to the setup file the attribute **Executable**
- Run the setup process
- Follow setup program instructions.

If the setup could not compile the necessary module for your Linux distribution, please refer to the file HOWTO.INSTALL:

```
/usr/lib/Acronis/TrueImageServer/HOWTO.INSTALL
```

You can choose to install, besides Acronis True Image Echo Server, the Rescue Media Builder tool. With Rescue Media Builder you can create bootable rescue disks or their ISO images.

2.3 Running Acronis True Image Echo Server

To run the program under the X Window System interface, use the **trueimage** command or select Acronis True Image Echo Server from the system tools menu.

To work in the console mode, use **trueimagecmd** and **trueimagemnt** tools, described in *Chapter 12. Console mode*. See also man trueimagecmd or man trueimagemnt.

If your operating system fails to load, 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 server bootup, when you see a message that tells you to press that key. Acronis True Image Echo Server will run in the standalone mode, allowing you to recover the damaged partitions.

If your disk data is totally corrupted (or if you have not activated Acronis Startup Recovery Manager), load the bootable Acronis True Image Echo Server version from removable media (created by you using Rescue Media Builder). Then you will be able to restore the disk from its previously created image.

2.4 Removing Acronis True Image Echo Server

To remove Acronis True Image Echo Server, do the following:

1. Execute the following commands:

```
# cd /usr/lib/Acronis/TrueImageServer/uninstall/
# ./uninstall
```

2. Remove the sources of the SnapAPI module:

```
# rm -rf /usr/src/snapapi*
```


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, is compressed and stored.

Backing up disks and partitions is performed in a different way: Acronis True Image Echo Server saves a sector-based 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 Echo Server stores only those hard disk parts that contain data (for supported file systems). 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), a boot record and file system super block.

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 Echo Server 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 (see *10.2 Mounting partition images*) or start the restore wizard, select image and select **Restore specified files or folders**.

3.2 Full, incremental and differential backups

Acronis True Image Echo Server 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** 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, data from 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 Echo Server 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 partition for storing archives on the computer system itself. In the Acronis True Image Echo Server 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 (see below). The two features, in combination, instantly make operational a system that fails to boot.

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 Echo Server 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 the 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 *Chapter 8. Managing Acronis Secure Zone*.

In case you remove Acronis True Image Echo Server from the system, there is an option to keep Acronis Secure Zone along with its contents (which will enable data recovery on booting from bootable media) or remove Acronis Secure Zone.

The Acronis Secure Zone should not be the only location where a backup is stored. Should the disk have a physical failure, the Acronis Secure Zone could be lost. This is particularly critical for backups of servers; the Acronis Secure Zone should only be one part of an overall backup strategy.

3.4 Acronis Startup Recovery Manager

3.4.1 How it works

The Acronis Startup Recovery Manager enables starting Acronis True Image Echo Server on a local computer without loading the operating system. With this feature, if the operating system won't load for some reason, you can run Acronis True Image Echo Server by itself to restore damaged partitions. As opposed to booting from Acronis removable media, you will not need a separate media to start Acronis True Image Echo Server. It is especially handy for traveling users.

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 Echo Server.

2. Create Acronis Secure Zone on the server hard disk and activate Acronis Startup Recovery Manager (see *8.1 Creating Acronis Secure Zone*).

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 Echo Server that only slightly differs from the complete version. For information on restoring damaged partitions, see *6.3 Restoring disks/partitions or files from images*.

After Acronis Startup Recovery Manager was initially activated, you can deactivate it or activate again at any time. See details in *8.2 Activating and deactivating Acronis Startup Recovery Manager*.

3.5 Working from a rescue CD

In some situations (e.g. if the operating system fails to boot, or when cloning a mounted disk), you might have to work with Acronis True Image Echo Server without loading the OS. In those cases, you can use the Acronis rescue CD. It is highly recommended that you create it as described in *Chapter 9. Creating bootable media*.

3.6 Working from a remote terminal

You can control the image creation or restoration process remotely from any computer in the local network or Internet, operating under Windows, Mac OS or any UNIX clone.

To act as a remote terminal, this computer must have X Server software installed. Start the X Server and log on to the server using SSH-enabled software. For example, Putty is one of the most popular Windows programs of that type.

Then you can invoke Acronis True Image Echo Server GUI with the **trueimage** command or use the **trueimagecmd** command line tool.

3.7 Backing up software and hardware RAID arrays

Acronis True Image Echo Server supports software and hardware RAID arrays as if these were simple single hard drives. However, as such arrays have a structure different from typical hard disks, there are peculiarities affecting the way data is stored.

Software RAID arrays under Linux OS combine several hard disks partitions and make solid block devices (/dev/md0, ... /dev/md31), information of which is stored in /etc/raidtab or in dedicated areas of that partitions. Acronis True Image Echo Server enables you to create images of active (mounted) software arrays similar to typical hard disk images.

Partitions that are part of software arrays are listed alongside other available partitions as if they had a corrupted file system or without a file system at all. There's no sense in creating images of such partitions when a software array is mounted, as it won't be possible to restore them.

Parameters of software disk arrays are not stored in images, so they can only be restored to a normal partition, or unallocated space, or previously configured array.

Operating from a rescue CD, Acronis True Image Echo Server tries to access parameters of a software disk array and configure it. However, if the necessary information is lost, the array cannot be configured automatically. In this case, create a software array manually and restart the restoration procedure.

Hardware RAID arrays under Linux combine several physical drives to create a single partitionable disk (block device). The special file related to a hardware disk array is usually located in /dev/ataraid. Acronis True Image Echo Server enables you to create images of hardware disk arrays similar to images of typical disks and partitions.

Physical drives that are part of hardware disk arrays are listed alongside other available drives as if they had a bad partition table or no partition table at all. There's no sense in creating images of such drives, as it won't be possible to restore them.

3.8 Support for LVM volumes

When running in Linux environment with 2.6.x kernel, Acronis True Image Echo Server supports disks, managed by Logical Volume Manager (LVM). You can back up data of one or more LVM volumes and restore it to a previously created LVM volume or MBR disk (partition), likewise it is also possible to restore MBR volume data to an LVM volume. In each case, the program stores and restores volume contents only. The type or other properties of the target volume will not be changed.

In rescue mode (when booted with bootable rescue media or using F11) Acronis True Image Echo Server cannot access LVM disks. This means that:

- an LVM volume image can be deployed on a MBR disk only

- to be able to recover data in rescue mode, you must keep its backup on a basic, network, or removable disk.

A system, restored from an LVM volume image over an MBR disk, cannot boot because its kernel tries to mount the root file system at the LVM volume. To boot the system, change the loader configuration and /etc/fstab so that LVM is not used. Then reactivate your boot manager as described in section 6.3.11.

When restoring an LVM volume over an MBR partition, resizing of the partition is possible.

LVM volumes appear at the end of the list of hard disks available for backup. Hard disk partitions included in LVM volumes are also shown in the list with **None** in the **Type** column. If you select to back up such partitions, the program will image it sector-by-sector. Normally it is not needed. To back up all available disks, specify all dynamic volumes plus partitions not belonging to them.

The following is an example of a list of drives obtained with the --list command (GUI wizards display a similar table). The system has three physical disks (1, 2, 3). Two dynamic volumes 4-1 and 4-2 are arranged across partitions 1-2 and 2-1. Hard drive 3 includes Acronis Secure Zone which is not normally imaged.

Num	Partition	Flags	Start	Size	Type
Disk 1:					
1-1	hda1 (/boot)	Pri,Act	63	208782	Ext3
1-2	hda2	Pri	208845	8177085	None
Disk 2:					
2-1	hdb1	Pri,Act	63	8385867	None
Disk 3:					
3-1	hdd1	Pri,Act	63	1219617	Ext3
3-2	Acronis Secure Zone	Pri	1219680	2974608	FAT32
Dynamic Volumes:					
4-1	VolGroup00-LogVol00			15269888	Ext3
4-2	VolGroup00-LogVol01			1048576	Linux Swap

To image dynamic volume 4-1, select partition 4-1.

To image all three physical drives, select partitions 1-1, 3-1, 4-1, 4-2.

If you select disk 2, partition 1-2 or 2-1, the program will create a sector-by-sector copy.

3.9 Backing up to tape drive

Acronis True Image Echo Server supports SCSI tape drives. It can store backups on the tape and restore data from the tape, store large backups to multiple tapes, and append incremental/differential changes to a tape with the existing archives.

If a SCSI tape drive is connected to the server, the list of devices available for storing backups will be extended with a name corresponding to the drive type.

Backup and restore using tape drive proceed in the same way as with other devices, with the following exceptions.

1. A full backup can be stored on an empty tape only. If the tape already contains data, its contents will be overwritten on prompt. You have an option to disable prompts. See details in *5.3.11 Additional settings*.

2. In case you want to keep more than one archive on the tape, for example, back up two disks separately, choose *incremental* backup mode instead of a *full* backup when you create an initial backup for the second disk. In other situations, incremental backup is used for appending changes to the previously created archive.

3. You do not have to provide filenames for backups.

You might experience short pauses that are required to rewind the tape.

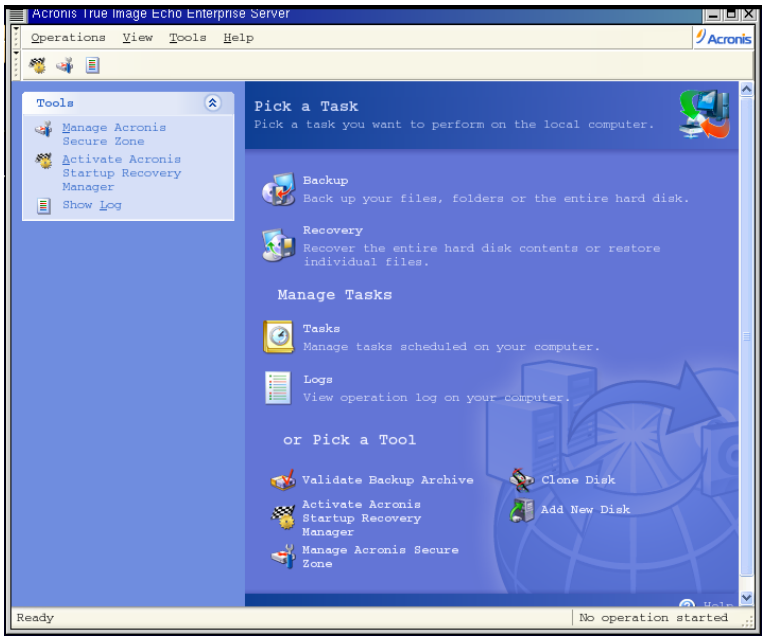
Low-quality or old tape, as well as dirt on the magnetic head, might lead to pauses that can last up to several minutes.

Chapter 4. The program interface under X Window System

Acronis True Image Echo Server features both the console mode and a user-friendly interface under X Window System. The GUI mode, described in this chapter, provides the widest functionality. For console commands please see *Chapter 12. Console mode*.

4.1 The main window and available operations

The main program window contains the menu, the toolbar, the sidebar and the main area. The sidebar features the **Tools** pane. The main area displays operation icons (default view), tasks (after clicking **Tasks**) or logs (after clicking **Logs**).



4.1.1 The main area

Operation icons are divided into three groups.

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

- **Backup** – create a backup archive
- **Recovery** – restore data from a previously created archive

The **Manage Tasks** group contains the following operations:

- **Tasks** – schedule backup or archive validation tasks on your computer and manage them
- **Logs** – open the Log Viewer window

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

- **Validate Backup Archives** – run the archive integrity checking procedure
- **Activate Acronis Startup Recovery Manager** – activate the boot restoration manager (F11 key)

- **Manage Acronis Secure Zone** – create, delete and resize a special hidden partition for storing archives (Acronis Secure Zone)
- **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.

4.1.2 The menu

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

The **Operations** menu contains the following list of operations:

- **Backup** – create a backup archive
- **Recovery** – restore data from a previously created archive
- **Mount image** – mounts a partition image
- **Unmount image** – unmounts a partition image
- **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
- **Schedule task** - schedule backup or archive validation tasks on your computer and manage them

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

- **Toolbars** – contains commands that control toolbar icons
- **Common Task Bar** – enables/disables the sidebar
- **Status Bar** – enables/disables the status bar

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
- **Consolidate archive** – applicable for archives containing more than one backups. This will create a consistent copy of the archive with an option to exclude backups that are no more needed
- **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 notifications etc.

The **Help** menu is used to view help and obtain information about Acronis True Image Echo Server.

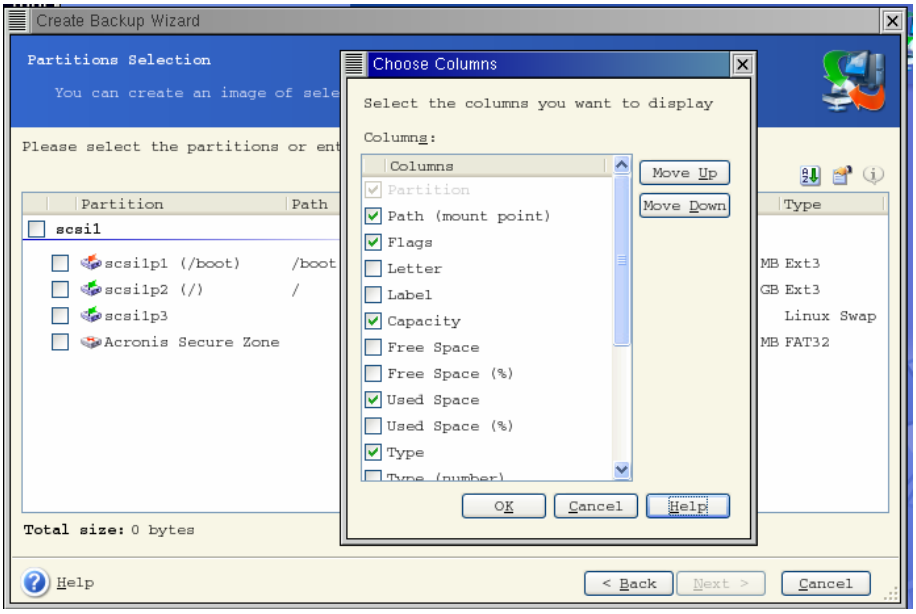
Most of the operations are represented two or even three times in different window areas, providing several ways to select them for more convenience. For example, you can start the necessary operation or tool by clicking its icon in the main area or by selecting the same item from the **Operations**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

4.1.3 Status bar

At the bottom of the main window, there is a status bar indicating the Acronis True Image Echo Server operation progress and results. Double-clicking the operation results will open the Log Viewer window.

4.2 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 etc.) parameters.

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

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*).

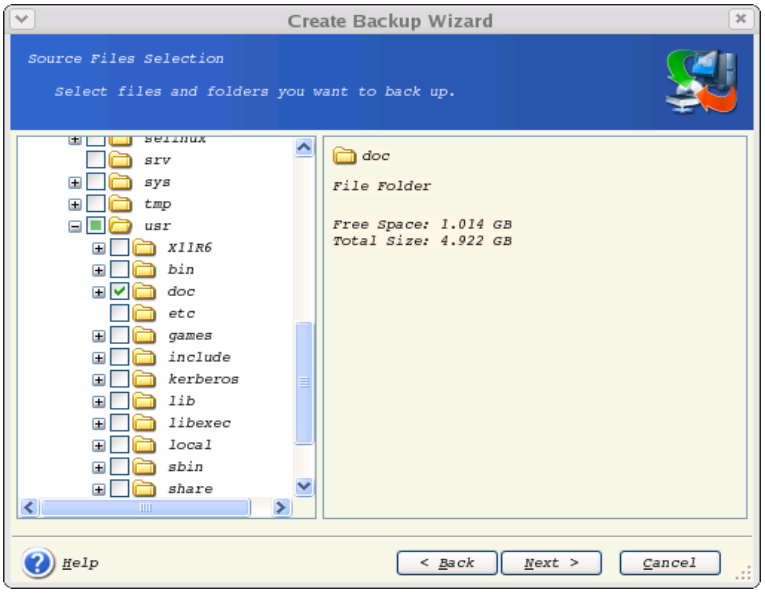
This chapter describes creating backup archives using Acronis True Image Echo Server GUI under X Window System. See *Chapter 12. Console mode* for using console or Cron service.

5.1 Backing up files and folders (file backup)

1. Start the **Create Backup Wizard** by clicking on the backup operation icon in the main program window.

2. Select **My Data**.

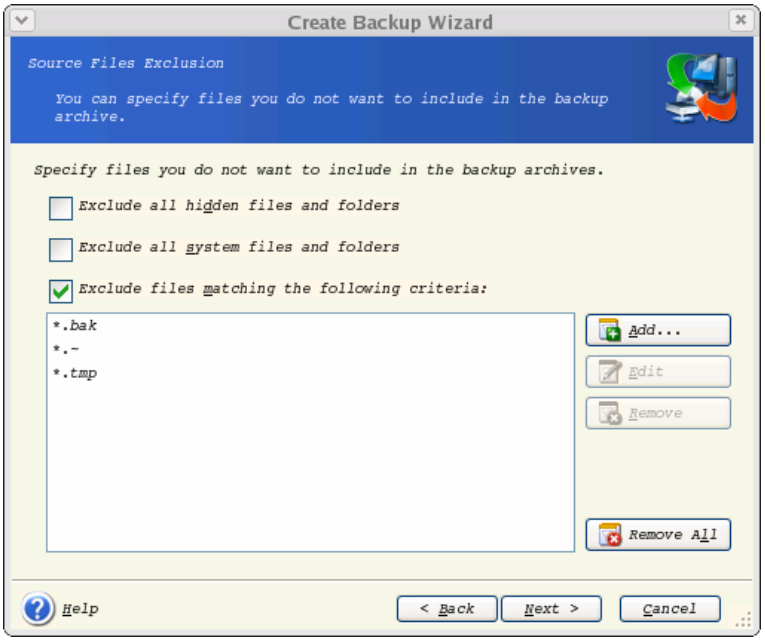
3. From the tree pane, select files and folders to back up. You can select a random set of files, folders, partitions, disks and even computers.



In order to restore your operating system, you must image the system disk or partition; a file-based backup is not sufficient for the operating system restore.

4. 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 not to be stored in the archive.

You can also apply custom filters, using the common masking rules. For example, to exclude all files with extension .tib, add ***.tib** mask. **My???.tib** mask will reject all .tib 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.*

5. Select the name and location of the archive.

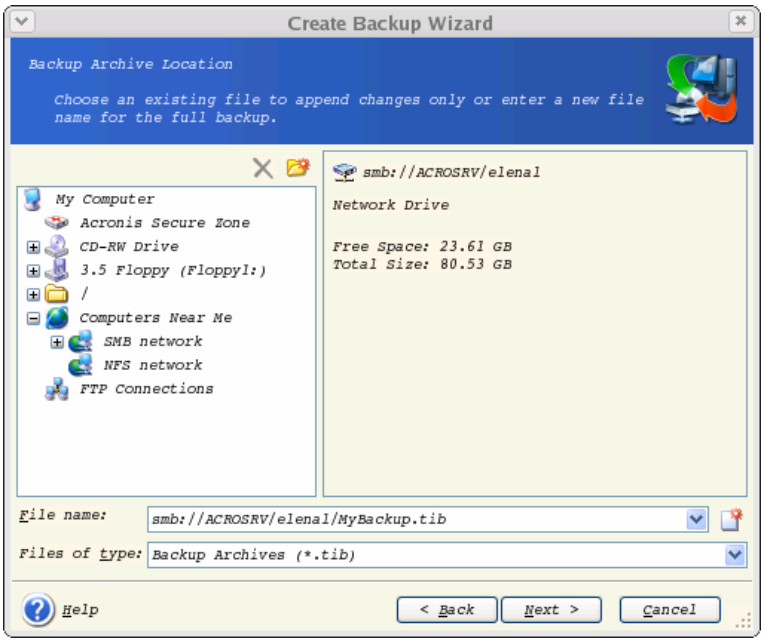
If you are going to create a full backup, type the file name in the **File Name** line, or use the file name generator (a button to the right of the line). If you select an existing full backup, it will be overwritten.

Including [date] in the backup file name will add to the name the time and date of the backup creation formatted as <DD-Month-YYYY HH:MM:SS>. Example: C:\MyBackup[date].tib.

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 with the basic full backup, 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 backups. Either way, the program will create a new differential backup.

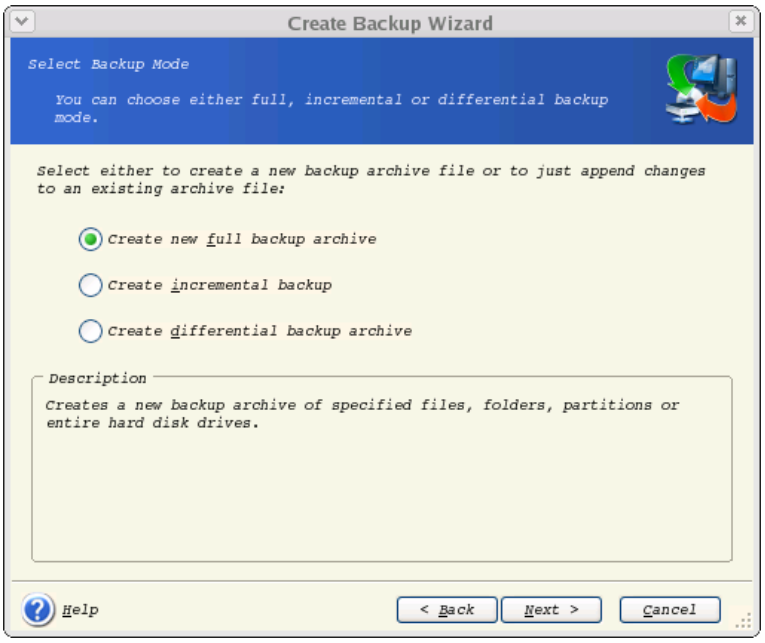


The “farther” you store the archive from the original folders, the safer it will be in case of data damage. For example, saving the archive to another hard disk will protect your data if the primary disk is damaged. Data saved to a network disk, ftp-server or removable media will survive even if all your local hard disks are down. In addition to NFS, Acronis True Image Echo Server supports the SMBFS network file system.

Please check, that the network backup node is accessible for Acronis True Image Echo Server Rescue CD Network Browser, otherwise you cannot restore images stored on this node.

See notes and recommendations for using the FTP server in *1.4.2 Supported storage media.*

6. 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*).



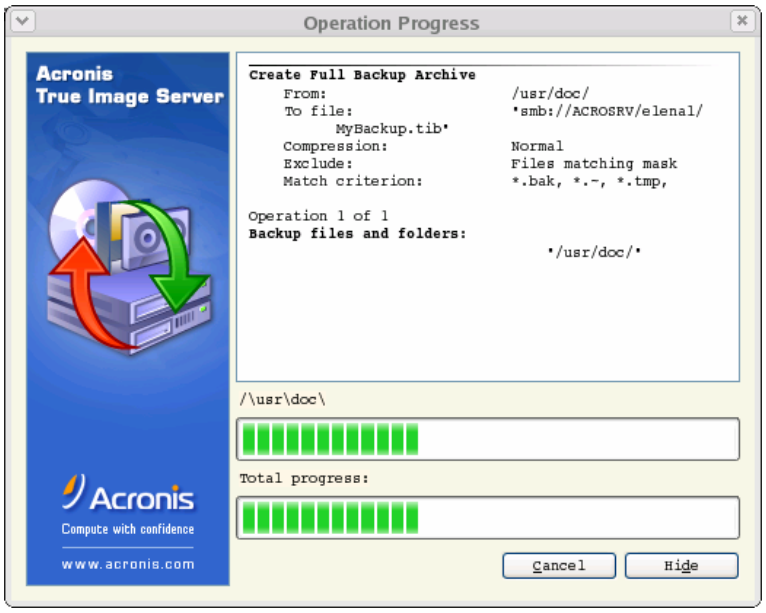
7. Select the backup options (that is, backup file splitting, compression level, password protection, pre/post backup commands etc.). You may **Use default options** or **Set the options manually**. If the latter is the case, the settings will be applied only to the current backup task. Alternatively, 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.

8. 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.

9. 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.

10. 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.



11. 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.

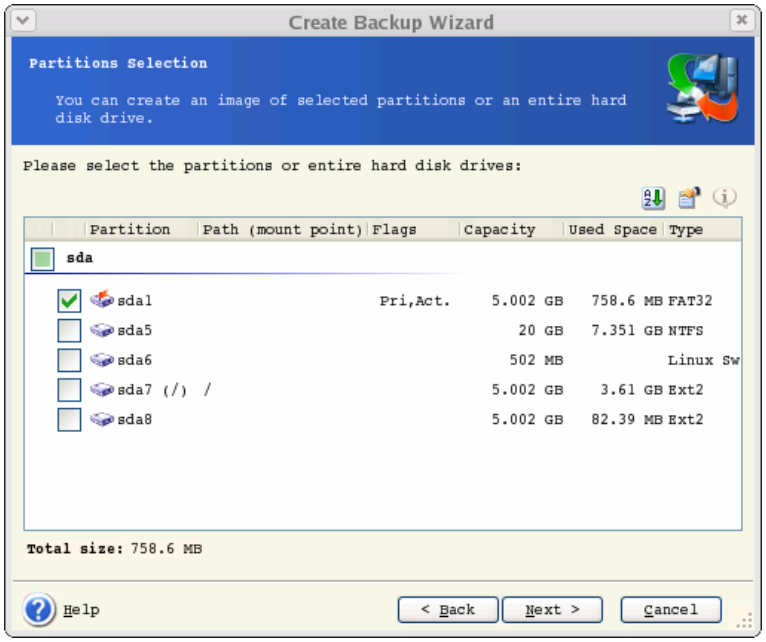
If you burn an archive to several removable media, be sure to number them, since you will have to insert them in order during the restoration.

5.2 Backing up disks and partitions (image backup)

1. Start the **Create Backup Wizard** by clicking the backup operation icon in the main program window.

2. Select **My Computer**.

3. Select disks or partitions or LVM volumes (LVM volumes are supported with 2.6.x kernel only) to back up. You can select a random set of disks, partitions and LVM volumes.



4. Select the name and location of the archive.

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 full backup, it will be overwritten.

Including [date] in the backup file name will add to the name the time and date of the backup creation formatted as <DD-Month-YYYY HH:MM:SS>. Example: C:\MyBackup[date].tib.

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 with the basic full backup, 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 backups. Either way, the program will create a new differential backup.

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, ftp-server or removable media will survive even if all your local hard disks are down. In addition to NFS, Acronis True Image Echo Server supports the SMBFS network file system.

Please check, that the network backup node is accessible for Acronis True Image Echo Server Rescue CD Network Browser, otherwise you cannot restore images stored on this node.

See notes and recommendations for using the FTP server in *1.4.2 Supported storage media.*

5. 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*).

6. Select the backup options (that is, backup file splitting, compression level, password protection, pre/post backup commands 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.

7. 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.

8. 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.

9. 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.

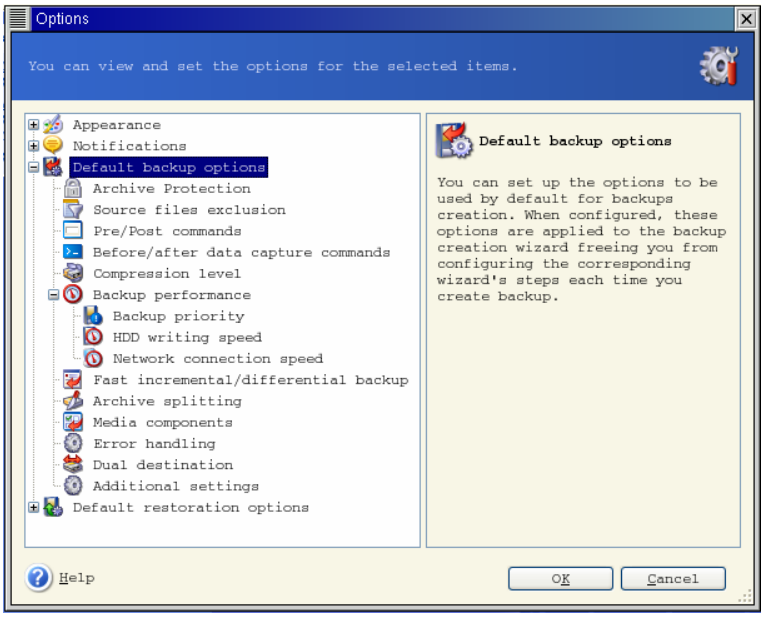
10. You may want to see the log when the task is completed. To view the log, click the **Show Operation Logs** button on the toolbar.

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.

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

Password

The preset is **no password**.

An archive can be protected with a password. To protect the archive data from being accessed 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 Echo Server will ask for the password in a special window, allowing access only to authorized users.

Passwords cannot be set for archives created in the Acronis Secure Zone. To protect such archives, set a password for the zone itself.

Encryption

The preset is **128 bit**.

Once the password has been set, you can choose to encrypt the backup for advanced security with industry-standard AES cryptographic algorithm. The password is used to generate a key which may differ in length. There are 4 choices: no encryption, 128, 192 and 256-bit encryption. The more the key size, the longer time to cipher and the greater is your data security.

5.3.2 Source files exclusion

By default, **all files from the selected folders will be included in 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 not to be stored in the archive.

You can also apply custom filters, using the common masking rules. For example, to exclude all files with extension .tib, add ***.tib** mask. **My???.tib** mask will reject all .tib 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 executable 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 an executable file.

Please do not try to execute interactive commands, i.e. commands that require user input. These are not supported.

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 Before/after data capture commands

Database servers, such as My SQL Server, prove to be troublesome to backup, partially due to open files and indexes and partially due to rapid data changes. Therefore many system administrators prefer to suspend the database at the backup (capturing the Snapshot) moment.

To ensure that the database will be ready to access immediately after recovery, the administrator must ensure completion of all transactions before the backup process starts. Once the backup process starts, you can resume server operations. It is not necessary to suspend the applications for the duration of the imaging process.

The transactions completion can be ensured with executing scripts that pause the appropriate services and automatically resume them after data capture.

Create scripts in any text editor (for example, name it 'pause_services.bat' and 'resume_services.bat'. Use **Edit** buttons to the right of **Before data capture command** and **After data capture command** fields, to open the **Edit Command** window where you can browse folders to find the respective scripts. A single command can be specified in the same window along with its arguments and working directory.

It is critical to note that these commands, as opposed to **Pre/post commands** above, will be executed before and after *data capture* process, which takes seconds, while the entire backup procedure may take quite long time. Therefore, the database idle time will be minimal.

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.

5.3.5 Compression level

The preset is **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.

5.3.6 Backup performance

The three options below might have a more or less noticeable effect on the backup process speed. This depends on overall system configuration and physical characteristics of devices.

1. Backup process priority

The preset is **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.

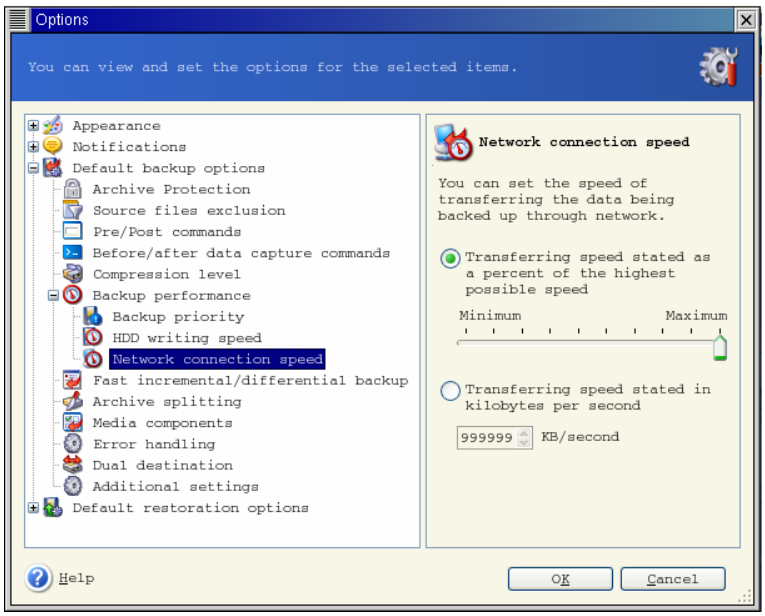
2. HDD writing speed

The preset is **Maximum**.

Backing up in the background to an internal hard disk (for example, to Acronis Secure Zone) may slow other programs' performance because of the large amounts of data transferred to the disk. You can limit the hard disk usage by Acronis True Image Echo Server to a desired level. To set the desired HDD writing speed for data being backed up, drag the slider or enter the writing speed in kilobytes per second.

3. Network connection speed

The preset is **Maximum**.



If you frequently backup data to network drives, think of limiting the network usage used by Acronis True Image Echo Server. To set the desired data transfer speed, drag the slider or enter the bandwidth limit for transferring backup data in kilobytes per second. This setting is also applied to FTP connection, if an FTP server is selected as backup destination device.

5.3.7 Fast incremental/differential backup

The preset is **Use fast incremental/differential backup**.

Incremental/differential backup captures only changes in data occurred since the last backup. To speed up the backup process, Acronis True Image Echo Server determines whether the file has changed by file size and the date/time when the file was last saved. Disabling this feature will make the program compare the entire file contents to that stored in the archive.

This option relates only to disk/partition (image) backup.

5.3.8 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 or saving on an FTP server (data recovery directly from an FTP server requires the archive to be split into files no more than 2GB in size).

The preset is **Automatic**. With this setting, Acronis True Image Echo Server 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 Echo Server will automatically split the backup into several files.

FAT16 and FAT32 file systems have a 4GB file size limit. At the same time, the existing hard drive's capacity may reach as much as 2TB. 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 backup 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 Echo Server 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 a backup directly on CD-R/RW or DVD±R/RW might take considerably more time than it would on a hard disk.

5.3.9 Media components

The preset is **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 the image archive, stored on removable media, allowing one-click disk recovery from this archive. This means that at boot from the media and clicking “restore” all the data contained in the image will be silently restored.

Because one-click approach does not imply user selections, like selecting partitions to restore, Acronis One-Click Restore always restores the entire disk. Therefore, if your disk consists of several partitions and you are planning to use Acronis One-Click Restore, all the partitions must be included in the image. Any partitions which are missing from the image will be lost.

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

Under **Advanced** tab you can select full, safe or both Acronis True Image Echo Server 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.

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

5.3.10 Error handling

1. Ignore bad sectors

The preset is **disabled**.

With the default setting, the program will generate a message each time it comes across a bad sector and ask for user decision whether to continue or stop the backup procedure. In order to back up the valid information on a rapidly dying disk, enable ignoring bad sectors. The rest of the data will silently backed up and you will be able to mount the image and extract valid files to another disk.

2. Do not show messages and dialogs while processing (silent mode)

The preset is **disabled**.

Corporate administrators need an option to continue back up on all errors, despite what that errors may be, without waiting for human decision, because this needs to be automated. Details of operation, including errors, if any, could be found in the operation log.

With the silent mode enabled, the program will automatically handle situations requiring user intervention such as running off disk space (except for handling bad sectors, which is defined as a separate option.) No one prompt will come up, including prompts for removable media or overwriting data on a tape. If operation cannot continue without user action, it will fail.

Therefore, enable this feature if you do not want unattended backup operations hang on errors, but come to an end in any case.

5.3.11 Additional settings

1. Validate backup archive upon operation completion

The preset is **disabled**.

When enabled, the program will check integrity of the just created or supplemented archive immediately after backup.

To check archive data integrity you must have all incremental and differential backups belonging to the archive and the initial full backup. If any of successive backups is missing, validation is not possible.

2. Overwrite data on a tape without user confirmation

The preset is **enabled**.

A full backup, when created on a tape drive, overwrites all data stored on the tape (see *3.9 Backing up to tape drive* for more information). In this situation, Acronis True Image Echo Server will warn that you are about to lose data on the tape. To disable this warning, check the middle box.

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

The preset is **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 someone to press **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 under X Window system

This chapter describes data recovery using Acronis True Image Echo Server GUI under X Window System. See *Chapter 12. Console mode* for using console.

6.1 Considerations before recovery

6.1.1 Restore under OS or boot from CD?

As mentioned above (*2.3 Running Acronis True Image Echo Server*), Acronis True Image Echo Server can be run in several ways. We recommend that you first try to restore data running Acronis True Image Echo Server under Linux, 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 the operating system does not load.

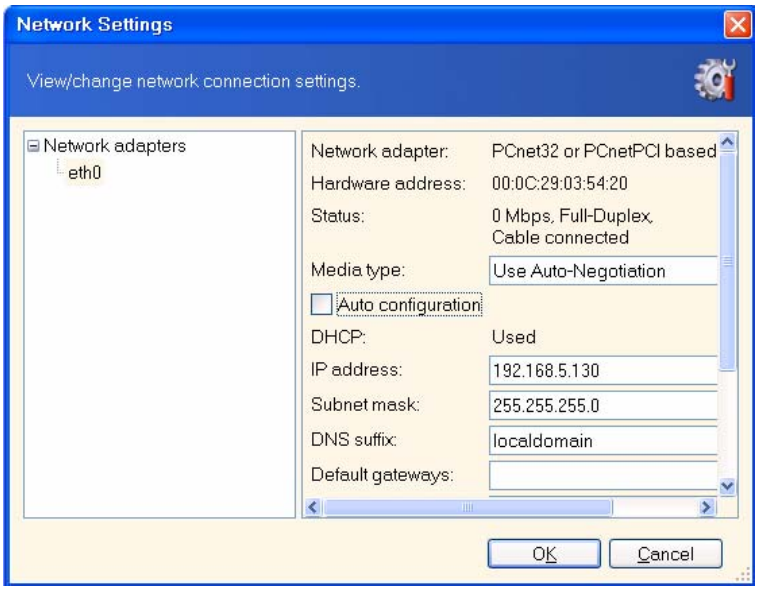
The boot CD from which you loaded the program does not keep you from using other CDs with backups. Acronis True Image Echo Server is loaded entirely into RAM, so you can remove the bootable CD to insert the archive disk.

If a backup image is located on bootable media, you might have a choice of using Acronis One-Click Restore. This operation always restores the entire physical disk. Therefore, if your disk consists of several partitions, the partitions which are missing from the image will be lost. Please make sure that the image contains all disk partitions or you do not need the partitions that are not imaged before using Acronis One-Click Restore. For more information on Acronis One-Click Restore see *5.3.9 Media components*.

6.1.2 Network settings in rescue mode

When booted from removable media or by Startup Recovery Manager, Acronis True Image Echo Server 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.**

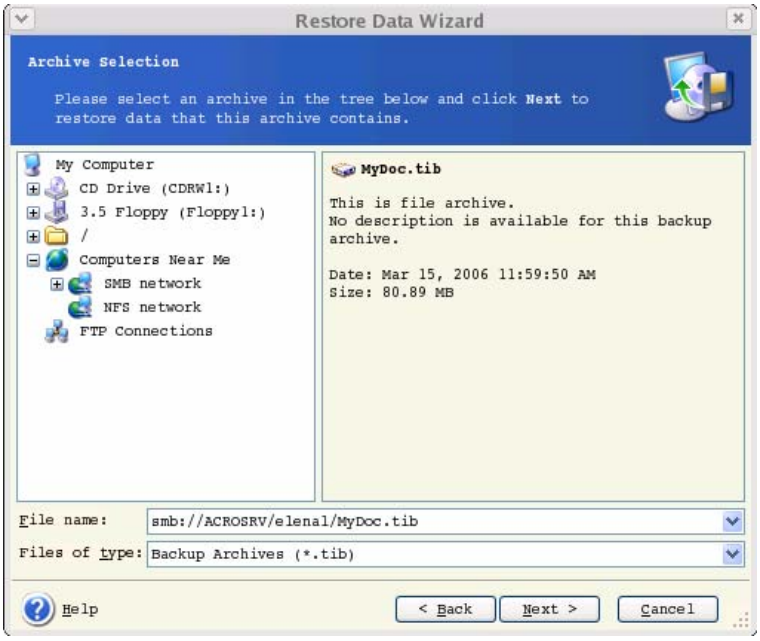


6.2 Restoring files and folders from file archives

Here we describe how to restore files/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 *10.2.1 Mounting an image* or *12.3 Restoring files with trueimagemnt*) or start the image restoration and select **Restore specified files or folders** (see *6.3 Restoring disks/partitions or files from images*).

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

2. 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.

Data recovery directly from an FTP server requires the archive to consist of files no more than 2GB in size. If you suspect that some of the files may be larger, first copy the entire archive (along with the initial full backup) to a local hard disk or network share disk. See notes and recommendations for supporting FTP server in *1.4.2 Supported storage media*.

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 Echo Server will ask for it. The comment and the **Next** button will be unavailable until you enter the correct password.

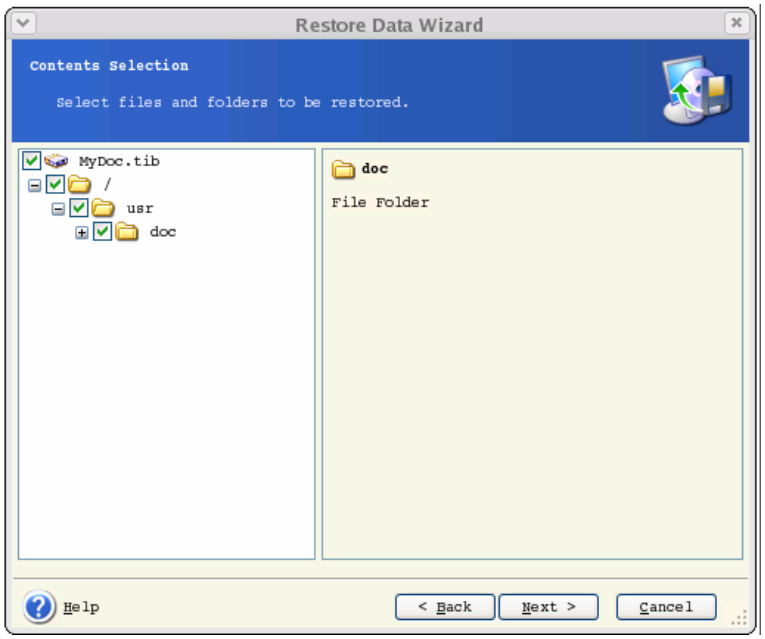
3. If the selected archive contains incremental backups, Acronis True Image Echo Server will suggest that you select one of successive incremental backups by its creation date/time. Thus, you can return the files/folders to a certain moment.

To restore data from an incremental backup, you must have all previous incremental backups 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. 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.

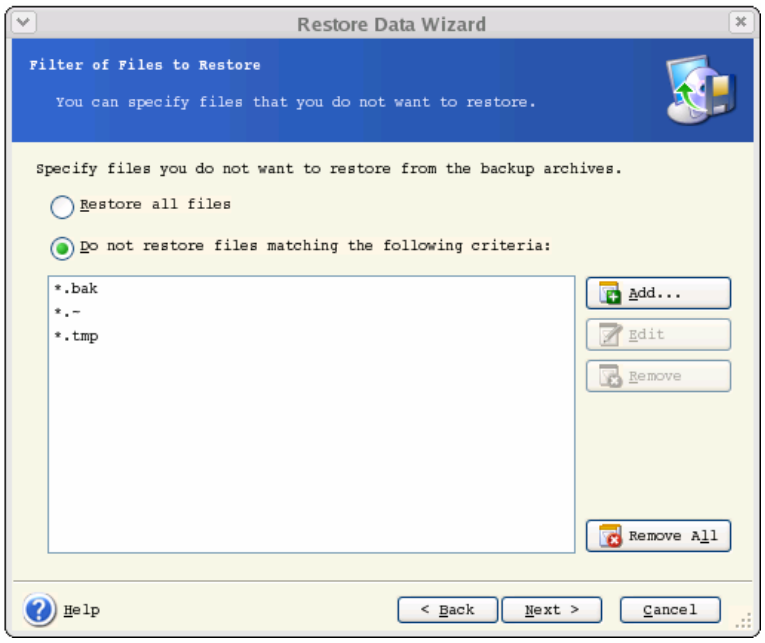
5. Select files and folders to restore. You can choose to restore all data or browse the archive contents and select the desired folders or files.



6. Select the options for the restoration process (that is, pre/post restoration commands, 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 *6.5 Setting restore options* for more information.

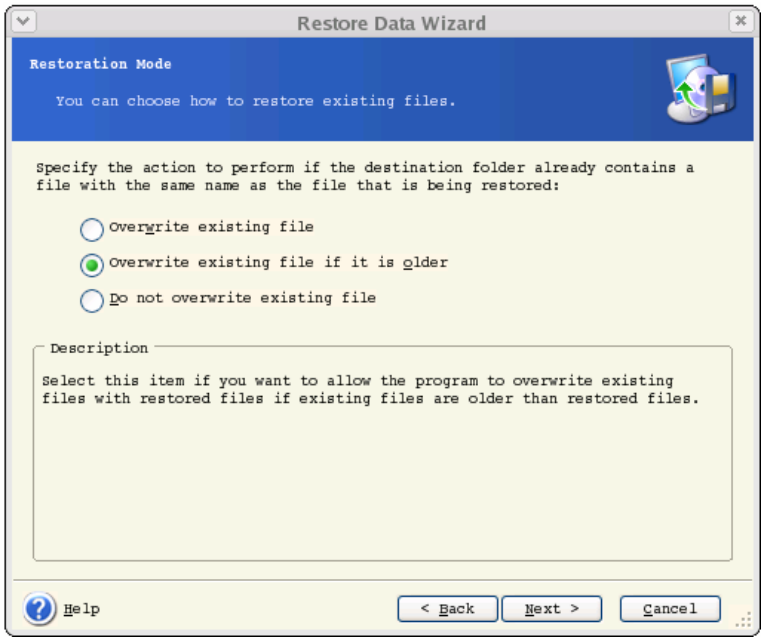
7. Set filters for the specific types of files that are not to be restored. For example, you may want hidden and system files and folders not to be restored from the archive.

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



All of these settings will take effect for the current task. How to set the default filters that will be called each time you restore data, see *6.5.1 Files to exclude from restoration*.

8. 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.

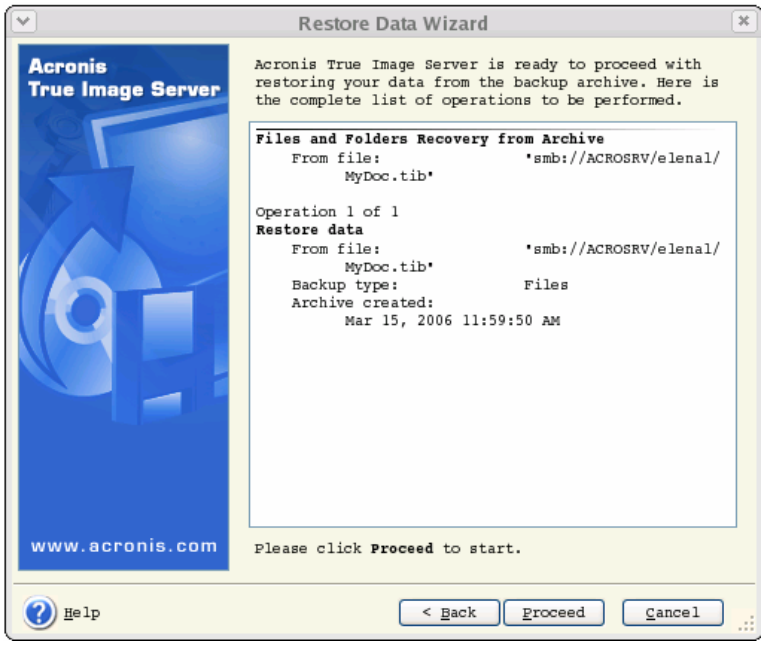


Overwrite existing file – this will give the archived file unconditional priority over the file on the hard disk.

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.

9. 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.



10. 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

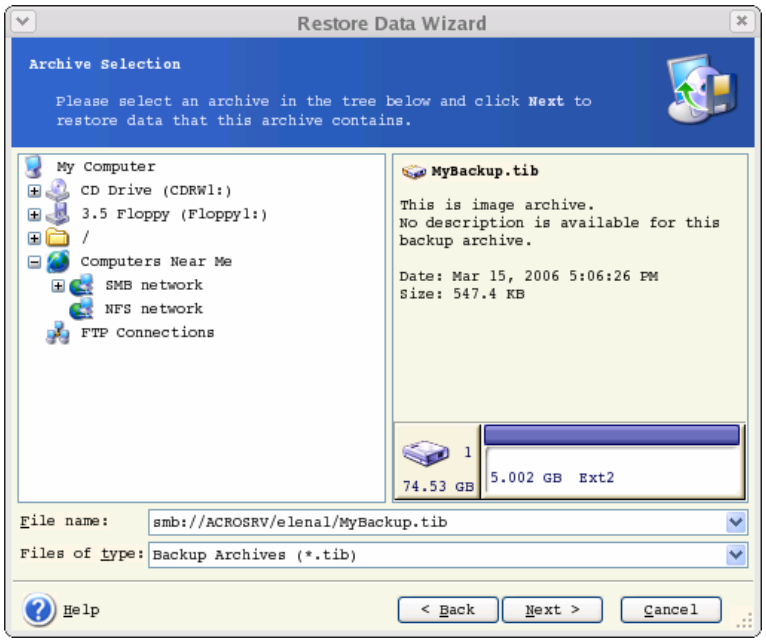
To restore a partition (disk) from an image, Acronis True Image Echo Server must obtain **exclusive access** to the target partition (disk). This means no other applications can access it at that time. If you receive a message stating that the partition (disk) can not be blocked, close applications that 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

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

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.

Data recovery directly from an FTP server requires the archive to be split into files no more than 2GB in size. If you suspect that some of the files may be larger, first copy the entire archive (along with the initial full backup) to a local hard disk or network share disk. See notes and recommendations for supporting FTP server in *1.4.2 Supported storage media*.

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 Echo Server will ask for it. The partitions layout, the comment and the **Next** button will be unavailable until you enter the correct password.

2. If the selected archive contains incremental backups, Acronis True Image Echo Server will suggest that you select one of successive incremental backups by its creation date/time. Thus, you can return the disk data to a certain moment.

To restore data from an incremental backup, you must have all previous incremental backups 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.

6.3.3 Restoration type selection

Select what you want to restore:

Restore specified files or folders

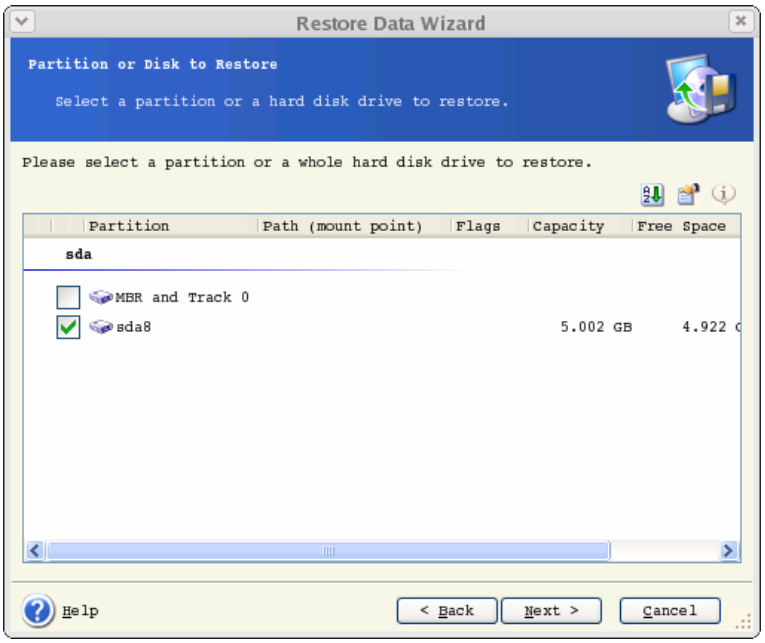
With this selection, you will be further offered to select where to restore selected folders/files (original or new location), choose files/folders to be restored and so on. These steps look like those in file archive restore. However, watch your selection: if you are to restore files instead of disk/partition, uncheck the unnecessary folders. Otherwise you will restore a lot of excessive files. Then you will be taken directly to Restoration Summary screen (*6.3.11 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.

6.3.4 Selecting a disk/partition to restore

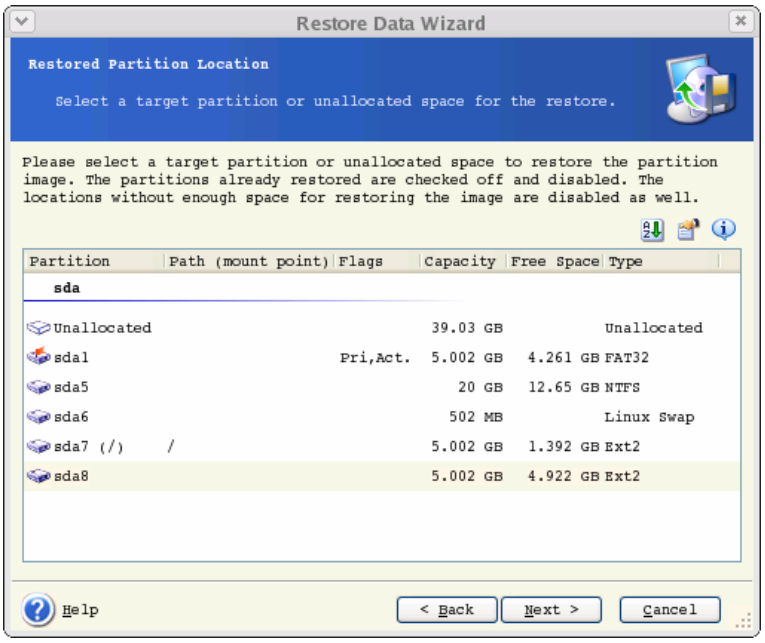
The selected backup can contain images of several partitions or even disks. Select which disk/partition to restore.



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.

6.3.5 Selecting a target disk/partition

1. Select a target disk or partition where you want to deploy the selected image. You can restore data to its 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 target partition will be replaced by the image data, so be careful and watch for non-backed-up data that you might need.

2. 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 *6.3.9 Restoring several disks or partitions at once*.

6.3.6 Changing the restored partition type

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 server from booting.

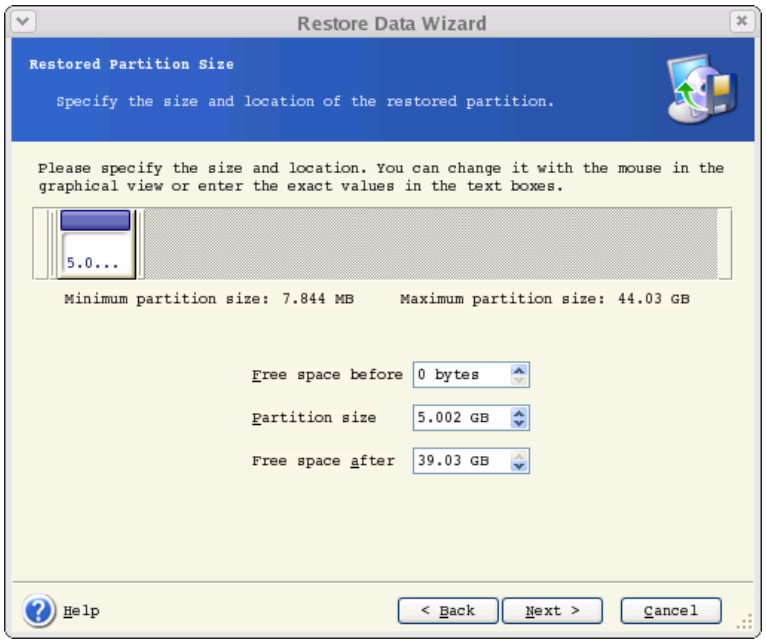
6.3.7 Changing the restored partition file system

Though seldom required, you can change the partition file system during its restoration. Acronis True Image Echo Server 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.

6.3.8 Changing the restored partition size and location

You can resize and relocate a partition by dragging it or its borders with a mouse or by entering corresponding values in 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.

6.3.9 Restoring several disks or partitions at once

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.

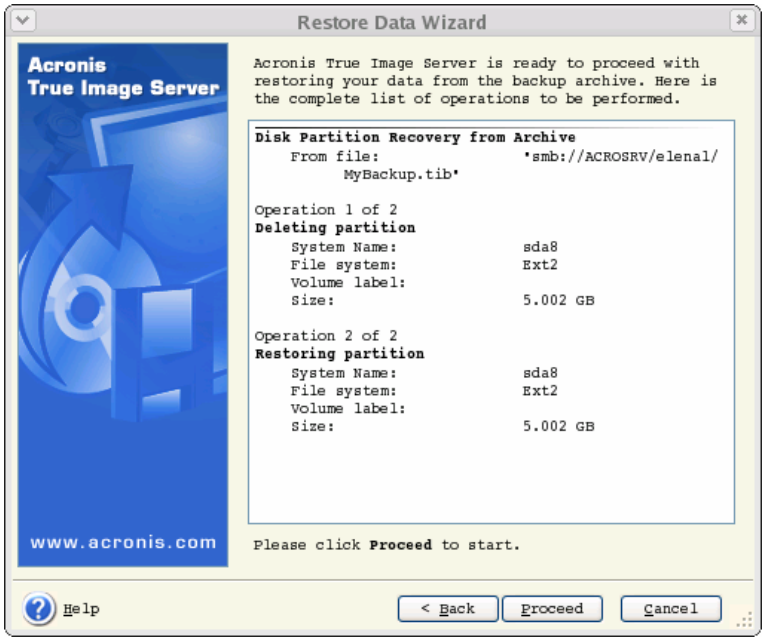
If you want to restore another disk (partition), select **Yes, I want to restore another partition or hard disk drive**. Then you will return to the partition selection window (6.3.4) again and will have to repeat the above steps. Otherwise, don't set this switch.

6.3.10 Setting restore options

Select the options for the restoration process (that is, pre/post restoration commands, 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 *6.5 Setting restore options* for more information.

6.3.11 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 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.

If you restore a system disk (partition), you might have to reactivate your boot manager. Please consult your boot loader manual pages to find out the appropriate information.

In case the system disk (partition) is restored to identical hardware, the following steps would usually help:

Boot the computer from the Linux installation CD

Enter rescue mode

Issue the following commands:

#mkdir /mnt/tmp

#mount /dev/hdXY /mnt/tmp (/dev/hdXY is the device, corresponding to root partition)

#chroot /mnt/tmp

If /boot is a separate partition, mount it with

#mount /dev/hdXZ /boot (/dev/hdXZ is the device, corresponding to boot partition)

Issue a command according to your loader type:

LILO:

#/sbin/lilo

GRUB:

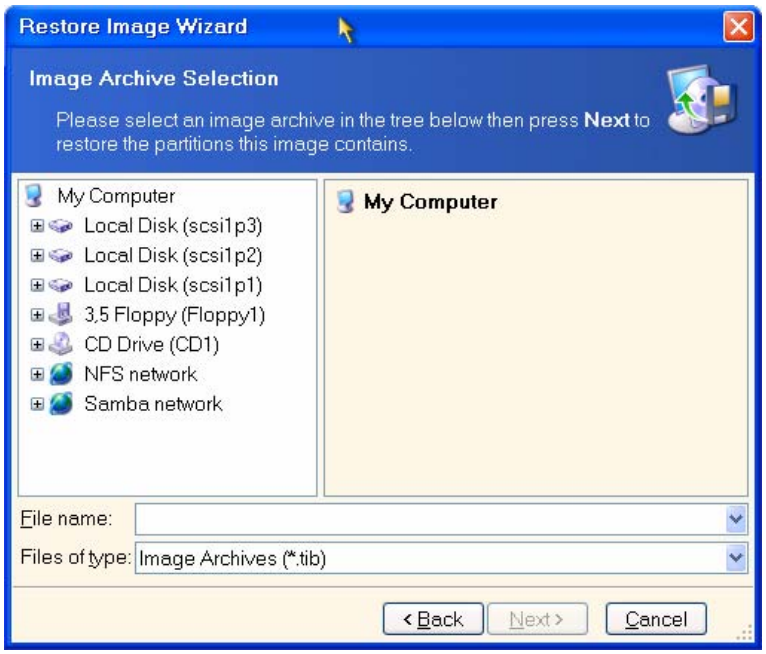
#/sbin/grub-install /device_name (/device_name is hd: hda, hdal, hda2, sdal, sda2 etc)

6.4 Restoring data with a rescue CD

To restore data from an archive, using a rescue CD of Acronis True Image Echo Server, you initially have to create such disk as described in *Chapter 9. Creating bootable media*.

Insert the rescue CD and reboot (you might have to enable the CD bootup option in BIOS). You will see a standard Acronis True Image Echo Server main window.

The procedure of disk (partition) restoration from an image is almost identical to the one described above. The only difference is that the Archive Selection window will list all local disks (partitions) as unmounted:



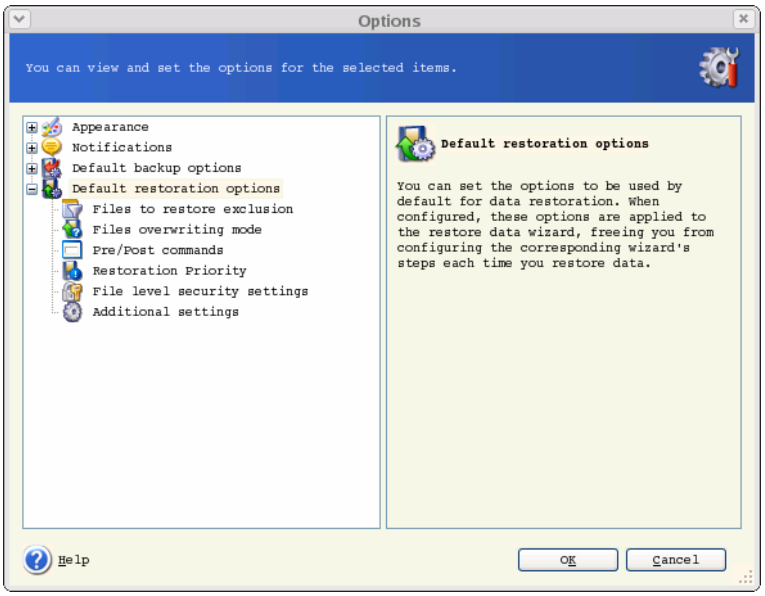
In rescue mode Acronis True Image Echo Server cannot access LVM disks. This means that an LVM volume image can be deployed on a MBR disk only.

A system, restored from an LVM volume image over an MBR disk, cannot boot because its kernel tries to mount the root at LVM volume. To boot the system, change the loader configuration and /etc/fstab so that LVM is not used. Then reactivate your boot manager as described in 6.3.11.

6.5 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.



6.5.1 Files to exclude from restoration

The preset is **Restore all files**.

You can set the default filters for the specific types of files that are not to be restored. Use the common masking rules. For example, to exclude all files with extension .tib, add ***.tib** mask. **My???.tib** mask will reject all .tib files with names, consisting of five symbols and starting with “my”.

This option is effective only when restoring files from file/folders archives. When restoring files from a disk/partition image, you cannot filter out any files.

6.5.2 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.

6.5.3 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.

Please do not try to execute interactive commands, i.e. commands that require user input. These are not supported.

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.

6.5.4 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.

6.5.5 File-level security settings

The preset is **Restore files with their security settings**.

You can choose whether to restore the original files' security settings (i.e. permissions for read, write and execute, set in file **Properties -> Permissions**), 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.

6.5.6 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 Echo Server can check its integrity. If you suspect that the archive might have been corrupted, select **Validate backup archive before restoration**.

To check archive data integrity you must have all incremental and differential backups belonging to the archive and the initial full backup. If any of successive backups is missing, validation is not possible.

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

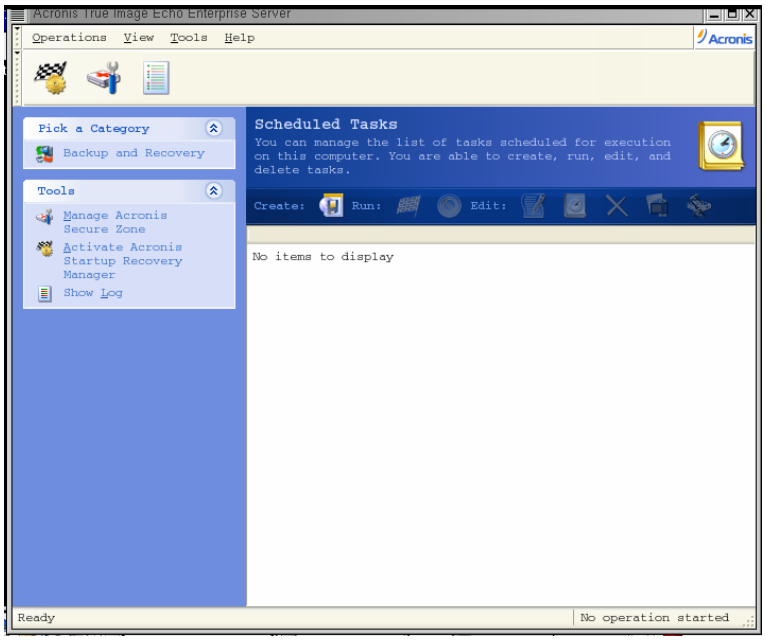
Verification of the file system is available only when restoring disk/partitions under Linux (i.e. not booted from the rescue CD) and only for Ext2, Ext3, Reiser4, ReiserFS, Linux Swap, XFS and JFS file systems.

4. The bootable Acronis True Image Echo Server version has also an option that after the restoration is finished the computer reboots and starts the newly restored OS without any user interaction. If this option is set, post operation commands will not be executed. In case you need these commands to be executed, include the reboot command in your executable file.

Chapter 7. Scheduling tasks

Acronis True Image Echo Server allows you to schedule periodic backup and archive validation 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 **Scheduled Tasks** window, where you can start, stop, edit, delete and rename them. To navigate to the **Scheduled Tasks** window, click **Tasks** in the **Manage Tasks** group.

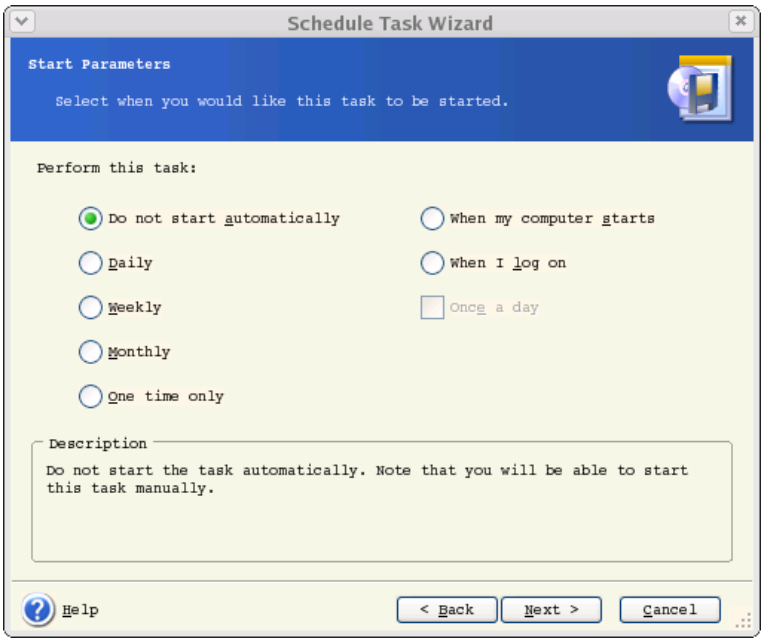
7.1 Creating scheduled tasks

1. To start the **Schedule Task Wizard**, click **Create** on the **Scheduled Tasks** window toolbar or select **Operations -> Schedule Task** from the main menu.

2. Choose the **Backup** or **Validate** operation. If the latter is the case, choose the archive in the next window and you will be taken straight to step 4.

3. If backup is your choice, 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, enter a user name and a password for the drive access.

4. Set the task execution periodicity.

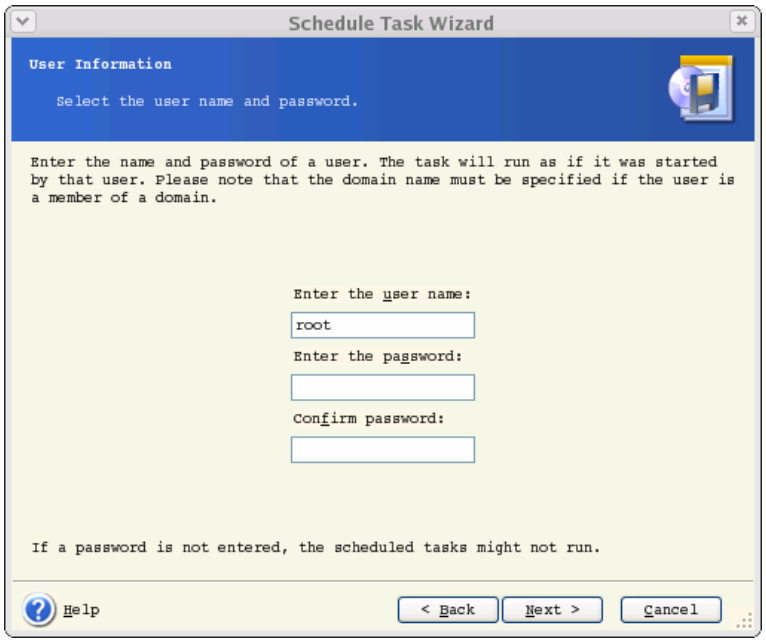


- **Manually later** – the task will be saved, but not launched automatically. You will be able to launch it later by clicking **Run** in the **Scheduled Tasks** window
- **Daily** – the task will be executed once a day or once in several days
- **Weekly** – the task will be executed once a week or once 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

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

5. Specify the task start time and other schedule parameters, according to the selected periodicity (see 7.1.1 - 7.1.4).

6. Next you will have to specify the name of the user who owns the executed task; otherwise no scheduled execution will be available.



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

7. 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.

8. The task schedule and default name appear in the **Scheduled Tasks** window. You can rename the task, if need be.

7.1.1 Setting up daily execution

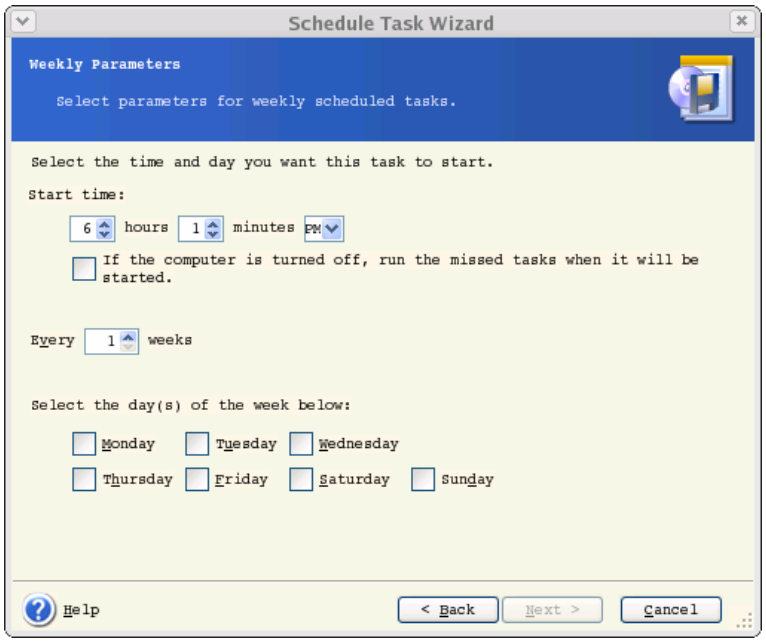
If you select daily execution, set the **Start time** and days on which you want to execute the task:

- **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.

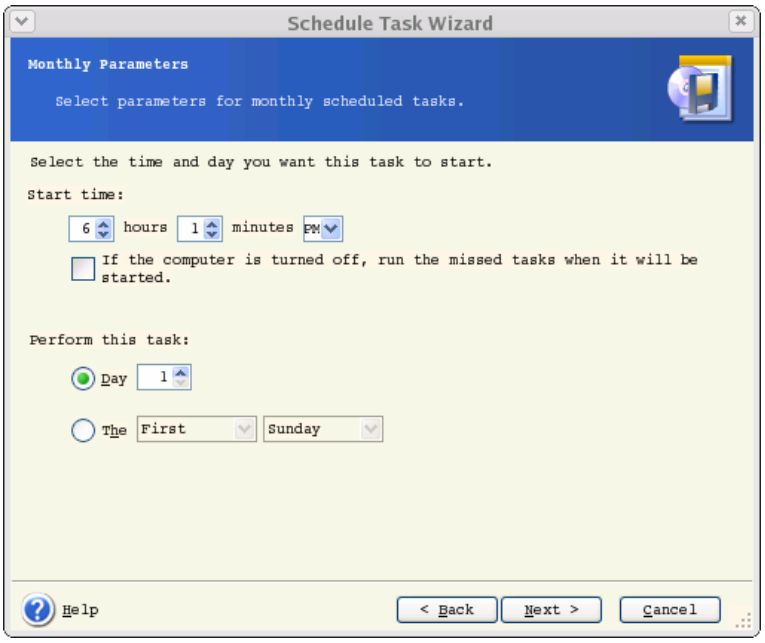


If the computer is off when the scheduled time comes, the task won't be performed, but you can force the missed task to launch at the next system startup by checking a box under the **Start time** fields.

7.1.3 Setting up monthly execution

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

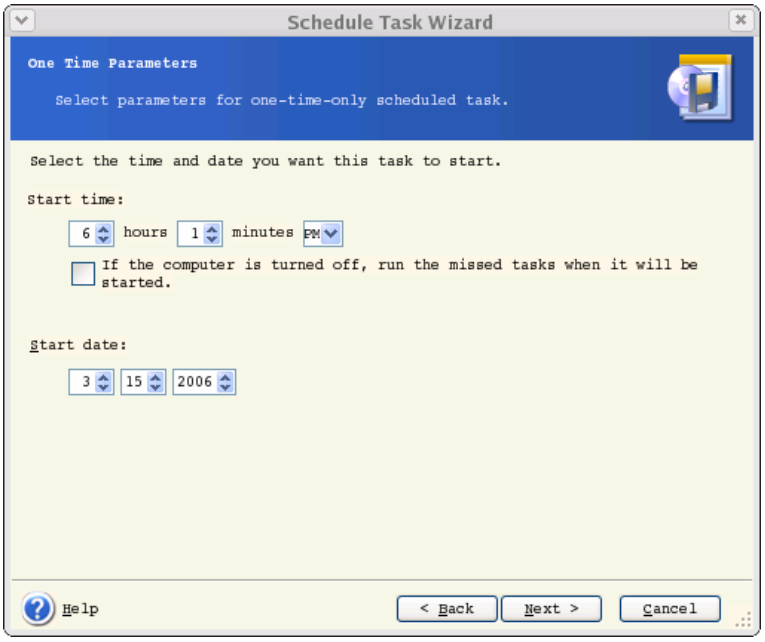
- **Day** – on the specified date
- **The <specify a day>** – on the specified day (e.g. on second Tuesday or fourth Friday); select this from the drop-down lists.



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 in the **Scheduled Tasks** 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** on the toolbar.

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

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

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

In Acronis True Image Echo Server local version there is an option to clone a task. Select the task and click **Clone** on the toolbar. Pass through the same wizard as when editing a task and make changes if necessary. As opposed to the editing procedure, the result will be saved as a separate task. Most probably you will rename the clone for better identification.

Chapter 8. Managing Acronis Secure Zone

The Acronis Secure Zone is a hidden partition for storing archives on the computer system itself. It 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*.

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 manage it (resize or change the password) or delete. If there is no zone, you'll be prompted to create it.

If the Acronis Secure Zone is password-protected, the proper password must be entered before any operation can take place.

8.1 Creating Acronis Secure Zone

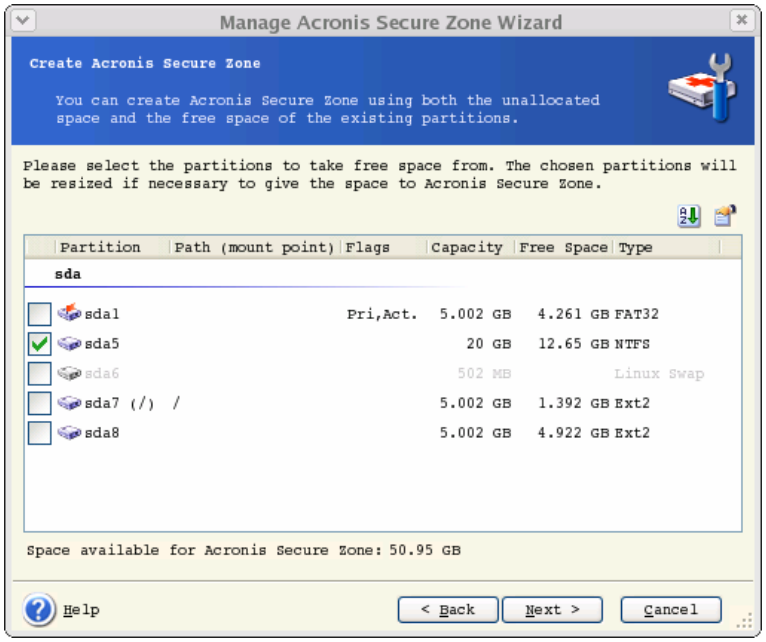
Acronis Secure Zone can be located on any internal disk. It is created using unallocated space, if available, or at the expense of free space on a partition. Partition resizing may require a reboot.

A computer can have only one secure zone. To create a zone on another disk, you must first delete an existing zone.

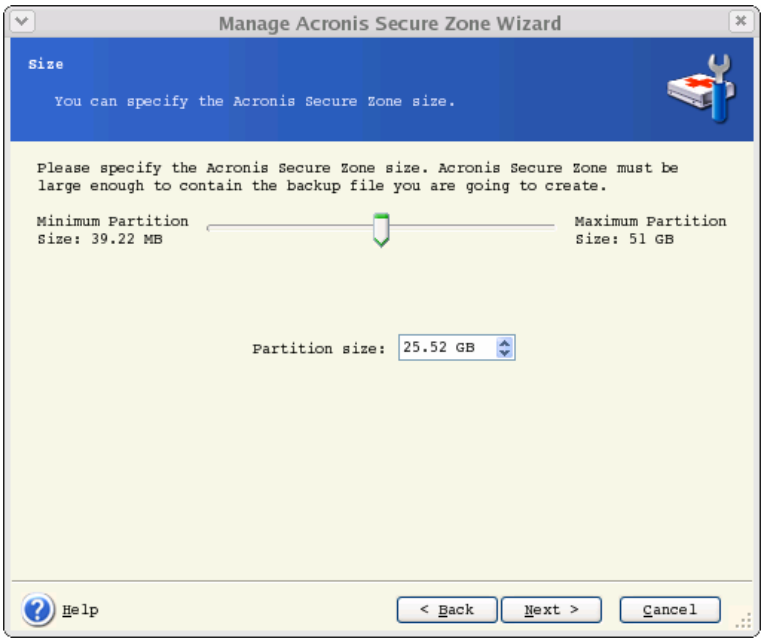
1. Before creating a zone, you may want to estimate its size. To do so, start a backup and select all data you are going to copy into it. At the **Set Backup Options** step, choose **Set the options manually**, then set the compression level. You will see the estimated full backup size (for disk/partition backup) or the approximate compression ratio (for file-level backup) with which you can calculate the estimated full backup size. Multiply this by about 1.5 to be able to create incremental or differential backups.

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 Acronis Secure Zone size or drag the slider to select any size between the minimum and maximum ones.



The minimum size is about 35MB, depending on the geometry of the hard disk. The maximum size is equal to the disk's unallocated space plus the total free space on all partitions selected at the previous step.

When creating the zone, the program will first use the unallocated space. If there is not enough unallocated space, the selected partitions will be decreased. Partition resizing may require a reboot.

Please keep in mind that reducing a system partition to the minimum size might prevent your operating system from booting.

5. You can set a password to restrict access to the zone. The program will ask for the password at any operation relating to it, such as data backup and recovery, mounting images or validating archives on the zone, rescue boot with the F11 key, resizing and deleting the zone.

Acronis True Image Echo Server 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 for the zone will be reset.

6. After this, you will be prompted to activate Acronis Recovery Manager, which will enable you to start Acronis True Image Echo Server at boot time by pressing F11 key. Or, you can activate this feature later from the 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 Echo Server 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. If you had selected to activate Acronis Startup Recovery Manager, all files required for loading Acronis True Image Echo Server standalone version has been copied to Acronis Secure Zone by now. To enable the program launch at boot time by pressing F11 key, add an entry to the configuration file, allowing boot from Acronis Secure Zone.

For example, if you use grub loader, add to /boot/grub/grub.conf or /boot/grub/menu.lst the following lines:

title Acronis //or any desired title

root (hd0,3) //ASZ location (available on summary screen), here: disk 0, partition 3

makeactive

chainloader +1

After that execute the following command:

grub-install /dev/hda //the hard disk from which grub will be loaded

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.

8.2 Activating and deactivating Acronis Startup Recovery Manager

After Acronis Startup Recovery Manager was initially activated, you can deactivate it or activate again at any time. To do so, simply delete the above entry from the configuration file or add it again.

If you did not activate Acronis Startup Recovery Manager when creating Acronis Secure Zone, select Activate Acronis Startup Recovery Manager on the sidebar or in the Tools menu and follow the Wizard's instructions. Then add an entry to the configuration file as described in step 8 of 8.1.

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.

8.3 Resizing Acronis Secure Zone

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

2. 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.

3. 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.

4. Enter the new size of the zone or drag the slider to select the size.

When increasing the Acronis Secure Zone, the program will first use unallocated space. If there is not enough unallocated space, the selected partitions will be decreased. Resizing of the partitions may require a reboot.

Please keep in mind that reducing a system partition to the minimum size may prevent your operating system from booting.

When reducing the zone, any unallocated space, if the hard disk has it, will be allocated to the selected partitions along with the space freed from the zone. Thus, no unallocated space will remain on the disk.

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

After you click **Proceed**, Acronis True Image Echo Server 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.

8.4 Changing the password for Acronis Secure Zone

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

2. Select **Change password**.

3. Enter the new password and confirm it or select **Do not use password protection**. You can also select a secret question that will be asked in case you forget the password.

4. To perform the password change operation, click **Proceed** in the final wizard window.

8.5 Deleting Acronis Secure Zone

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

In case you remove Acronis True Image Echo Server from the system, there is an option to keep Acronis Secure Zone along with its contents (which will enable data recovery on booting from bootable media) or remove Acronis Secure Zone. To delete the zone without uninstalling the program, proceed as follows.

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

2. Select the partitions to which you want to add the space freed from the zone. If you select several partitions, the space will be distributed proportionally to each partition.

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

After you click **Proceed**, Acronis True Image Echo Server 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.

Chapter 9. Creating bootable media

You can run Acronis True Image Echo Server on a bare metal or on a crashed computer that cannot boot. You can also back up disks on a non-Linux 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 Echo Server version.

Because Acronis True Image Echo Server is available only as a download, you must create bootable media using the Bootable Media Builder. For this, you will need a blank CD-R/RW, DVD±R/RW, several formatted diskettes (the wizard will tell you the exact number), or any other media your server can boot from, such as a Zip drive.

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

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

1. Run Rescue Media Builder by entering the command **mediabuilder**.

2. Select which components you want to place on the bootable media.

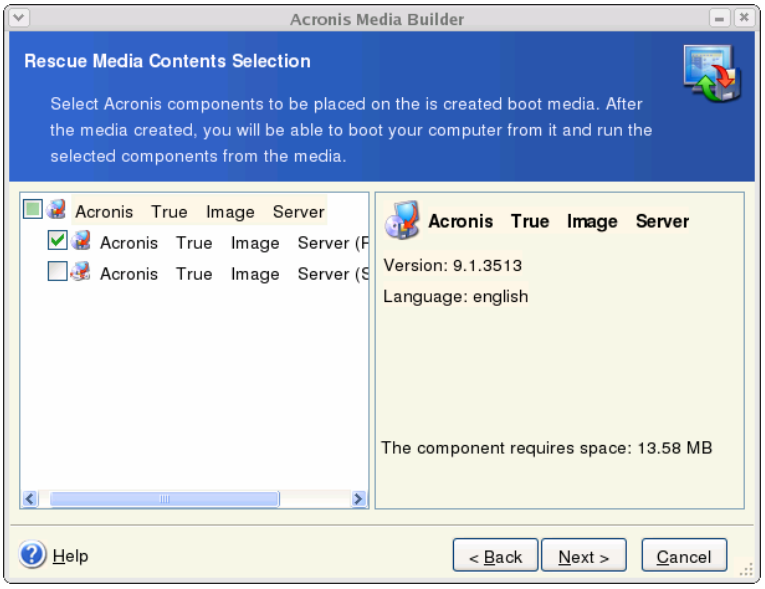
Acronis True Image Echo Server offers the following components:

- Acronis True Image Echo Server full version

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

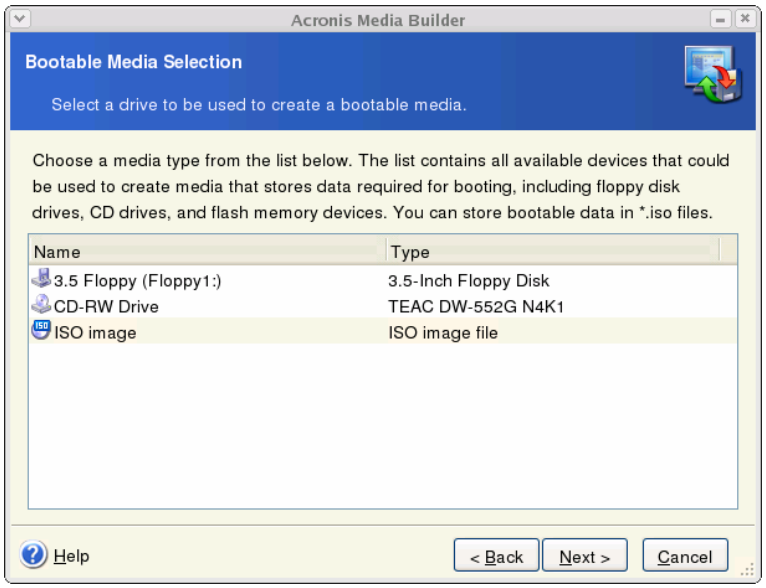
- Acronis True Image Echo Server safe version

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



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 Echo Server). To write another component, start Bootable Media Builder once again.



4. If you are creating removable media other than CD, 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) and give you time to prepare them. When you are finished, click **Proceed**.

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

Chapter 10. Operations with archives

10.1 Validating backup archives

To be certain that your archives are not damaged, you can check their integrity. Here's how to run a one-time validation task. For how to schedule regular archive validation, see *7.1 Creating scheduled tasks.*

1. To start the **Backup Archive Validation Wizard**, select **Validate Backup Archive** in the main window or in the **Tools** menu.

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

3. Clicking **Proceed** in the summary window 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 archive data integrity you must have all incremental and differential backups belonging to the archive and the initial full backup. If any of successive backups is missing, validation is not possible.

10.2 Mounting partition images

Acronis True Image Echo Server can mount partition images, thus letting you access them as though they were physical drives. This means that 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.

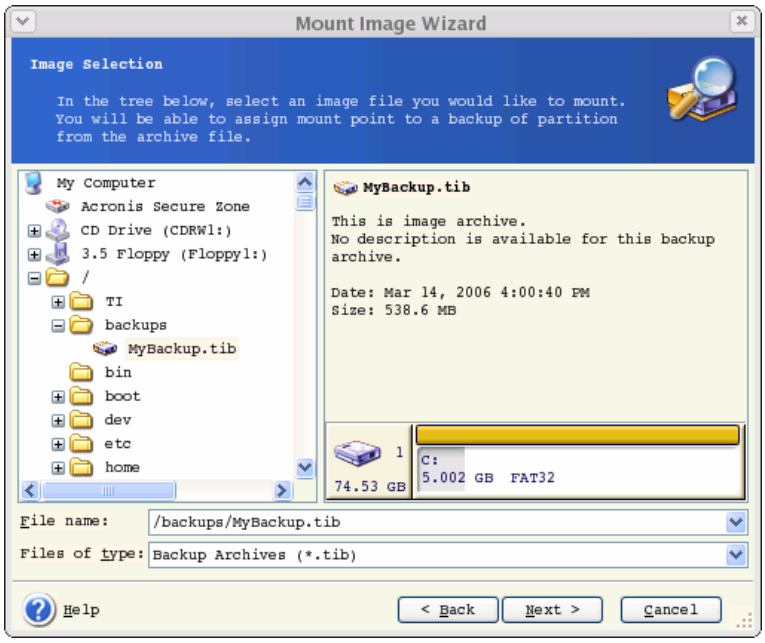
Please keep in mind that, though both file archives and disk/partition images have a default ".tib" extension, only partition images can be mounted. If you want to view file archive contents, use the Restore Data Wizard (see *6.2 Restoring files and folders from file archives*, steps 1-5).

Acronis True Image Echo Server 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.

10.2.1 Mounting an image

1. Start the **Mount Image Wizard** by selecting **Operations -> Mount Image** in the main program menu.

2. 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.



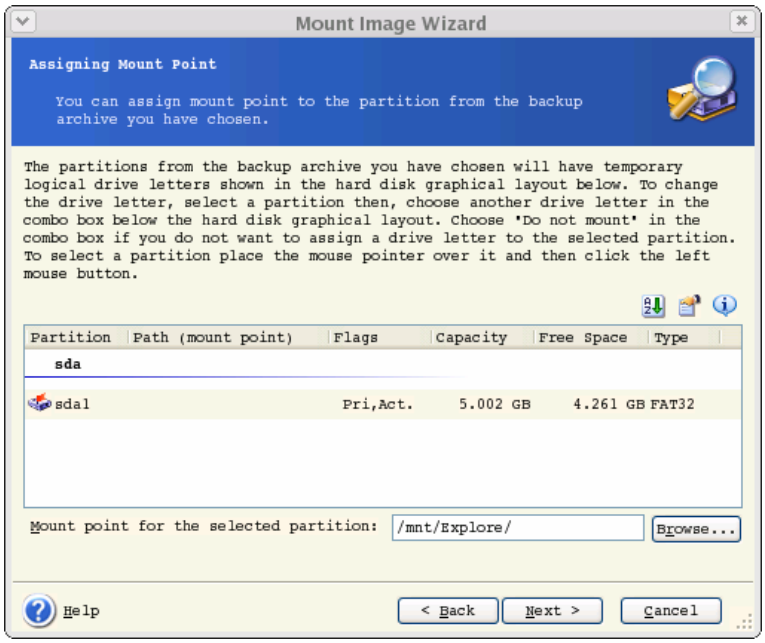
If you added a comment to the archive, it will be displayed to the right of the drives tree. If the archive was protected with a password, Acronis True Image Echo Server will ask for it. Neither the partitions layout, nor the **Next** button will be enabled until you enter the correct password.

3. If you selected an archive containing incremental images, Acronis True Image Echo Server 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.

4. Select a partition to mount (note that you cannot mount the entire disk) and specify the mount point for the selected partition.



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

6. 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.

7. The program displays a summary containing a single operation. Click **Proceed** to mount the selected partition image.

8. After the image is mounted, you can operate with files or folders as if they were located on a real disk.

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

10.2.2 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 server is turned off.

To disconnect the virtual disk, click **Unmount Image** and select the folder to unmount.

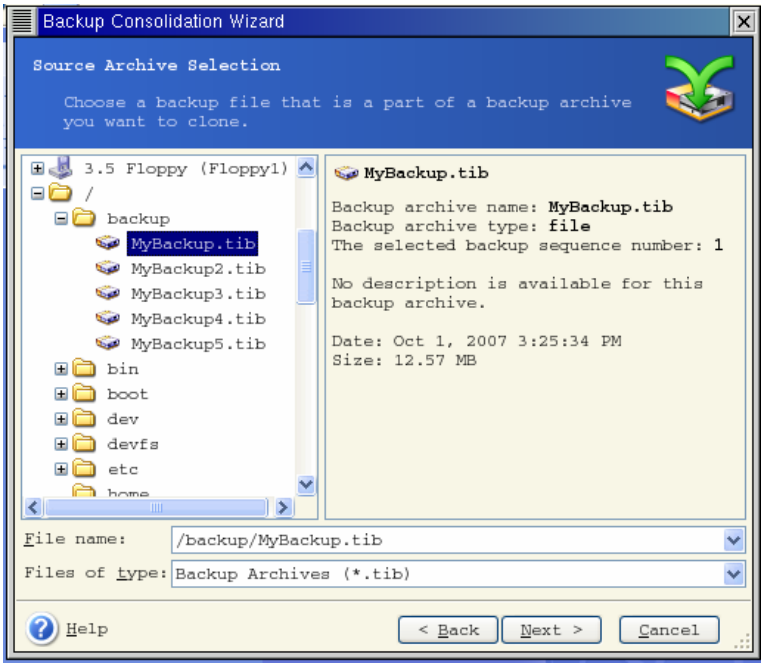
10.3 Consolidating backups

The file name-based consolidation allows deleting from any archive the backups that you do not need any more while keeping the archive consistency. You can delete from an archive, if need be, the base full backup. The program will create another full backup in place of the oldest remaining backup.

To consolidate backups in the archive:

1. Start the **Backup Consolidation Wizard** by selecting **Tools -> Consolidate archive** in the main program menu.

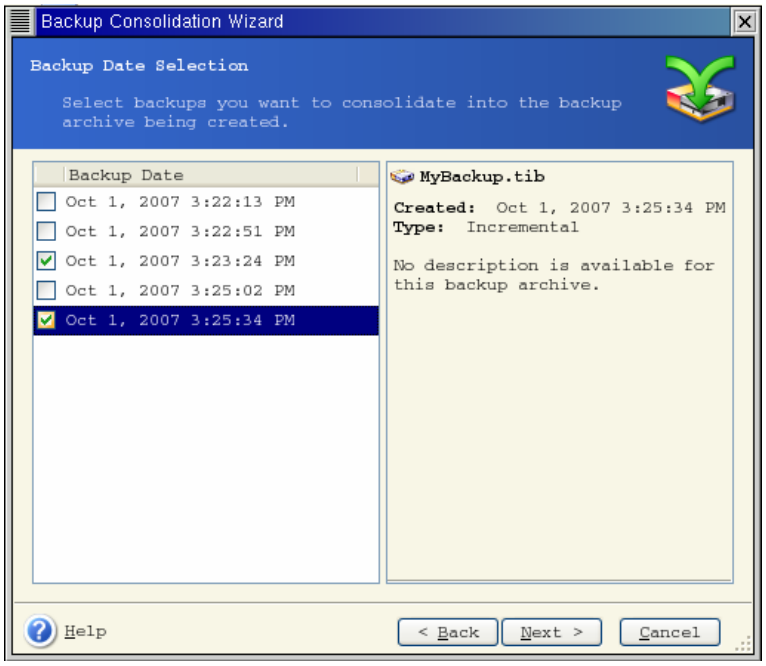
2. Select the archive from the drives tree. The file name-based consolidation does not support Acronis Secure Zone, so it is not displayed in the tree.



An archive MyBackup consisting of one full and four incremental backups is selected

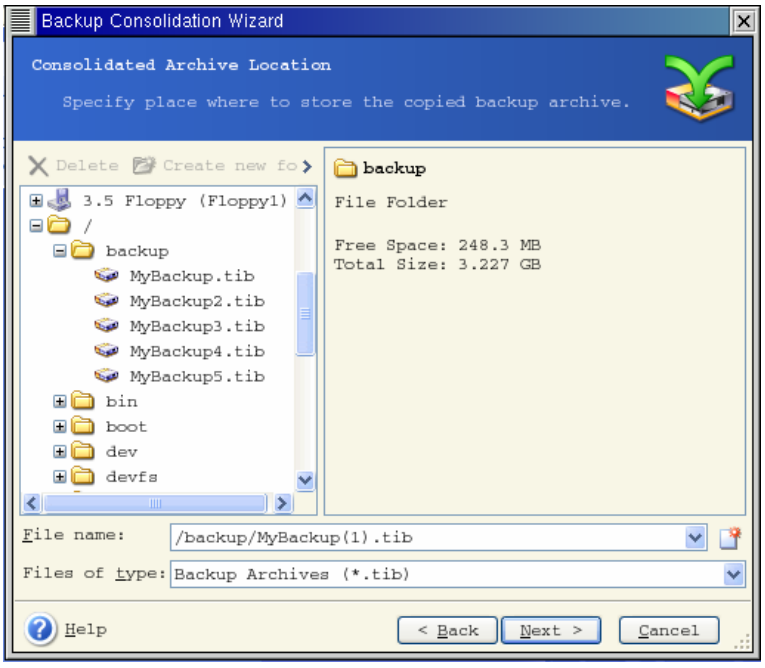
3. The program displays a list of backups belonging to the selected archive with the backups creation date and time. The list is very much alike to that in restore wizard. The upper backup is full, the rest are incremental ones. Tick off the backups you want to LEAVE.

Editing images, mounted in R/W mode, results in creating incremental backups, that are a kind of offshoots of the incremental chain. Therefore, they cannot be consolidated and always will be excluded from the archive copy.



The clone archive will consist of MyBackup3 and MyBackup5, however, their numbers will be zero (no number) and 2. MyBackup3 will change into a full backup

4. Choose location and name for the archive copy. By default, the program suggests the same location and the source archive name with (1) added.

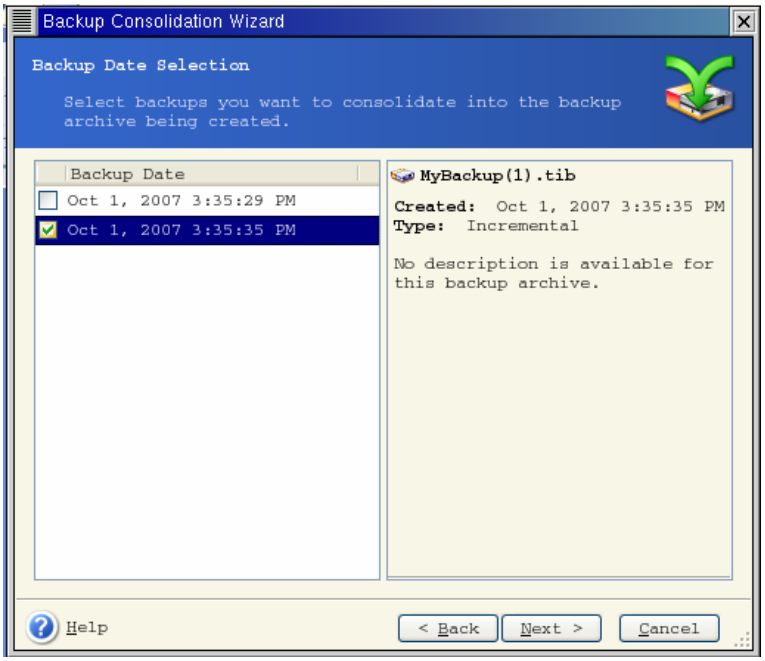


New archive will be created in the same folder and named MyBackup(1)

5. The program displays the summary window. Click **Proceed** to start consolidation.

In our example, when consolidation is completed, the folder Backups will contain two archives MyBackup and MyBackup(1). The first is the source archive, the second is the copy consisting of MyBackup(1) and MyBackup(1)2.

MyBackup(1) is a full backup containing data as of Tuesday, July 17, 2007, 5:35:09 PM. MyBackup(1)2 is an incremental backup containing data as of Tuesday, July 17, 2007, 6:54:40 PM. You can make sure of this by starting the consolidation wizard again, selecting the archive MyBackup(1) and proceeding to the next window.



The resulting archive contents

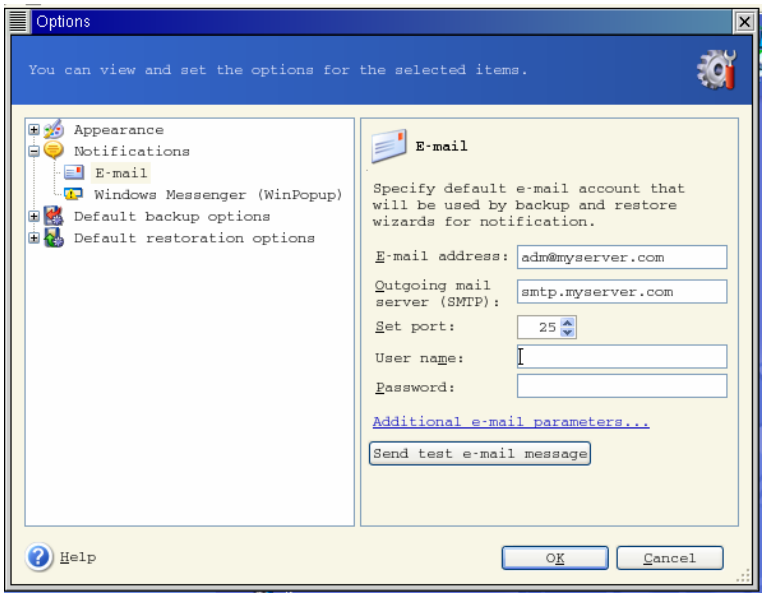
Chapter 11. Notifications and event tracing

Sometimes a backup or restore procedure can last for 30 minutes or more. Acronis True Image Echo Server can notify you when it is finished using the WinPopup service (if you address the notification to a computer, running Windows) or via e-mail. The program can also duplicate messages issued during the operation or send you the full operation log after operation completion.

By default all notifications are disabled.

11.1 Email notification

To set up the e-mail notification, select **Tools -> Options -> Notifications -> E-mail**:



Provide the e-mail address to which notifications will be sent. You can enter several semicolon-separated addresses.

Provide the outgoing SMTP server name. A user name and a password might also be needed if the SMTP server requires authentication.

Some Internet service providers require authentication on the incoming mail server before being allowed to send anything. If this is your case, tick off **Log on to incoming mail server** and provide the server name.

Filling up the **From** and **Subject** fields will help the e-mail client program filter notifications to the appropriate folder. If the From field is left blank, messages will be constructed as if they are from the destination address.

Below in this window you can choose whether you want to get notifications:

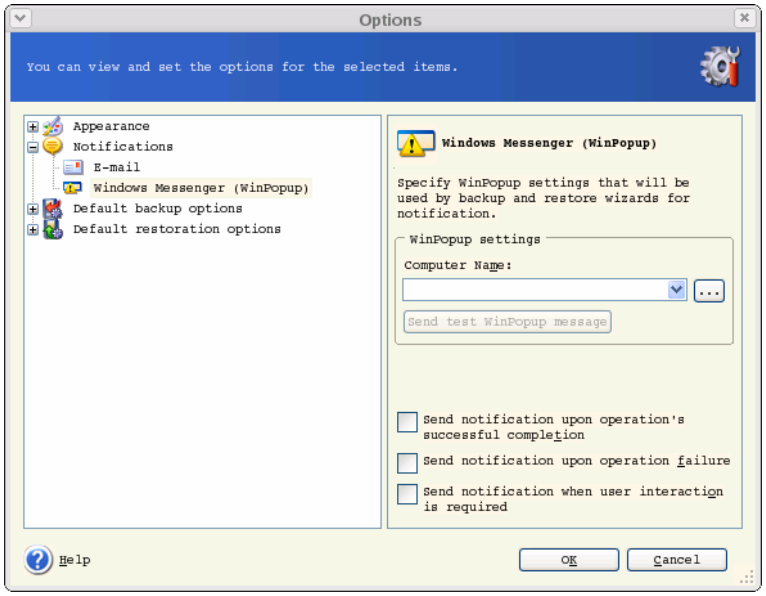
- when the operation is completed successfully (check **Add full log to the notification** to add the full operation log to the message)

- when the operation failed (check **Add full log to the notification** to add the full operation log to the message)

- during the operation when user interaction is required.

11.2 WinPopup notification

To set up WinPopup notification, select **Tools -> Options -> Notifications -> WinPopup**:



Provide the name of the Windows computer to which notifications will be sent.

Below in this window you can choose whether you want to get notifications:

- when the operation is completed successfully

- when the operation failed

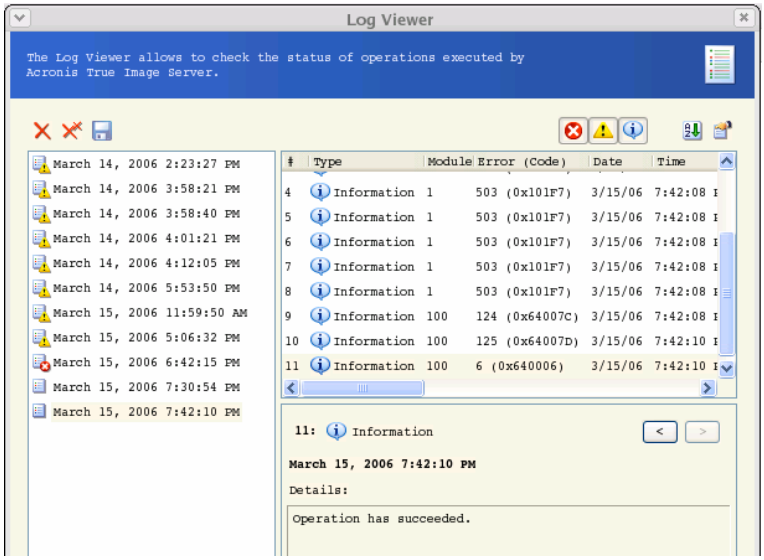
- during the operation when user interaction is required.

11.3 Viewing logs

Acronis True Image Echo Server allows users to view its working logs. They can provide information about scheduled backup 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.

Chapter 12. Console mode

Console is a natural part of Linux OS. Acronis True Image Echo Server supports it through the **trueimagecmd** command line tool. It provides a way to initiate data backup and recovery operations. **Trueimagecmd** also enables you to automate backup with '*cron'* service.

The **trueimagecmd** functionality is somewhat limited as compared to the GUI mode. **trueimagecmd** does not support operations that require reboot of the system, such as restore a system partition or clone system drive. Therefore, under complex conditions, we recommend that you use the more powerful trueimage operating mode under X Window System.

Another useful tool, **trueimagemnt**, allows you to extract files or directories from images by mounting images as if they were Linux kernel block devices. See also **man trueimagecmd** or **man trueimagemnt**.

12.1 Backup, restore and other operations in the console mode (trueimagecmd)

12.1.1 Supported commands

TrueImageCmd has the following format:

```
trueimagecmd --command --option1 --option2…
```

Commands may be accompanied with options. Some options are common for most trueimagecmd commands, other are specific for individual commands. Below is a list of supported commands and compatible options.

Command	Common Options	Specific Options
`create` Creates an image of specified disks and partitions	`/filename:[filename] /password:[password] /asz /incremental /differential /compression:[0…9] /split:[size in MB] /oss_numbers /log:[filename]`	`/harddisk:[disk number] /partition:[partition number] /raw /progress:[on|off]`
`filebackup` Backs up specified files and folders	`/filename:[filename] /password:[password] /asz /incremental /differential /compression:[0…9] /split:[size in MB] /reboot /log:[filename]`	`/include:[names] /exclude_names:[names] /exclude_masks:[masks] /exclude_system /exclude_hidden`
`restore` Restores disks and partitions from an image	`/filename:[filename] /password:[password] /asz /index:N /oss_numbers /log:[filename]`	`/harddisk:[disk number] /partition:[partition number] /target_harddisk:[disk number] /target_partition:[partition number] /start:[start sector] /fat16_32 /size:[partition size in sectors] /type:[active|primary|logical] /preserve_mbr`
`filerestore` Restores files / folders from a file archive	`/filename:[filename] /password:[password] /asz /index:N /log:[filename]`	`/target_folder:[target folder] /overwrite:[older|never|always] /restore_security:[on|off] /original_date:[on|off]`

`deploy_mbr` Restores MBR from a disk or partition image	`/filename:[file name] /password:[password] /asz /index:N /oss_numbers /log:[file name]`	`/harddisk:[disk number] /target_harddisk:[disk number]`
`verify` Verifies the archive data integrity	`/filename:[file name] /password:[password] /asz /log:[filename]`	
`pit_info` Displays the numbered list of backups, contained in the specified archive	`/filename:[file name] /password:[password] /asz`	
`consolidate` Creates a consistent copy of the archive, which will contain only specified backups	`/filename:[file name] /password:[password] /log:[file name]`	`/target_filename:[file name] /include_pits:[pits numbers]`
`list` Lists available drives and partitions. With the `filename` option, lists the image contents	`/password:[password] /index:N /asz`	`/filename:[file name]`
`asz_create` Creates the Acronis Secure Zone on the selected drive	`/oss_numbers /log:[filename]`	`/harddisk:X` `/partition:[partition number] /size:[ASZ size in sectors] /asz_activate`
`asz_activate` Activates Acronis Startup Recovery Manager.	`/password:[password]`	
`asz_content` Displays the Acronis Secure Zone size, free space and contents	`/password:[password]`	
`asz_delete` Deletes the Acronis Secure Zone	`/password:[password] /oss_numbers /log:[filename]`	`/partition:[partition number]`
`clone` Clones a hard disk		`/harddisk:[disk number] /target_harddisk:[disk number]`
`help` Shows usage		

12.1.2 Common options (options common for most trueimagecmd commands)

Option	Description	Archive location
Access to archives		
`filename:[filename]*`	Archive name	Other than ASZ
`password:[password]`	Specify the password for the archive (if required)	Other than ASZ
	Specify the password for the ASZ (if required)	ASZ
`asz:[number of archive]`	Addresses to Acronis Secure Zone and selects the archive (a full backup with or without increments). To get the archive number, use `/asz_content`	ASZ
`index:N` N = Number of the backup in an archive: 1 = basic full backup 2 = 1st increment... and so on 0 (default) = latest increment	Select a backup in a sequence of incremental backups inside the archive. To get a backup index from ASZ, use `/asz_content`	Any
`ftp_user:[username]`	Specify a user name for access to an FTP server	FTP server
`ftp_password:[password]`	Specify a password for access to an FTP server	FTP server
Backup options		
`incremental`	Set the backup type to incremental. If not specified or there is no basic full backup, a full backup will be created	Any
`differential`	Set the backup type to differential. If not specified or there is no basic full backup, a full backup will be created	Any
`compression:[0…9]`	Specify the data compression level. It ranges from 0 to 9 and is set to 3 by default	Any
`split:[size in MB]`	Split the backup into parts of the specified size	Other than ASZ
General options		
`oss_numbers`	Declares that numbers of partitions in the `partition` option are adjusted for MBR partition table rather than be simple ascending numbers. This means that primary partitions have numbers 1-1, 1-2, 1-3, 1-4 and logical partitions numbers start with 1-5. For example, if the disk has one primary and two logical partitions, their numbers can appear as	Any

	follows: `--partition:1-1,1-2,1-3` or `--oss_numbers --partition:1-1,1-5,1-6`	
`log:[filename]*`	Create a log file of the current operation with the specified file name	Any

* To get Samba network access, specify the backup file name and the log file name as follows:

```
--filename:smb://username:password@hostname/sharename/filename
```

```
--log:smb://username:password@hostname/sharename/logfilename
```

or:

```
--filename:smb://hostname/sharename/filename –-net_user:username \
--–net_password:password
```

```
--log:smb://hostname/sharename/logfilename –-log_net_user:username \
--–log_net_password:password
```

To access an NFS network drive, specify the backup file name as follows:

nfs://hostname/share name:/remote filename

For example:

`trueimagecmd --list --filename:``nfs://dhcp6-223.acronis.com/sdb3/nfs_root:/mike/md1.tib`

shows contents of /mike/md1.tib archive. /mike/md1.tib is located on dhcp6-223.acronis.com node in /sdb3/nfs_root directory exported by NFS.

12.1.3 Specific options (options specific for individual trueimagecmd commands)

Option	Description
create	
`harddisk:[disk number]`	Specifies numbers of the hard disks to be imaged (comma separated). For example: `--harddisk:1,3` You can obtain the list of available hard disks using the `--list` command. The list includes LVM disks and md (multiple devices) as additional drives that can also be imaged.
`partition:[partition number]`	Specifies the partitions to include into the image file by numbers. The list of available partitions is provided by the `--list` command. Partition numbers are specified as <disk number>-<partition number>, e.g.: `--partition:1-1,1-2,3-1`
`raw`	Use this option to create an image of a disk (partition) with unrecognized or unsupported file system. This will copy all disk/partition contents sector-by-sector. Without this option only the sectors containing useful system and user data are imaged.
`progress:[on | off]`	Shows/hides the progress information (percent completed). It is shown by default.

filebackup	
`include:[names]`	Files and folders to be included in the backup (comma separated). For example: `--include:'/home/bot/ATIESsafe.iso,/home/bot/ATIW.iso'`
`exclude_names:[names]`	Files and folders to be excluded from the backup (comma separated). See the above example.
`exclude_masks:[masks]`	Applies masks to select files to be excluded from the backup. Use the common 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".
`exclude_system`	Excludes all system files from the backup.
`exclude_hidden`	Excludes all hidden files from the backup.
restore	
`harddisk:[disk number]`	Specifies the hard disks to restore by numbers.
`partition:[partition number]`	Specifies the partitions to restore by numbers.
`target_harddisk:[disk number]`	Specifies the hard disk number where the image will be restored.
`target_partition:[partition number]`	Specifies the target partition number for restoring a partition over the existing one. If the option is not specified, the program assumes that the target partition number is the same as the partition number specified with the `partition` option.
`start:[start sector]`	Sets the start sector for restoring a partition to the hard disk unallocated space.
`size:[partition size in sectors]`	Sets the new partition size (in sectors).
`fat16_32`	Enables the file system conversion from FAT16 to FAT32 if the partition size after recovery is likely to exceed 2GB. Without this option, the recovered partition will inherit the file system from the image.
`type:[active | primary | logical]`	Sets the restored partition active, primary or logical, if possible (for example, there cannot be more than four primary partitions on the disk.) Setting a partition active always sets it primary, while a partition set primary may stay inactive. If the type is not specified, the program tries to keep the target partition type. If the target partition is active, the restored partition is set active. If the target partition is primary, and there are other primary partitions on the disk, one of them will be set active, while the restored partition becomes primary. If no other primary partitions remain on the disk, the restored partition is set active. When restoring a partition on unallocated space, the program extracts the partition type from the image. For the primary partition, the type will be set as follows: - if the target disk is the 1st according to BIOS and it has not

	other primary partitions, the restored partition will be set active - if the target disk is the 1st according to BIOS and there are other primary partitions on it, the restored partition will be set logical - if the target disk is not the 1st, the restored partition will be set logical.
`preserve_mbr`	When restoring a partition over an existing one, the target partition is deleted from the disk along with its entry in the target disk MBR. Then, with the `preserve_mbr` option, the restored partition's entry will occupy the upper empty position in the target disk MBR. Thus, the target disk MBR is preserved. If not specified, the restored partition's entry will occupy the same position as in the source disk MBR saved in the image. If the position is not empty, the existing entry will be moved to another position.
filerestore	
`target_folder:[target folder]`	Specifies a folder where folders/files will be restored (a target folder). If not specified, the original path is re-created from the archive.
`overwrite:[older | never | always]`	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: `older` – this will give the priority to the most recent file modification, whether it be in the archive or on the disk. `never` – this will give the file on the hard disk unconditional priority over the archived file. `always` – this will give the archived file unconditional priority over the file on the hard disk. If not specified, the files on the disk will `always` be replaced with the archived files.
`restore_security:[on | off]`	Specifies whether to restore files' security attributes (default) or the files will inherit the security settings of the folder where they will be restored.
`original_date:[on | off]`	Specifies whether to restore files' original date and time from the archive or assign the current date and time to the restored files. If not specified, the current date is assigned.
consolidate	
`target_filename:[file name]`	Specifies the path to and name of the archive copy to be created. If there are two or more backups (pits) in the copy, numbers will be added to their names.
`include_pits:[pits numbers]`	Specifies the backups (pits) to be included in the archive copy. To get the numbers of pits, use `/pit_info`. Separate pit numbers with comma, for example: `/include_pits:2,4,5`

list	
`filename:[filename]`	With this option, the image contents is displayed. When listing image contents, partition numbers may not coincide with those in the drives/partitions list, if the image does not contain all the disk partitions. For example, if the image contains partitions 2-3 and 2-5, they will be listed as 2-1 and 2-2. If the `--deploy --partition` command cannot find a partition in the image by its physical number, use `--partition:<number in the image> --target_partition:<physical number of the target partition>` keys. For the above example, to restore partition 2-5 to its original place use: `--partition:2-2 --target partition:2-5.`
asz_create	
`harddisk:X`	Specifies the hard disk number where the Acronis Secure Zone will be created.
`partition:[partition number]`	Specifies partitions from which free space will be taken for Acronis Secure Zone.
`size:[ASZ size in sectors | unallocated]`	Sets the Acronis Secure Zone size (in sectors). If not specified, the size is set as an average between the maximal (unallocated space plus free space on all partitions selected with the `partition` option) and minimal (about 35MB) values. Either way, the program will first use the unallocated space. If there is not enough unallocated space, the selected partitions will be decreased. Resizing of locked partitions requires a reboot. With "unallocated", the zone will use all unallocated space on the disk. Partitions will be moved, if necessary, but not resized. Moving of locked partitions requires a reboot. The `partition` option is ignored.
`asz_activate`	Activates the Acronis Startup Recovery Manager. The option will not take effect if the system partition is resized during Acronis Secure Zone creation. In that case, use the separate `asz_activate` command.
asz_activate	
`password:[password]`	Sets a password for the Acronis Secure Zone.
asz_delete	
`partition:[partition number]`	Specifies partitions to which free space will be added after the Acronis Secure Zone is deleted. If you specify several partitions, the space will be distributed proportionally to each partition's size.
clone	
`harddisk:[disk number]`	Specifies a source hard disk which will be cloned to the new hard disk.
`target_harddisk:[disk number]`	Specifies the target hard disk number where the source hard disk will be cloned.

12.1.4 Trueimagecmd usage examples

- This will list available partitions:

```
trueimagecmd --list
```

- This will list the partitions (and their indices) saved in backup.tib:

```
trueimagecmd --list --filename:backup.tib
```

- This will create an image named backup.tib of partition 1-1:

```
trueimagecmd --partition:1-1 --filename:backup.tib \
--create
```

- This will create an incremental image of the partition above:

```
trueimagecmd --partition:1-1 --filename:backup.tib \
--create --incremental
```

- This will create an image of partition 1-1 in the Acronis Secure Zone:

```
trueimagecmd --partition:1-1 --asz --create
```

- This will restore a partition from backup.tib:

```
trueimagecmd --partition:1-1 --filename:backup.tib \
--restore
```

- This will back up the folder /usr/kerberos/lib to the FTP server location:

```
trueimagecmd --filebackup --include:'/usr/kerberos/lib' \
--filename:ftp://myftp.com/Backup/MyLib.tib --ftp_user:usr1 \
--ftp_password:passw1
```

- This will back up the folder /bin to the shared folder on host1 and create the operation log in the shared folder on host2:

```
trueimagecmd --filebackup --include:’/bin' \
--filename:smb://username1:password1@host1/dir/MyBin.tib \
--log:smb://username2:password2@host2/dir/Mylog1.log
```

- This will list backups, contained in the archive /usr/backups/backups.tib, with their pit numbers. This command is designed to obtain pit numbers for consolidation.

```
trueimagecmd --pit_info --filename:/usr/backups/backups.tib
```

The list will look like the following:

Pit number: 1

type: file; kind: base; date: 10/18/07 2:45:02 PM

Pit number: 2

type: file; kind: incremental; date: 10/18/07 2:47:38 PM

Pit number: 3

type: file; kind: incremental; date: 10/18/07 2:49:58 PM

- This will create in the folder /usr/backups an archive consisting of two files: kons.tib, (pit 2 of the archive /usr/backups/backups.tib) and kons2.tib (pit 3 of the archive /usr/backups/backups.tib). Therefore, the ‘kons’ archive is a copy of the ‘backups’ archive without pit 1. Use this command to get rid of backups that you need not any more while keeping the archive.


```
trueimagecmd --consolidate \
--filename:/usr/backups/backups.tib --include_pits:2,3 \
--target_filename:/usr/backups/kons.tib
```

- This will restore MBR from partition image D1 to the hard disk 1:

```
trueimagecmd --deploy_mbr --filename:/usr/backups/D1.tib \
--harddisk:1
```

12.2 Automatic image creation using cron service

As a rule, disk/partition images are created regularly, often daily. To automate this operation, you can use the **cron** service familiar to many UNIX users.

As an example, let's consider a situation where you (the system administrator) need to back up one or more disk partitions regularly.

Use `--list` to obtain the necessary partition number:

```
Disk 1:
1-1          hda1     Pri,Act    31.35 MB    26.67 MB     FAT16
             Table                                        Table
1-2          hda5                980.5 MB                 Linux Swap
1-3          hda6                4.887 GB    135.9 MB     Ext2
1-4          hda7                9.767 GB    1.751 GB     Ext2
1-5          hda8                3.462 GB    1.3 GB       Ext2
Disk 2:
2-1 (/1)     hdd1     Pri,Act    4.806 GB    4.627 GB     Ext3
             Table                                        Table
2-2          hdd5                3 GB        1.319 GB     Ext3
2-3          hdd6                3.906 GB                 Ext3
```

You need to back up partition 2-1. Let's suppose a complete image has to be created weekly supported by incremental images created daily.

To do this, place the respective executable files (e.g. **trueimage.cron**) into **/etc/cron.daily** and **/etc/cron.weekly** folders.

To initiate **weekly** creation of a complete image of partition 2-1, add the following line to the above file:

```
#!/bin/bash
/usr/sbin/trueimagecmd --create --partition:2-1 \
--filename:/mnt/backups/my_host/backup.tib
```

Where /mnt/backups/my_host/backup.tib is image name and path.

The second executable file is needed to initiate daily creation of incremental images:

```
#!/bin/bash
/usr/sbin/trueimagecmd --create --incremental --partition:2-1 \
--filename:/mnt/backups/my_host/backup.tib
```

If needed, users can make their own backup schedule. For more information, see Help on the **cron** service.

12.3 Restoring files with trueimagemnt

The **trueimagemnt** tool is designed to restore files from partition/disk images. It mounts Acronis True Image archives as if they were kernel space block devices. The program implements the user level part of the Acronis True Image Echo Server user mode block device service. The large part of functionality is handled by the snumbd kernel module.

SYNOPSIS

trueimagemnt [-h|--help] [-l|--list] [-m|--mount mountpoint**] [-u|--umount** mountpoint**] [-s|--stop** pid**] [-o|--loop] [-f|--filename** archive filename**] [-p|--password** password**] [-t|--fstype** filesystem type**] [-i|--index** partition index**] [-w|--read-write] [-d|--description** archive description**] [-k|--keepdev]**

12.3.1 Supported commands

Trueimagemnt supports the following commands:

-h|--help

Shows usage.

-l|--list

Lists already mounted user mode block devices.

-m|--mount mountpoint

Mounts the archive image specified by `-f|--filename` option into the folder specified by `mountpoint` option. The partition index should be specified by `-i|--index` option. Image file contents (partitions and their indices) may be listed by `trueimagecmd --list --filename:filename` command.

To mount an incremental image, you must have all previous incremental images and the initial full image. If any of successive images is missing, the mounting is impossible.

-u|--umount mountpoint

Unmounts the device mounted at `mountpoint`, destroys kernel space block device and stops user space daemon.

-s|--stop pid

Destroys kernel space block device and stops user space daemon specified by `pid`. This command should be used if an error occurs while mounting and unmounted user space daemon/kernel space block device pair survives. Such a pair is listed by `-l|--list` command with none in `mountpoint` field.

-o|--loop

A test command. Mounts a file, specified in `-f|--filename` option, containing valid Linux filesystem, as if it is Acronis True Image archive. The command may be used, for example, to estimate an image compression level, by comparing the time, necessary for copying a file from the image, with the time for copying the mounted (non-compressed) file.

Trueimagemnt supports the following command options:

-f|--filename archive filename

The image file name. **trueimagemnt** transparently supports NFS and Samba network access. To access a NFS network drive, specify the image file name as follows:

nfs://hostname/share name:/remote filename

For example:

trueimagemnt -m /mnt/md1 **-f** nfs://dhcp6-223.acronis.com/sdb3/nfs_root:/mike/md1.tib **-i** 2

mounts /mike/md1.tib archive, located on dhcp6-223.acronis.com node in /sdb3/nfs_root directory exported by NFS.

To get Samba network access, specify the image file name as follows:

smb://hostname/share name/remote filename

Hostname may be specified with username and password as: username:password@hostname

For example:

trueimagemnt -m /mnt/md1 **-f** smb://dhcp6-223.acronis.com/sdb3/mike/md1.tib **-i** 2

mounts /mike/md1.tib archive, located on dhcp6-223.acronis.com node in /sdb3 directory exported by Samba.

-p|--password password

Specifies the password to explore password protected images.

-t|--fstype filesystem type

Specifies explicit filesytem type to be passed to the standard "mount" command. This option is useful if the standard "mount" command can't guess filesystem type by some reason.

-i|--index partition index

Index of the partition.

-w|--read-write

Opens the image in read-write mode. After umount all changed data will be saved into the archive with a new index.

-d|--description archive description

If an image is mounted in **read-write** mode, the program assumes that the image will be modified, and creates an incremental archive file to capture the changes. The option enables you to list the forthcoming changes in the comment to this file.

-k|--keepdev

Keeps kernel space block device and user space daemon if an error occurs while mounting. This option may be used to get raw access to imaged partition data.

12.3.2 Trueimagemnt usage examples

- This will list the mounted archives:

```
trueimagemnt --list
```

- This will mount the archive backup.tib of partition with index 2, to /mnt/backup:

```
trueimagemnt --mount /mnt/backup --filename backup.tib --index 2
```

- This will unmount a partition mounted at /mnt/backup:

```
trueimagemnt --umount /mnt/backup
```

Chapter 13. Transferring the system to a new disk

13.1 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 server. If a server doesn't have a bay for another hard disk, you can temporarily install it in place of your CD-ROM. 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.

Note that you can not clone, add or replace mounted disks, so you will have to run Acronis True Image Echo Server from a rescue CD in such cases. How to create a rescue CD see in *Chapter 9. Creating bootable media.*

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.

13.2 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.

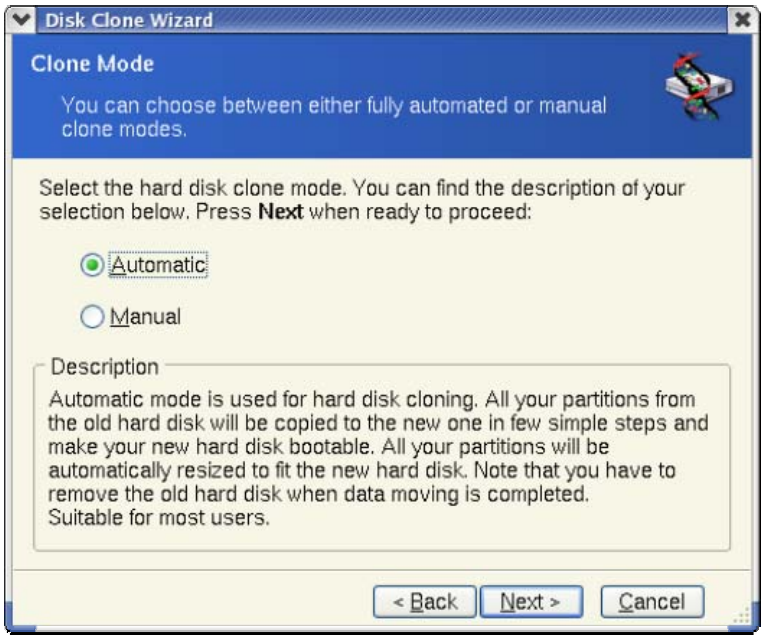
No data will be lost because the original disk is only being read (no partitions are changed or resized) until data transfer is completed.

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 server boots up from it and all applications work.

13.3 Executing transfers

13.3.1 Selecting Clone mode

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

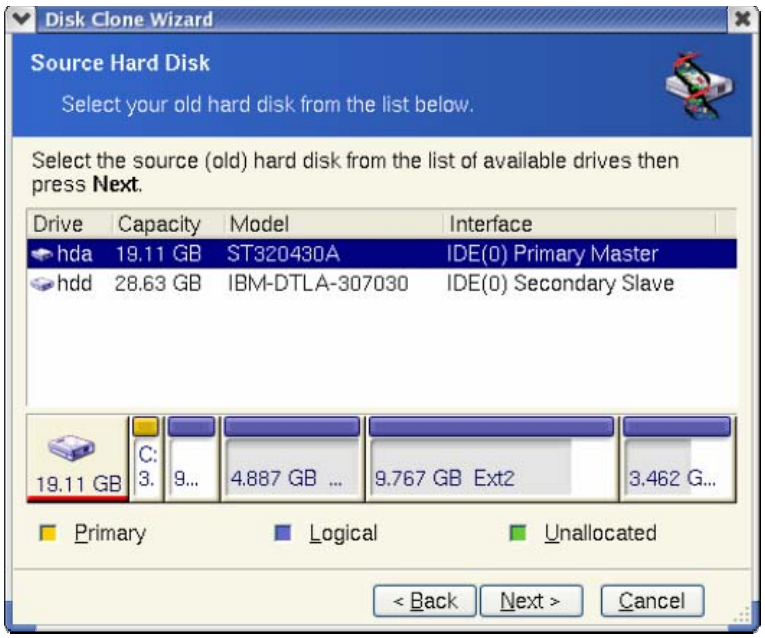


We recommend using automatic mode in most cases. The manual mode can be useful if you need to change the disk partition layout.

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.

13.3.2 Selecting source disk

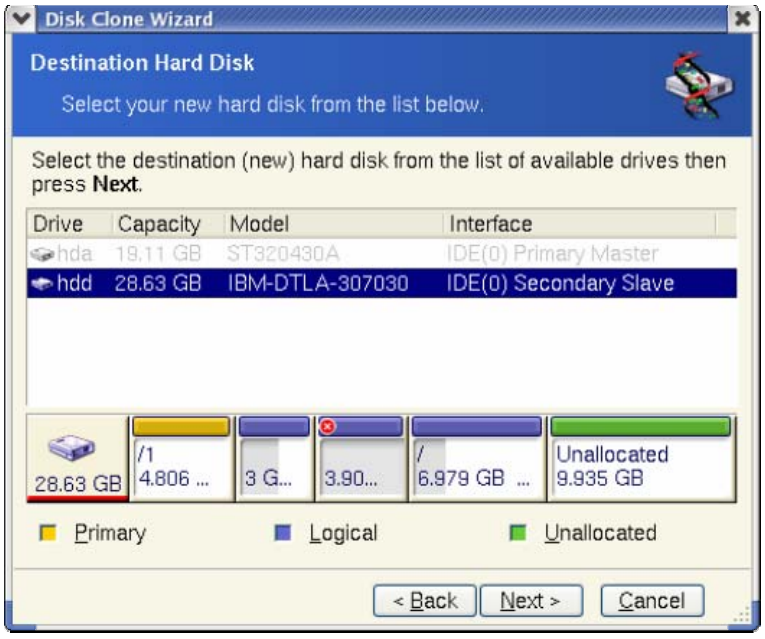
If the program finds several partitioned disks, it will ask you which is the source (i.e. the older data disk).



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

13.3.3 Selecting destination disk

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

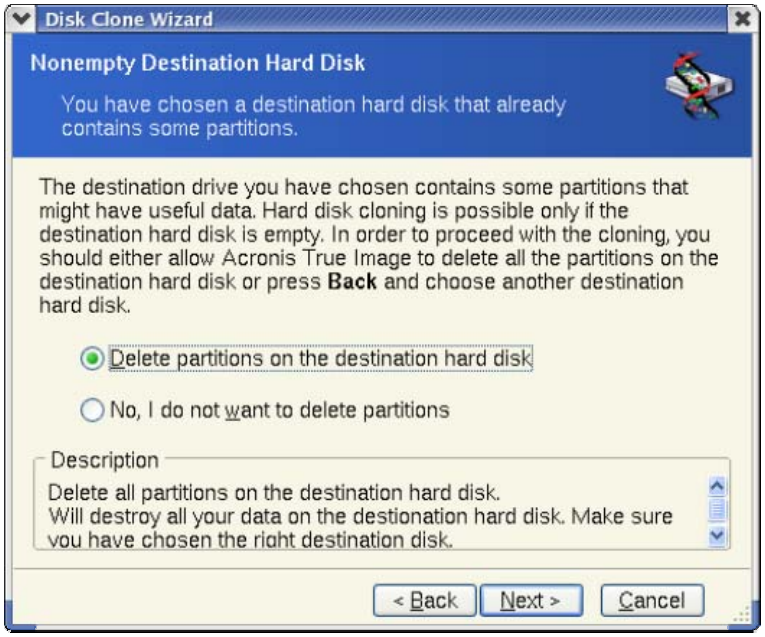


The previously selected source becomes grayed-out and disabled for selection.

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

13.3.4 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.**

13.3.5 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.

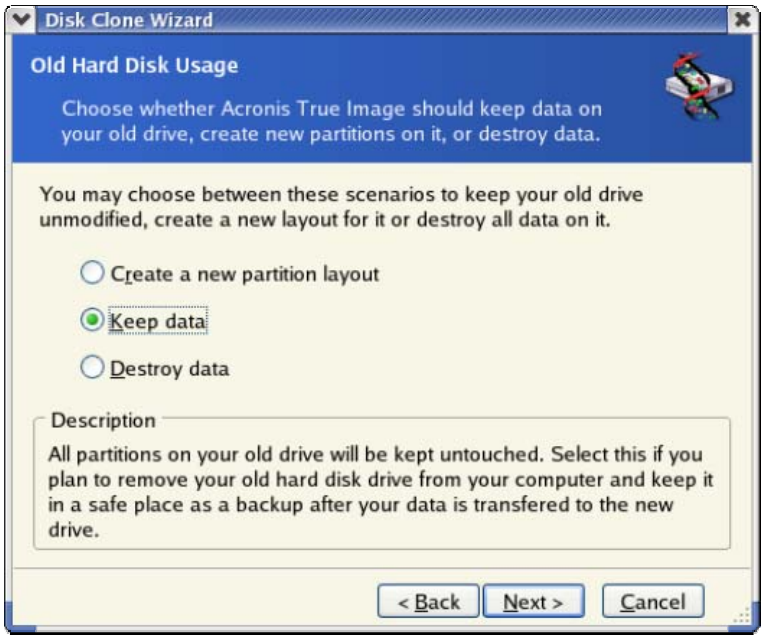
Next you will see the cloning summary.

13.3.6 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.

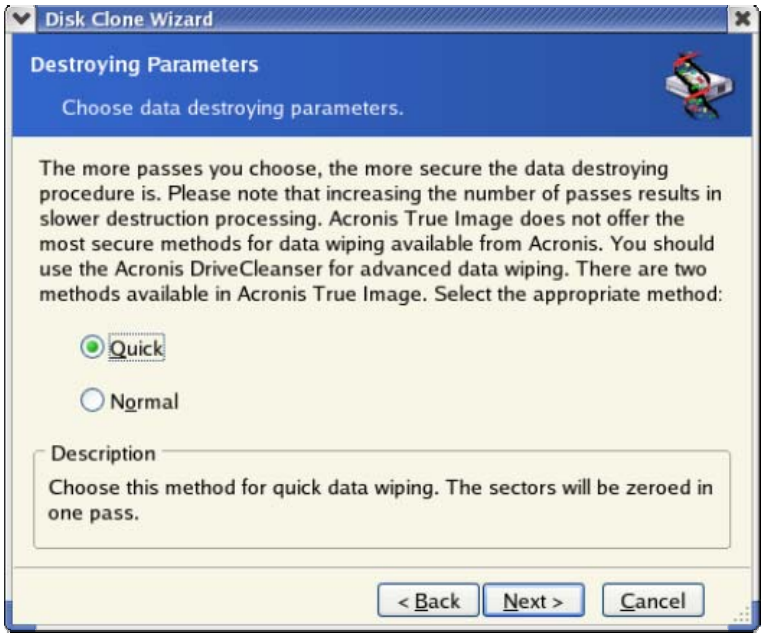
If you are going to keep it for data storage, you can create a new partition layout on it. In this case, the disk will be ready right after cloning is complete.

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.

14.3.7 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



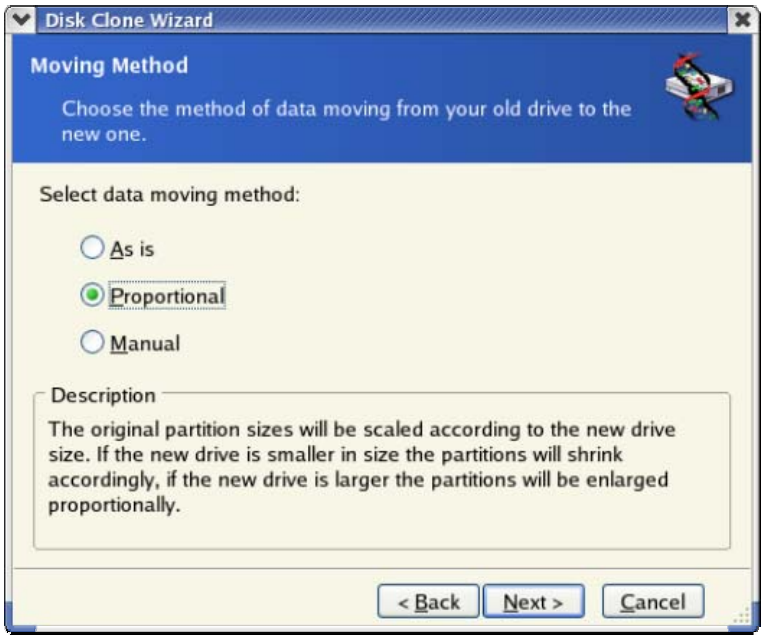
The second method takes more time, but makes it impossible to recover data afterwards, even with special equipment.

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

13.3.8 Selecting partition transfer method

Acronis True Image Echo Server 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 Echo Server 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 4GB 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).

13.3.9 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**.

13.3.10 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.

13.3.11 Cloning summary

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

After you click **Proceed**, Acronis True Image Echo Server 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.

13.4 Cloning with manual partitioning

13.4.1 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 14. Adding a new hard disk

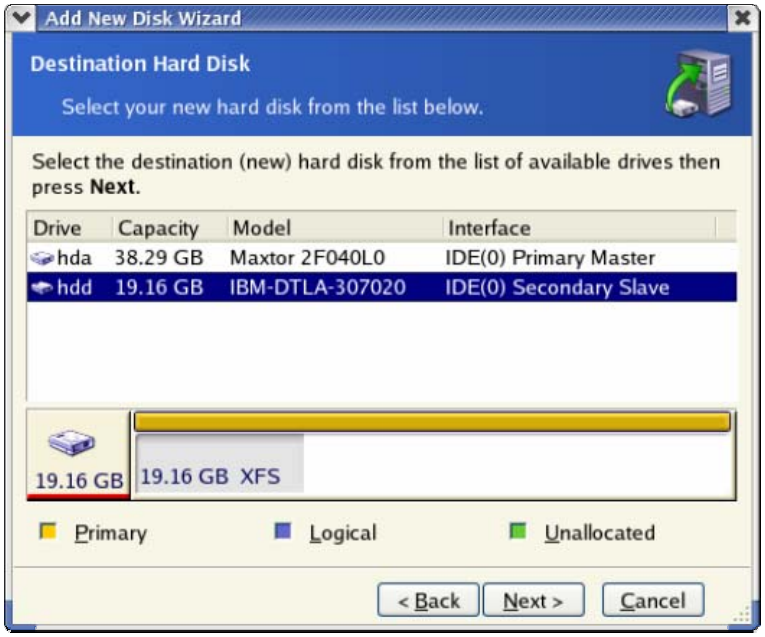
If you don't have enough space for your data, you can either replace the old disk with a new higher-capacity one (data transfers to new disks are described in the previous chapter), or add a new disk only to store data, leaving the system on the old disk. If the server has space for another disk, it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

Note that you can not clone, add or replace mounted disks, so you will have to run Acronis True Image Echo Server from a rescue CD in such cases. How to create a rescue CD see in *Chapter 9. Creating bootable media.*

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

14.1 Selecting a hard disk

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



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.

14.2 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.

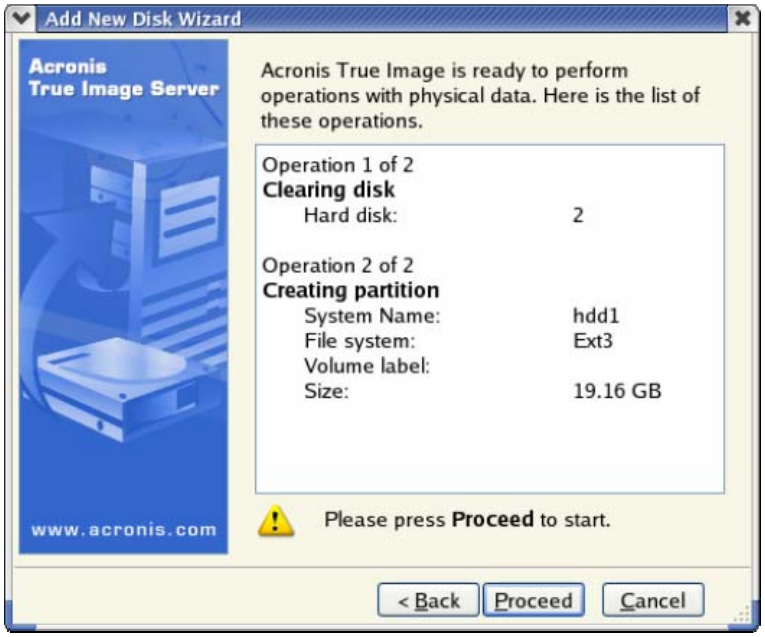
If the cursor turns to two vertical lines with left and right arrows, it is pointed at the partition border and you can drag it to enlarge or reduce the partition size. If the cursor turns to four arrows, it is pointed at the partition, so you can move it to the left or right (if there is unallocated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

14.3 Disk add summary

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



After you click **Proceed**, Acronis True Image Echo Server 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.

