User's Guide

Acronis True Image Server 8.0 for Linux

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Chapter 1. Introduction

1.1 What is Acronis True Image Server 8.0 for Linux?

Acronis True Image Server 8.0 for Linux is a unique product for complete data backup that enables you to create exact images of server hard disks or their partitions under Linux. Thanks to the proprietary **Acronis Drive Snapshot** technology the program creates server disk images *in the operating mode without file system dismounting* to provide complete data safety and avoid server downtimes.

An image, including all disk data, applications and operating systems, can be restored to a hard disk if the old disk or any other hardware or software fails and other recovery means don't work.

In addition, you can easily extract files, deleted by mistake, from the disk image and copy them to the disk.

1.2 Fastest recovery

Acronis True Image Server 8.0 for Linux dramatically reduces your server downtime. Unlike traditional file-by-file backup solutions, the Acronis disk imaging approach provides you with the fastest, bare-metal server recovery (recovery starting with an unformatted disk drive) without time-consuming reinstallations, configurations and the like.

1.3 Rapid ROI

Is server downtime costing you thousands of dollars an hour? Acronis True Image Server 8.0 for Linux dramatically reduces IT costs by providing an easy, fast and reliable way to return your server to its original working state in minutes or to restore lost or damaged files and folders.

1.4 Disk drive cloning and new disk drive deployment

Acronis True Image Server 8.0 for Linux can be used to clone an image onto multiple servers. For example, a company purchases several servers and needs a similar environment on each of them. Traditionally, the IT manager would install an operating system and programs on each of them. Acronis True Image Server 8.0 for Linux simplifies the process and saves the IT manager time by creating 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 Server 8.0 for Linux simplifies the task to a few mouse clicks, creating an exact copy of your old disk to a new one and adjusting partition size to fit a new hard disk.

1.5 Features of Acronis True Image Server 8.0 for Linux

- Image creation without system shutdown
- Acronis True Image Server 8.0 for Linux images only the sectors that contain data, so images are created in just a few minutes

- Support for 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)
- Support for all hard disks, regardless of capacity
- Support for all Linux and Windows file systems, including Linux Ext2/Ext3, ReiserFS, JFS, XFS, Linux Swap, FAT16, FAT32, NTFS; sector-based support for other file systems. JFS and XFS are supported without resize while restore
- Backup and restore software RAIDs (md devices) both on running system and from rescue CD
- Complete and incremental backups
- Scheduled and periodical image creation using *cron jobs* utility
- Restore of individual files and directories (by mounting image archives as if they were kernel space block devices)
- Transparent NFS and Samba network drives access (in X Windows mode NFS and Samba appear among available devices, in console mode a path to the network drive may be specified)
- OS-independent operation of Acronis True Image Server 8.0 for Linux from the bootable CD, including restore over NFS or Samba Network
- Comprehensive wizards simplify even the most complex operations

ADDITIONAL FEATURES

- Control of data compression level, image volume splitting and password protection
- The ability to change a partition type, file system, size and location during recovery or disk cloning
- The ability to clone a disk drive so that multiple systems will have the exact same base disk drive configuration and software
- The ability to migrate data from one drive to another

1.6 What is a disk image?

A disk (partition) image is a file that contains a copy of all information stored on a disk. The image stores all the server data, including operating system, databases, applications, data and settings.

By backing up your information regularly, you will completely protect yourself from data losses in case of server failure or malfunction. To recover your system after a failure, simply restore your disk data from a previously created image.

By default, Acronis True Image Server 8.0 for Linux image files have ".tib" extension and can contain images of several partitions or disks.

Images of large partitions or several disks could be sizeable. In that case, an image can be split into several files that together make the original image. A single image can also be split for burning to removable media.

Acronis True Image Server 8.0 for Linux can create **incremental images**.

An incremental image only contains data changed since the last complete or incremental image creation. Therefore, it is smaller and takes less time to create. But as it doesn't contain complete disk (partition) information, all the previous incremental images and the initial complete image are required for restoration.

You can create incremental images frequently, as they need less space than complete ones and take less time to create.

An incremental image set enables you to restore a disk to any of the states stored in these images. Having created a complete image once and then creating an incremental image each day of a month, you will get the same result as if you created complete images every day. But the cost in time and disk space (or the removable media usage) will be as little as one tenth as much.

Acronis True Image Server 8.0 for Linux stores only those hard disk sectors that contain data (for supported file systems). This reduces image size and speeds up image creation and restoration from an image.

A partition image contains all its files and folders independently of their attributes (including 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).

1.7 Software usage terms and conditions

The conditions for Acronis True Image Server 8.0 for Linux software usage are described in the «License agreement» (page 3 of this guide). The unique serial number is the confirmation of your legal purchase and use of Acronis True Image Server 8.0 for Linux on your system.

Under current law, the «License agreement» is considered a legal contract between a user (you) and a software manufacturer (Acronis Inc.,).

Violation of the contract, or illegal use and/or distribution of this software, will be prosecuted.

Chapter 2. Installation and operation

2.1 System requirements

Acronis True Image Server 8.0 for Linux requires the following hard-/software:

- Pentium or compatible PC
- 128 MB RAM
- CD-RW drive for rescue CD creating
- Mouse (recommended)
- 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 7.3, 8.0, 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 Server II, Virtuozzo 2.6.x, Gentoo, UnitedLinux 1.0, Ubuntu 4.10, TurboLinux 8.0, TurboLinux 10.0 and some others Linux distributions are supported.

To obtain the up-to-date information about distributions, supported by your copy of Acronis True Image Server 8.0 for Linux, see readme.txt file supplied with the program.

2.2 Installing Acronis True Image Server 8.0 for Linux

To install Acronis True Image Server 8.0 for Linux:

- Extract the file trueimagelinuxserver8.0_s_e.tar.gz
- Go to the directory where archive content was extracted
- Run ./trueimage-setup
- Follow setup program instructions.

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

When you're finished installation, please issue the following command in console:

```
trueimagecmd --serial-key:[your serial number] --list
```

This will activate your serial number. If you first run Acronis True Image Server 8.0 for Linux under the X Window System interface, type in the serial number to the appearing form.

2.3 Running Acronis True Image Server 8.0 for Linux

- To run the program under the X Window System interface, use the **trueimage** command.

- To work in the console mode, use **trueimagecmd** and **trueimagemnt** tools, described in Chapter 6. See also **man trueimagecmd** or **man trueimagemnt**.

2.4 Removing the program

To remove Acronis True Image Server 8.0 for Linux, issue the following command:

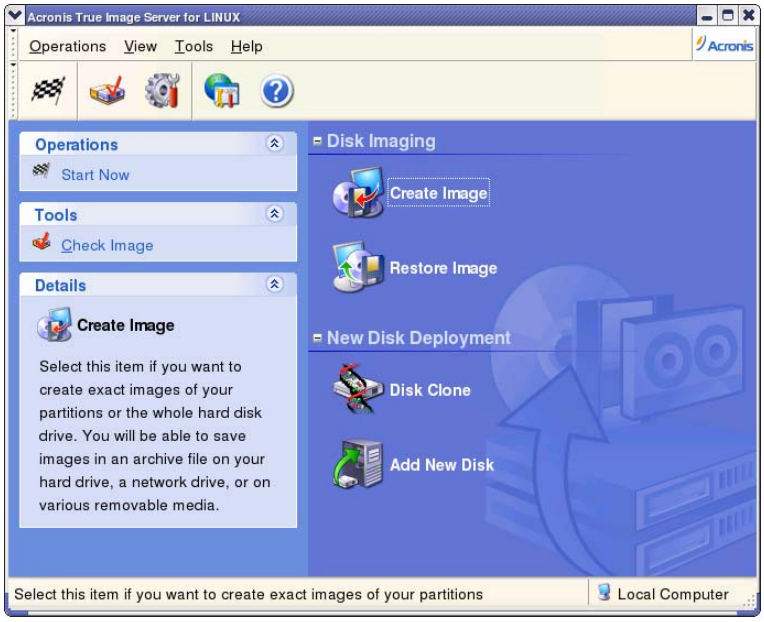
```
# /usr/lib/Acronis/trueimage-setup --uninstall
```

Chapter 3. General program information

3.1 Main program interface under X Window System

Acronis True Image Server 8.0 for Linux features a user-friendly interface under X Window System.

The main program window features a menu line, toolbar and the main screen divided into two sections. Operation icons are located to the right, while rollout windows describing selected operations, their typical actions and additional tools are located to the left.



Main program window

The menu, toolbar and menu items to the left duplicate each other, letting you use the software in the way that suits you best.

Having selected an operation by clicking it, you can run it as follows: by double-clicking its icon, by selecting **Start now** in the **Operations** menu, or by clicking **Start now** on the toolbar.

The main window contains two groups of icons.

Disk Imaging features disk image operations:

- **Create image** – create a disk (partition) image
- **Restore image** – restore a disk (partition) from a previously created image.

New Disk Deployment features operations performed when a new disk is added:

- **Disk clone** — transfers the operating system, installed applications and data from the old disk to the new one

- **Add new disk** — adds a new disk as data storage, leaving the operating system and applications where they were

Program menu

The menu contains the following submenus: **Operations**, **View**, **Tools**, **Help**.

The **Operations** submenu has a **Start now** item that launches operations selected.

The **Tools** submenu contains:

- **Check image** — checks disk (partition) integrity

The **View** submenu contains:

- **Toolbars** — sets icon representation on the toolbar
- **Common tasks bar** — enables and disables the typical actions panel in the left part of the program window
- **Status bar** — enables and disables the status bar
- **Refresh** — refreshes the main program window
- **Help** submenu is used to invoke built-in help, as well as information about Acronis True Image Server 8.0 for Linux

Status bar

A status bar in the lower part of the main window briefly describes the selected operation.

Disk and partition information

In all disk configurations provided by wizards, you will be able to change the way they are represented.

To the right, there are three icons: **Arrange Icons by...**, **Choose details** and **Properties** (the last duplicated in the context menu invoked by a right-click on the object).

To enable sorting by selected column, click its header (click again to reverse) or click **Arrange Icons by ...** and select the sorting parameter.

To select columns to display, right-click on column headers or click **Choose details** and check the columns that will be displayed.

Click **Properties** to invoke the properties window of the selected partition or disk.

This window has two panels. The left contains the properties tree, while the right describes the property selected. Disk information includes its physical parameters (connection, type, capacity, etc.). Partition information includes both physical (sectors, location on disk, etc.) and logical parameters (file system, free space, etc.).

You can resize columns by dragging their borders with a mouse.

3.2 Working from a rescue CD

In some situations (e.g. when restoring a system partition, or disk cloning or addition), you might have to work with Acronis True Image Server 8.0 for Linux without loading the OS. In those cases, you can use the Acronis rescue CD. It is highly recommended that you create it from an ISO-image, located in **/var/lib/Acronis/TrueImage/rescue.iso**.

3.3 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 Server 8.0 for Linux GUI with the **trueimage** command or use **trueimagecmd** command line tool.

3.4 Backing up software and hardware RAID arrays

Acronis True Image Server 8.0 for Linux 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 Server 8.0 for Linux 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 Server 8.0 for Linux 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 Server 8.0 for Linux 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.

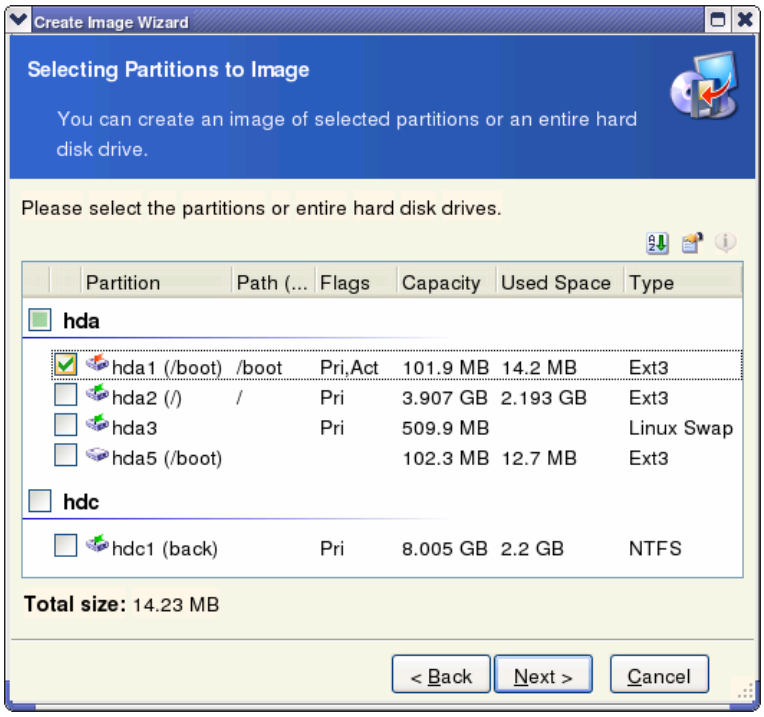
Chapter 4. Creating images under X Window System

This chapter describes creating disk or partition images using Acronis True Image Server 8.0 for Linux GUI under X Window System. See Chapter 6 for using console or *Cron* service.

Under X Window System interface, Acronis True Image Server 8.0 for Linux offers user-friendly wizards. They simplify image creation and restoration operations, so even users not very familiar with Linux can work with them.

4.1 Selecting disks/partitions

In the **Selecting Partitions To Image** window, you will see the hard disk structure of your server. Flag a partition to select it. Flag a whole disk to select all its partitions. You can select a random set of disks and partitions.



Disk and partition structure

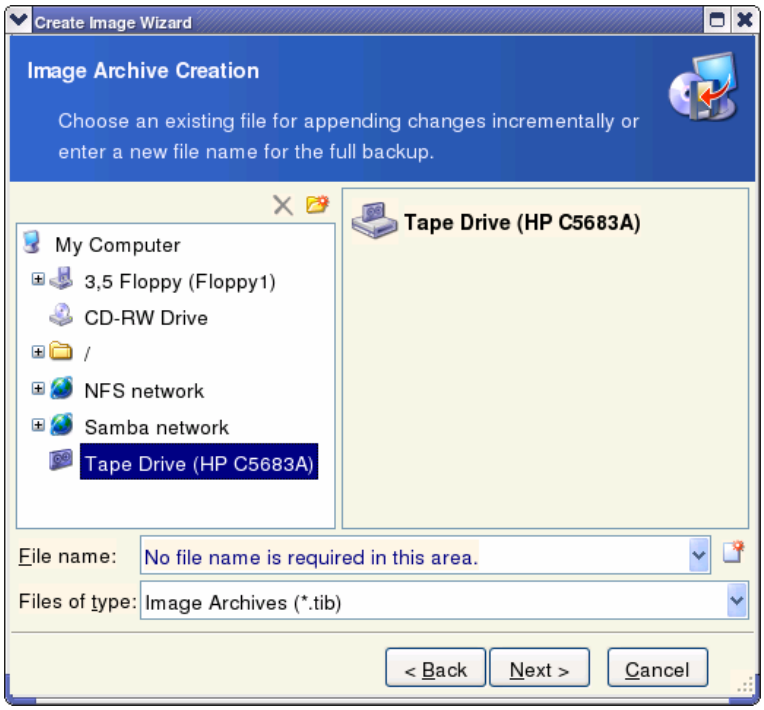
Having selected partitions and/or disks, click **Next**. Note that this button will be disabled until at least one partition or disk is selected.

4.2 Specifying image location

Specify image file location on a storage device:

- Local hard disk

- Network disk
- Removable media drive, including tapes, CD-R/RW and other supported devices.



Specifying image location

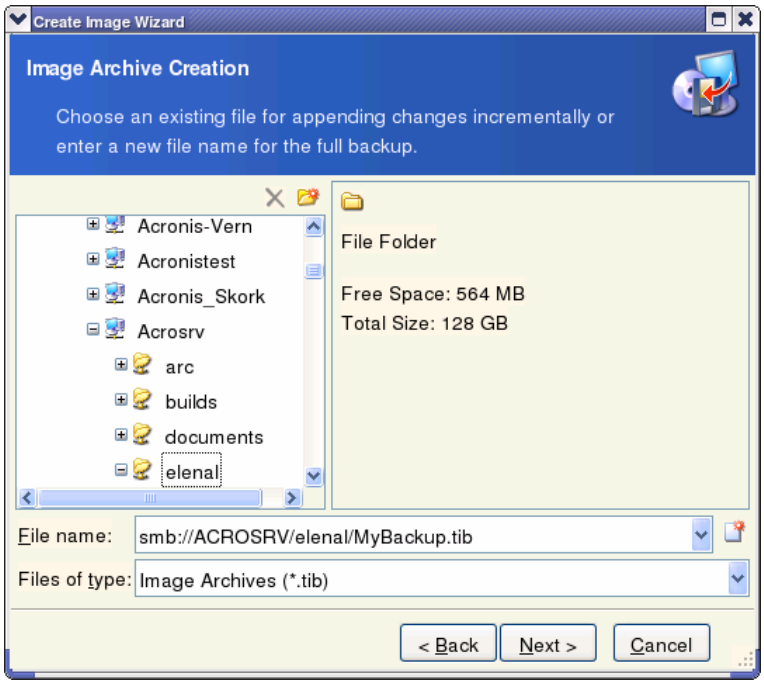
In the drive tree, select a place to locate an image and enter its name in the **File name** field.

You can store images of several partitions or disks in a single file, but you won't be able to **append** images to an existing file.

The program can automatically generate file names. To do this, click the **Generate file name for a new file** button located to the right of the file name field.

You can create a disk (partition) image on the same disk (partition), if there is enough space for it, but do not leave it there. Having created an image, burn it onto a CD, DVD or ZIP media, or copy to another local or network hard disk.

Though Acronis True Image Server 8.0 for Linux can store images on both local and network drives, the latter way is preferable, as it provides higher image safety and therefore restoration possibility after a software or hardware failure.



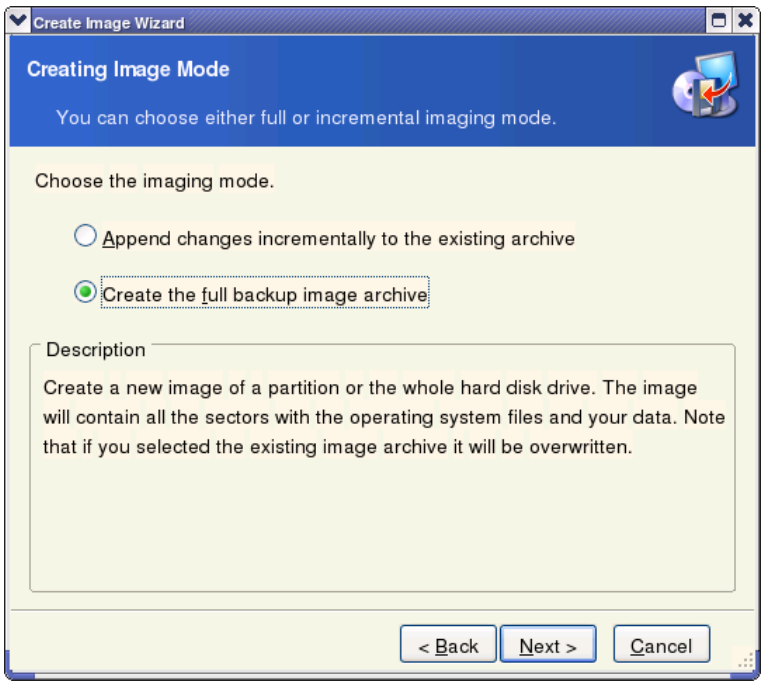
Specifying image location on a network drive

In addition to NFS, Acronis True Image Server 8.0 for Linux supports the SMBFS network file system.

Please check, that the network backup node is accessible for Acronis True Image Server 8.0 for Linux Rescue CD Network Browser, otherwise you cannot restore images stored on this node.

4.3 Selecting image mode

At this point you will select the complete or incremental image mode.



Selecting image mode

The complete image contains all disk information, so it needs a lot of space.

An incremental image only contains information changed since the last time an image was created, so it is usually smaller and takes less time to create.

Thus, if you are creating an image of this disk or partition for the first time, or if you have made a lot of changes to the disk since your last image, the complete image is recommended.

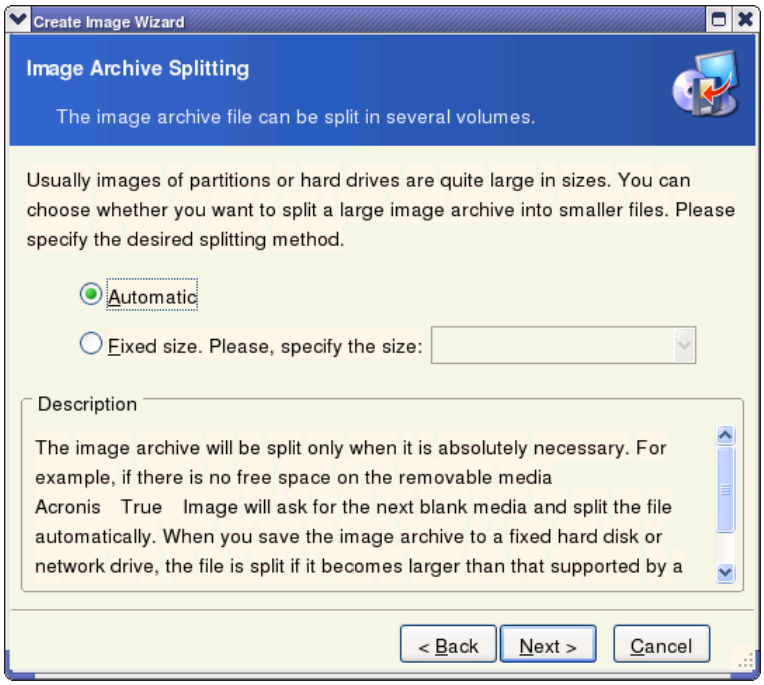
If you recently created a complete image, we recommend that you create incremental images. If image archive is stored on removable media, e.g. CD, insert the last CD and then follow instructions of the **Create Image Wizard**.

4.4 Selecting image size

On this stage, you can specify whether the program should create a single image file or split it into several files.

If you select **Automatic**, Acronis True Image Server 8.0 for Linux will try to determine image size itself. If there's enough space on the hard disk you specified, a single file will be created.

Otherwise the program will warn you about space limitations and await your decision. You can free some space on a partition and continue image creation, or stop Acronis True Image Server 8.0 for Linux, free enough space and begin the image creation again.



Selecting image size

You can also select fixed image size by selecting **Fixed size** and entering or selecting the desired value. By default, the size is provided in bytes, but you can also use kilobytes or megabytes by appending respective units.

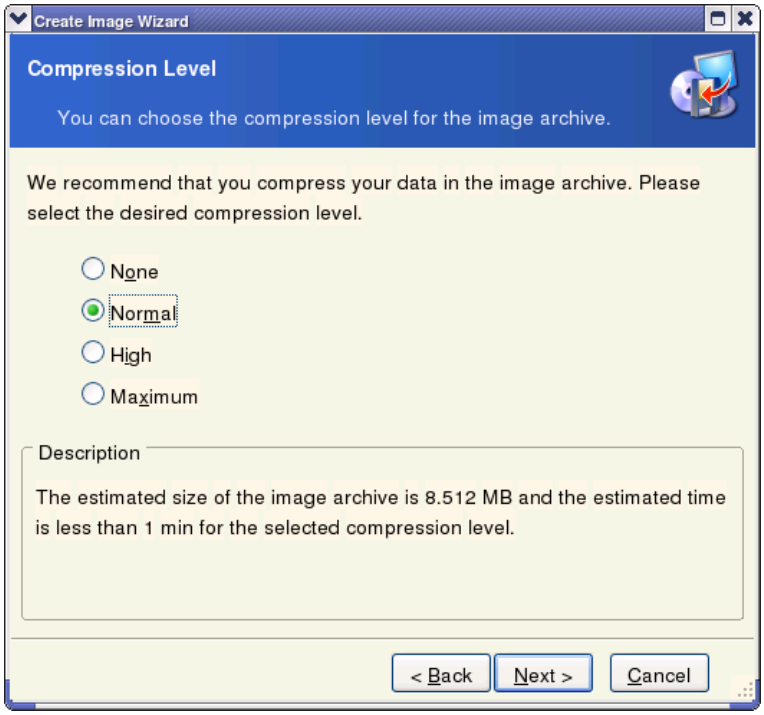
The size of an image file, destined to removable media, is set automatically.

It's a good idea to create fixed-size images on a hard disk if you plan to burn them onto a CD-R/RW or DVD+R/RW media later.

4.5 Selecting compression level

On this stage, you need to select the desired compression level.

If you select **None**, the data will be imaged without any compression, which will significantly increase image size. However, if you select maximum compression, the image will take longer to create.



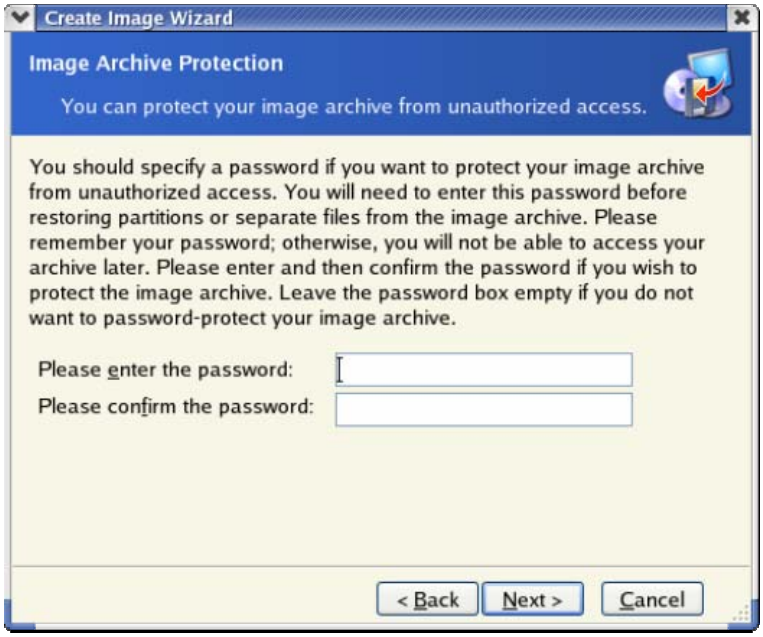
Selecting compression level

Optimal compression level depends on the type of files stored on the disk (partition), so you can determine it empirically.

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

4.6 Protecting images with passwords

You can protect images you create with a password by entering the password into the respective field and confirming it in the **Image Archive Protection** window.

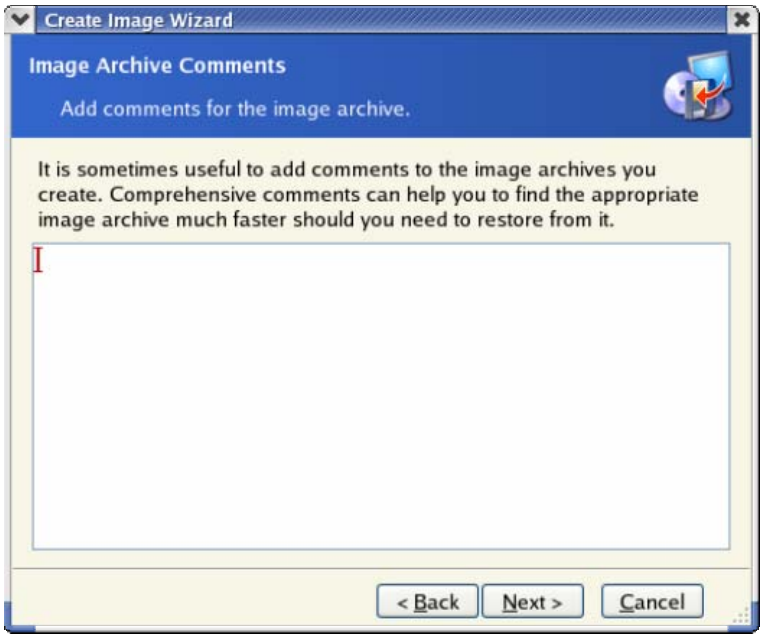


Protecting images with passwords

When you try to restore a password-protected disk (partition) image, Acronis True Image Server 8.0 for Linux will ask you for a password and won't continue with restoration until the password is verified by the software.

4.7 Comments about images

You can supply additional information about the image. This could include information about the server, its users, hard disk, data, creation time or the like.

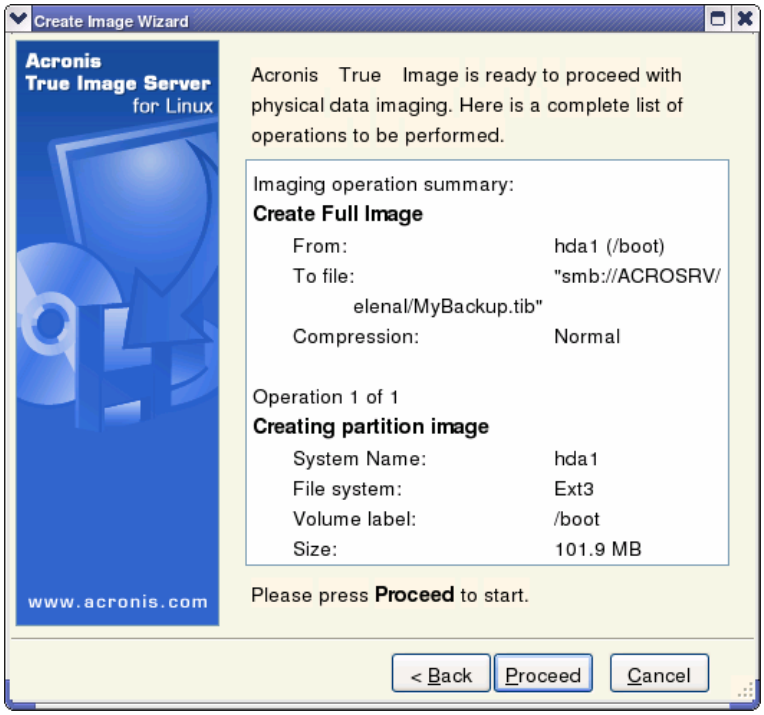


Adding comments to an image

The more details you provide in a comment, the more assured you will be of its contents when you need this image the next time. This can help prevent you from restoring the wrong image.

4.8 Image creation script

In the next window, you will see an image creation script that will list all operations to be performed, along with their brief descriptions.



Disk image creation script

In Acronis True Image Server 8.0 for Linux, all disk image creation operations are pending until you tell the software to execute the commands. After you click **Proceed**, the program will start creating an image, indicating progress in the special window. To cancel image creation, click **Cancel**.

When an image is ready, you can check its integrity with **Check Image** operation (see Section 10.1 «Checking images» of this guide).

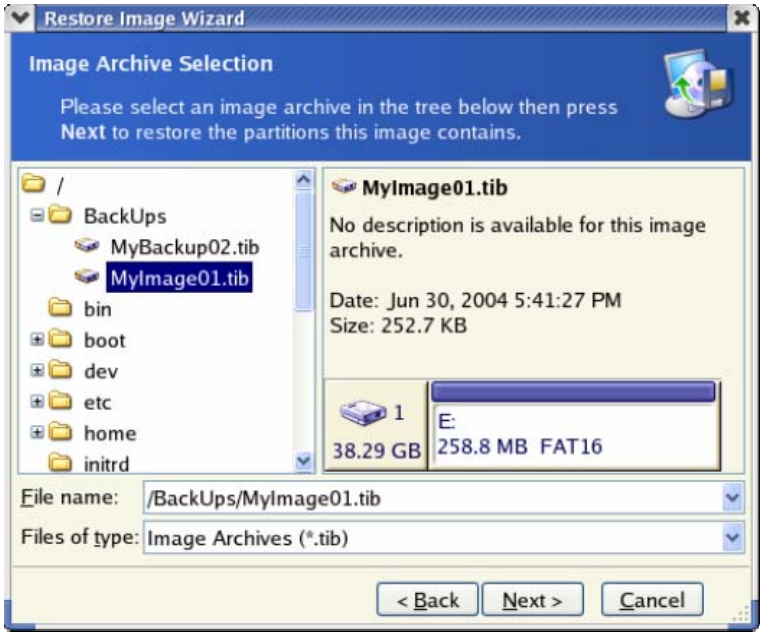
Chapter 5. Restoring disks (partitions) from images under X Window System

This chapter describes restoring disk or partition images using Acronis True Image Server 8.0 for Linux GUI under X Window System. See Chapter 6 for using console.

Note that a system partition can be restored only when Acronis True Image Server 8.0 for Linux is started from a bootable CD (see also 3.2 and 5.9).

5.1 Selecting images to restore

To restore a partition from an image, run the image restoration wizard of Acronis True Image Server 8.0 for Linux by double-clicking **Restore Image**. Then locate and select the necessary image file in the device tree in the **Image Archive Selection** window. The image name will appear in the **File name** field and the **Next** will be enabled.



Selecting images to restore from

If you have added comments to an image when you created it, it will help you determine whether you found the right image. The comments will be shown in the right-hand part of the window below the file name and above the creation date. Note that you don't need a password to read a comment.

If you have protected the selected image with a password, Acronis True Image Server 8.0 for Linux now will ask for it, preventing you from continuing with restoration by disabling the **Next** button.

If you are to restore a disk (partition) from an incremental image, Acronis True Image Server 8.0 for Linux will suggest you to select one of successive incremental files by

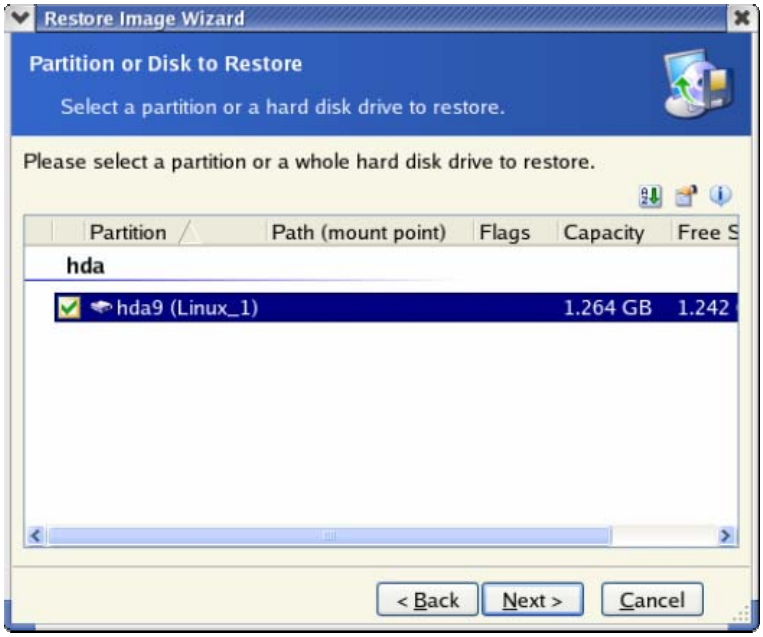
date/time of its creation. Thus, you can return the disk (partition) state to a certain moment, often called "a point of restore".

To restore data from an incremental image, you must have all previous incremental images and the initial full image. If any of successive images is missing, restoration is impossible.

If you are to restore an image from removable media, e.g. CD, first insert the last CD and then follow instructions of the Restore Image Wizard.

5.2 Selecting a partition to restore

A single file might contain images of several partitions or even disks.



Select a partition to restore

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.

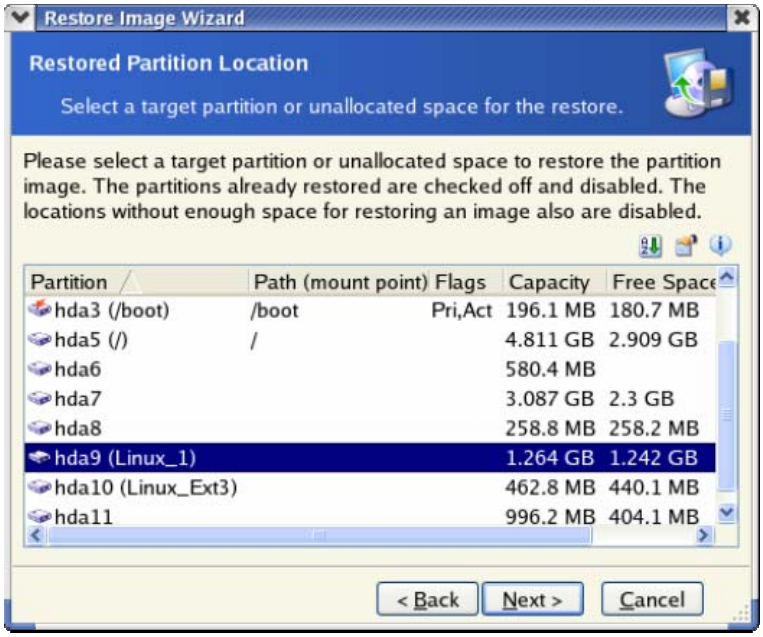
Select the necessary partition and click **Next**.

5.3 Selecting a location to restore to

As a rule, you should restore an image to the same partition from which it was created.

You can restore an image to another partition, but this is not often necessary. However, a partition should be of at least the same size as uncompressed image data.

If you don't have a special reason to restore an image to another partition, restore it only to the partition that was used to create the image.



Select partition to which the image will be restored

All the data stored on the restored partition will be replaced by the image data, so be careful and do not overwrite data that you might need but haven't backed up yet.

5.4 Selecting 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. You are forced to restore the partition from a backup to another hard disk with its own partitions and OS.

Select partition type

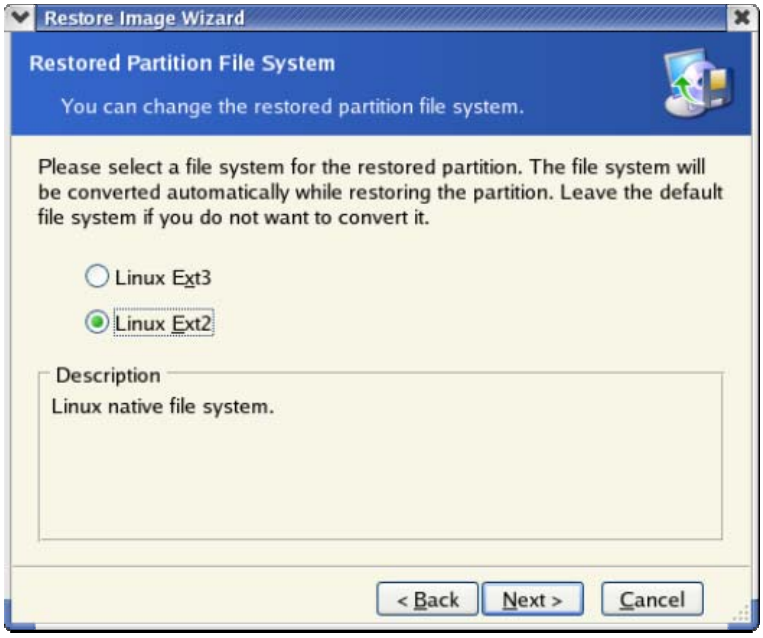
If you need only the data, you don't have to create another primary partition. In this case, you can restore the partition as logical to access the data only.

But if you are to restore a system partition, you should select the **Primary** type for it. Finally, if you want to load an operating system from it, select **Active** as well.

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

5.5 Selecting a file system

Though seldom required, you can change the partition file system during its restoration.



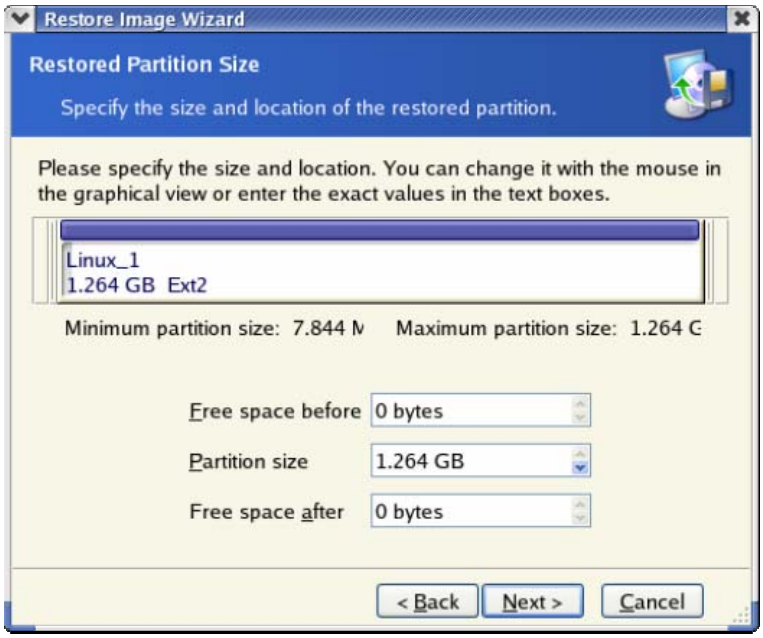
Selecting a file system

Acronis True Image Server 8.0 for Linux can make the following file system conversions: **FAT 16 ↔ FAT 32**, **Ext2 ↔ Ext3**.

5.6 Selecting restored partition size

In some cases, you might need to change the partition configuration and size during the restoration. Acronis True Image Server 8.0 for Linux is flexible enough to do it.

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 on the screen.



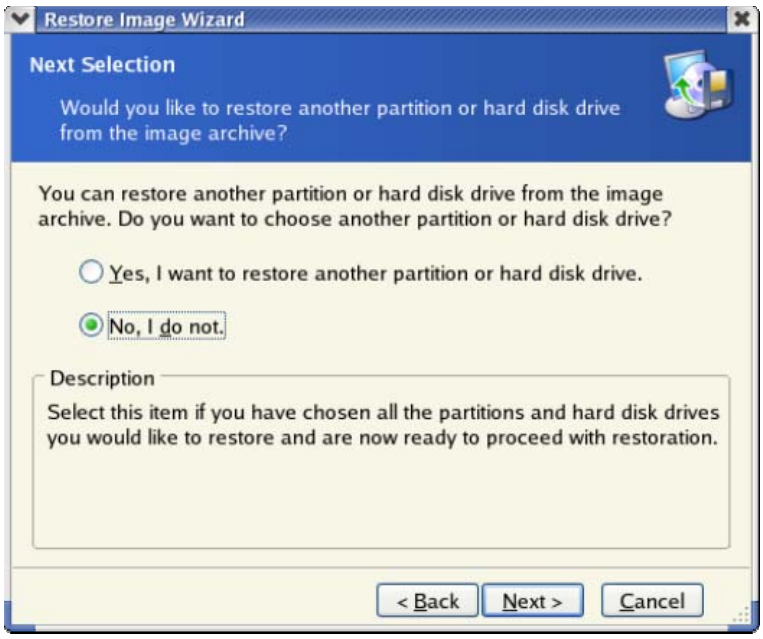
Select partition size and location

You might need to resize and relocate a partition to redistribute the disk space among existing partitions. In this case, you will have to restore the partition to be reduced first.

These changes might be useful if you are to clone a hard disk by creating its image and restoring it to a new disk with larger partitions. Such cloning is used if it's impossible to connect the second hard disk to the server.

5.7 Restoring several partitions at once

You can restore several partitions during a single session. To do this, select **Yes, I want to restore another partition or hard disk drive** in the **Next Selection** window and click **Next**.



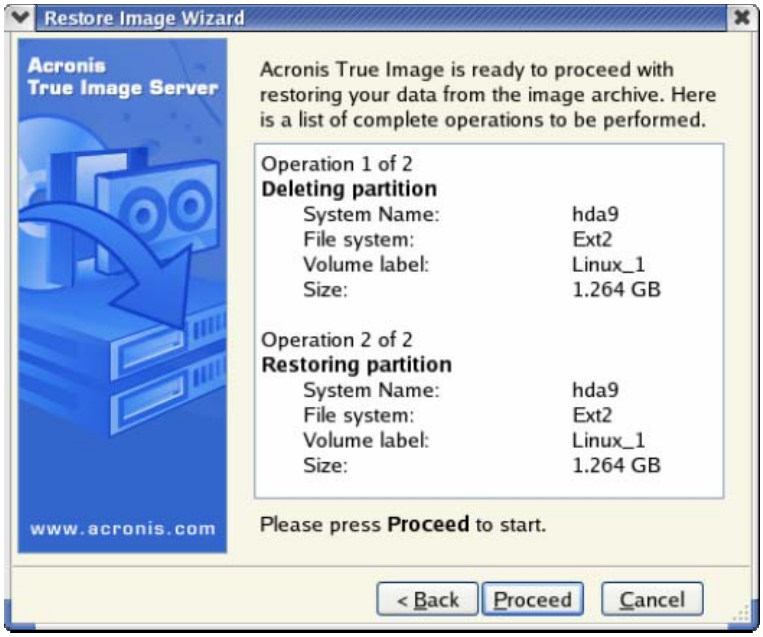
You can restore another partition during this operation

After this, you will see the partition selection window again and will have to repeat the actions mentioned above.

If you want to restore only one disk (partition) or have already selected all the partitions you need, do *not* set this switch and click **Next**.

5.8 Restoration script

In the next window, you will see a disk(s) or partition(s) image restoration script containing a list of briefly described operations to be performed.



Restoration scenario

After you click **Proceed**, Acronis True Image Server 8.0 for Linux will start image restoration, indicating the progress in the special window. If you click **Cancel**, no changes will be made to the disk(s).

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

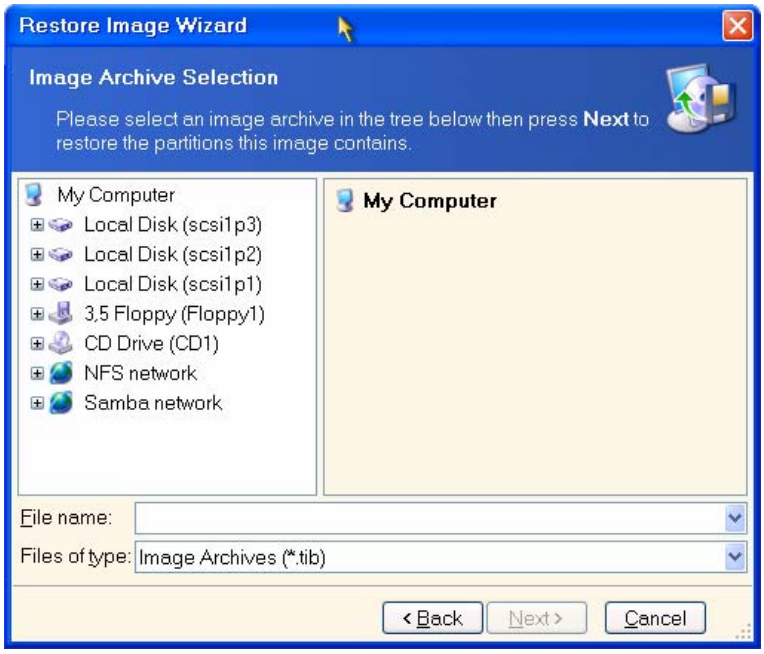
After the restoration is finished, you will see a message about its results.

5.9 Restoring a disk (partition) from a rescue CD

To restore a disk (partition) from a rescue CD of Acronis True Image Server 8.0 for Linux, you initially have to create such a disk using the rescue.iso image located in the **/var/lib/Acronis/TrueImage/** folder after installation.

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 Server 8.0 for Linux main window (see 3.1 «Main program interface under X Window»).

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



Selecting a disk (partition) image to restore when booted from a rescue CD

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)

Chapter 6. Console mode

Console is a natural part of Linux OS. Acronis True Image Server 8.0 for Linux supports it through the **trueimagecmd** command line tool. It provides a way to initiate image creation and restoration operations (with some limitations). **Trueimagecmd** also enables you to automate image creation with '*cron*' service.

Note that **trueimagecmd** doesn't support partition resizing at image restoration neither creating images on CD-R/RW or tapes. 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**.

6.1 Creating and restoring images in the console mode (trueimagecmd)

SYNOPSIS

trueimagecmd --create|--restore|--list|--help [--filename:filename**] [--harddisk:**disk1,disk2**] [--target_harddisk:**disk**] [--partition:**disk1-part1,disk2-part2**] [--target_partition:**disk-part**] [--incremental] [--compression:**level**] [--progress:**on|off**] [--split:**size in MB**] [--raw] [--password:**password**] [--type:**active|primary|logical**] [--serial-key:**serial key**]**

6.1.1 Supported commands

Trueimagecmd supports the following commands:

--create

Creates an image file with the specified file name. A complete image is created by default. Use the `--incremental` option to create an incremental image.

--restore

Restores a disk/partition from the specified image file.

--list

Lists available devices and partitions if no --filename specified. With --filename lists the archive content.

--help

Shows usage.

Trueimagecmd supports the following command options:

-- filename:filename

Sets the image file name. **Trueimagecmd** 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:

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.

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:

trueimagecmd --list --filename:smb://dhcp6-223.acronis.com/sdb3/mike/md1.tib

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

--harddisk:disk1,disk2, etc

With --create, specifies the hard disks to include into the image file. With --restore, specifies the hard disks to restore from the image file. The list of available hard disks is provided by the --list command. An image may contain data of more than one hard disk. In that case, separate disk numbers by commas, e.g.:

--harddisk:1,3

--target_harddisk:disk

Specifies the target disk to which the image will be restored.

--partition:disk1-part1,disk2-part2, etc

With --create, specifies the partitions to include into the image file. With --restore, specifies the partitions to restore from the image file. 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

--target_partition:disk-partition

Specifies the target partition to which the image will be restored.

--compression:level

Sets image compression level. The valid range - from 0 to 9, the default value is 3.

--progress:on|off

Shows/hides the operation progress bar, hidden by default.

--incremental

Sets image type to incremental. If there is no a basic image file to append an incremental one, a complete image will be created.

--split:size in MB

With --create, states that the image must be split into multiple files of the specified size (in Mb).

--raw

Use this option to create an image of a disk (partition) with unrecognized or unsupported file system. This will copy disk/partition contents sector-by-sector.

--type:active|primary|logical

Specifies the type of the partition to be restored.

--password:password

Protects an image with a password, while created, and specifies the image password, while restored.

--serial-key:serial key

Specifies the Acronis True Image Server 8.0 for Linux serial key. Note that you must enter any command, --list, for example, along with the --serial-key (see example in 2.2).

6.1.2 Trueimagecmd usage examples

- This will list available partitions:

```
trueimagecmd --list
```

- 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 restore a partition from backup.tib:

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

6.2 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.

6.3 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 Server 8.0 for Linux 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**] [-f|--filename** archive filename**] [-i|--index** partition index**] [-u|--umount** mountpoint**] [-s|--stop** pid**] [-k|--keepdev] [-p|--password** password**] [-t|--test]**

6.3.1 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.

-t|--test

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.

-i|--index partition index

Index of the partition.

-p|--password password

Specifies the password to explore password protected images.

-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.

6.3.2 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 list the partitions (and their indices) saved in backup.tib:

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

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

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


Chapter 7. Database support

Database servers, such as MySQL, 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 moment (image file creation).

7.1 Database start/stop when creating image under X Window

While backup by GUI in X Window it is recommended that the database be suspended **just before** pressing the **Proceed** button on the last page of the Acronis True Image 8.0 Server for Linux **Create Image Wizard**. Once the imaging process starts, you can resume server operations. It is not necessary to suspend the applications for the duration of the imaging process.

7.2 Scheduling database start/stop for automatic backup

For automatic backup, using the Linux *cron* service, you can schedule sequential actions - `"stop mysql"`, do backup and `"start mysql"`. The following is an example. System has **`/dev/sda1`** as **`root(/)`** and **`/dev/sda2`** mounted to **`/backups`** directory. All database (mysql) data are located on **`root(/)`**.

You may schedule a *cron* job to start/stop the database by the following record in **`/var/spool/cron/root`** file:

```
14 4 * * * /bin/bash -c "(/etc/init.d/mysqld
stop;/usr/sbin/trueimagecmd --create --partition:1-1 --
filename:/backups/test.tib; /etc/init.d/mysqld start)"
```

However, this will interrupt database operation to the very end of the image creation process, which may take quite long time.

7.3 Automatic database start/stop inside `tils_freeze_hook` script

To fully automate the database start/stop, create a special **`/usr/lib/Acronis/tils_freeze_hook`** script. It will allow you both to decrease database downtime in *cron jobs*, still keeping database consistency, and automatically start/stop database in GUI mode.

`trueimage` or **`trueimagecmd`** will call this script using the `<device-name> <stop>` options before and `<device-name> <start>` options after creating file system snapshot. Having set up this script once, you will not have to run the `"mysql stop"` or `"mysql start"` command neither in *cron* job, nor in GUI mode. **`tils_freeze_hook`** will be called automatically and start/stop MySQL itself.

The following is an example of the *cron* record in **`/var/spool/cron/root`** file:

```
14 4 * * * /bin/bash -c "(/usr/sbin/trueimagecmd --create --
partition:1-1 --filename:/backups/test.tib)"
```

And here is an example of **tils_freeze_hook**. This assumes MySQL database is located on **sdb1** partition.

```
#!/bin/bash
# Example of tils_freeze_hook
#
MYSQLDEV="/dev/sdb1"
HOOKLOG="/var/log/tils_freeze_hook.log"
MSQLCMD="/etc/init.d/mysqld"
function set_fd {
        # prepare file descriptors 3-100 to be
        # closed before launch msql
        for i in `/usr/bin/seq 3 100` ; do
                FD="$FD $i>&-"
        done
}
function is_msql_running {
        ${MSQLCMD} status | grep "mysqld.* running" > /dev/null 2>&1
}
function write_log {
        local prefix="`/bin/date \
        +%Y-%m-%dT%H%M%S%z`:tils_freeze_hook:"
        echo ${prefix}$* >> $HOOKLOG
}
DEV=${1}
MODE=${2}
[ "${MYSQLDEV}" != "${DEV}" ] && exit 0
# mysql database partition affected
if [ "$MODE" == "stop" ] ; then
        is_msql_running
        [ ! $? -eq 0 ] && exit 0 # msql is not running \
        #- nothing to do
        set_fd
        write_log "Backup ${DEV}. Stopping MySQL ..."
        # launch "msql stop" in synchronous (foreground) mode
        # because backup must wait until database stops
        eval "${MSQLCMD} stop $FD > /dev/null 2>&1"
        write_log "MySQL was stopped."
fi
if [ "$MODE" == "start" ] ; then
        is_msql_running
        [ $? -eq 0 ] && exit 0 # msql is running
        set_fd
        write_log "Backup ${DEV}. Starting MySQL ..."
        # launch "msql start" in asynchronous (background) mode
        # because backup and database start may run concurrently
        eval "${MSQLCMD} start $FD > /dev/nill 2>&1 &"
        # Don't write anything to logs because we don't
        # know real "msql start" exit status
fi
exit 0
```

Chapter 8. Transferring the system to a new disk

8.1 General information

Sooner or later, most server administrators discover that they are out of free disk space. If just more data storage space is needed, you can add a new disk, following instructions in the next chapter.

Sometimes your hard disk can't provide 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 larger-capacity hard disk.

When transferring an operating system to a new disk, don't forget to add the disk first.

If the server has no more space for new disks, you can temporarily unplug a CD-ROM drive from the IDE cable and use its connector for the new drive. If this option is unavailable, you can clone a disk by creating an image of the old one and restoring it onto a higher-capacity new disk, resizing partitions as needed.

There are two transfer modes available: automatic and manual.

In the automatic mode, you will merely have to take several simple actions to transfer all the data, including partitions, folders and files, to a newer disk, making it bootable (if the original was bootable as well).

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 and disk labels, will remain the same.

Note that you can not clone, add or replace mounted disks, so you will have to run Acronis True Image Server 8.0 for Linux from a rescue CD in such cases.

Of course, this is the only result available in the *automatic* mode. The program can only duplicate the older 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 partitions and data transfer:
   - As is
   - New disk space is proportionally distributed among 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 all screenshots below, damaged partitions are marked with a red circle with a white cross inside in the upper left corner. Before you start cloning, you should check such disks for errors using corresponding OS tools.

8.2 Security

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.

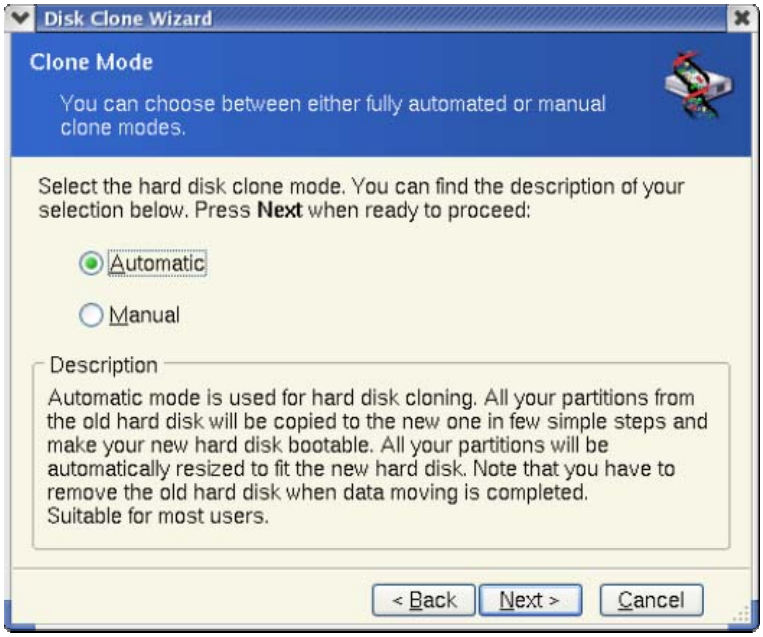
No data will be lost because the original disk is only being read (no partitions are changed or resized) until data transfer is completed.

Nevertheless, we don't 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 new disk, and all applications work.

8.3 Executing transfers

8.3.1 Selecting transfer mode

You will see the **Select transfer mode** window just after the welcome window.



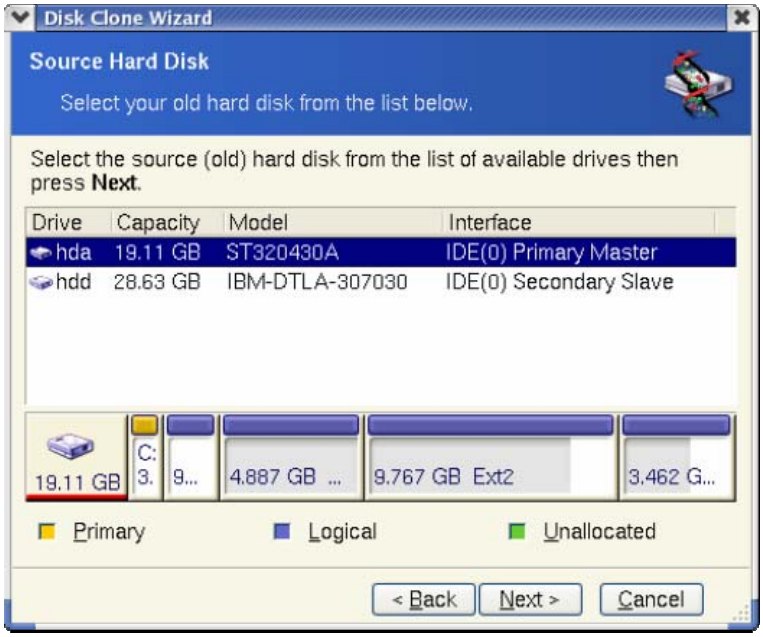
Transfer mode selection

We recommend using automatic mode as it is suitable for most cases. The manual mode can be helpful if you need to change disk partition layout.

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

8.3.2 Selecting the source disk

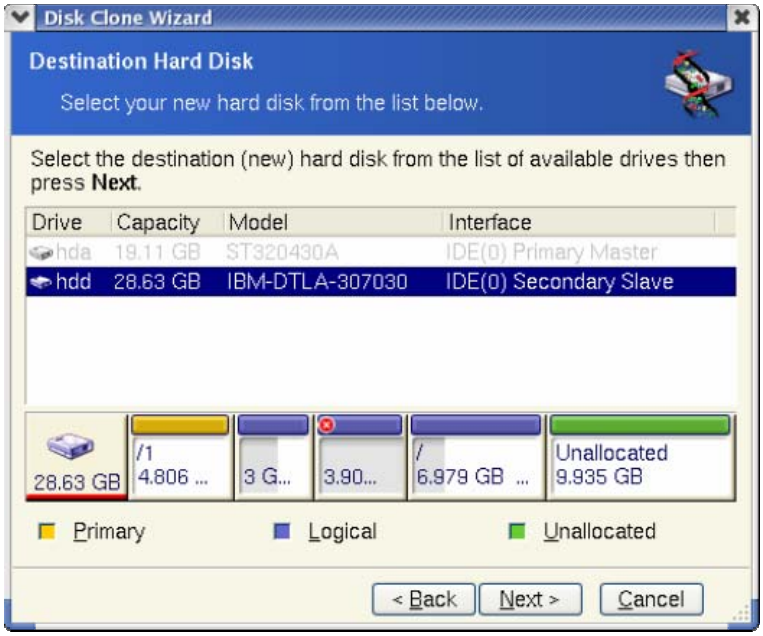
If the program finds several partitioned disks, it will ask you what is the source (i.e. the older data disk).



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

8.3.3 Selecting the destination disk

After you select the source disk, you have to select the destination to clone to.

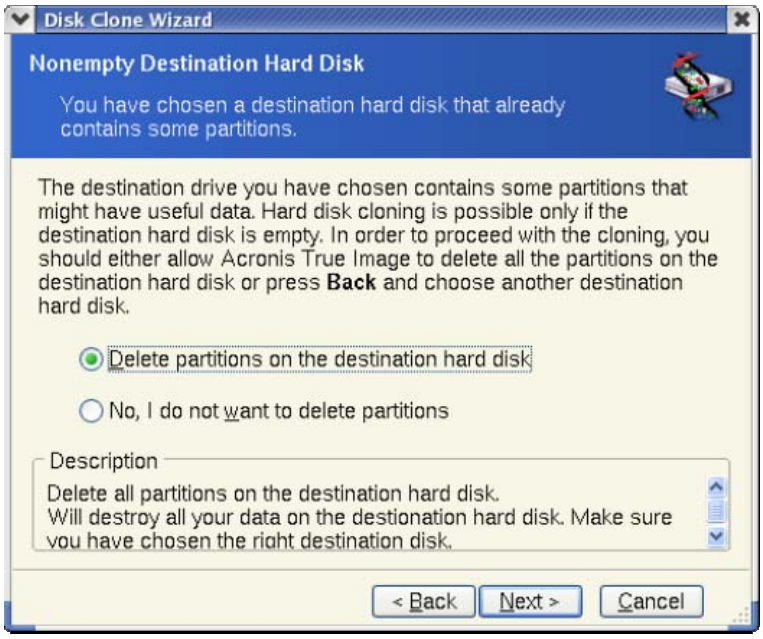


The previously selected source becomes grayed-out and disabled for selection.

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

8.3.4 Partitioned destination disk

At this point, the program checks if the destination disk is free of partitions. If not, you will be prompted by the **Partitioned destination disk** window stating that the destination disk contains partitions, perhaps with data.



You can continue once existing partitions are deleted

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, making the cloning impossible. You will only be able to cancel this operation and return to select another disk.

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

No real changes and data destruction will be performed at this time! For now, the program will just create a cloning script. All changes will be implemented only when you click **Proceed**, after the script is formed.

8.3.5 Old and new disk partition layout

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

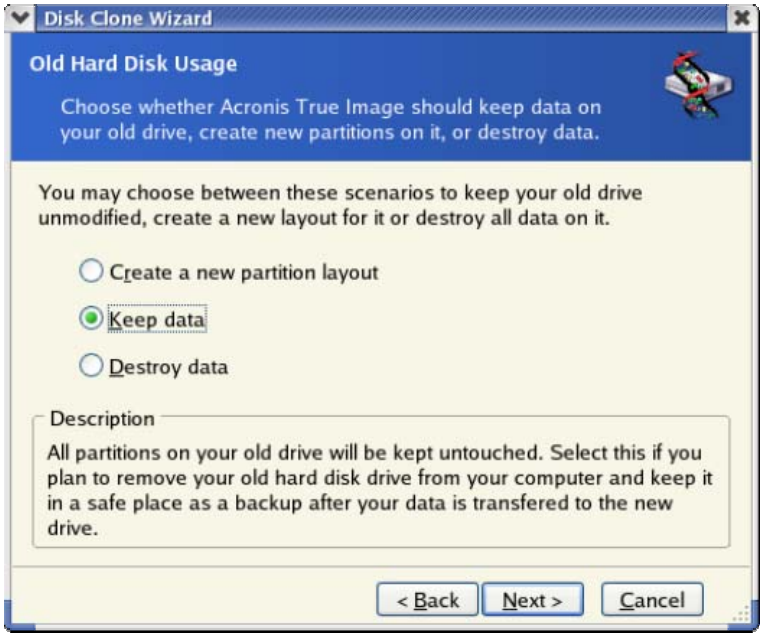
Along with the disk number some additional information is provided: capacity, label, partition and file system information. Partition types — primary, logical — and unallocated space are marked with different colors.

Next you will see the cloning script.

8.3.6 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** — 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** — delete partitions (and data) from the old disk



If you are going to sell, give away or otherwise part with your old disk, we recommend that you clean all information from it to avoid the data getting into unfriendly hands.

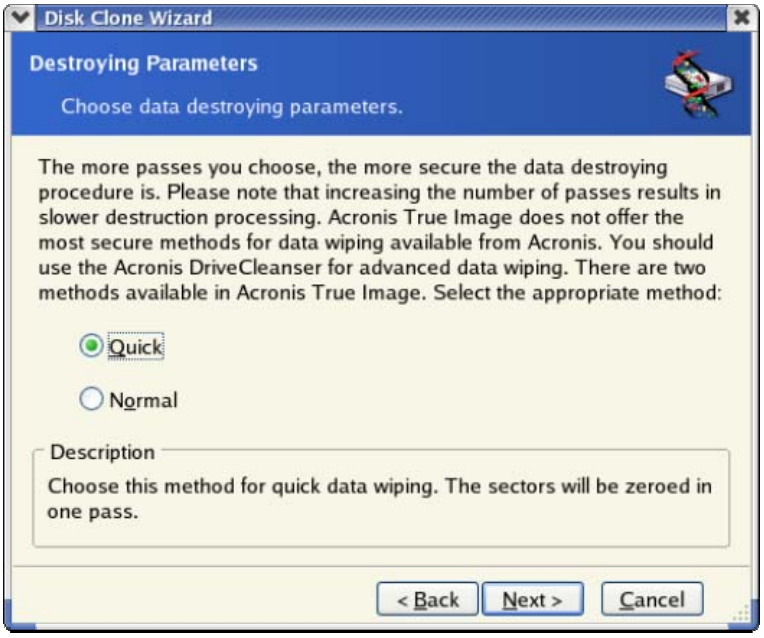
If you are going to keep the old disk and use it for data storage, you can create a new partition layout on it. In this case, the disk will be ready to use right after cloning is complete.

To protect yourself from unforeseen consequences, it is recommended that you leave the old disk data intact until you are certain that the cloning process worked. You can wipe the old disk anytime you want later.

8.3.7 Destroying the old disk data

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

- **Quick** — one-pass destruction (takes several minutes)
- **Normal** — guaranteed multipass destruction (takes additional time)



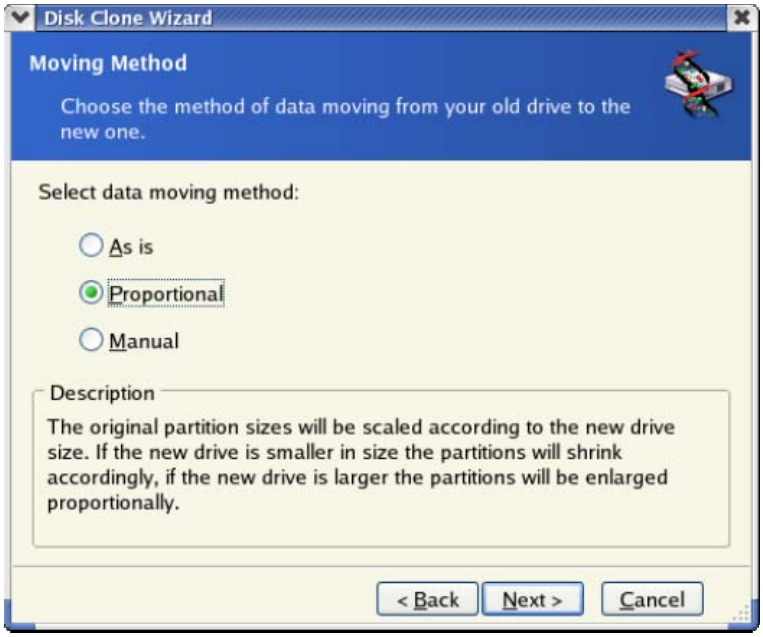
The second method takes more time, but makes it impossible to recover data afterwards, even with special equipment.

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

8.3.8 Selecting partition transfer method

Acronis True Image Server 8.0 for Linux 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 decide 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 it to create new partitions or to enlarge the existing partitions with special tools (e.g. Acronis Disk Director Suite.)

As a rule, "as is" transfers are discouraged, as they leave a lot of unallocated space on the new disk.

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

In some cases, some partitions may still be transferred "as is" or be enlarged to the lesser extent compared to the other.

"As is," Acronis True Image Server 8.0 for Linux transfers unsupported and damaged file systems.

Note that FAT16 partitions have a 2 GB maximum size limit.

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

8.3.9 Partitioning the old disk

If you have selected **Create a new partition layout** before, it's now time to re-partition your old disk.

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

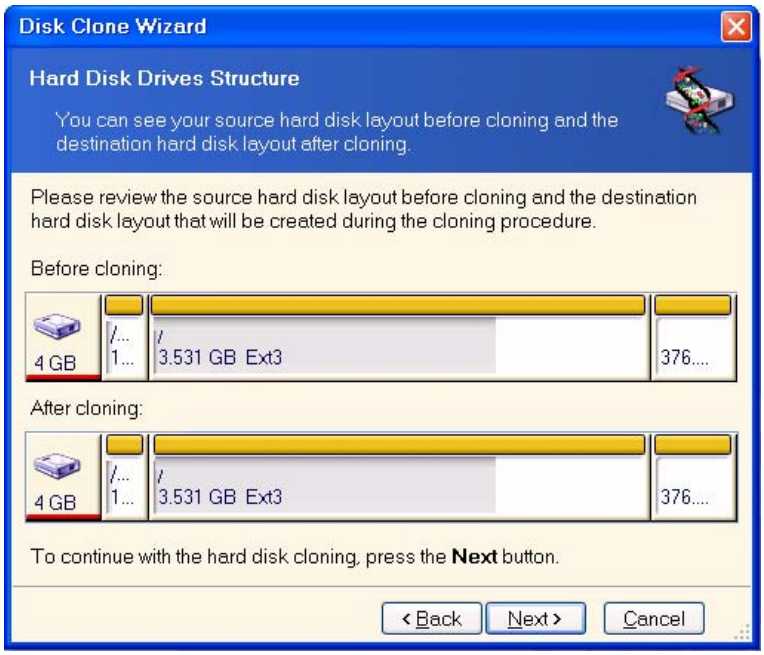
Having completed the required steps, you will add a new partition. To create another one, simply repeat these steps.

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

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

8.3.10 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 see its capacity, label, partition and file system information. Primary, logical partitions and unallocated space are colored differently.

If you have selected manual partition creation before, the partition layout will look different. That partitioning method is described below.

8.3.11 Cloning script

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

After you click **Proceed**, Acronis True Image Server 8.0 for Linux will start cloning, indicating the progress in the special window. You can stop this procedure by clicking **Cancel**. In this case, you will have to re-partition and format the new disk or repeat the cloning procedure.

After the operation is complete, you will see the results message.

8.4 Cloning with manual partitioning

8.4.1 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 its capacity, label, partition and file system information. Different partition types, including primary, logical, and unallocated space, are all colored differently.

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 script 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 become 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's pointed at the partition border and you can drag it. If the cursor turns to four arrows, it's pointed at the partition and 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 may have to perform some more resizing and relocation before you get the layout you need.

Chapter 9. Adding a new hard disk

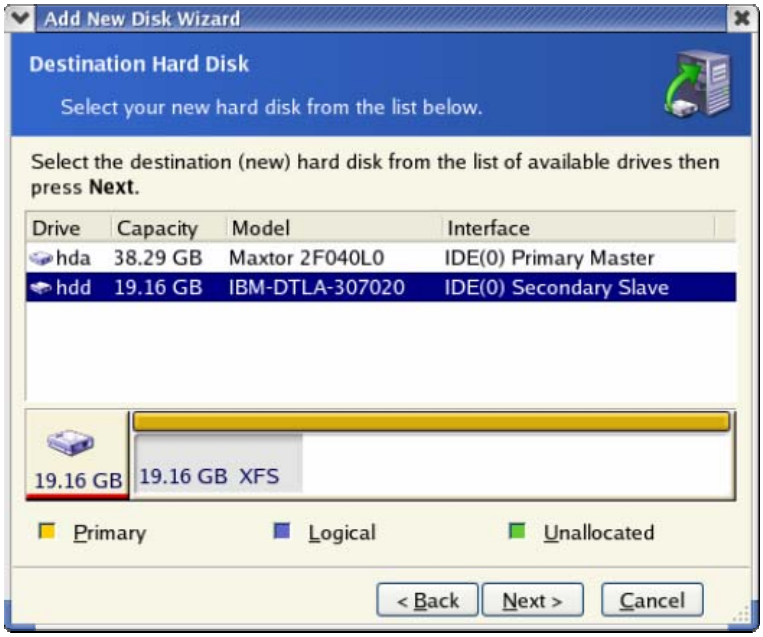
If you don't have enough space for your data (e.g. family photos and videos), you can replace the old disk with a higher-capacity one (data transfers to new disks are described in the previous chapter). But you can also add a new disk only to store data, leaving the system on the old disk. If the server has space for another disk, it would be easier to add it, then clone.

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

Note that **cloning, addition and replacement operations are not available for mounted disks**. In such cases, you will need to run Acronis True Image Server 8.0 for Linux from a rescue CD.

9.1 Selecting a hard disk

Select the disk you've added to the server.



This window might be bypassed if the program detects the new disk itself. In that 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.

9.2 Creating a new partition

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

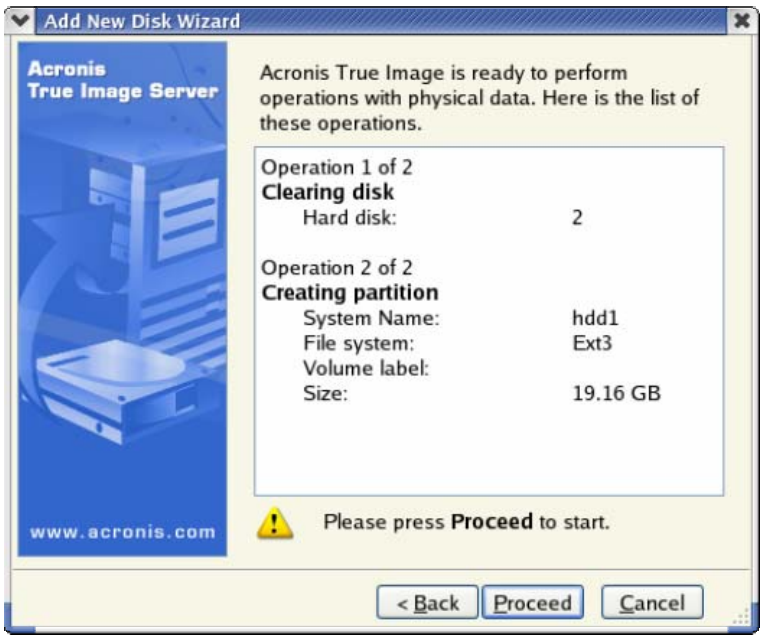
To create a partition in the unallocated space, select **Create new partition in unallocated space** and click **Next** to perform steps required by the partition creation wizard.

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

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

9.3 Disk adding script

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



Add New Disk script

After you click **Proceed**, Acronis True Image Server 8.0 for Linux will start creating and formatting new partitions, indicating the progress in the special window. You can stop this procedure by clicking **Cancel**. In that case, you will have to re-partition and format the new disk or repeat the disk add procedure.

After the operation is complete, you will see the results message.

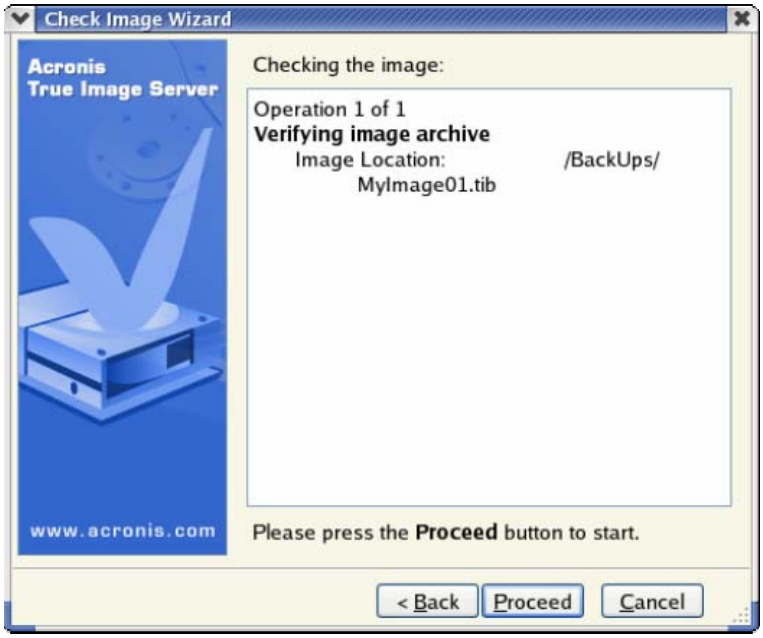
Chapter 10. Other operations

10.1 Checking images

To make sure created images are not corrupted, you can check their integrity with Acronis True Image Server 8.0 for Linux. To do this, select **Tools** -> **Check Image** (roll out the group if needed) or click **Check Image** on the toolbar. This will invoke the **Image checking wizard**. Click **Next** to continue.

This window will list all storage devices connected to your PC, including hard disks. Locate and select the image you need to check.

Its name will appear in the **File name** field and the **Next** button will be enabled.



Click **Proceed** to continue. The progress of integrity checking will be indicated in the special window.

You can cancel checking by clicking **Cancel**.

After the check is finished, its results are output to a separate window.

Technical support

Users of legally purchased copies of Acronis True Image Server 8.0 for Linux can use free technical support provided by Acronis. If you have any installation or working problems that you can't solve by yourself using this manual and readme.txt, e-mail the technical support. Acronis also offers free fax support and paid priority support options.

Before you do this, you will have to register your copy at http://www.acronis.com/registration/ or by mail.

When e-mailing technical support, you must provide the serial number of your Acronis True Image Server 8.0 for Linux copy bundled with the program.

For more information visit http://www.acronis.com/support/

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