User's Manual

R-Drive Image

r-tools technology

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I R-Drive Image

R-Drive Image is unique and powerful drive image software. It creates drive image files on-the-fly, that is, without stopping Windows. Such images may be stored anywhere including various removable media. It compresses image data with variable compression level to save free space. It also restores such images on the disks on-the-fly, except system partitions. **R-Drive Image** creates special startup disk (a startup CD/DVD disc, or USB removable storage device) to restore system partitions. It mounts images as virtual disks to copy only certain files from the images. It also directly copies an entire disk to another - no time spent for file structure scanning.

System integrators and computer assemblers can use **R-Drive Image OEM kit** to create system recovery disks to include them with their fully assembled computer systems.

Note: The current version has a limited support for dynamic disks or other non-MBR/GPT partitioning scheme. See **Support for Various Disk Partition Schemes and File Systems** for details.

The **R-Drive Image Features** topic tells more about **R-Drive Image**.

The **System Requirements** topic tells more about **R-Drive Image** system requirements.

The **R-Drive Image Registration** topic explains how to register your copy of **R-Drive Image**.

The **License Transfer** topic explains how to transfer the Standalone and Corporate licenses.

The **Disk Actions** chapter explains disk actions such as:

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Create an Image from Files**
- **Copy Files to a Folder**
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Manage partition and logical disks**
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- **Unmount Virtual Logical Disks**
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The **RAIDs, and Various Disk and Volume Managers** chapter explains how to perform disk actions with various compound volumes such as:

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- **Windows Software RAIDs, Spanned, and Other Volumes**
- **Windows Storage Spaces**
- **Apple RAIDs**
- **Apple CoreStorage/File Vault/Fusion Drive Volumes**
- **Linux mdadm RAIDs**
- **Linux Logical Volume Manager Volumes**

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- **Create Startup Disk**
- **Restoring Data to a System or Other Locked Disk**
- **Create an Image Using the Startup Disks**
- **Disk to Disk Copy Using the Startup Disks**

The **Scheduled Actions, Command Line Operations, and Scripting** chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

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- **Image Replications**
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- **List of Hardware Devices Supported in the Startup Mode**

The **R-Drive Image OEM kit** chapter explains how computer system integrators can create system recovery disks for their systems

- **Create a Master Image**
- **Create Startup Media**

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

1.1 R-Drive Image Features

R-Drive Image is unique and powerful drive image software. It creates *disk images*: files that contain exact, byte-by-byte, copies of hard drives, partitions, or logical disks. Such images may be stored in any location: other hard disks or various removable media, such as CD-R(W) and DVD discs, USB external disks, and network drives. At any time, data from such images may be restored on their original disks or on any other partitions or

even on drive's free space. Images may contain data from the partitions, logical disks, and entire hard drives, or only individual files.

Note: The current version has a limited support for non-Windows file systems, dynamic disks, or other non-MBR/GPT partitioning schemes. See **Support for Various Disk Partition Schemes and File Systems** for details.

Using **R-Drive Image**, you can completely restore your system immediately after heavy data loss caused by an operating system crash, virus attack, or hardware failure. You can also use **R-Drive Image** for mass system deployment: if you need to setup many identical computers, you can setup manually only one system, than, using **R-Drive Image**, you can make an image of the system, and deploy it on all other computers, saving your time and cost.

You can copy a hard drive, partition, or logical disk directly to another one. Such copying is much faster than traditional file by file copying, as no time spent for file structure scanning.

If you need to restore only certain files from an image, you can mount that image as a read-only virtual disk and copy those files directly from the image using Windows Explorer or any other file utility.

R-Drive Image includes a partition manager that can delete, wipe, create, and re-sized partitions and logical disks.

If you are a system integrator, consultant, or computer assembler, you can use **R-Drive Image OEM kit** to create system recovery disks to include them with your fully assembled computer systems.

R-Drive Image features:

- A simple wizard interface – no in-depth computer management skills are required.
- Commands in the shortcut menu to perform some disk actions, like restoring data from an image file and mounting an image as a virtual disk directly from Windows explorer.
- Image files are created on-the-fly, no need to stop and restart Windows. All other disk writes are stored in a cache until the image is created.
- Images can be created for storage devices with removable media.
- Images can contain data from the entire disk or useful information only, that is, only those disk parts that contain data from existing files.
- Images can be created from individual files, not only partitions and logical disks. Individual files may be copied to a certain folder.
- Individual files can be copied to a specified folder.
- Images can be burned on CD/DVD recorders directly from the program
- Image data can be compressed to save free space.
- Image files can be stored on removable media. Support for USB 2.0 and 3.0 devices in the startup mode.
- Images can be stored on various cloud services and FTP/FTPS/SFTP servers, and download from them to restore data on the disks.
- Images can be split into several files to fit the type of the storage medium.
- Image can be created incrementally and differentially.
- Image files can be password-protected and contain comments. Images of the rdi type may also be encrypted using the AES-XTS algorithm.
- Images can be replicated, that is, their copies can be saved in one or several different places.
- Partition manager that allows you to delete, wipe, create, and resize partitions and logical disks. It can be used to clean entire hard drives before disposal.

- Support for several image format types: .rdr (**R-Drive Image**'s proprietary internal format), and virtual machine formats: VHD/VHDX, VDI, and VMDK (last two only in **Corporate, Technician**, and **Commercial** licenses). In addition, you may open several additional formats: .dmg (Apple Disk Image), e01(ewf) , and aff (advanced forensic format), the latest two for the **Commercial** license.
- Support for various non-MBR/GPT partitioning schemes and file systems. See **Support for Various Disk Partition Schemes and File Systems** for details.
- Support for RAIDs, and various disk and volume managers, such as Windows Storage Spaces, Apple RAIDs, Apple CoreStorage/File Vault/Fusion Drives, and Linux LVM.
- Data from an image are restored on-the-fly, except on a system partition. Data to the system partition can be restored either by restarting **R-Drive Image** in its startup mode directly from Windows, or by using specially created startup disks.
- Special startup disks (a startup CD/DVD disc or USB removable storage device) can be created to restore data to a system partition. Such disks can be used to perform basic disk imaging operations on Mac computers with some restrictions.
- Data from an image can be restored on a free (unpartitioned) space on any place on a hard drive. The size of the restored partition can be changed
- Data from an image can be restored on other existing partitions. **R-Drive Image** deletes such partitions and restores data on that free space.
- An entire disk can be directly copied to another one.
- An image can be mounted as a read-only virtual drive and its content can be viewed and copied.
- An image can be checked for its integrity.
- Support for **S.M.A.R.T.** warnings.
- A built-in scheduler automatically starts disk actions at scheduled times/events.
- Scripts can be created for frequent or unattended actions. Scripts are executed from a command line and can be included in any command file.
- Advanced and versatile logs accessible directly from the user interface.
- Support for rotation schemes (backup sets). A rotation scheme is a set of files (usually a file for a full image of an object and a number of its incremental/differential backups) which **R-Drive Image** treats as one unit. Rotation schemes (backup sets) are used to flexibly control the parameters of complex backup tasks such as a total size allocated for the image files, number of image files to keep, and time for which the data will be kept. Available are simple and custom rotation schemes. Custom rotation schemes are available in the **Corporate**, **Technician**, and **Commercial** licenses.
- **R-Drive Image OEM System Recovery Media** creation: special startup disk that may be used to restore a computer system after a complete failure when it requires a complete fresh setup (system recovery disks).
  Note: You need to purchase an OEM registration key to activate this feature.

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

1.2 System Requirements

- An Intel-compatible platform.
- The administrative privileges are required to install and run **R-Drive Image**.

Operating systems on which various licenses can run:

- All licenses: Windows 11/10/8.1/8/7/Vista/XP/2000 Windows (including 64 bits editions).
- Corporate, Technician, Commercial licenses: Server 2022/2019/2016/2012/2008/2003 (including 64 bits editions).

1.3 Contact Information and Technical Support

To obtain the latest version of **R-Drive Image**, go to:

Product Site: http://www.drive-image.com/

Sales Department: sales@r-tt.com

The **R-Drive Image** Technical Support Team is available 24 hours a day, seven days a week, and has an average e-mail response time less than 4 hours.

Tech. Support: support@r-tt.com

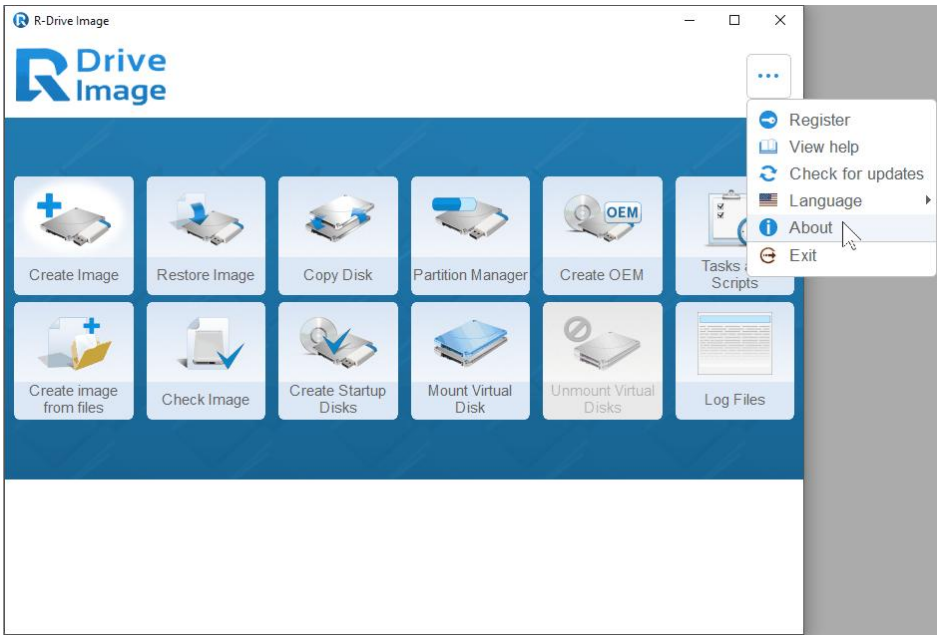
You may send a support request form from http://www.r-tt.com/Support_request.html.

You may be asked to provide a system dump.

To create a system dump:

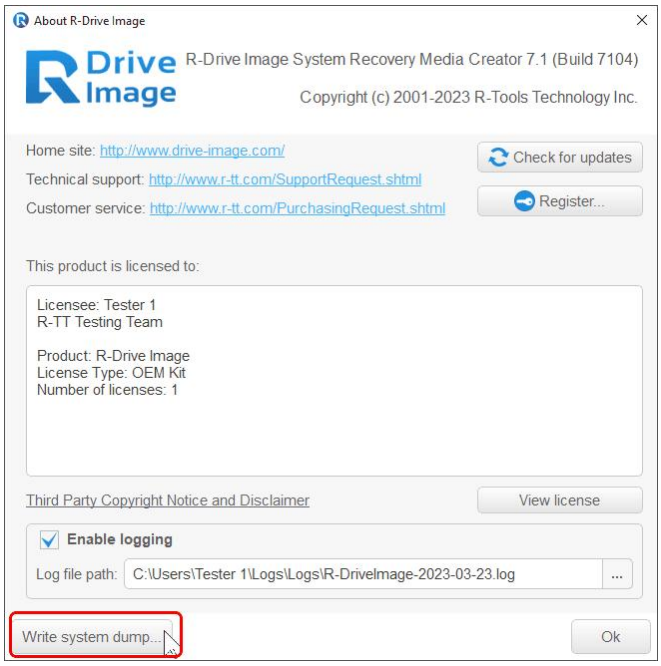
1 **Go to the About dialog box**

R-Drive Image Action selection panel



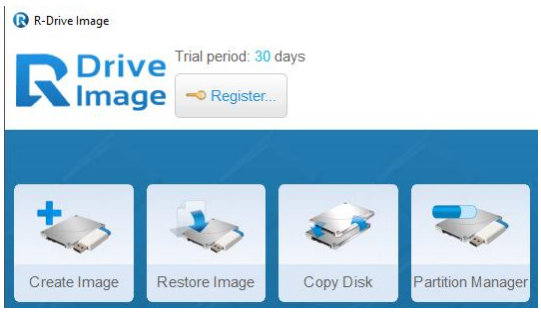
2 And click the Write system dump button

Write system dump button



1.4 R-Drive Image Registration

The trial period of **R-Drive Image** will start after its fresh install. The **Action Selection** panel will show its remaining time.



You need to obtain a registration key to activate the **R-Drive Image** trial version. You may obtain this key online at the **R-TT web site** or on the **R-Drive Image Please register R-Drive Image** message.

The registration keys are sent to customer e-mail boxes immediately after purchase.

With the purchase of a new **R-TT** software product, you receive one year of support services that includes technical support, customer support and all upgrades and new releases for your product during that term. When your 1-year support service expires, you will need to renew that support at a discounted price to continue receiving support services. The renewal support purchase will extend your support by 1-year from the date of its expiration.

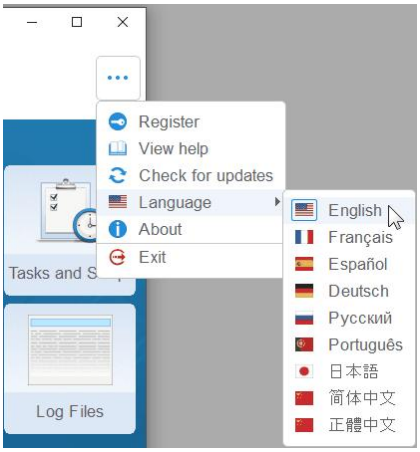
More details are on the **Buy On Line** page (`http://www.r-tt.com/BuyOnLine.shtml`) at the **R-TT web**

site.

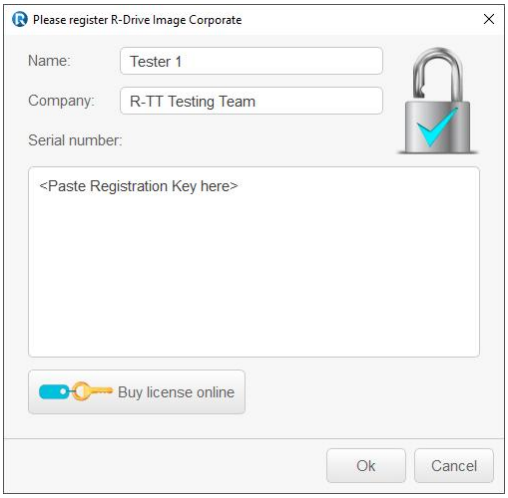
To obtain a registration key directly from R-Drive Image,

1 **Click the About button**

and select **Register** on the shortcut menu.



2 **Click the Buy license online button on the Please register R-Drive Image message**

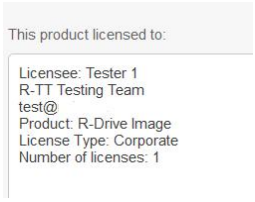


and follow the instructions.

To register with a registration key,

1 **Click the About button and select Register on the shortcut menu.**

2 **Enter the registration key on the Please register R-Drive Image message and click the OK button.**
The registration information will appear.

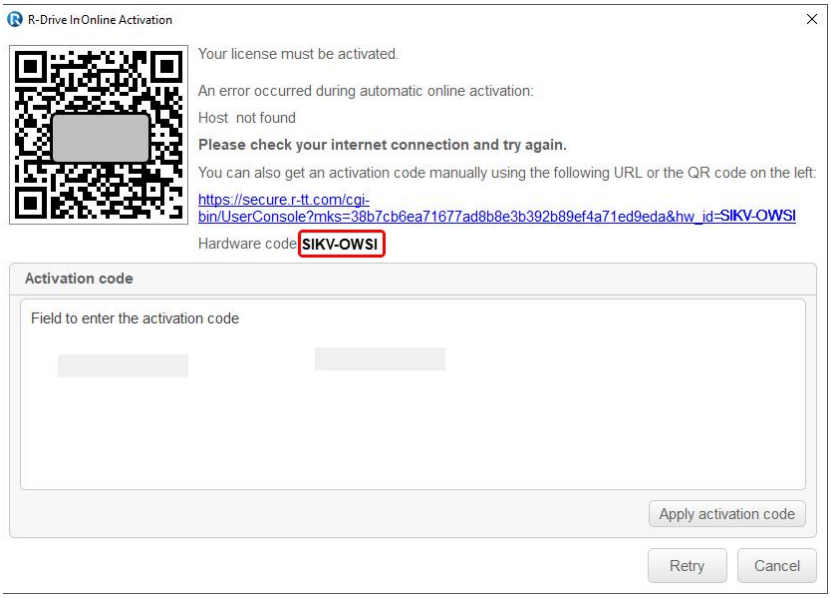


Sometimes you may need an active Internet connection to finish program activation after its registration.

If you don't have an Internet connection.

You need to manually obtain an activation code to complete the registration and activation.

The Online Activation dialog window will appear when you enter the activation code.



You may copy the url with the activation information and go to it on another computer connected to the Internet, obtain the activation code, and enter it into the respective field on the dialog box.

You may also use your smartphone to activate **R-Drive Image**. Scan the QR-code and go to the specified URL, obtain the activation code, and finish program activation.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

1.5 License Transfer

All **R-Drive Image** licenses are transferable. However, **R-Drive Image** Standalone and Corporate licenses can be transferred to another computer only one way. You can transfer the license to a new computer, but the license may not be transferred between different computers back and forth and be reused on the computer it was transferred from.

For example, you have **R-Drive Image** installed on Computer A. You may transfer the license from Computer A to Computer B, and **R-Drive Image** will work on Computer B. But it won't run on Computer A under this license anymore, even if you deactivate this license on Computer B and remove **R-Drive Image** from it. Then you may transfer the license to Computer C, but **R-Drive Image** will work neither on Computer A, nor on Computer B. And so on...

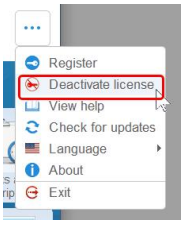
If you have just one **R-Drive Image** license, you can simply install the software on a new computer you want to transfer the license to and then activate it. The license on the previously licensed machine will be automatically deactivated as soon as the software is activated on a new computer. For computers connected to the Internet the online activation is processed in the background mode and you will not even notice it. For off-line activations you will need to use a QR code and it will take extra 1-2 minutes to complete the activation. So, a single **R-Drive Image** license does NOT require a license deactivation procedure.

When you have more than one **R-Drive Image** license linked to the same registration key, our system may not recognize what particular license you want to transfer to a new computer and in this situation, the license deactivation procedure is a must.

Option 1.* R-Drive Image *software is still installed on the computer from which it is being transferred and the computer is connected to the Internet.

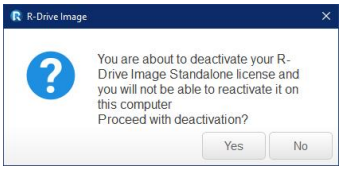
1 **Open the R-Drive Image main menu and choose the Deactivate license option.**

Main menu



2 **The following message will appear:**

Deactivation message



Click Yes to deactivate the license.

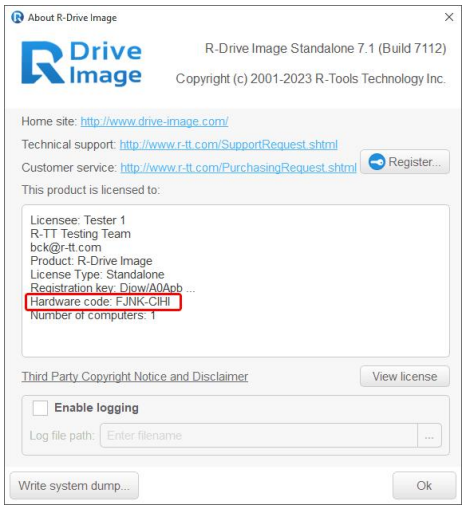
3 **Uninstall/Remove R-Drive Image from the computer**

4 **Install R-Drive Image on a new computer and activate it.**

Option 2. R-Drive Image software is still installed on the computer from which it is being transferred and the computer is NOT connected to the Internet.

1 **Open the R-Drive Image main menu and go to the About option to get the hardware code of the computer on which the license is currently active.**

The About dialog box



2 **Write down or take a photo of the Hardware Code**

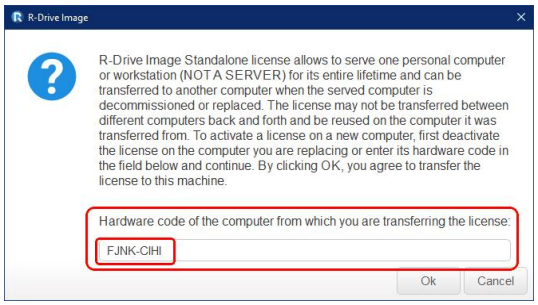
3 **Uninstall/Remove R-Drive Image from the computer**

4 **Install R-Drive Image on a new computer.**

Since the license on the previous computer was deactivated offline, our server will not know which machine to deactivate the license on and you will be prompted to enter the hardware code of the previous computer.

Enter the saved Hardware code in the Activation window

Activation dialog box



and click the OK button.

Option 3. R-Drive Image was installed and activated on a computer that has already been decommissioned/replaced and the Licensee doesn't have access to that computer.

1 **In this case you can't deactivated the R-Drive Image license,**

but you can check the hardware codes of your other computers on which **R-Drive Image** licenses are being used and are currently active.

2 **Send the list of the codes of computers on which you still keep and want to retain R-Drive Image licenses**

(main menu > About) to our customer support team and they will help you deactivate the license for computers that you do not have access to.

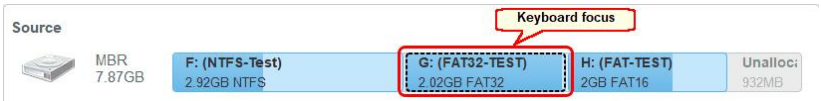
II Disk Actions

Note: Disable **Windows Ransomware protection** in **Windows Security** and/or other utilities that block direct access to disks, or **R-Drive Image** will not work properly.

This chapter explains how to perform disk actions. Each action starts from the **Action Selection** panel.

Keyboard Navigation

You may use the keyboard to navigate through and select items and objects on the panels.
If there are several objects that can be selected, a dashed frame will appear around the object that is in the current focus.



Space	Select/Deselect.
Keyboard arrows	Right / Left / Up / Down
Alt+S / Alt+D	Switch between the Source / Destination panels.
Tab/Shift-Tab	Forward / Backward

Changing the program language

You may select the language of **R-Drive Image** panels . To do so, click the **Help** button and select the required language on the **Language** menu.

To start a required action, select

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Create an Image from Files**
- **Copy Files to a Folder**
- **Restore Data from an Image**

- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Manage partition and logical disks**
- **Mount an Image as a Virtual Logical Disk** (read-only)
- **Unmount Virtual Logical Disks**
- **Check an Image File** to check an existing image file

The **RAIDs, and Various Disk and Volume Managers** chapter explains how to perform disk actions with various compound volumes such as:

- **Hardware RAIDs**
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- **Windows Software RAIDs, Spanned, and Other Volumes**
- **Windows Storage Spaces**
- **Apple RAIDs**
- **Apple CoreStorage/File Vault/Fusion Drive Volumes**
- **Linux mdadm RAIDs**
- **Linux Logical Volume Manager Volumes**

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- **Create Startup Disk**
- **Restoring Data to a System or Other Locked Disk**
- **Support for Various Disk Partition Schemes and File Systems**
- **Disk to Disk Copy Using the Startup Disks**

The **Scheduled Actions, Command Line Operations, and Scripting** chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

- **Scheduler and Unattended Actions**
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The **R-Drive Image OEM kit** chapter explains how computer system integrators can create system recovery disks for their systems

- **Create a Master Image**
- **Create Startup Media**

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

2.1 Create an Image

Note: You may read about **Support for Various Disk Partition Schemes and File Systems** to learn more about possible options for your specific case.

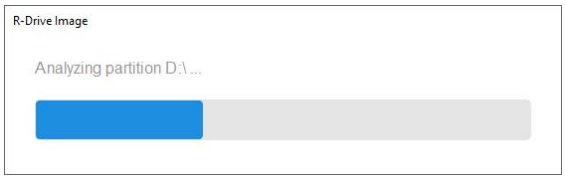
You may create images of entire objects or backup only selected files during this action. Images from files can also be created by selecting **Create an Image from Files** on the **Action Selection** panel.

Creating images of entire objects

To create an image:

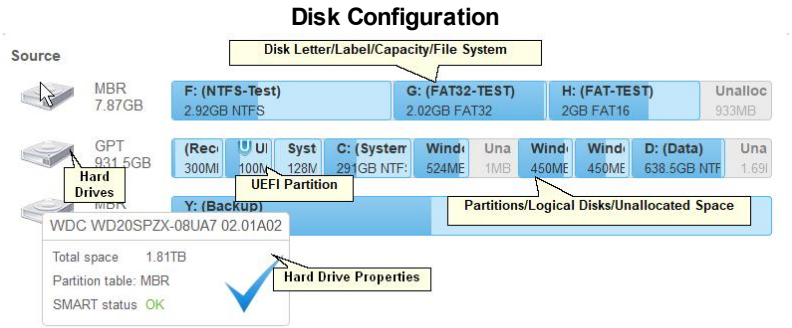
1 **Click Create image on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.



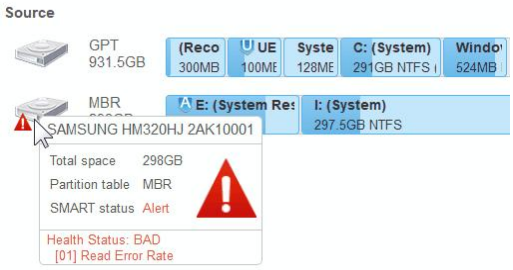
Then the **Select disk(s) to create image** panel will show the configuration.

More information...



S.M.A.R.T. warning for a hard drive

If a hard drive has S.M.A.R.T. warnings, a color mark will appear on its left-top corner. Dragging the cursor over the drive will show a tooltip explaining that warning.



Warnings will also appear in confirming e-mails for scheduled actions.

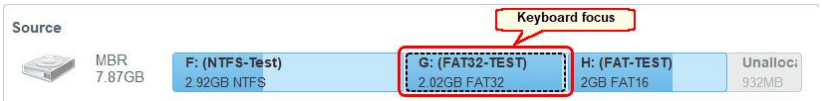
```
* ====================[S.M.A.R.T.]====================
! SAMSUNG HM320HJ 2AK10001(298GB #2): Health Status: BAD
  [01] Read Error Rate
! ====================[S.M.A.R.T.]====================
```

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a technology widely-used in hard drives and solid-state devices that monitors their reliability conditions to predict possible hardware failures.

2 Select the objects you want to backup on the Select disk(s) to create image panel and click the Next button

Keyboard Navigation

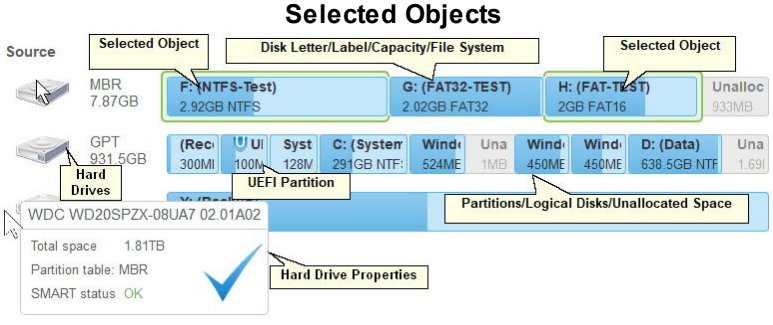
You may use the keyboard to navigate through and select items and objects on the panels.
If there are several objects that can be selected, a dashed frame will appear around the object that is in the current focus.



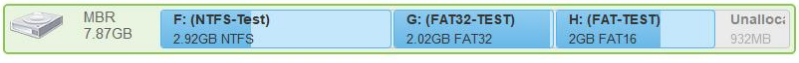
Space	Select/Deselect.
Keyboard arrows	Right / Left / Up / Down
Alt+S / Alt+D	Switch between the Source / Destination panels.
Tab/Shift-Tab	Forward / Backward

More information...

Selected Objects

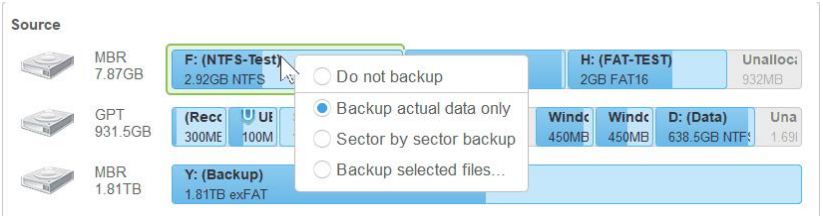


You may select all objects on a hard drive by clicking the hard drive icon. 

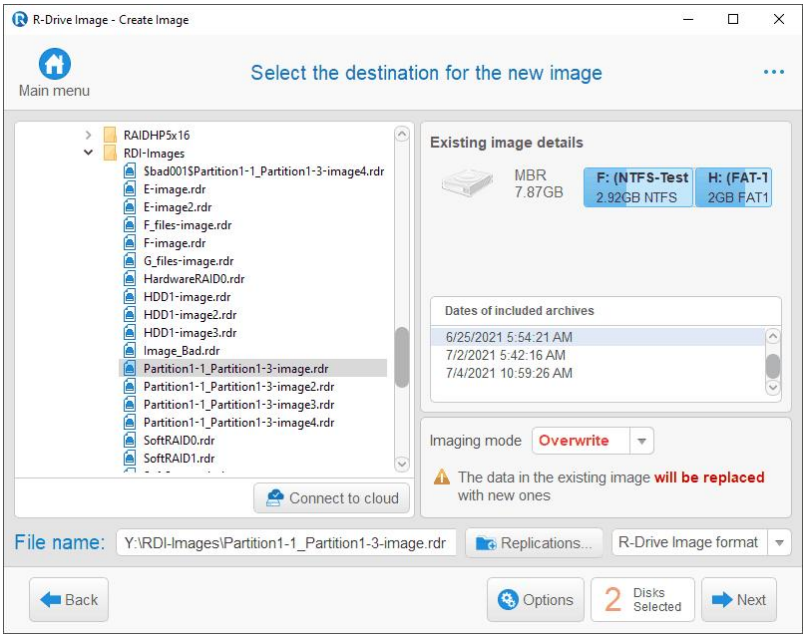
. It will show the marked hard drive. 

Use the **Refresh** button if your computer disk configuration has been changed (when you connect a USB disk, for example).

You may select the backup type for each partition. You may store in the image either the exact **Sector by backup copy** of the object, **Backup useful information only**, or **Backup selected files**...Right-click the object and select the required backup type on the shortcut menu.



3 Select the place on the Choose destination of new image panel to which the image files will be written, specify the file name, and click the Next button



You may select any place including connected network drives, **supported CD and DVD Recorders**, or any other devices with removable storage. Several cloud services and are also supported.

Images can be replicated, that is, their copies may be saved to one or other different locations.

You may also choose what image format will be created. (Only in the **Corporate**, **Technician**, and **Commercial** licenses).

Image file format

RDR	Default. A proprietary image format. Data in the image can be compressed and password protected.
VHD and VHDX	A virtual disk format mainly used in the Windows built-in virtual machine.
VMDK	A common virtual disk format for virtual machines. Only the **Corporate**, **Technician**, and **Commercial** licenses support this format.

VDI	A common VDI for the VirtualBox virtual machine. Only the **Corporate**, **Technician**, and **Commercial** licenses support this format.
You may read more about virtual disk formats in the help page Supported Virtual Disk and Disk Image Formats.	

Imaging Options

Differentially	Appended changes will be those between the saved full image and the current state. If there is no full image, it will be created instead. When restoring data, you will need the full image and ONLY the differential file created at the instant to which you want to restore data.
Incrementally	Appended changes will be those between the last saved changes and the current state. If there is no full image, it will be created instead. When restoring data, you will need the full image and ALL files (both incremental and differential ones) created to the instant to which you want to restore data.
Minimum file sizes: If you need to keep only the latest backup instant, you may use the Append changes differentially to the existing image option and delete all previous differential files. If you need to keep all instances, you may use the Append changes incrementally to the existing image option to keep overall file sizes smaller. **Data safety:** If any of the differential file is damaged, data will be lost only for that backup instant. If any of the incremental file is damaged, data will be lost for all subsequent backup instances starting from the damaged file until the next full of differential backup.	
Full	All data in the image file will be replaced with the current one.

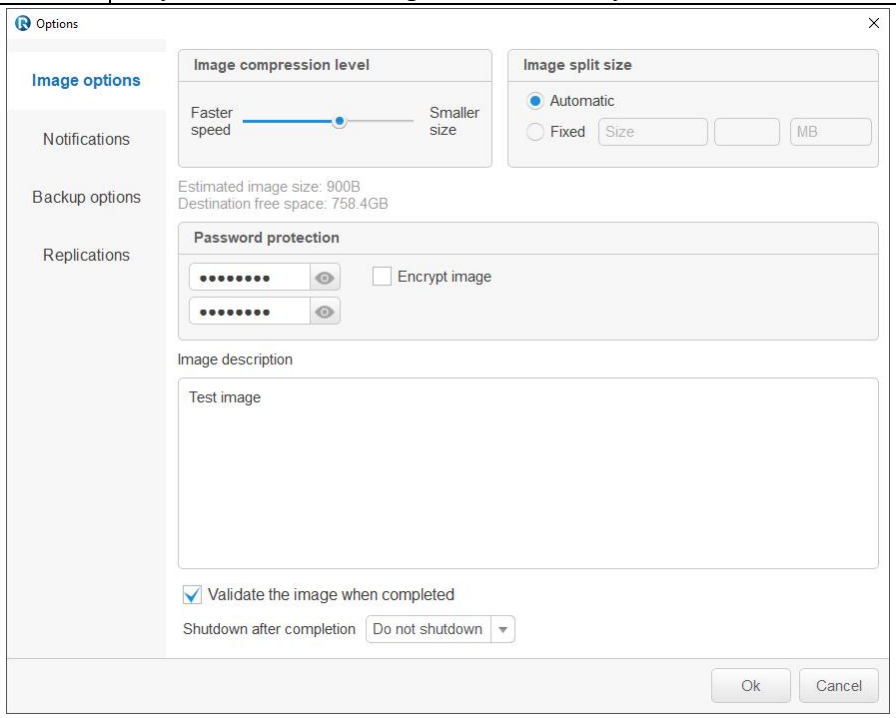
Click the Options button to specify additional options and parameters, if necessary.

- **Image Options** panel

Image options

Image compression ratio	You may compress the data in the image to save space. Please note that the smaller size you select the more time will be spent to create the image file and vise versa.
Volume size for multi-volume image	You may set this option to Automatic and let Windows decide how to split the image file. This mostly depends on the file system on the destination disk. You may also either explicitly specify the split size, or choose a preset for various devices with removable storage. Select Fixed size for that. For the RDR format, a new partial file of the image will be started when the previous file reaches the specified file size. For the VMDK format, a new partial file of the image will be started when the specified data volume of the source object has been processed. Files in the VHD/VHDX and VDI formats cannot be split. You may read more about virtual disk formats in the help page Supported Virtual Disk and Disk Image Formats.
Estimated size	Shows the estimated size of the image file. An actual image size depends on how much empty space is on the selected partition and what file types are there.
Password protection	You may protect your image file with a password. **Note:** If you leave the Encrypt image option clear this feature will provide a relatively moderate protection against conventional unauthorized access. If this option is selected, **R-Drive Image** will

	encrypt the image using the AES-XTS algorithm. **Note:** Only files in the RDR format can be password protected and encrypted.
Image description	You may attach a text description to the image for annotation. Maximum length of the description is 255 characters.
Validate image when completed	Select this option if your want **R-Drive Image** to check the newly created file image for its consistency. This may be useful for storing image files with critical data. Please note that this operation requires additional time.
Shutdown after completion	There are three options for tasks started by the Windows scheduler or as a script: Do not shutdown: The default option. Your computer will not be shut down On success: Your computer will be shut down only if the task completes successfully Always: Your computer will be shut down regardless of the task result. If the task is started from **R-Drive Image** itself, your computer will be shut down only when the task completes successfully.

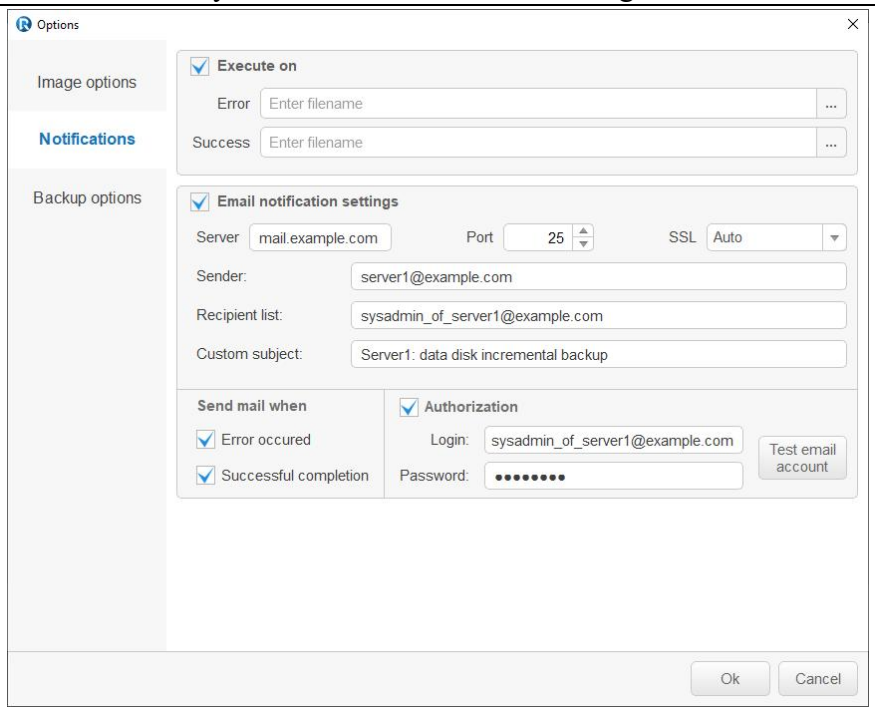


- **Notifications Options** panel

Notifications options

Execute on
You may specify the applications of the `*.com`, `*.exe`, and `*.pif` types, and their parameters delimited by a space.
Mail Notification
If a personal firewall is installed on your computer, you should allow the `r-driveimagecl.exe` application to get access to the e-mail server.

Test mail account
Click this button to test whether you entered the correct mail settings.



- **Backup Options** panel

Backup Options

Snapshot provider	A snapshot provider is a service **R-Drive Image** uses to read the disk content while creating its image. **R-Drive Image** uses the snapshot providers in the order specified on the tab. If it fails to use the first one selected, it tries to use the second one, and so on.
Windows Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use the Windows native snapshot provider. This snapshot provider is able to notify system applications that a snapshot is being taken. If this option is selected, `pagefile.sys` and `hibernate.sys` files are excluded from the image of the system disk.
R-TT Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.
Notify system applications	If this check box is selected, the snapshot provider, if it supports this feature, notifies system applications that a snapshot is being taken.
Limit I/O rate	Specifies the rate limits for reading/writing data from/to disks
Limit read	The rate limit for reading from the source disk
Limit write	The rate limit for writing to the destination disk

Process priority	These options specify how much computer resources **R-Drive Image** will consume during a backup process.
Backup Process Priority	Specifies the priority of the backup process. Similar to that specified in Windows Task Manager.
Use CPU cores	Specifies how many processor cores **R-Drive Image** will use for the backup process.
Ignore disk read errors (bad sectors)	If this check box is selected, **R-Drive Image** will ignore possible read errors when it tries to read data from bad sectors. **R-Drive Image** works with disks with bad sectors in the following way: It reads a certain part of disk (predefined by Windows) and • If read errors are ignored, the entire part with bad sectors will be filled with zeros. • If read errors are not ignored, **R-Drive Image** reads that part sector by sector and shows a warning message for every bad sector with two options: skip the sector or try to read it again. In this case only the bad sectors will be filled with zeros, but all that requires manual actions and extremely slows the imaging process. Please note that **R-Drive Image** is developed for the work with normally functioning disks. If you need to image a malfunctioning disk, use **R-Studio**, a data recovery utility. It has more controls for imaging, and can create **R-Drive Image**-compatible images even in its demo mode, that is, without registering.
Backup AUX applications	**R-Drive Image** is able to make applications run before and after all backup operations. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before the backup operations starts. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after the backup operations completes. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
Snapshot AUX applications	**R-Drive Image** is able to make applications run before and after taking the snapshot of one or several volumes. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`

See **Creating consistent point-in-time backups** for more details.

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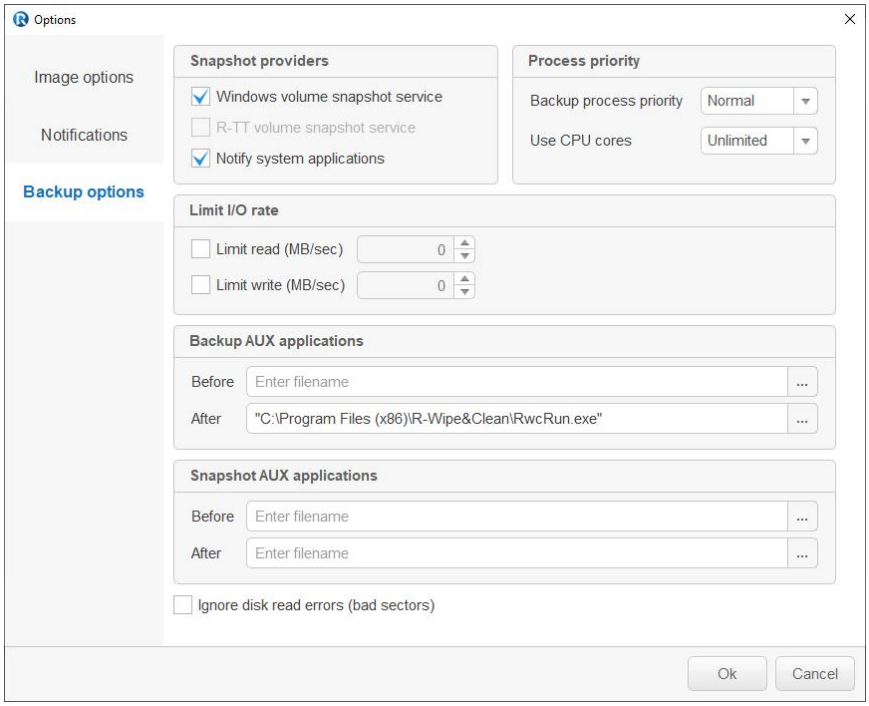
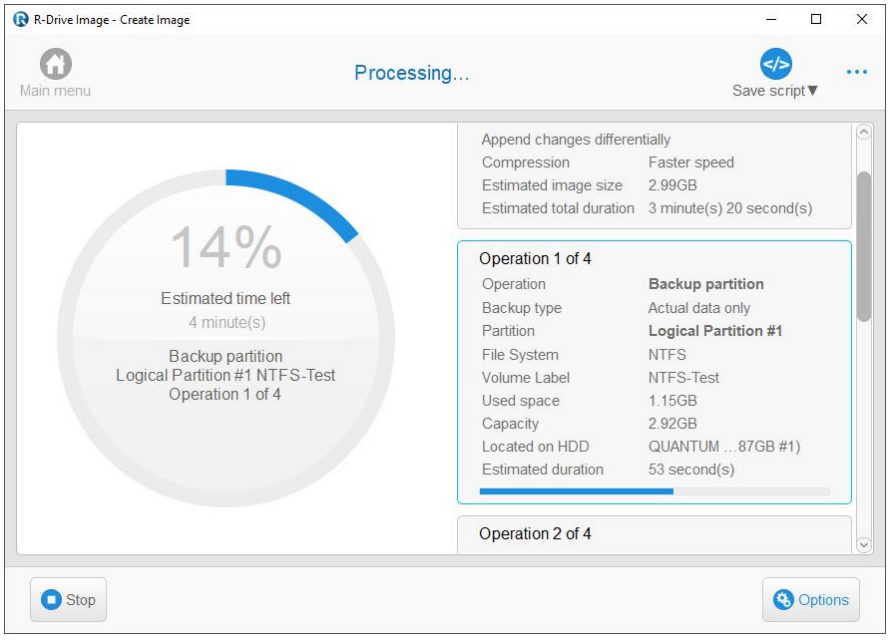


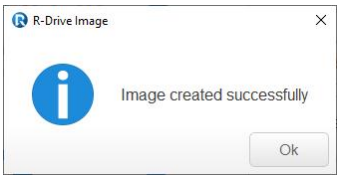
4 Verify that the information on the Processing panel is correct and click the Start button

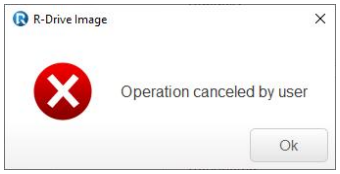
You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility.

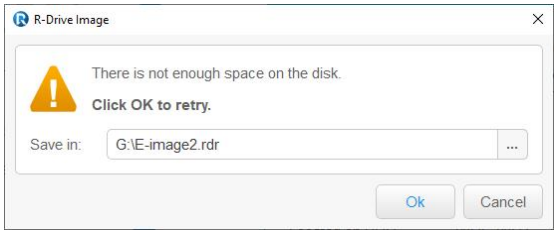


> R-Drive Image will start creating the image file(s)

The Progress bar will show the progress of the current operation and overall process. When the image is created, the **Image created successfully.** message will appear. You may cancel the current operation by clicking the **Cancel** button. The **Operation canceled by user** message will appear.







If there is not enough space on the destination place, the **Not enough space** message will appear. You may select another place for the rest of the image file or cancel the operation

When the operation is over, you may see the results of the operation by clicking the **Open logs** button .

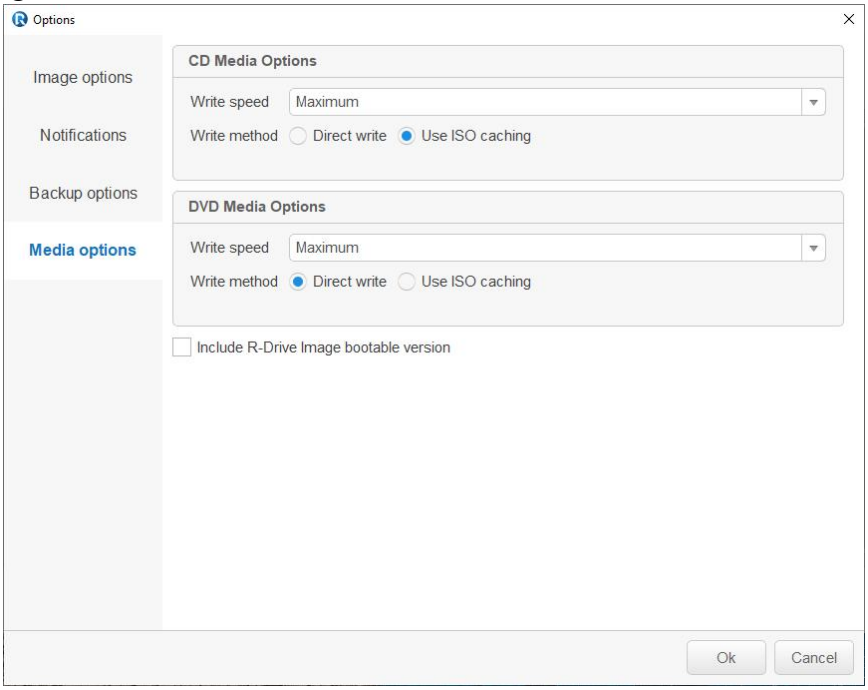
Writing images on CD-R/RW discs and other devices with removable storage

CD-R/RW and DVD discs

If you select a CD/DVD drive to write the image file, you will see the **Media Options** panel

You may create a system recovery disc(s) for your system if you select the Include **R-Drive Image bootable version** option on this panel. You may start your system up using such CD/DVD disc and recover the data using the **R-Drive Image** startup version.

Then select appropriate CD/DVD Media Options. Leave Use ISO caching selected unless you have problems with data recording on a disc.



When you click the **Start** button, **R-Drive Image** will open the CD-R/RW drive tray and the **Insert a blank CD-R/RW disc...** message will appear. Insert a blank CD-R/RW disc and click the **OK** button. Each time **R-Drive Image** fills the disc, the **Insert the next blank CD-R/RW disc...** message will appear. Insert the next blank CD-R/RW disc and click the **OK** button.

If you mistakenly insert a non-empty CD-R/RW disc, the **CD-R/RW disc is not empty...** message will appear. Change the disc to another empty CD-R/RW disc and click the **OK** button.

Supported CD and DVD Recorders.

Disk/file structure for CD-R/RW discs and other devices with removable storage

If you specify the `filename.rdr` file name for the image file, **R-Drive Image** will create the following disk/file structure:	
Disc	**File name**
The first disk	`filename1.rdr`
The second disk	`filename2.rdr`
The third disk	`filename3.rdr`
...	`...`
It is recommended that you mark the disk accordingly. You will start restoring the data from the last disk. Go to the **Restore Data from an Image** topic for more details.	

Bad Sectors

When **R-Drive Image** encounters a bad sector, the **IO Error** message will appear. You may either cancel the current action or fill the bad sectors with zeros.

IO Error Options

Abort	Click this button to cancel the action
Retry	Click this button to try to read the bad sectors once again
Ignore	Click this button to skip this error and fill the bad sectors with zeros
Ignore All	Click this button to skip all errors and fill the bad sectors with zeros

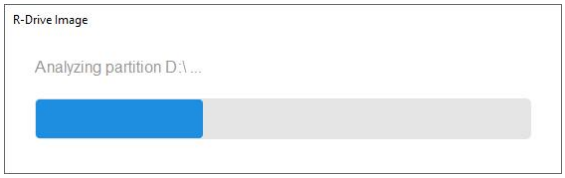
Backup only selected files from the Select disk(s) to create image panel

You may also copy those files to a specified folder.

You may create images from individual files only from partitions with file systems supported by your Windows system (FAT, NTFS, ReFS by default).They may be other file systems if your Windows has installed drivers for them.

1 **Click Create image on the Action Selection panel.**

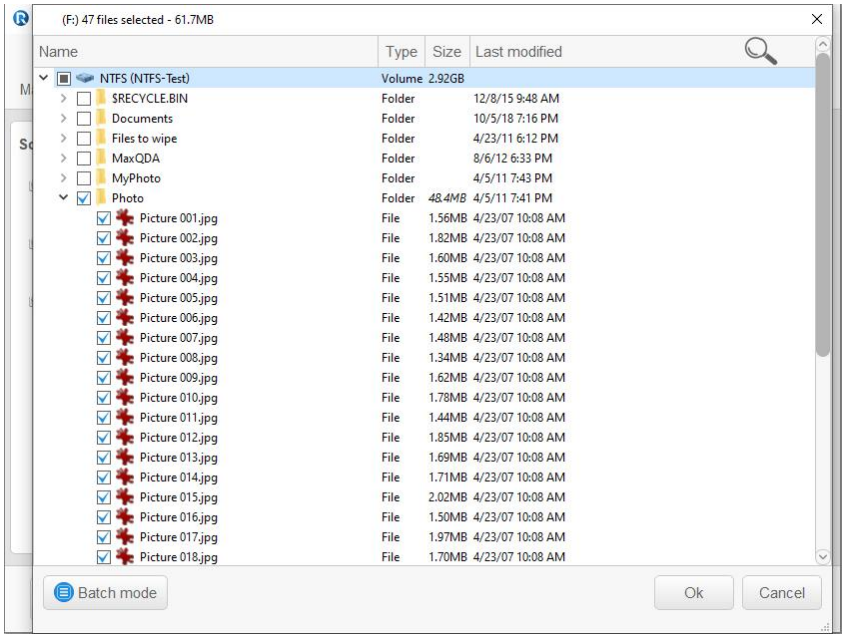
R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.



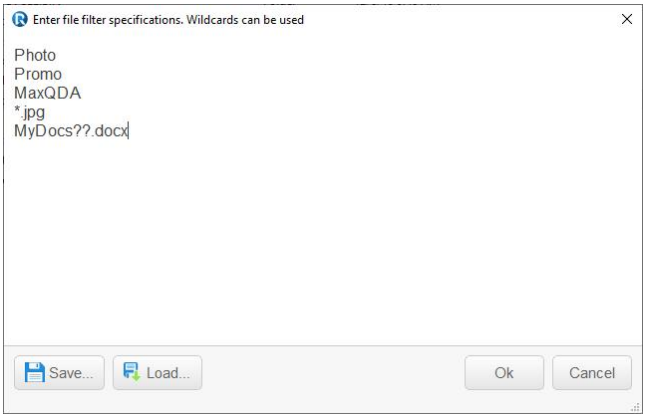
Then the **Select disk(s) to create image** panel will show the configuration.

2 **Right-click the objects files on which you want to backup on the Select disk(s) to create image panel and select Backup selected files only on the shortcut menu.**

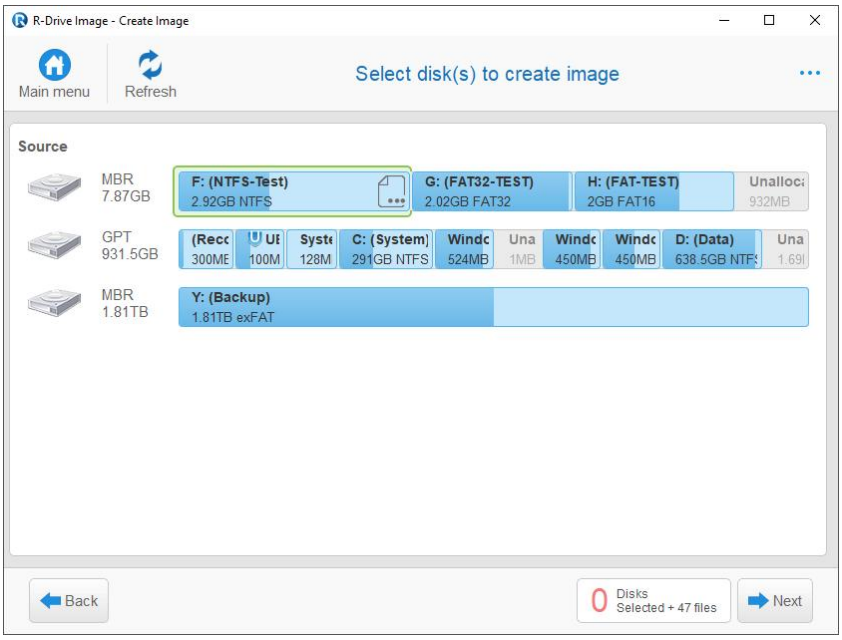
3 **Select files on the Files Selected panel and select the files you want to backup and click the OK button**



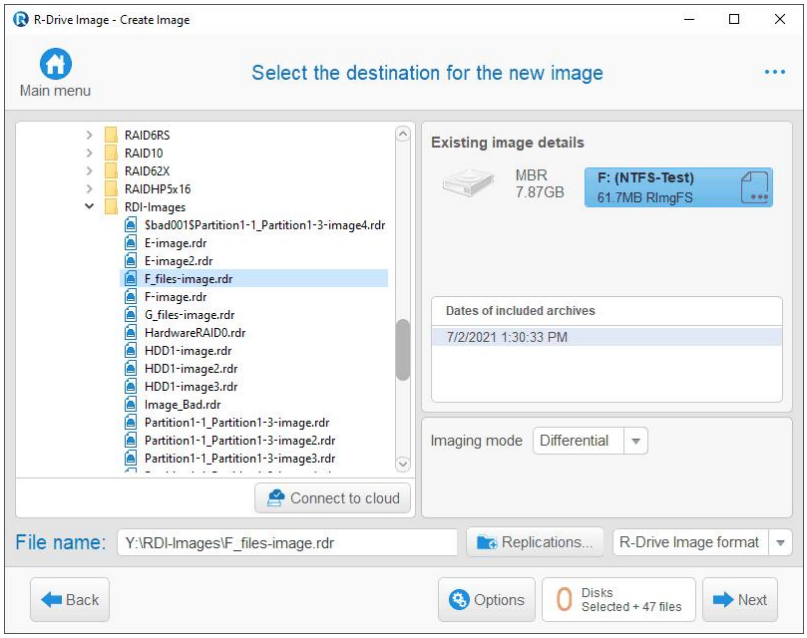
You may search for individual files, use filters, or the Batch mode if you want to include all files of several patterns. Such patterns may include multiple file names, masks, and paths.



And click the Next button on the Select disk(s) to create image panel



4 Select the place on the Choose destination of new image panel to which the image files will be written, specify the file name, and click the Next button



You may select any place including connected network drives, supported CD and DVD Recorders, or any other devices with removable storage.

Click the Options button to specify additional options and parameters, if necessary.

- Image Options

- Notifications Options
- Backup Options

See Creating consistent point-in-time backups for more details.

5 Verify that the information on the Processing panel is correct and click the Start button

You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility.

> R-Drive Image will start creating the image file(s)

The Progress bar will show the progress of the current operation and overall process. When the image is created, the **Image created successfully.** message will appear.

When the operation is over, you may see the results of the operation by clicking the **Open logs** button .

The Disk Actions chapter explains basic disk actions.

The Startup Version chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The Technical Information chapter gives technical information on Supported CD and DVD Recorders **and** List of Hardware Devices Supported in the Startup Mode and another useful technical information.

Follow this link to obtain R-Drive Image Contact Information and Technical Support

2.2 Create an Image from Files

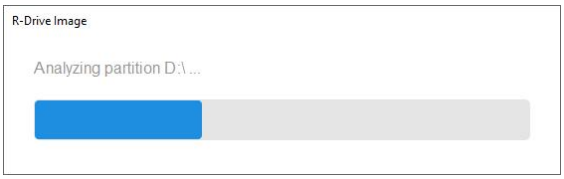
You may backup only selected files rather than the entire object. You can do that in the Create Image and **Create an Image from Files** (below) actions. You may also copy those files to a specified folder.

You may create images from individual files only from partitions with file systems supported by your Windows system (FAT, NTFS, ReFS by default).There may be other file systems if your Windows has installed drivers for them.

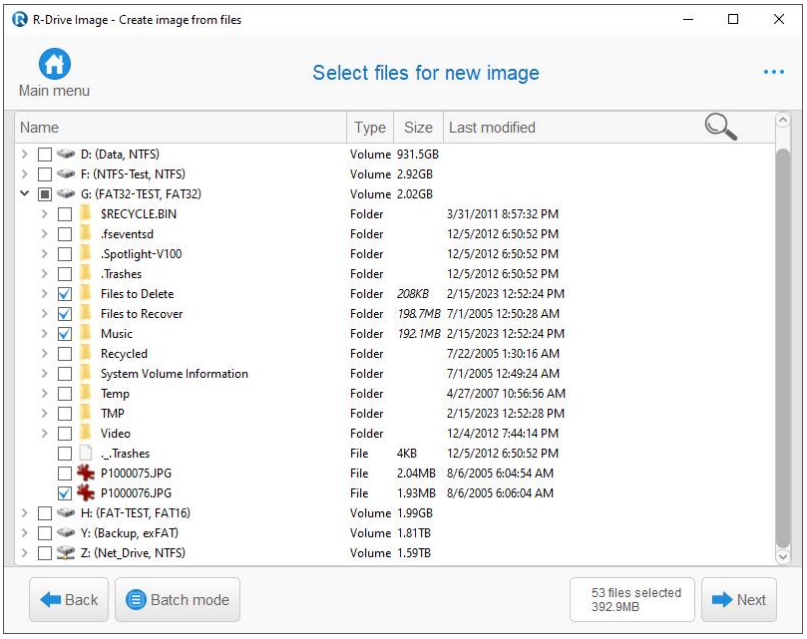
Create Image from selected files from the Action Selection panel

1 Click Create image from files on the Action Selection panel

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

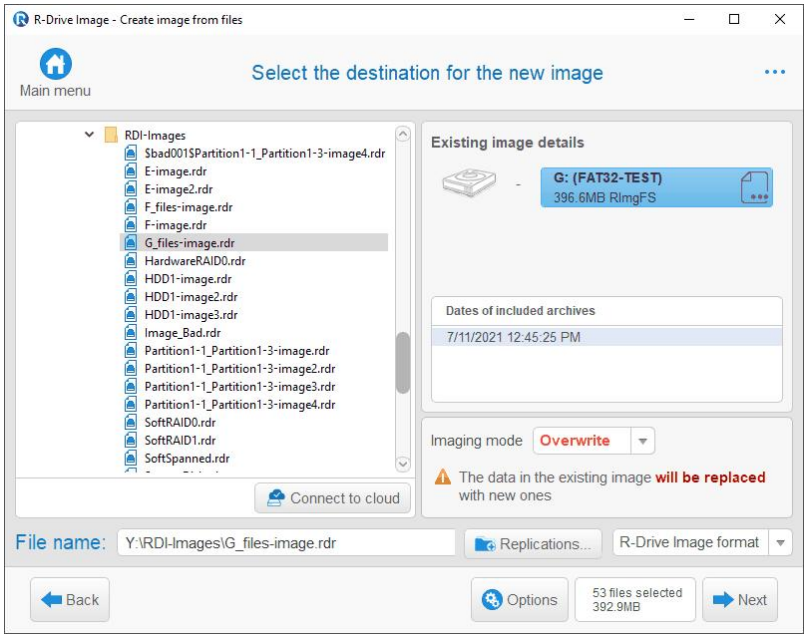


2 Select files you want to include in the image on the Select files for new image panel and click the Next button



You may search for individual files, use filters, or the Batch mode if you want to include all files of several patterns. Such patterns may include multiple file names, masks, and paths.

3 Select the place on the Choose destination of new image panel to which the image files will be written, specify the file name, and click the Next button



You may select any place including connected network drives, **supported CD and DVD Recorders**, any other devices with removable storage, or available FTP/FTPS/SFTP servers. Several cloud services are also supported.

Images can be replicated, that is, their copies may be saved to one or other different locations.

Click the Options button to specify additional options and parameters, if necessary.

- **Image Options** panel

Image compression ratio	You may compress the data in the image to save space. Please note that the smaller size you select the more time will be spent to create the image file and vise versa.
Volume size for multi-volume image	You may set this option to Automatic and let Windows decide how to split the image file. This mostly depends on the file system on the destination disk. You may also either explicitly specify the split size, or choose a preset for various devices with removable storage. Select Fixed size for that. For the RDR format, a new partial file of the image will be started when the previous file reaches the specified file size.
Estimated size	Shows the estimated size of the image file. An actual image size depends on how much empty space is on the selected partition and what file types are there.
Password protection	You may protect your image file with a password. **Note:** If you leave the Encrypt image option clear this feature will provide a relatively moderate protection against conventional unauthorized access. If this option is selected, **R-Drive Image** will encrypt the image using the AES-XTS algorithm.
Image description	You may attach a text description to the image for annotation. Maximum length of the description is 255 characters.
Validate image when completed	Select this option if your want **R-Drive Image** to check the newly created file image for its consistency. This may be useful for storing image files with critical data. Please note that this operation requires additional time.
Shutdown computer when completed	If this checkbox is selected, **R-Drive Image** will shut your computer down when completed the task.

- **Notifications Options** panel

Notifications options

Execute on
You may specify the applications of the `*.com`, `*.exe`, and `*.pif` types, and their parameters delimited by a space.
Mail Notification
If a personal firewall is installed on your computer, you should allow the `r-driveimagecl.exe` application to get access to the e-mail server.
Test mail account
Click this button to test whether you entered the correct mail settings.

- **Backup Options** panel

Backup Options

Snapshot provider	A snapshot provider is a service **R-Drive Image** uses to read the disk content while creating its image. **R-Drive Image** uses the snapshot providers in the order specified on the tab. If it fails to use the first one selected, it tries to use the second one, and so on.

Windows Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use the Windows native snapshot provider. This snapshot provider is able to notify system applications that a snapshot is being taken. If this option is selected, `pagefile.sys` and `hibernate.sys` files are excluded from the image of the system disk.
R-TT Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.
Notify system applications	If this check box is selected, the snapshot provider, if it supports this feature, notifies system applications that a snapshot is being taken.
Limit I/O rate	Specifies the rate limits for reading/writing data from/to disks
Limit read	The rate limit for reading from the source disk
Limit write	The rate limit for writing to the destination disk
Process priority	These options specify how much computer resources **R-Drive Image** will consume during a backup process.
Backup Process Priority	Specifies the priority of the backup process. Similar to that specified in Windows Task Manager.
Use CPU cores	Specifies how many processor cores **R-Drive Image** will use for the backup process.
Ignore disk read errors (bad sectors)	If this check box is selected, **R-Drive Image** will ignore possible read errors when it tries to read data from bad sectors. **R-Drive Image** works with disks with bad sectors in the following way: It reads a certain part of disk (predefined by Windows) and • If read errors are ignored, the entire part with bad sectors will be filled with zeros. • If read errors are not ignored, **R-Drive Image** reads that part sector by sector and shows a warning message for every bad sector with two options: skip the sector or try to read it again. In this case only the bad sectors will be filled with zeros, but all that requires manual actions and extremely slows the imaging process. Please note that **R-Drive Image** is developed for the work with normally functioning disks. If you need to image a malfunctioning disk, use **R-Studio**, a data recovery utility. It has more controls for imaging, and can create **R-Drive Image**-compatible images even in its demo mode, that is, without registering.
Backup AUX applications	**R-Drive Image** is able to make applications run before and after all backup operations. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before the backup operations starts. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after the backup operations completes. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`

Snapshot AUX applications	**R-Drive Image** is able to make applications run before and after taking the snapshot of one or several volumes. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`

See **Creating consistent point-in-time backups** for more details.

4 **Verify that the information on the Processing panel is correct and click the Start button**

You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility.

> **R-Drive Image will start creating the image file(s)**

The Progress bar will show the progress of the current operation and overall process. When the image is created, the **Image created successfully.** message will appear.

When the operation is over, you may see the results of the operation by clicking the **Open logs** button .

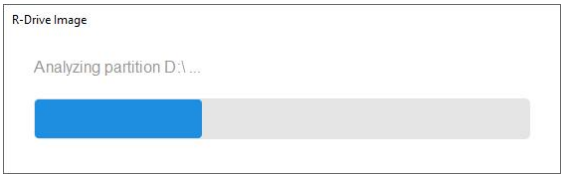
2.3 Copy Files to a Folder

R-Drive Image can copy individual files to a specified folder. Such copy is differential, that is, **R-Drive Image** compares files in the source and target folders and copies only those files that are new or have been altered.

To create an image:

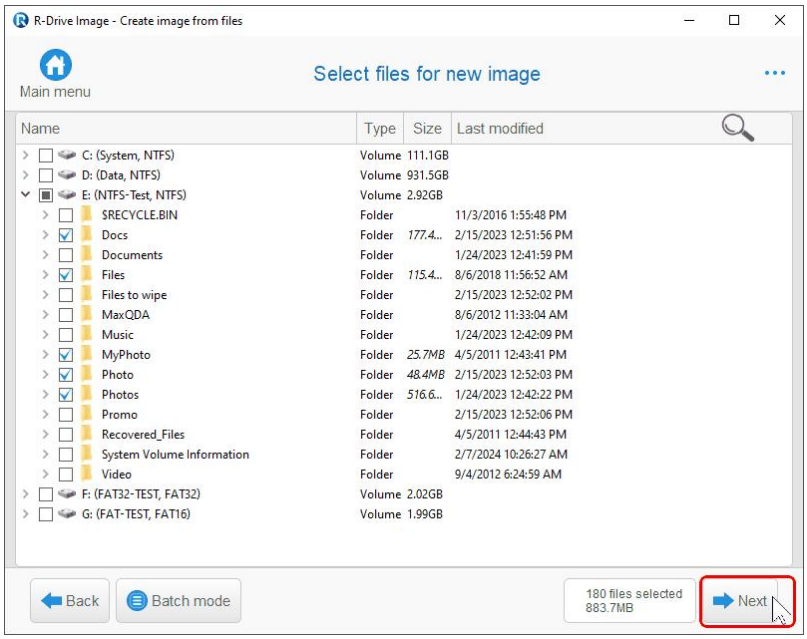
1 **Click Create image from files on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration.



2 Select files you want to include into the Differential copy on the Select files for new image panel and click the Next button

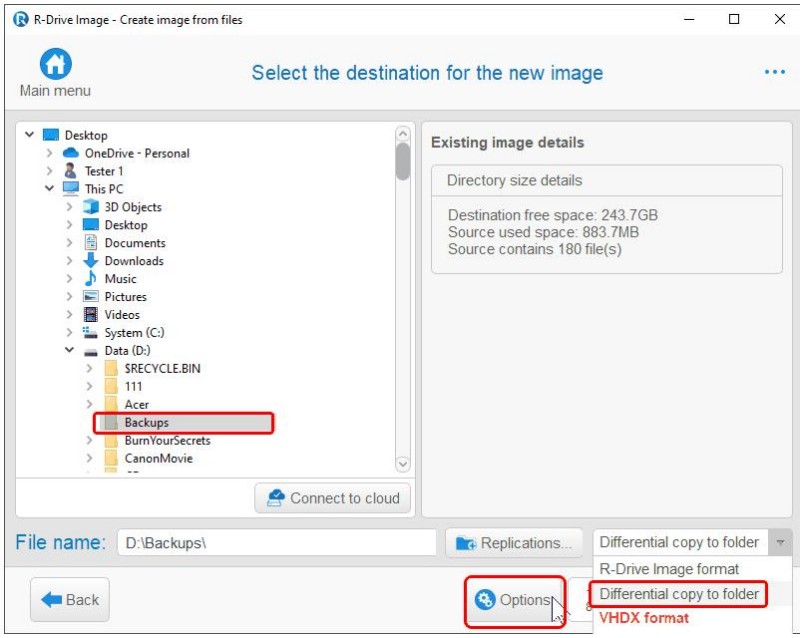
Select files for new image panel



You may search for individual files, use filters, or the Batch mode if you want to include all files of several patterns. Such patterns may include multiple file names, masks, and paths.

3 Select a folder to copy files to on the Select destination of new image panel, switch image file format to Differential copy to folder, and click the Next button

Select the destination for the new image panel

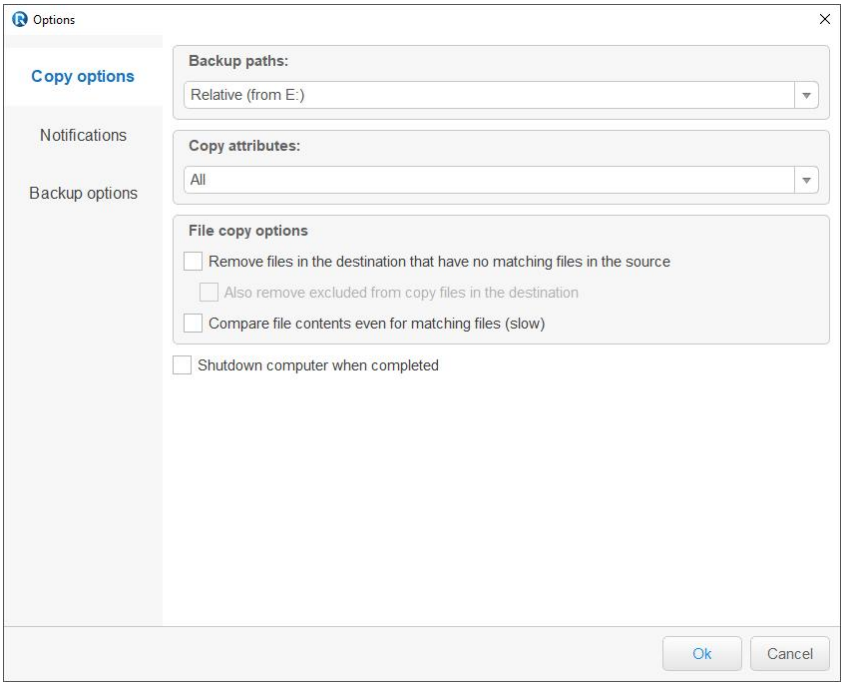


You may select any place including connected network drives, **supported CD and DVD Recorders**, any other devices with removable storage, or available FTP/FTPS/SFTP servers. Several cloud services are also supported.

Copied files can be replicated, that is, their copies may be saved to one or other different locations.

Click the Options button to specify additional options and parameters, if necessary.

Copy options panel



- **Copy options**

Backup paths	Full: The entire file path starting from the device root will be saved. Relative: The file path will be saved from the topmost selected folder.
Copy attributes	Specifies how file attributes will be copied: All, Remove hidden/system attributes, Do not copy file attributes.
File copy options	
Remove files in the destination that have no matching files in the source	If this checkbox is selected, **R-Drive Image** will delete those files in the destination folder which have been removed/deleted in the source folder(s). Copy filters are also applied. For example, if only jpg files (the `*.jpg` filter) are to be copied, only jpg files will be deleted.
Also remove excluded from copy files in the destination	If this checkbox is selected, **R-Drive Image** will delete all files in the destination folder which have been removed/deleted in the source folder(s), regardless on all copy filters.
Compare file contents even for matching files	**R-Drive Image** compares matching files by their size and modification time stamp, and overwrites mismatching files. If this checkbox is selected, **R-Drive Image** will compare by their content, which severe slows down this operation.
Shutdown computer when completed	If this checkbox is selected, **R-Drive Image** will shut your computer down when completed the task.

- **Notifications Options** panel

Notifications options

Execute on
You may specify the applications of the `*.com`, `*.exe`, and `*.pif` types, and their parameters delimited by a space.
Mail Notification
If a personal firewall is installed on your computer, you should allow the `r-driveimagecl.exe` application to get access to the e-mail server.
Test mail account
Click this button to test whether you entered the correct mail settings.

- **Backup Options** panel

Backup Options

Snapshot provider	A snapshot provider is a service **R-Drive Image** uses to read the disk content while creating its image. **R-Drive Image** uses the snapshot providers in the order specified on the tab. If it fails to use the first one selected, it tries to use the second one, and so on.
Windows Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use the Windows native snapshot provider. This snapshot provider is able to notify system applications that a snapshot is being taken. If this option is selected, `pagefile.sys` and `hibernate.sys` files are excluded from the image of the system disk.
R-TT Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.
Notify system applications	If this check box is selected, the snapshot provider, if it supports this feature, notifies system applications that a snapshot is being taken.
Limit I/O rate	Specifies the rate limits for reading/writing data from/to disks
Limit read	The rate limit for reading from the source disk
Limit write	The rate limit for writing to the destination disk
Process priority	These options specify how much computer resources **R-Drive Image** will consume during a backup process.
Backup Process Priority	Specifies the priority of the backup process. Similar to that specified in Windows Task Manager.
Use CPU cores	Specifies how many processor cores **R-Drive Image** will use for the backup process.
Ignore disk read errors (bad sectors)	If this check box is selected, **R-Drive Image** will ignore possible read errors when it tries to read data from bad sectors. **R-Drive Image** works with disks with bad sectors in the following way: It reads a certain part of disk (predefined by Windows) and • If read errors are ignored, the entire part with bad sectors will be filled with

	zeros. • If read errors are not ignored, **R-Drive Image** reads that part sector by sector and shows a warning message for every bad sector with two options: skip the sector or try to read it again. In this case only the bad sectors will be filled with zeros, but all that requires manual actions and extremely slows the imaging process. Please note that **R-Drive Image** is developed for the work with normally functioning disks. If you need to image a malfunctioning disk, use **R-Studio**, a data recovery utility. It has more controls for imaging, and can create **R-Drive Image**-compatible images even in its demo mode, that is, without registering.
Backup AUX applications	**R-Drive Image** is able to make applications run before and after all backup operations. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before the backup operations starts. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after the backup operations completes. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
Snapshot AUX applications	**R-Drive Image** is able to make applications run before and after taking the snapshot of one or several volumes. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`

See **Creating consistent point-in-time backups** for more details.

4 Verify that the information on the Processing panel is correct and click the Start button

You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility.

> R-Drive Image will start creating the image file(s)

The Progress bar will show the progress of the current operation and overall process. When the image is created, the **Image created successfully.** message will appear.

When the operation is over, you may see the results of the operation by clicking the **Open logs** button .

2.4 Restore Data from an Image

Note: You may read about **Support for Various Disk Partition Schemes and File Systems** to learn more about possible options for your specific case.

We recommend you stop all other programs before you start restoring data on a partition.

Note: Go to the **Restoring Data to a System or Other Locked Disk** topic if you want to learn how to restore data to system disks.

You may restore data from images for entire disk objects or restore only selected files.

Restoring partitions and entire disks

R-Drive Image can smoothly copy/restore drives/images onto larger drives or drives of the same size. Moreover, it can shrink/extend partitions with some file systems if need be.

Whether **R-Drive Image** can copy/restore data onto a smaller drive depends on the last cluster in the file system of the source drive/image. It cannot do this if the data blocks are physically located outside the boundaries of the smaller drive, even when the total size of the file system is smaller than the drive size. Try to defragment the source drive then.

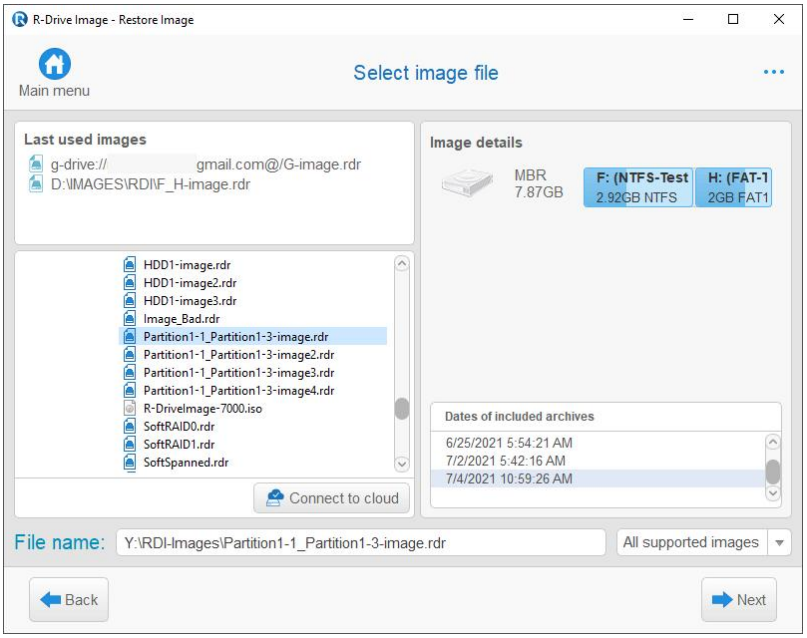
To restore data from an image to a disk/partition:

1 **Click Restore Image on the Action Selection panel.**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress. Then **R-Drive Image** will show you the **Choose image file** panel with the disks/folder structure.

2 **Select the file with the image on the Choose image file panel and click the Next button**

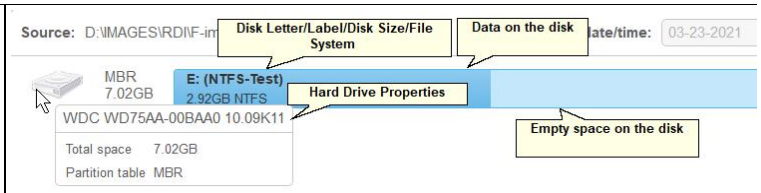
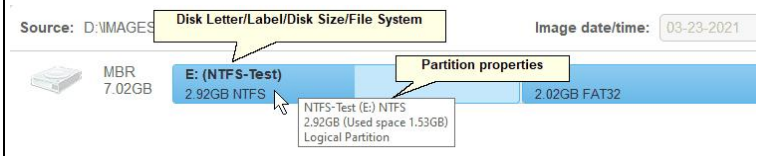
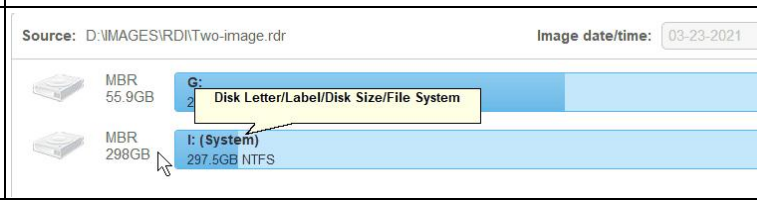
In addition to the `rdr` native file format, **R-Drive Image** support several virtual disk and disk image formats.



When you click the file, you may view its content in the right panel.

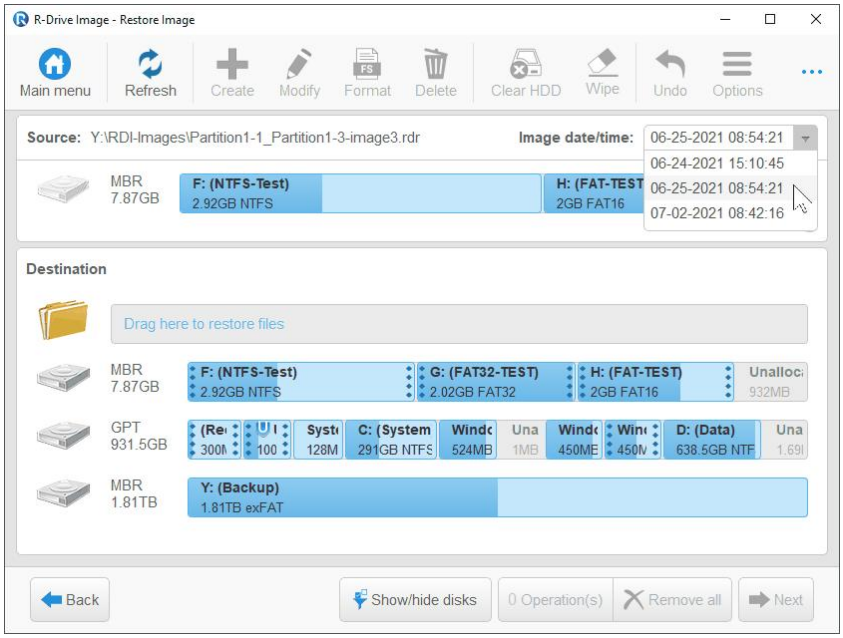
More information...

Objects in Image Files

Image with one logical disk	
Image with two logical disks on one hard drive	
Image with two logical disks on two hard drives	

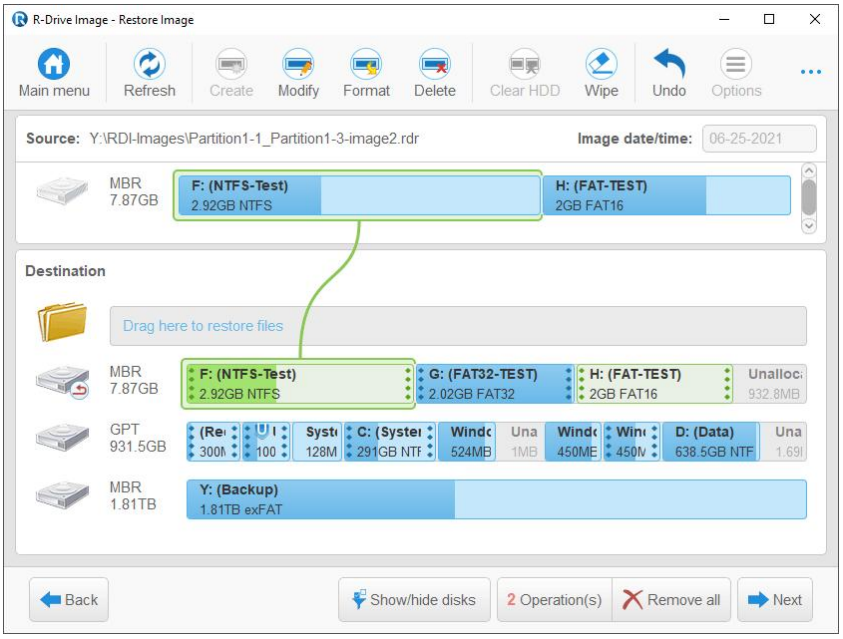
You may also restore data directly from Windows explorer by right-clicking the required image file with the `.rdr` extension and selecting **Restore Image** from the shortcut menu.

If you select an image with incremental or differential data backup, **select** the date and time of image creation and click the **Next** button.



If the image file is password-protected, the **Password prompt...** message will appear. Enter the password and click the **OK** button.

3 Select the object in the image file on the Image Object Selection panel, select a destination, and click the Next button



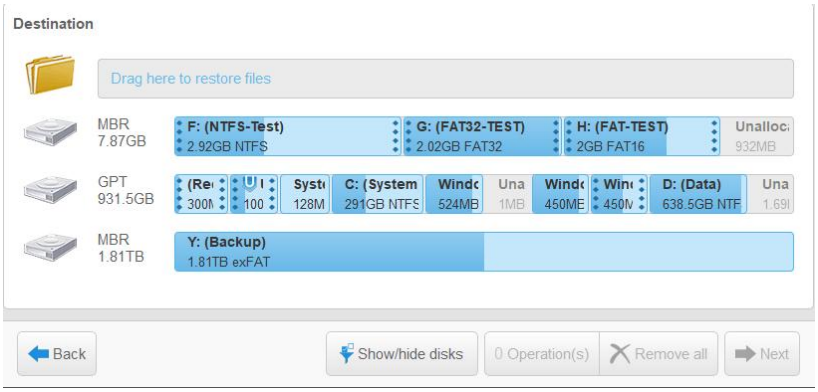
Use the **Refresh** button if your computer disk configuration has been changed (when you connect a USB disk, for example).

R-Drive Image may show only those disks that you wand to see.

To hide/show disks:

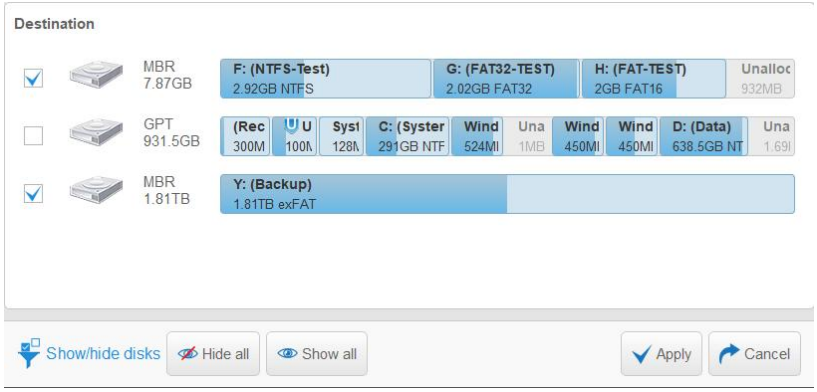
1 Click the Show/hide disks button

Hide/show disks



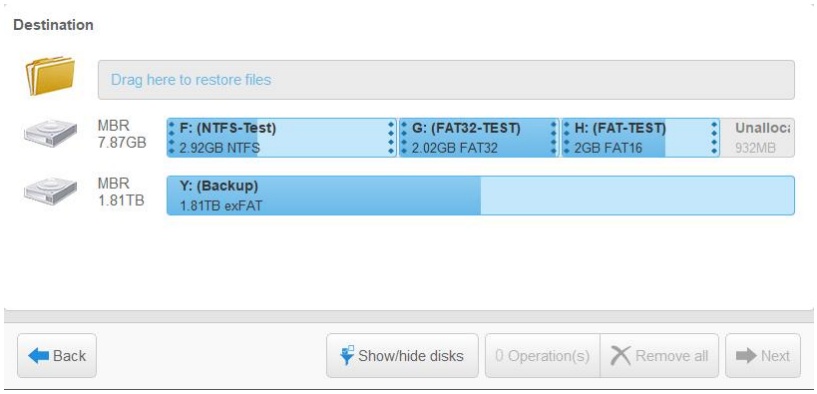
2 **Clear/select disks you want to hide/show**

Hide/show disks

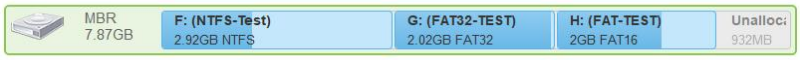


> **R-Drive Image will show only those disks that have been selected**

Hide/show disks



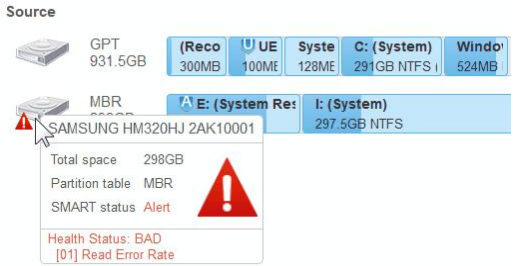
You may select all objects on a hard drive by clicking the hard drive icon. 

. It will show the marked hard drive. 

You may select only one object at a time, and you need to specify the destination to proceed further.

S.M.A.R.T. warning for a hard drive

If a hard drive has S.M.A.R.T. warnings, a color mark will appear on its left-top corner. Dragging the cursor over the drive will show a tooltip explaining that warning.



Warnings will also appear in confirming e-mails for scheduled actions.

```
* ====================[S.M.A.R.T.]====================
! SAMSUNG HM320HJ 2AK10001(298GB #2): Health Status: BAD
  [01] Read Error Rate
! ====================[S.M.A.R.T.]====================
```

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a technology widely-used in hard drives and solid-state devices that monitors their reliability conditions to predict possible hardware failures.

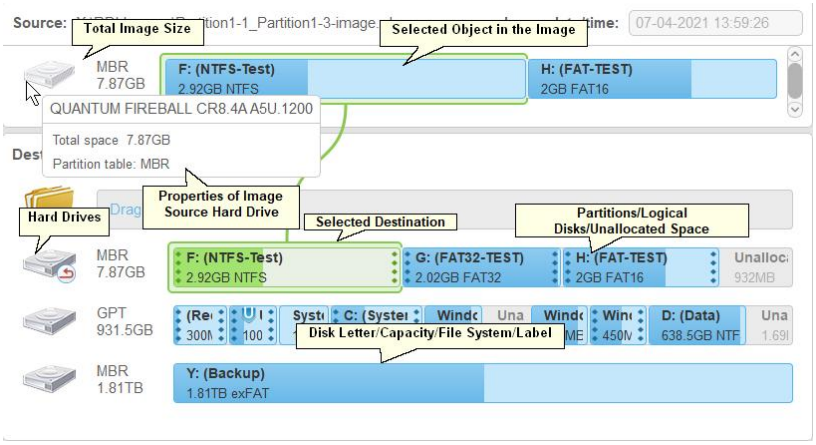
More information...

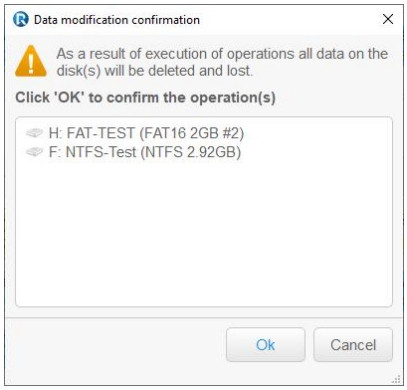
If the chosen destination is smaller than the selected image, **R-Drive Image** will show the **Destination disk is too small** message and you will need to select another destination.

If you select several partitions as the destination, **R-Drive Image** will show the **You have selected several partitions...** message. If you click the **OK** button, all those partitions will be deleted and data will be restored on that free space.

Note: Although **R-Drive Image** shows unallocated space instead of the deleted partitions, the partitions and their data will be actually deleted only when **R-Drive Image** starts restoring the data from the image.

Selected Object and Destination





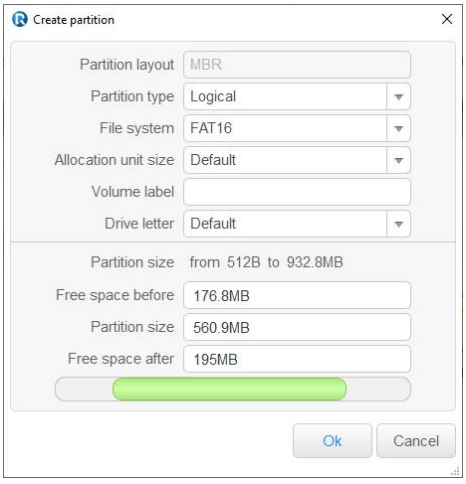
5 Specify restore parameters on this panel and click the Next button

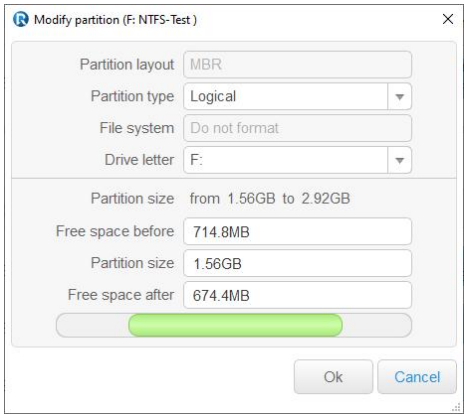
You may change create/copy/modify parameters on the **Create partition, Copy partition**, or **Modify partition** panel. Click the **Create / Copy Options / Modify** button, respectively.

Create/Copy Partition Parameters

Partitioning	The type of partitioning scheme. See **Support for Various Disk Partition**

scheme	**Schemes and File Systems** for the list of supported partition types.
Partition type	Primary (Active)/ Primary/Logical You may specify the type of the partition to be restored. Do not change this setting unless you have serious reasons to do so.
File system	You may select the file system for the partition to be restored.
Allocation unit size	It is the size of a disk block, that is, the minimum allocatable disk space. (only on the **Create partition** panel.)
Volume label	Label of this volume. You can change it.
Drive letter	Select the letter that will be assigned to the partition. You may select "Do not connect" if you do not want to connect this partition to your system. Or "Do not modify" it you do not want to change the drive letter.
Partition size	Minimum/maximum size of the partition to be restored.
Free space before	You may specify the size of free space that will be left on the hard drive before the beginning of the partition.
Partition size	You may specify the size of the partition to be restored. Should be between the minimum and maximum partition size.
Free space after	You may specify the size of free space that will be left on the hard drive after the end of the partition.
	You may visually adjust the location and size of the object to be restored. All other restore options will be adjusted accordingly. Also, when you adjust one or several restore options directly, these changes will be shown visually. Green marks available space. See **Support for Various Disk Partition Schemes and File Systems** for the list of supported file systems.



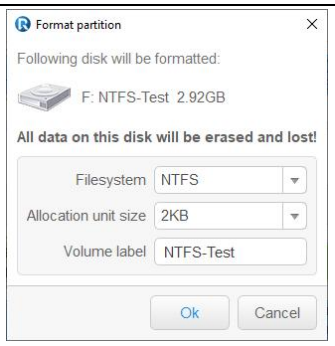


You may format a disk if necessary. Click the **Format** button and select the format parameters on the **Format partition** panel.

Format partition options

File system	You may select the file system for the partition to be formatted.
Allocation unit size	It is the size of a disk block, that is, the minimum allocatable disk space.

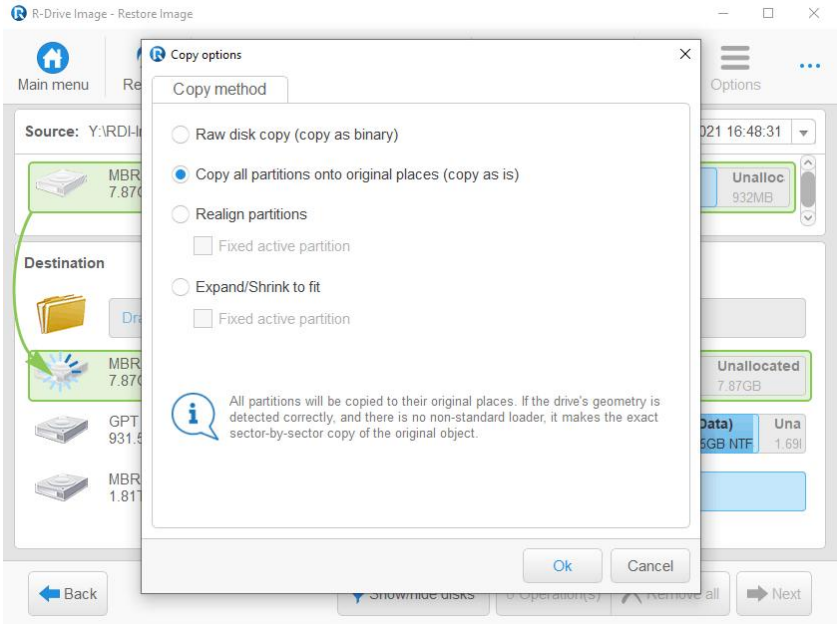
Volume label	Label for this volume.



You may also delete or wipe selected disk object by clicking the **Delete** button. Click the **Clear HDD** or **Wipe** button if you want to delete all object on the hard drive or wipe its data. Go to the **Partition Manager** help page for more details..

- ***To restore data from an image of an entire hard drive to a hard drive:***

The **Restore/Copy Parameters** panel will be different with different sets of options:

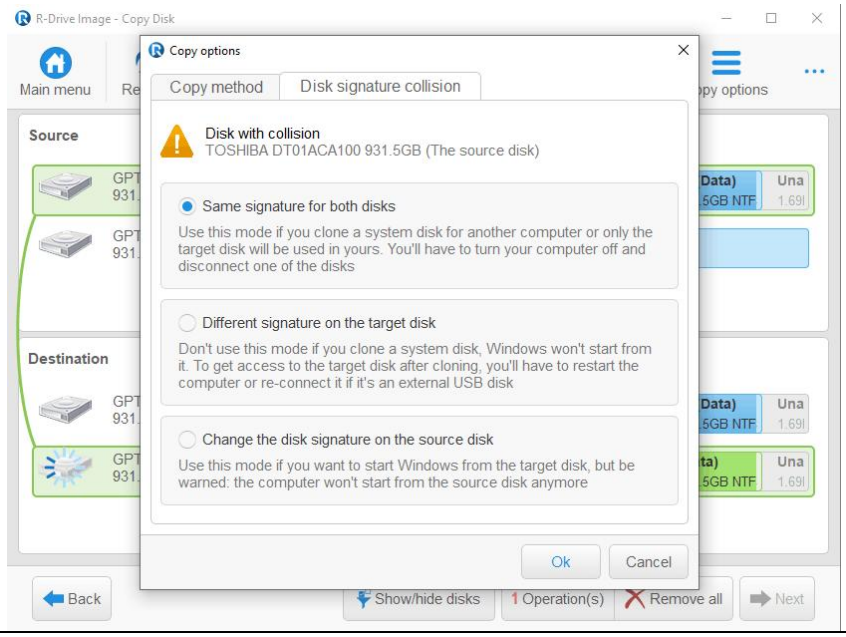


HDD Copy Method	
Raw disk copy	**R-Drive Image** writes sector-by-sector the data from the original drive or its image to the target one making an exact copy of the original disk regardless of its partitioning method. Can be used if other methods create a non-bootable disk due to incorrect detection of drive's geometry or non-standard loader. Drawback: partition sizes cannot be changed.
Copy all partitions onto original places	**R-Drive Image** copies all partitions to their original places. If **R-Drive Image** detects the drive's geometry correctly, and there is no non-standard loader, it makes the same result as during Raw disk copy.
Realign partitions	**R-Drive Image** will copy the partitions on the disk with a 512KB alignment. This is very useful for SSD and advanced-formatted disks. If there are empty

	(non-used) spaces between partitions, those spaces will be removed taking into account the alignment.
Expand/Shrink partition to whole disk	If there are empty (not-used) places between the partitions or they occupy less or more space than the target drive, **R-Drive Image** proportionally expands/shrinks them to occupy the entire target drive. Otherwise it is similar to Copy all partitions onto original places.
Fixed active partition	**R-Drive Image** preserves the original offset/size of the active partition (in case the loader has links to it).

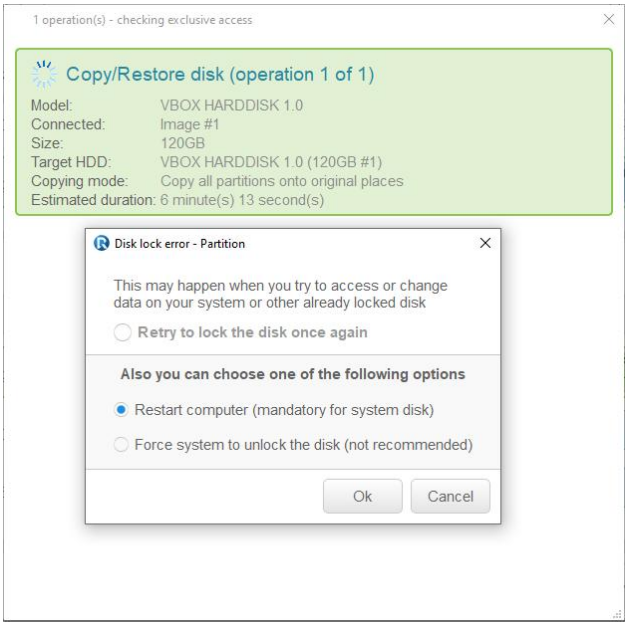
See **Support for Various Disk Partition Schemes and File Systems** for details.

When you restore data from an image of a system disk, a disk signature collision may occur. In this case, the **Disk Signature Collision** panel will appear. You may specify the way to resolve this collision on this panel.



Disk Signature Collision Resolving	
Same signature for both disk	**R-Drive Image** will create an identical copy of the source disk with the same signature. To avoid disk signature collision, you'll have to disconnect one of the disks and restart the computer, if necessary. Use this mode if you clone a system disk for another computer or only the target disk will be used in yours.
Different signature on the target disk.	**R-Drive Image** will write another disk signature to the target disk. Don't use this mode if you clone a system disk, Windows won't start from it. To get access to the target disk after cloning, you'll have to restart the computer or re-connect it if it's an external USB disk.
Change the disk signature on the source disk.	**R-Drive Image** will change the disk signature on the source disk. Use this mode if you want to start Windows from the target disk, but be warned: the computer won't start from the source disk anymore.

If you try to restore data to a system or other disk locked by the system or other application, the **Disk not locked** message will appear.



To continue restoring you may:

- If you restore data to your system disk, select Restart computer (recommended) to continue restoring the data in the **R-Drive Image** startup mode. Read carefully the Restoring Data to a System Disk topic before you proceed.
- **If you restore data to a disk locked by other low-level disk software (including Windows internal services)**, stop this software and select Retry to lock the disk once again.
- You may also try to unlock the disk by selecting Force Windows to unlock the disk (not recommended). If Windows fails to unlock the disk, the **Disk not locked** message will appear again. You will need to stop the software locking the disk manually or select Restart computer (recommended) to continue restoring the data in the **R-Drive Image** startup mode.

Note: Use this option cautiously, because it may cause unpredictable results including system crash and data loss.

6 Verify that the information on the Processing panel is correct and click the Start button

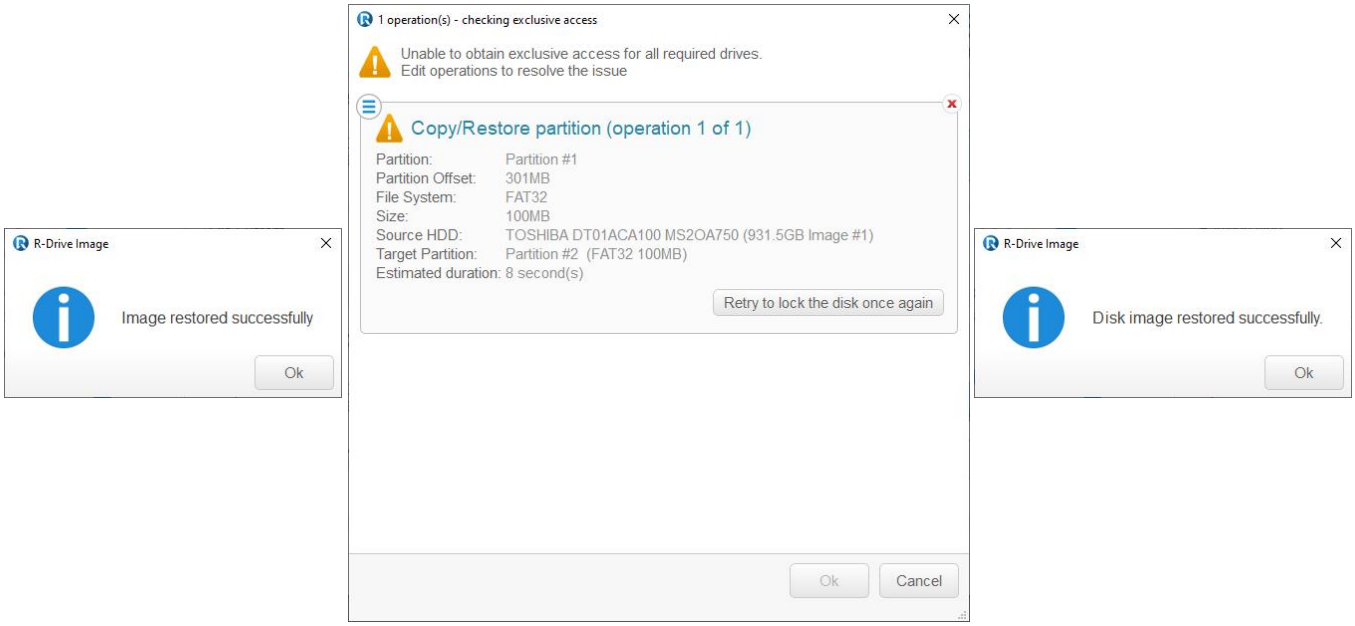
You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility.

> R-Drive Image will start restoring the data from the image file to the selected destination.

When the image is restored, the **Image restored successfully** message will appear.

If some other program (like a file manager) is accessing the partition on which the data is to be restored, the **Cannot lock the disk** message will appear. Close this program or make it stop accessing the partition.

If you restore data from an image of an entire hard drive to an entire hard drive, the system may not see the restored partitions until restarted. In this case **R-Drive Image** will show the **Disk image restored successfully.** message. Click the **Yes** button to restart your system.



Restoring data from CD-R/RW drives or other devices with removable storage

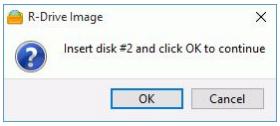
For the image with the file name `filename.rdr`, **R-Drive Image** creates the following disk/file structure:	
Disk	**File name**
The first disk	`filename1.rdr`
The second disk	`filename2.rdr`
The third disk	`filename3.rdr`
...	`...`
You should start restoring the data from the **last** disk. Each time **R-Drive Image** requires a new disk, the **Insert disk #...** message will appear. Insert the necessary disk and click the **OK** button. Follow the device instructions on how to change its disks. **Note**: At the beginning, **R-Drive Image** may require you to change the first/last disks several times.	

Bad Sectors

When **R-Drive Image** encounters a bad sector, the **IO Error** message will appear. You may either cancel the current action or fill the bad sectors with zeros.

IO Error Options

Abort	Click this button to cancel the action
Retry	Click this button to try to read the bad sectors once again
Ignore	Click this button to skip this error and fill the bad sectors with zeros
Ignore All	Click this button to skip all errors and fill the bad sectors with zeros



Restoring selected files and folders

(See **Support for Various Disk Partition Schemes and File Systems** for the list of supported file systems)

1 **Click Restore Image on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress. Then **R-Drive Image** will show you the **Choose image file** panel with the disks/folder structure.

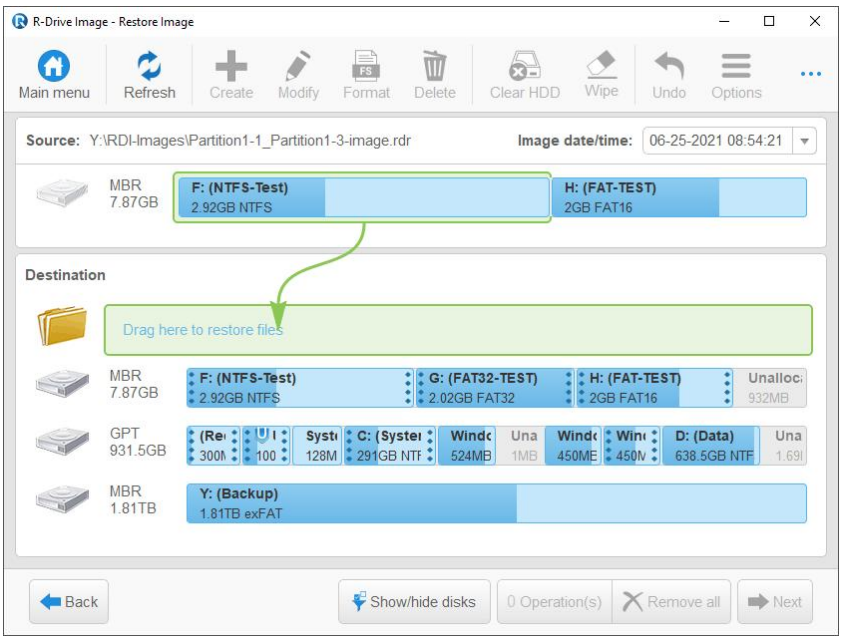
2 **Select the file with the image on the Choose image file panel and click the Next button**

When you click the file, you may view its content in the right panel.

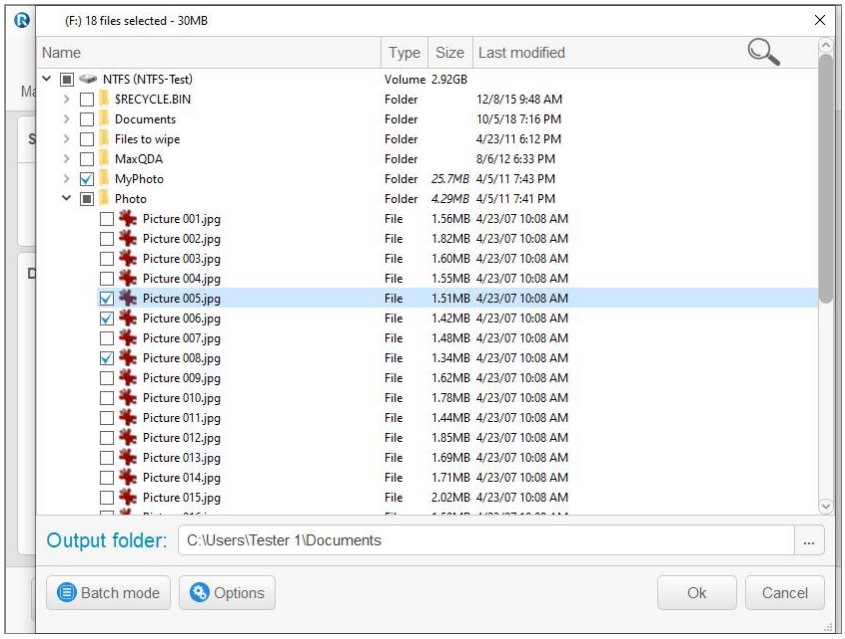
If you select an image with incremental or differential data backup, **select** the date and time of image creation and click the **Next** button

If the image file is password-protected, the **Password prompt...** message will appear. Enter the password and click the **OK** button.

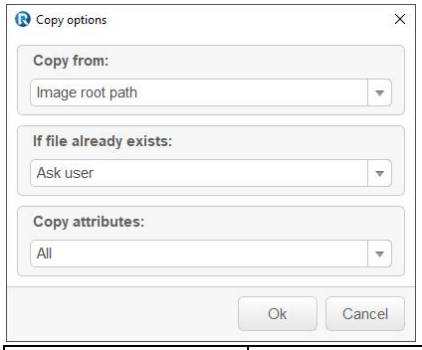
3 **Select the object in the image file on the Image Object Selection pane where the files and folders reside, and click the Next button**



4 Mark folders and files to restore on the Select Files to Restore panel, specify the output folder, and click the OK button



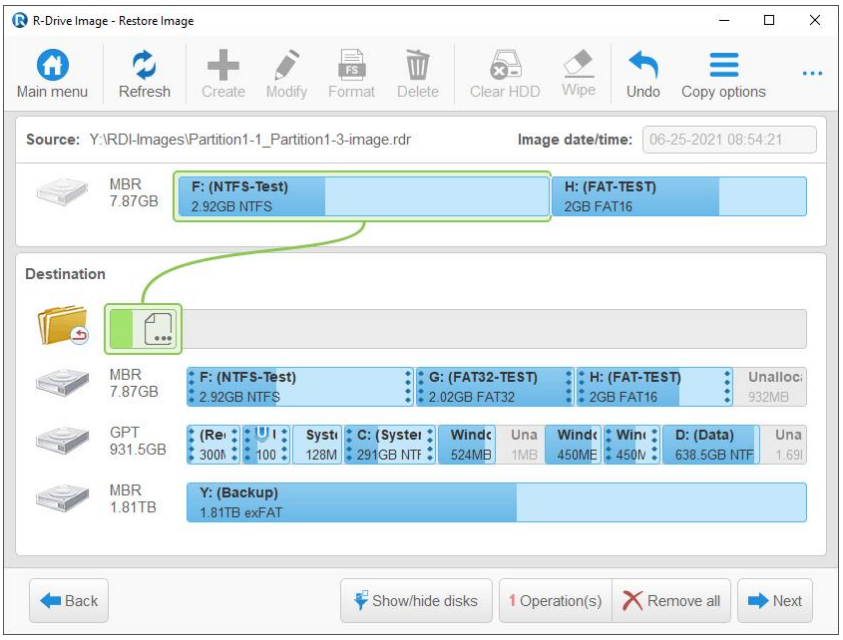
You may also specify Options that specifies paths for restored files, control processing of already existing files, and what to do with file attributes.



Copy from:	You may copy files either with their full path or from their parent folder
If file already exists:	You may specify **R-Drive Image** what to do with existing files when they have the same name with the new ones.
Copy attributes:	You may specify **R-Drive Image** what to do with file attributes: Copy all attributes, Remove hidden / system attributes, or Do not copy file attributes.

You may search for individual files, use filters, or the Batch mode if you want to include all files of several patterns. Such patterns may include multiple file names, masks, and paths.

5 Click the Next button to continue file restore on the Image Object Selection panel.

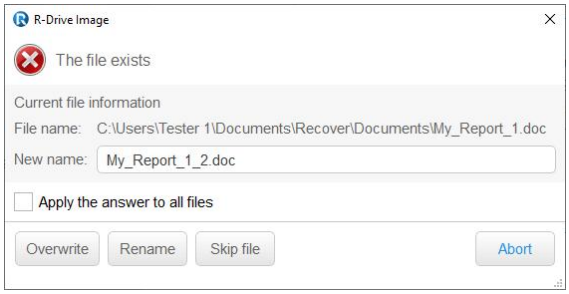


6 Verify that the information on the Processing panel is correct and click the Start button

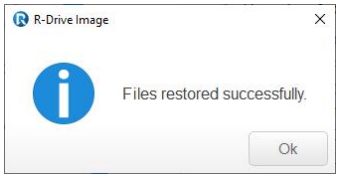
You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility.

> R-Drive Image will start restoring the files from the image file to the selected destination.

If the files already exist in the specified folder, **The file exists** message will appear. Click the necessary button to resume the restore operation.



When the image is restored, the **Files restored successfully** message will appear.



The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

2.5 Copy a Disk to a Disk

Attention: All previous data on the destination disk will be completely deleted

R-Drive Image can smoothly copy/restore drives/images onto larger drives or drives of the same size. Moreover, it can shrink/extend partitions with some file systems if need be.

Whether **R-Drive Image** can copy/restore data onto a smaller drive depends on the last cluster in the file system of the source drive/image. It cannot do this if the data blocks are physically located outside the boundaries of the smaller drive, even when the total size of the file system is smaller than the drive size. Try to defragment the source drive then.

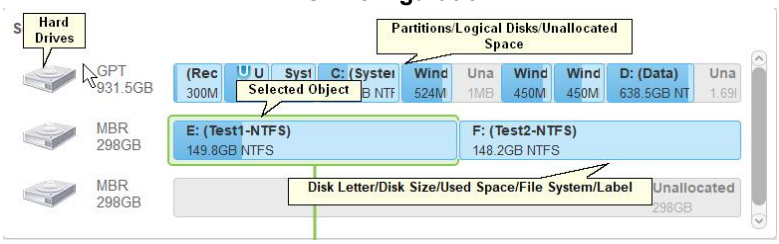
To copy an entire disk or its part to another one:

1 **Click Copy Disk on the Action Selection panel.**

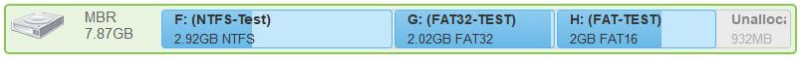
R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress. Then the **Object Selection** panel will show the configuration.

More information...

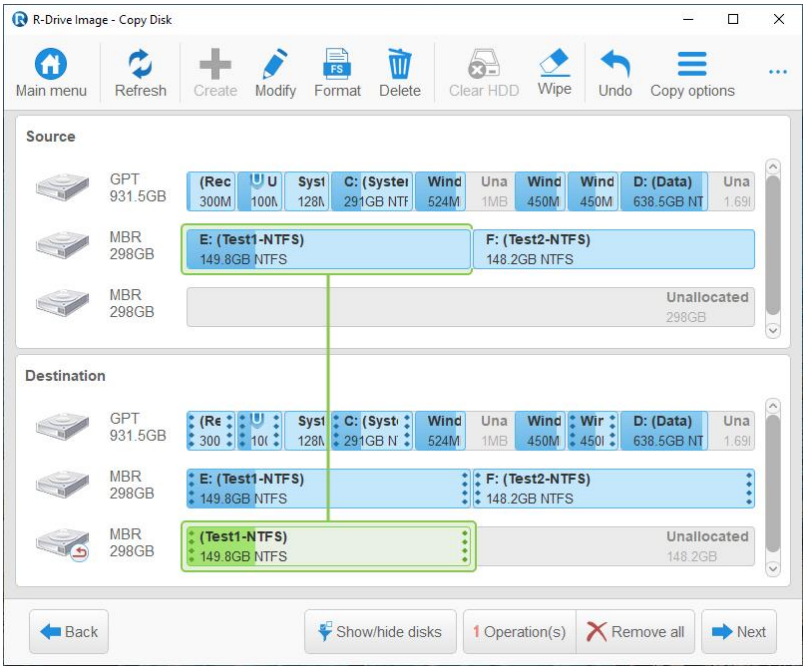
Disk Configuration



You may select all objects on a hard drive by clicking the hard drive icon. 

. It will show the marked hard drive. 

2 Select the disk object on the Source: on the Object Selection panel, select a destination, and click the Next button



You may select only one object at a time, and you need to specify the destination to proceed further.

Use the **Refresh** button if your computer disk configuration has been changed (when you connect a USB disk, for example).

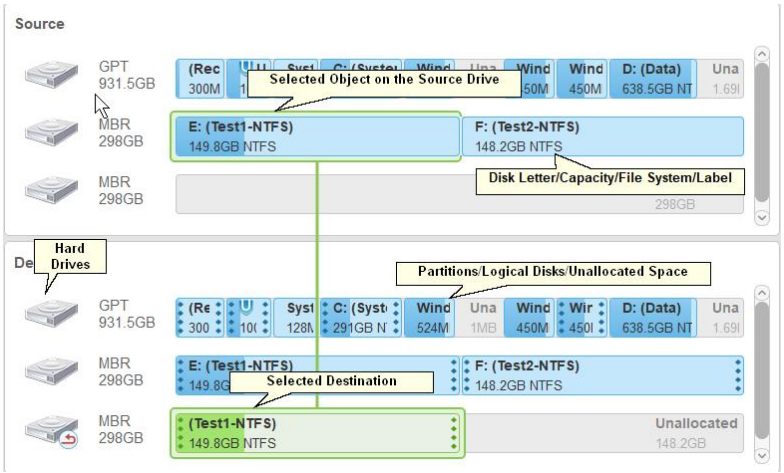
More information...

If the destination is smaller than the selected object, **R-Drive Image** won't allow you to select this object and you will need to select another destination.

If you select several partitions as the destination, **R-Drive Image** will show the **You have selected several partitions...** message. If you click the **OK** button, all those partitions will be deleted and data will be restored on that free space.

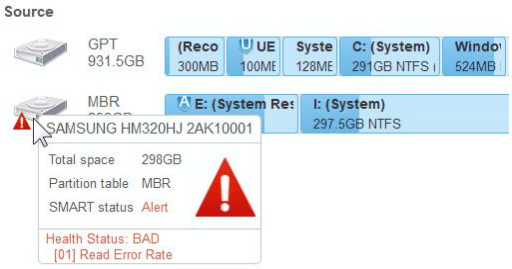
Note: Although **R-Drive Image** shows unallocated space instead of the deleted partitions, the partitions and their data will be actually deleted only when **R-Drive Image** starts copying the data.

Selected Object and Destination



S.M.A.R.T. warning for a hard drive

If a hard drive has S.M.A.R.T. warnings, a color mark will appear on its left-top corner. Dragging the cursor over the drive will show a tooltip explaining that warning.



Warnings will also appear in confirming e-mails for scheduled actions.

```
* ==================[S.M.A.R.T.]==================
! SAMSUNG HM320HJ 2AK10001(298GB #2): Health Status: BAD
  [01] Read Error Rate
! ==================[S.M.A.R.T.]==================
```

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a technology widely-used in hard drives and solid-state devices that monitors their reliability conditions to predict possible hardware failures.

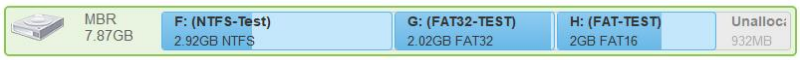
If you try to copy data to or from a system, or other disk locked by the system or other application, the **Disk not locked** message will appear.

To continue copying you may:

- **If you copy data to or from your system disk**, select Restart computer (recommended) to continue restoring the data in the **R-Drive Image** startup mode. Read carefully the **Disk to Disk Copy Using the Startup Disks** topic before you proceed.
- **If you copy data to a disk locked by other low-level disk software (including Windows internal services)**, stop this software and select Retry to lock the disk once again.
- You may also try to unlock the disk by selecting **Force Windows to unlock the disk (not recommended)**. If Windows fails to unlock the disk, the **Disk not locked** message will appear again. You will need to stop the software locking the disk manually or select Restart computer (recommended) to continue copying the data in the **R-Drive Image** startup mode.

Note: Use this option cautiously, because it may cause unpredictable results including system crash and data loss.

You may select all objects on a hard drive by clicking the hard drive icon. 

. It will show the marked hard drive. 

3 Specify copy parameters on the Restore/Copy Parameters panel and click the Next button

Restore parameters

You may change create/copy/modify parameters on the **Create partition, Copy partition**, or **Modify partition** panel. Click the **Create / Copy Options / Modify** button, respectively.

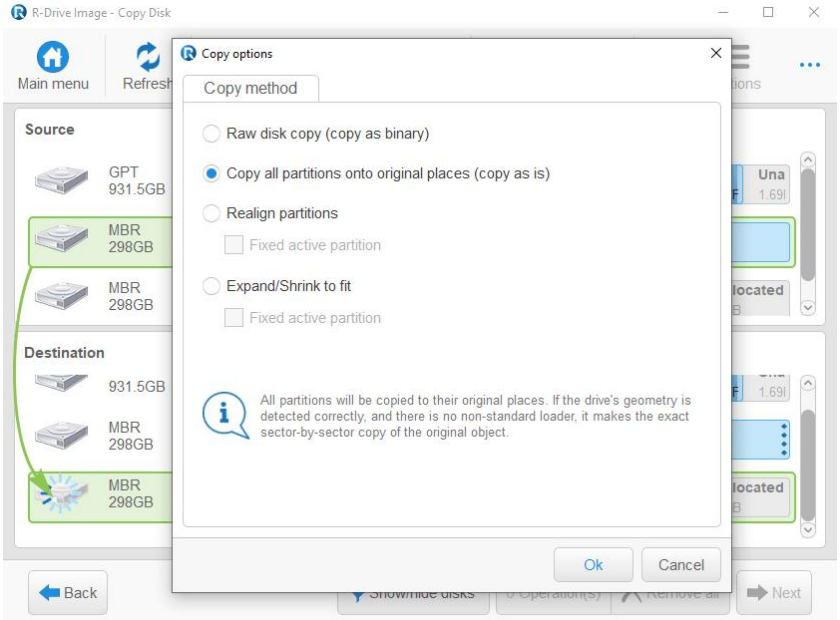
Create/Copy Partition Parameters

Partitioning scheme	The type of partitioning scheme. See **Support for Various Disk Partition Schemes and File Systems** for the list of supported partition types.

Partition type	Primary (Active)/ Primary/Logical You may specify the type of the partition to be restored. Do not change this setting unless you have serious reasons to do so.
File system	You may select the file system for the partition to be restored.
Allocation unit size	It is the size of a disk block, that is, the minimum allocatable disk space. (only on the **Create partition** panel.)
Volume label	Label of this volume. You can change it.
Drive letter	Select the letter that will be assigned to the partition. You may select "Do not connect" if you do not want to connect this partition to your system. Or "Do not modify" it you do not want to change the drive letter.
Partition size	Minimum/maximum size of the partition to be restored.
Free space before	You may specify the size of free space that will be left on the hard drive before the beginning of the partition.
Partition size	You may specify the size of the partition to be restored. Should be between the minimum and maximum partition size.
Free space after	You may specify the size of free space that will be left on the hard drive after the end of the partition.
	You may visually adjust the location and size of the object to be restored. All other restore options will be adjusted accordingly. Also, when you adjust one or several restore options directly, these changes will be shown visually. Green marks available space. See **Support for Various Disk Partition Schemes and File Systems** for the list of supported file systems.

To copy data from an entire hard drive to another hard drive:

The **Restore/Copy Parameters** panel will be different with different sets of options:

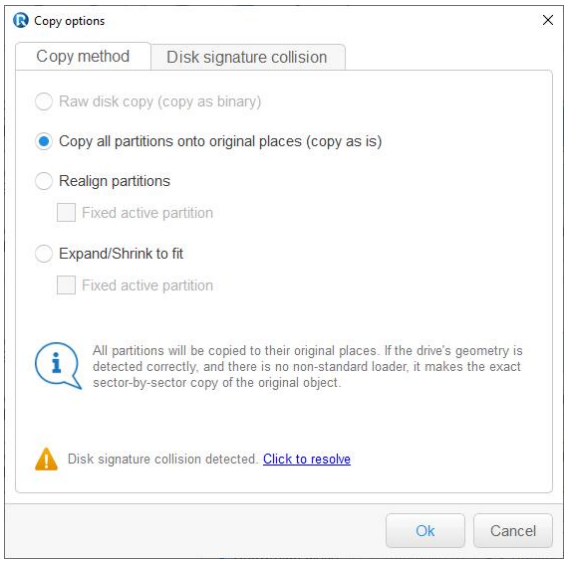


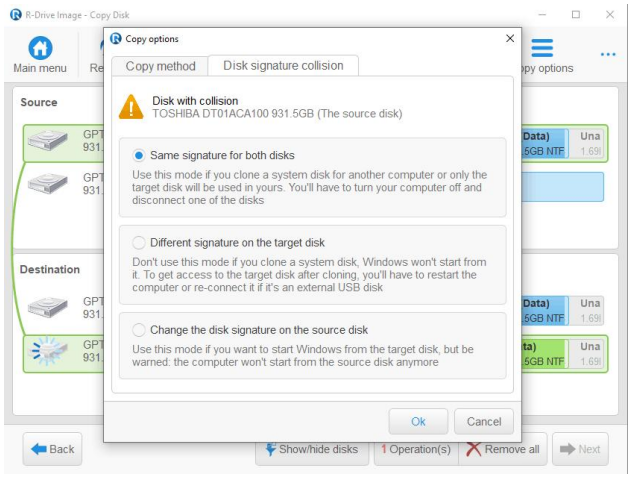
HDD Copy Method	
Raw disk copy	**R-Drive Image** writes sector-by-sector the data from the original drive or its image to the target one making an exact copy of the original disk

	regardless of its partitioning method. Can be used if other methods create a non-bootable disk due to incorrect detection of drive's geometry or non-standard loader. Drawback: partition sizes cannot be changed.
Copy all partitions onto original places	**R-Drive Image** copies all partitions to their original places. If **R-Drive Image** detects the drive's geometry correctly, and there is no non-standard loader, it makes the same result as during Raw disk copy.
Realign partitions	**R-Drive Image** will copy the partitions on the disk with a 512KB alignment. This is very useful for SSD and advanced-formatted disks. If there are empty (non-used) spaces between partitions, those spaces will be removed taking into account the alignment.
Expand/Shrink partition to whole disk	If there are empty (not-used) places between the partitions or they occupy less or more space than the target drive, **R-Drive Image** proportionally expands/shrinks them to occupy the entire target drive. Otherwise it is similar to Copy all partitions onto original places.
Fixed active partition	**R-Drive Image** preserves the original offset/size of the active partition (in case the loader has links to it).

See **Support for Various Disk Partition Schemes and File Systems** for details.

When you copy a system disk, a disk signature collision may occur. In this case, the **Copy options** panel will inform you about this. You may specify the way to resolve this collision on the **Disk Signature Collision** panel.





Disk Signature Collision Resolving	
Same signature for both disk	**R-Drive Image** will create an identical copy of the source disk with the same signature. To avoid disk signature collision, you'll have to disconnect one of the disks and restart the computer, if necessary. Use this mode if you clone a system disk for another computer or only the target disk will be used in yours.

Different signature on the target disk.	**R-Drive Image** will write another disk signature to the target disk. Don't use this mode if you clone a system disk, Windows won't start from it. To get access to the target disk after cloning, you'll have to restart the computer or re-connect it if it's an external USB disk.
Change the disk signature on the source disk.	**R-Drive Image** will change the disk signature on the source disk. Use this mode if you want to start Windows from the target disk, but be warned: the computer won't start from the source disk anymore.

4 Verify that the information on the Processing panel is correct and click the Start button

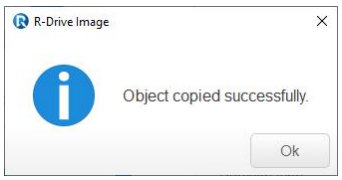
You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility

> R-Drive Image will start copying the data from the source to the selected destination place.

When the data is copied, the **Object copied successfully** message will appear.

If some other program (like a file manager) is accessing the partition on which the data is to be restored, the **Cannot lock the disk** message will appear. Close this program or make it stop accessing the partition.

If you copy an entire hard drive to another hard drive, two absolutely identical hard drive will appear in your system. That will confuse it and may cause unpredictable results. To prevent that, a **Disk copied successfully** message will appear. You may turn your system off to disconnect one of the disks, or restart it to disable one of the disk in the BIOS of your system. Under Windows 95/98/Millennium, the target disk will not appear until system restart even if you decide to click the **Cancel** button.



Bad Sectors

When **R-Drive Image** encounters a bad sector, the **IO Error** message will appear. You may either cancel the current action or fill the bad sectors with zeros.

IO Error Options

Abort	Click this button to cancel the action
Retry	Click this button to try to read the bad sectors once again
Ignore	Click this button to skip this error and fill the bad sectors with zeros
Ignore All	Click this button to skip all errors and fill the bad sectors with zeros

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

2.6 Partition Manager

R-Drive Image has a built-in partition manager. It can perform the following disk operations:

All objects Object properties can be shown.

Entire hard drives: A disk partitioning scheme can be changed. An entire hard drive can be cleared or wiped.

Existing partitions: An existing partition can be modified, formatted, deleted, or wiped

Unallocated space: A new partition can be created, or free space can be wiped

All commands can be invoked either by clicking the respective button on the panel, or by right-clicking the object and selecting the respective menu item.

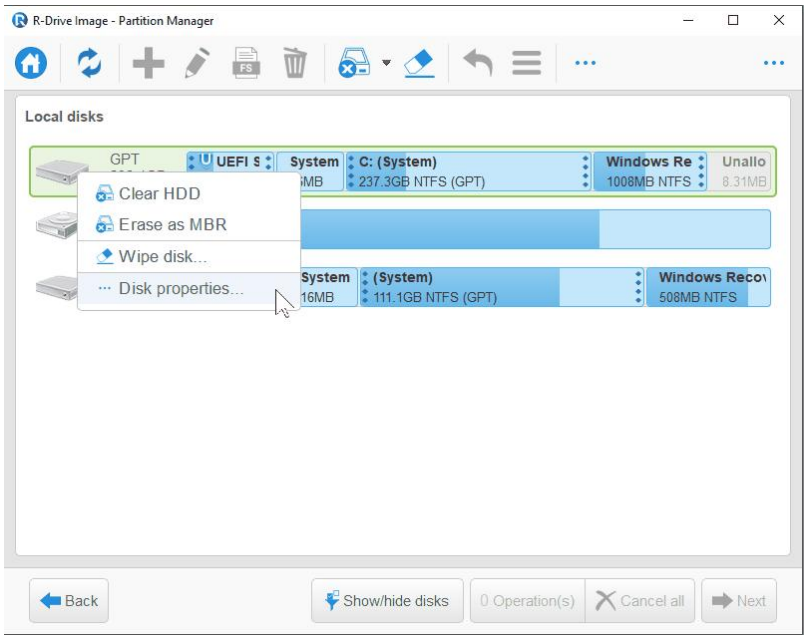
All objects

To view object properties:

1 **Click Partition Manager on the Action Selection panel.**

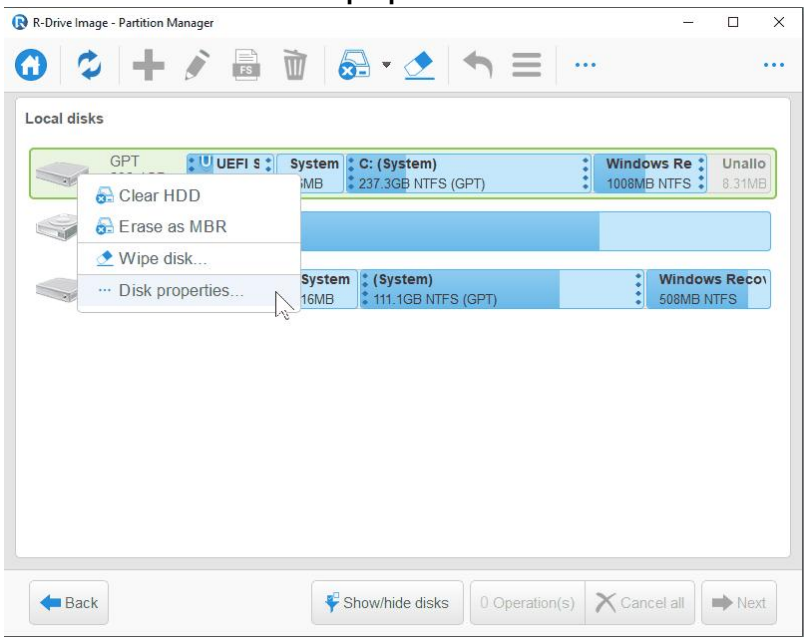
R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Right-click the object and select Disk or Partition properties on the shortcut menu.**

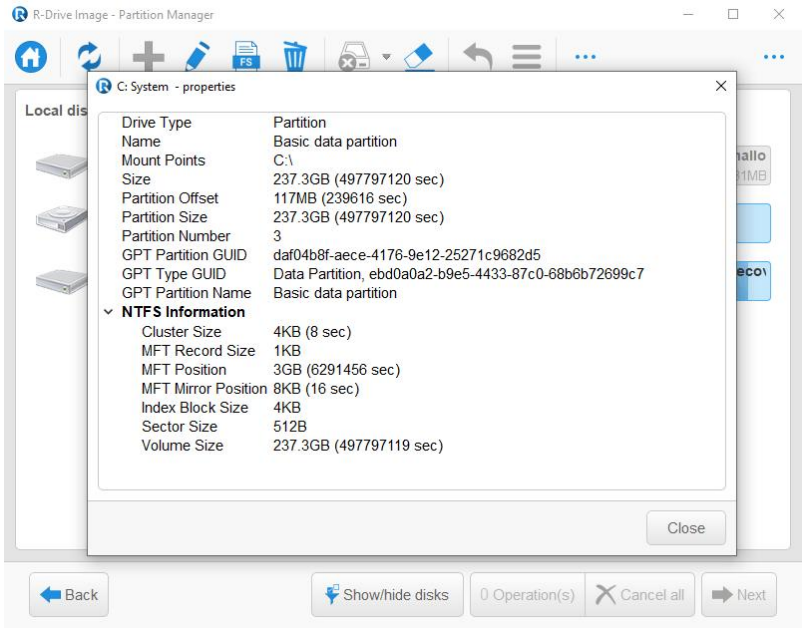


> R-Drive Image will show object properties.

HDD properties



Partition properties



Entire hard drive

There are two methods to change the disk partitioning scheme:

Convert to (GPT/MBR) The existing disk partitioning scheme will be converted into a new one, the old partitions and their content will remain intact.

Erase as (GPT/MBR) The existing disk partitioning scheme will be completely erased and a new one with empty space created. All old partitions and their content will be deleted and can be recovered, if that's possible, only by using special data recovery software.

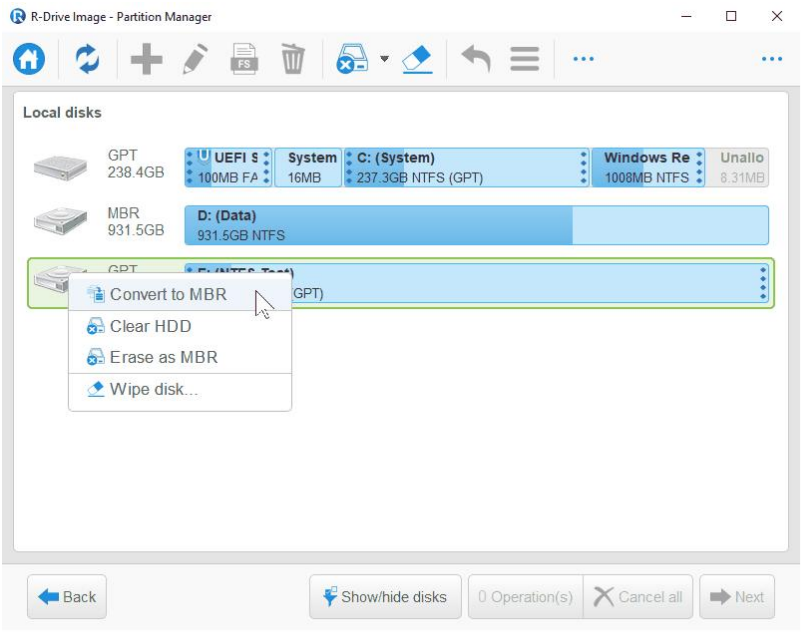
Not all methods may always be available for all cases. **R-Drive Image** determines which ones can be made and show them in its menu.

To change the drive partitioning scheme (MBR/GPT):

1 **Click Partition Manager on the Action Selection panel.**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Right-click hard drive and select the necessary action to change drive partitioning scheme on the shortcut menu.**



3 **Select another disk action on the Object Selection panel, if necessary.**

4 **Verify that the information on the Processing panel is correct and click the Start button**

> **R-Drive Image will convert the drive to the selected partitioning scheme.**

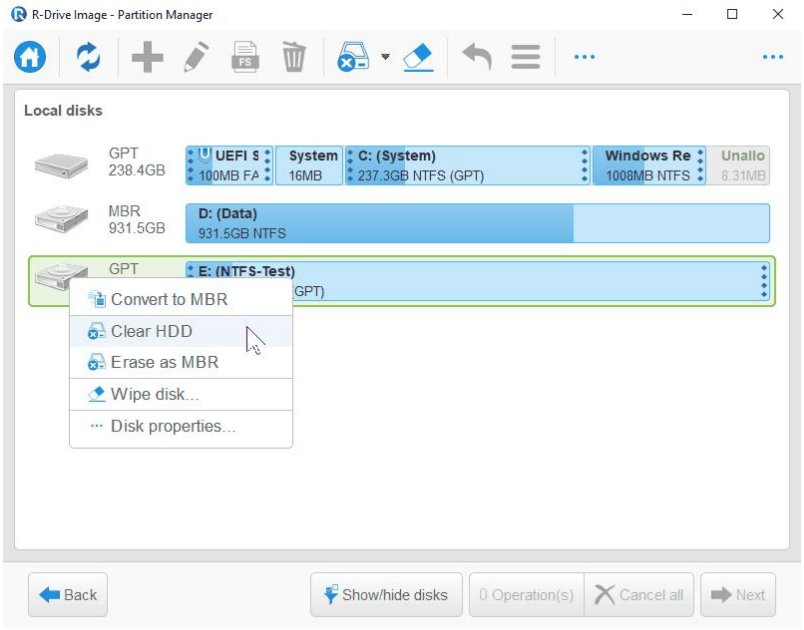
To clear an entire hard drive:

1 **Click Partition Manager on the Action Selection panel.**

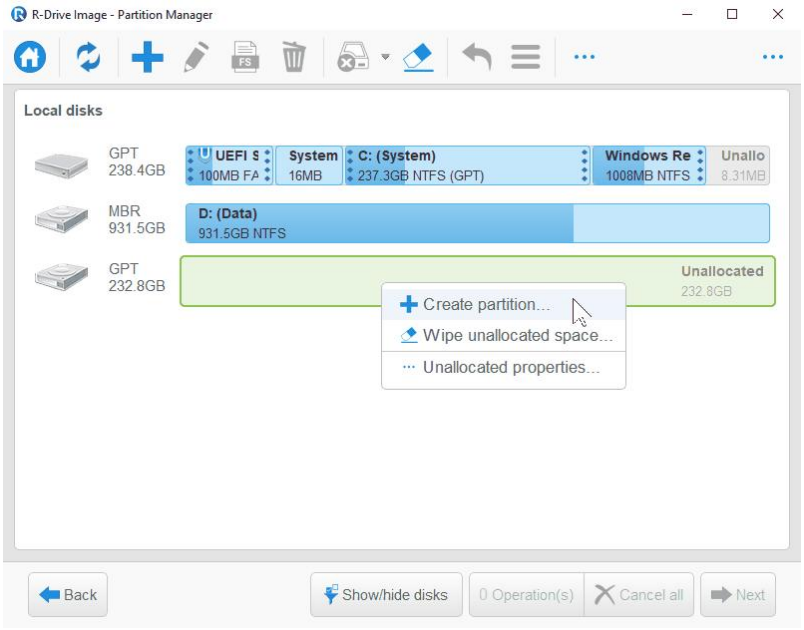
R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Select the hard drive and click the Clear HDD button on the Object Selection panel.**

or right-click the drive and select **Clear HDD** in the shortcut menu.



3 Select another disk action on the Object Selection panel, if necessary..



If not, click the **Next** button

4 Verify that the information on the Processing panel is correct and click the Start button

> R-Drive Image will remove all objects on the disk.

To wipe an entire hard drive:

Data wiping is necessary only for files stored on conventional hard drives. Data stored on SSD storage devices cannot be effectively wiped out due to the principles of operation of these devices.

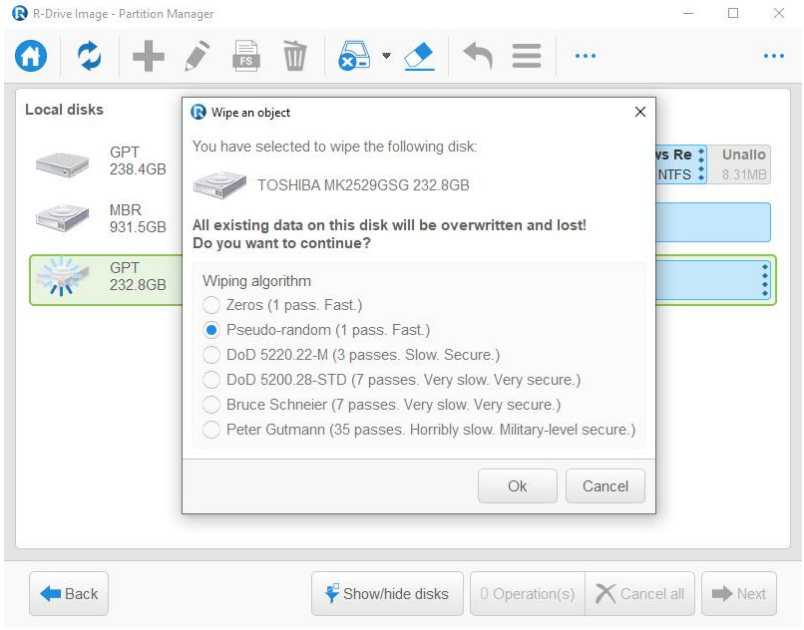
1 **Click Partition Manager on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Select the hard drive and click the Wipe button on the Object Selection panel**

or right-click the drive and select **Wipe disk** in the shortcut menu.

3 **Select the necessary wiping algorithm on the Wipe an object panel and click the OK button..**



You may read more about wiping algorithms on the **Disk Wiping Algorithms help page.**

4 **Select another disk action on the Object Selection panel, if necessary.**

If not, click the **Next** button

5 **Verify that the information on the Processing panel is correct and click the Start button**

> **R-Drive Image will remove all objects on the disk and wipe it.**

Existing partition

To modify/format/delete/wipe an existing partition:

1 **Click Partition Manager on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Select the partition and click the Modify/Format//Delete/Wipe button on the Object Selection panel and specify the required parameters**

Modify panel	Modify parameters
Format panel	Format options
Delete button	Deletes partition
Wipe panel	Wipe algorithms

then click the OK button

3 **Verify that the information on the Processing panel is correct and click the Start button**

> **R-Drive Image will perform the specified action.**

Unallocated space

To create a new partition on an allocated space:

1 **Click Partition Manager on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Select the unallocated space, click the Create button on the Object Selection panel, and specify the required parameters on the Create partition panel,**
then click the OK button

3 **Verify that the information on the Processing panel is correct and click the Start button**

> **R-Drive Image will create a new partition.**

To wipe an unallocated space:

1 **Click Partition Manager on the Action Selection panel**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress.

2 **Select the unallocated space, click the Wipe button on the Object Selection panel, and specify the wiping algorithms on the Wipe partition panel,**
then click the OK button

3 **Verify that the information on the Processing panel is correct and click the Start button**

> **R-Drive Image will wipe the unallocated space.**

2.7 Mount an Image as a Virtual Logical Disk

Note: You can mount images only as **read-only** disks. See **Support for Various Disk Partition Schemes and File Systems** for the list of supported file systems.

To mount an image as a Virtual Logical Disk:

1 **Click Mount an Image as a Virtual Logical Disk on the Action Selection panel.**

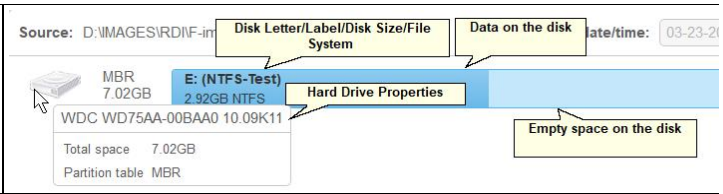
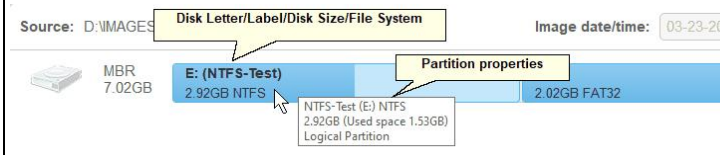
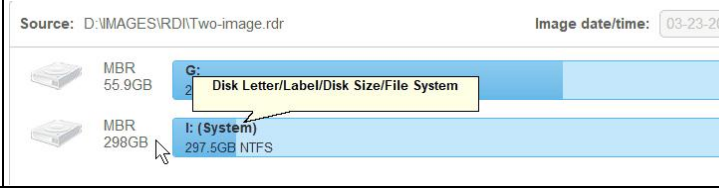
R-Drive Image will show you the **Choose image to mount drive(s) from** panel with the disks/folders structure.

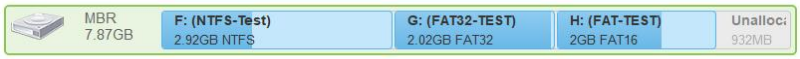
2 **Select the file with the image on the Choose image to mount drive(s) from panel and click the Next button**

When you click the file, you may view its content on the right pane.

More information...

Objects in Image Files

Image with one logical disk	
Image with two logical disks on one hard drive	
Image with two logical disks on two hard drives	

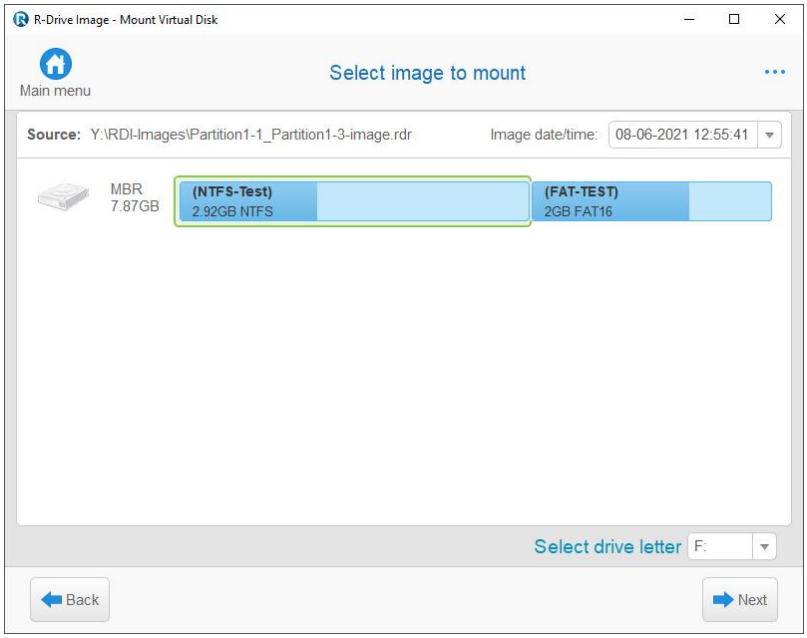
You may select all objects on a hard drive by clicking the hard drive icon.  . It will show the marked hard drive. 

You may also mount the disk from Windows explorer by right-clicking the required image file with the `.rdr` extension and selecting **Mount as Virtual Disk** from the shortcut menu.

If you select an image with incremental or differential data backup, select the date and time of image creation and click the **Next** button.

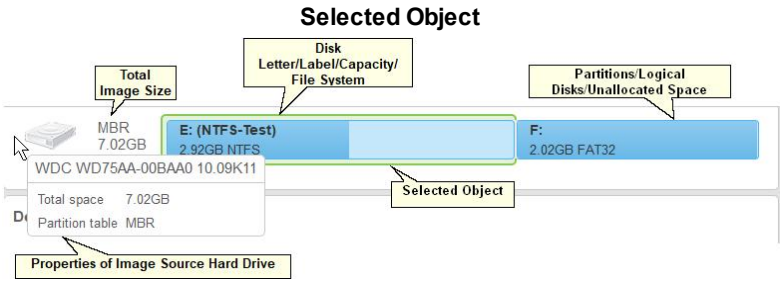
If the image file is password-protected, the **Password prompt...** message will appear. Enter the password and click the **OK** button.

3 Select the object in the image file on the Choose image to mount panel, select a drive letter, and click the Next button



You may select only one object at a time, and you need to specify its drive letter to proceed further.

More information...



4 Verify that the information on the Processing panel is correct and click the Start button

You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility

> R-Drive Image will start mounting the selected object as a virtual logical disk.

When the disk is mounted, the **Virtual disk(s) mounted successfully** message will appear.

Mounting images on devices with removable storage

You cannot mount a split image if its files are stored on separate removable disks. However you can mount such image if you copy all the files into one folder on a hard disk.

Note: While **R-Drive Image** is mounting an image, Windows itself may install additional software required to run the virtual logical disks correctly. In this case follow Windows on-screen instructions.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

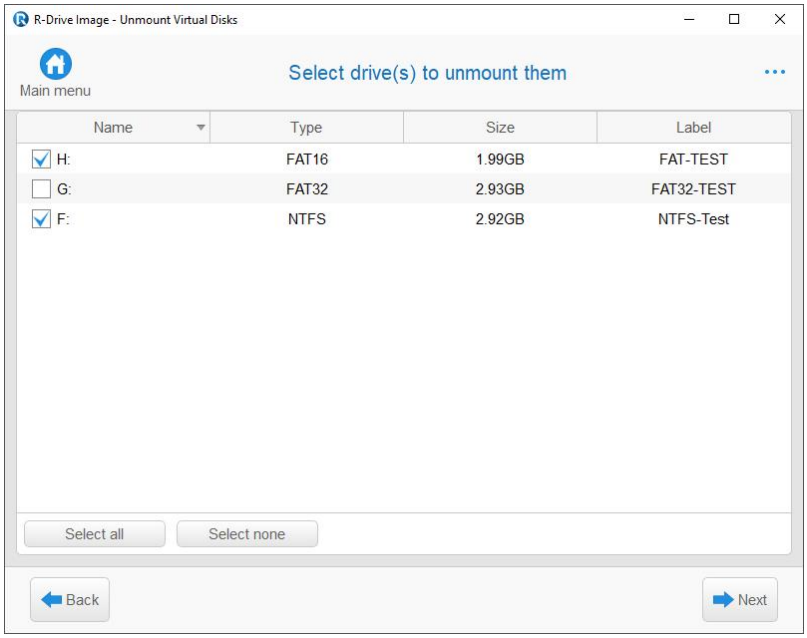
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

2.8 Unmount Virtual Logical Disks

To unmount Virtual Logical Disks:

1 Click Unmount Virtual Logical Disks on the Action Selection panel.

R-Drive Image will show you the list of virtual disks on the **Choose drive(s) to umount them** panel.



More information...

Mounted Virtual Logical Disks

Name	Type	Size	Label
K:	FAT16	1.99GB	FAT-TEST
G:	FAT32	2.02GB	FAT32-TEST
F:	NTFS	2.92GB	NTFS-Test

2 **Mark the disks on the Choose drive(s) to umount them panel and click the Next button**

More information...

Marked Mounted Virtual Logical Disks

Name	Type	Size	Label
K:	FAT16	1.99GB	FAT-TEST
G:	FAT32	2.02GB	FAT32-TEST
F:	NTFS	2.92GB	NTFS-Test

3 **Verify that the information on the Processing panel is correct and click the Start button**

You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility

> **R-Drive Image will start unmounting the selected virtual logical disks**

When the disks are unmounted, the **Virtual disk(s) unmounted successfully.** message will appear.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

2.9 Check an Image File

To check an image file:

1 **Click Check an Image File on the Action Selection panel.**

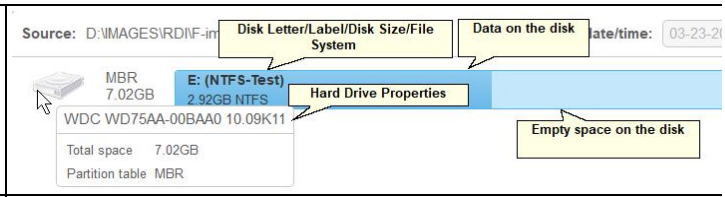
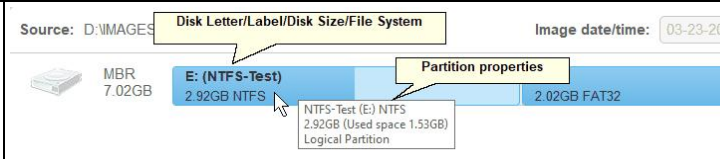
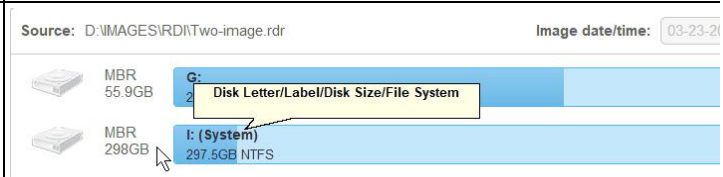
R-Drive Image will show you the **Choose image to check integrity** panel with the disks/folder structure.

2 **Select the file with the image on the Choose image to check integrity panel and click the Next button**

When you click the file, you may view its content in the right pane. You may also check either an individual file or all files in the folder/rotation. Files in the subfolder will not be checked.

If there is a split image or a main image file and several incremental/differential ones are selected, **R-Drive Image** will check all image files of the selected image.

More information...

Objects in Image Files	
Image with one logical disk	
Image with two logical disks on one hard drive	
Image with two logical disks on two hard drives	

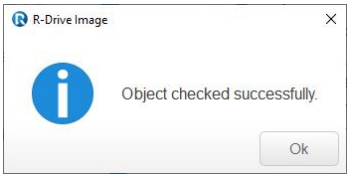
If the image file is password-protected, the **Password prompt...** message will appear. Enter the password and click the **OK** button.

3 **Verify that the information on the Processing panel is correct and click the Start button**

You may also create a script for this action. Click the **Script to Clipboard** button and paste the script to any text-processing utility

> **R-Drive Image will start checking the data in the image file.**

When the image is checked, the **Object checked successfully** message will appear if the image file is good. If it is corrupted, **R-Drive Image** will show the **Image corrupted** message.



The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

III Advanced File Filtering

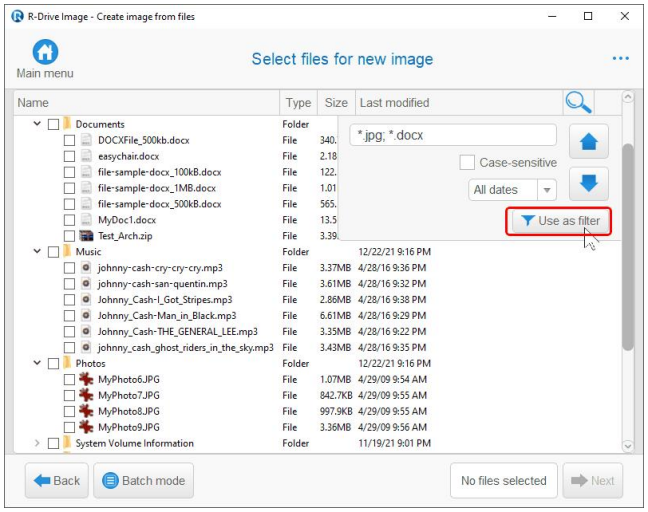
3.1 Filters

Filters can be used if it's necessary to show only files of certain types. For example, the required types are *.jpg and *.docx. Then such files can be searched for and marked accordingly. Complex filters can be created using the **Batch mode**.

Note that filters do not mark files, they filter out all other file types making **R-Drive Image** show only files matching the filter(s). File marking affects only those files that are matching the applied filters.

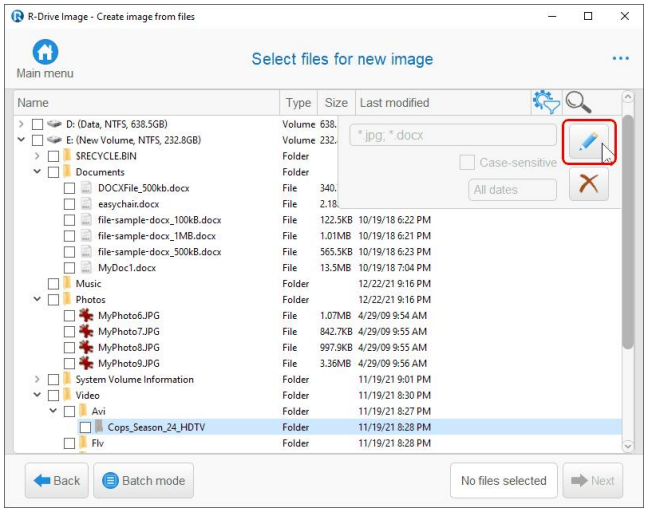
A filter can be specified on the Search window. The example below shows how this filter affects files that **R-Drive Image** shows on the **Select files...** panel.

Filter specified



After this field has been applied, **R-Drive Image** will show only *.jpg and *.docx files.

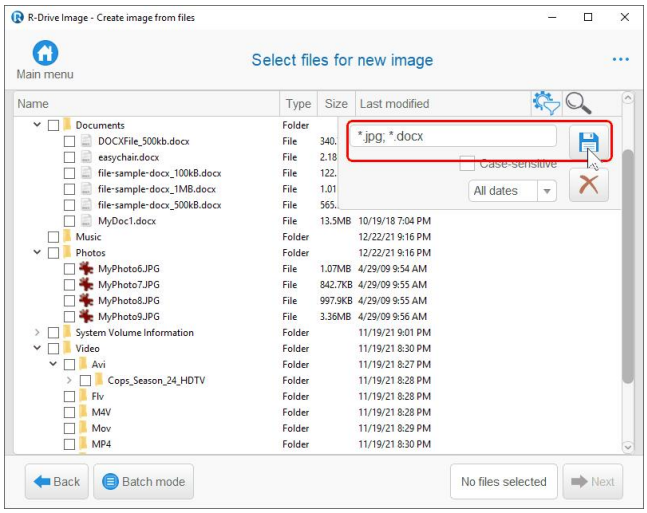
Filter applied



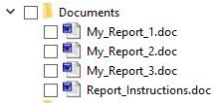
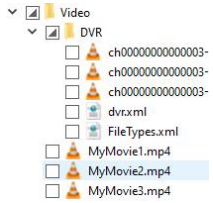
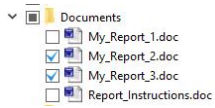
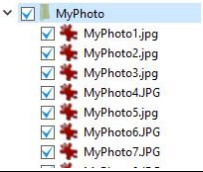
Note that folders that contain no *.jpg or *.docx files are show as empty.

Applied filters can be edited and saved to load them later.

Filter being edited



Folders and their files may be marked/unmarked manually changing folder's marks accordingly. There are four mark types for folders:

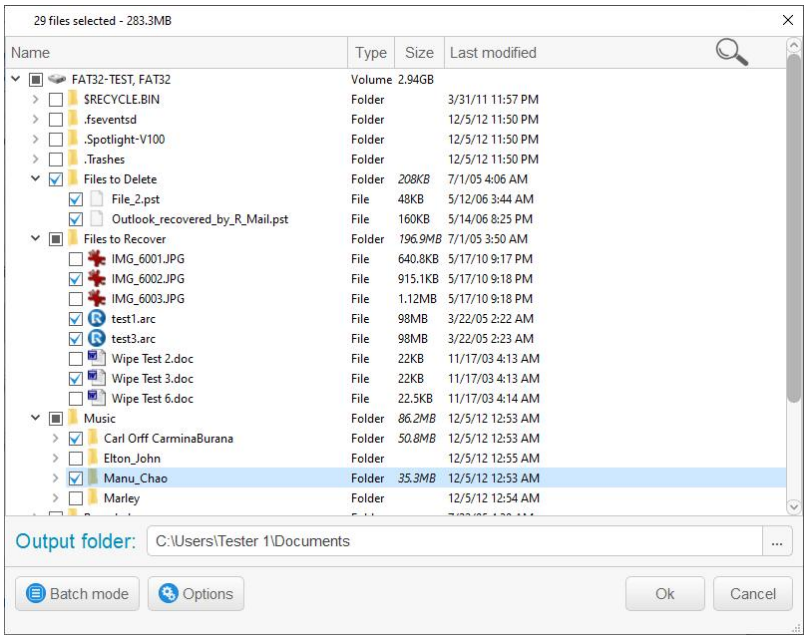
	No files or folder matching the selection recursively have been marked in the folder.
	No files or folders matching the selection have been found, but they may appear in the future.
	Some files match the selection and marked in this folder.
	The folder and all its files and folders recursively match the selection and are marked in this folder.

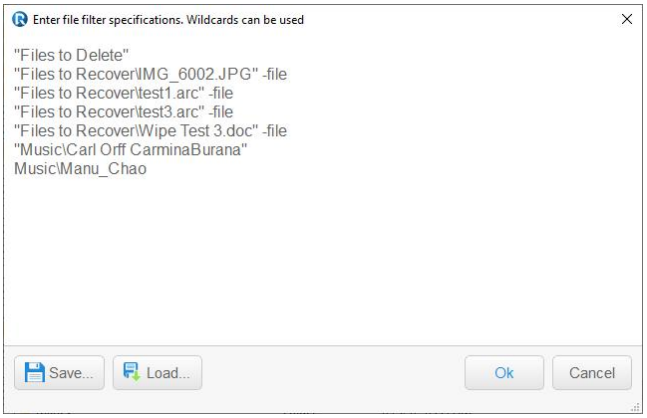
3.2 Batch Mode

Batch mode is a way to apply very complex sets of file filters for automated search for folders and files and marking them for backup or restore. Such sets can be saved for future use and loaded when necessary.

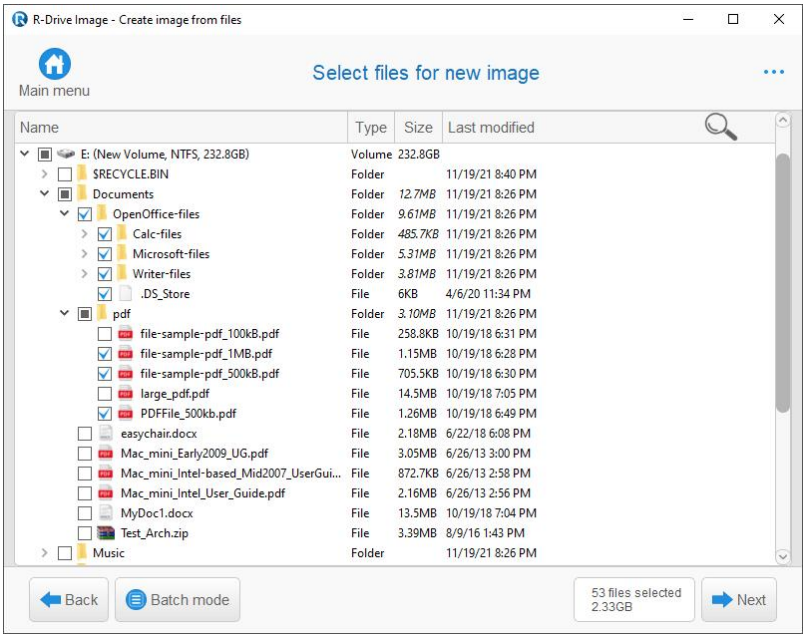
The simple way to specify such a set is to mark all necessary files and folders manually on the **Select Files to Restore** panel and click the **Batch mode** button. Depending whether files or folders are on a disk or in a image, their paths may look slightly different.

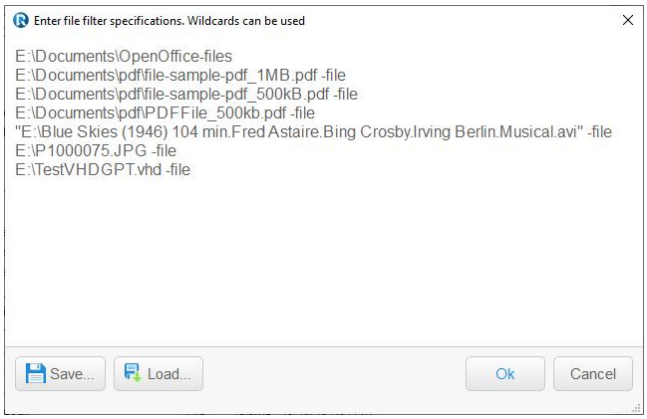
Select Files to Restore panel (image)





Select Files to Restore panel (image)





Sets are stored in the plain text format (the `rdf` file extension), and can be composed or edited in the **Batch window** or in any text editor capable of exporting text in this format. Below are the rules that should be followed while writing filter sets.

Every filter set consists of strings each representing a single filter. They are executed in the top to bottom order. If, for example, files are to be marked according to the first string, but unmarked according to the seventh string, they will eventually be unmarked.

Filters can include file names, file paths, and wildcards, like * and ?. They can also have some keys that modify their impact on the search results. If a path in the filter has a space in it, it should be enclosed in quotation marks.

Switches that modify file filters:

`-no`	This filter unmarks the folders or files it's applied to. I.g., `C:\Photos\*.jpg` -no unmarks all jpg files in the `C:\Photos` folder.

-file	This filter is applied to files. May be shorten to -fi. -no-file negates the filter, making it applied not to files.
-dir	This filter is applied to folders. May be shorten to -d. -no-dir negates the filter, making it applied not to folders..
-case	This filter is case-sensitive. May be shorten to -c. -no-case makes the filter case-insensitive.
-local	This filter is applied to the current folder, not to its subfolders. May be shorten to -l. -no-local negates the filter making it applied to the folder and its subfolders.
-recursive	This filter is applied to the current folder and its subfolders. May be shorten to -r. -no-recursive negates the filter making it applied only to the folder.
-from:	The initial date from which files will be marked. It may be either in the form of exact date: -from:20210101, or relative to the current date: -from:now-3week. Has no effect on folders. May be shorten to -fr.
-to:	The final date to which files will be marked. It may be either in the form of exact date: -to:20211201, or relative to the current date: -to:now-1week. Has no effect on folders.

An exact date may be specified as a local time YearMonthDayHour24MinSec, or as a UTC time YearMonthDayHour24MinSecU.

Provided that there's no switches in the filter (i.g., -recursive), a file path in the file filter ending with a path separator is applied to the files in the folder and its subfolders. If not, only to the files in the folder.
The file filter D:\Files\ will be applied to the files in the D:\Files\.
The file filter D:\Files will be applied to the files in the D:\Files and in its subfolders.

Below is an example of filters recursively applied to files in the D:\Files\Pictures folder and its subfolders.

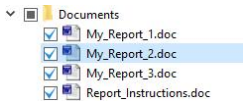
```
D:\Files\Pictures
D:\Files\Pictures\My_Photo -no
D:\Files\Pictures\My_Photo\Home??????.jpg
```

Line 1: All files will be marked in the D:\Files\Pictures folder and its subfolders will be marked.
Line 2. All files in the D:\Files\Pictures\My_Photo folder will be unmarked.
Line 3: Files named like Home210312.jpg in the folder D:\Files\Pictures\My_Photo\ will be marked.

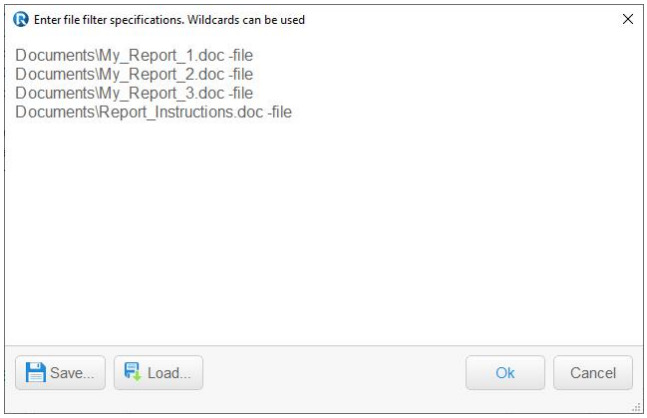
An importance notice about marking a folder.

If you mark all files in the folder but not the folder itself, its mark will be the following:

The folder was not marked)

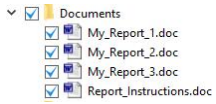


The batch will look like:

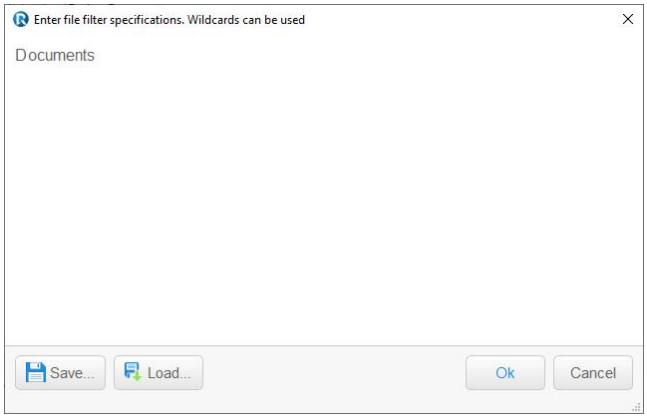


And the folder will be restored only if there are marked files/folders in it.
If you mark the folder, its mark will be the following:

The folder was marked)



The batch will look like:



And the folder will always be restored regardless whether there are marked files/folders in it.

IV RAIDs, and Various Disk and Volume Managers

R-Drive Image supports various RAIDs, and Disk/Volume Managers.

- **Hardware RAIDs**
- **BitLocker Drive Encryption**
- **Windows Software RAIDs, Spanned, and Other Volumes**
- **Windows Storage Spaces**
- **Apple RAIDs**
- **Apple CoreStorage/File Vault/Fusion Drive Volumes**
- **Linux mdadm RAIDs**
- **Linux Logical Volume Manager Volumes**

The **Disk Actions** chapter explains disk actions such as:

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Create an Image from Files**
- **Copy Files to a Folder**
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Manage partition and logical disks**
- **Mount an Image as a Virtual Logical Disk** (read-only)
- **Unmount Virtual Logical Disks**
- **Check an Image File** to check an existing image file

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- **Create Startup Disk**
- **Restoring Data to a System or Other Locked Disk**
- **Create an Image Using the Startup Disks**
- **Disk to Disk Copy Using the Startup Disks**

The **Scheduled Actions, Command Line Operations, and Scripting** chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

- **Scheduler and Unattended Actions**
- **Scripting and Command Line Operations**
- **Rotation schemes (backup sets)**

The **Technical Information** chapter gives technical information on

- **Updates**
- **Cloud Services**
- **FTP/FTPS/SFTP Servers**
- **Image Replications**
- **Logging**
- **Creating consistent point-in-time backups**
- **Support for Various Disk Partition Schemes and File Systems**
- **Supported Virtual Disk and Disk Image Formats:**
- **Disk Wiping Algorithms**
- **Supported CD and DVD Recorders**
- **List of Hardware Devices Supported in the Startup Mode**

The **R-Drive Image OEM kit** chapter explains how computer system integrators can create system recovery disks for their systems

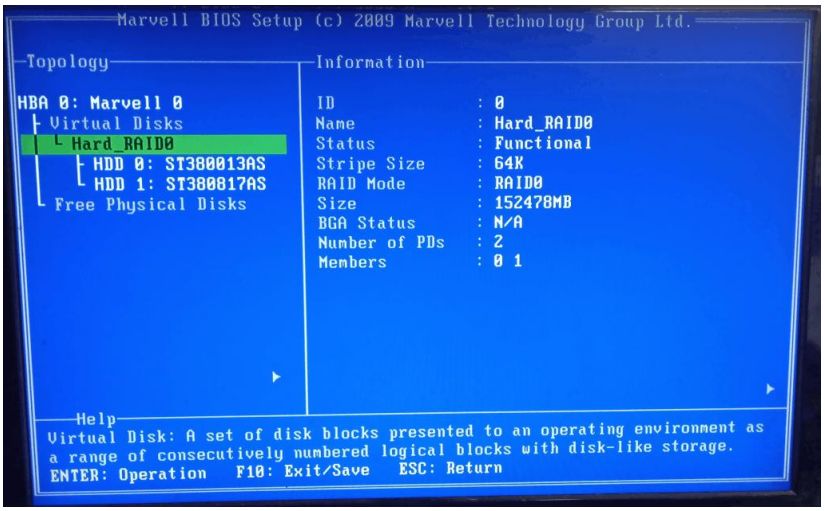
- **Create a Master Image**
- **Create Startup Media**

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

4.1 Hardware RAIDs

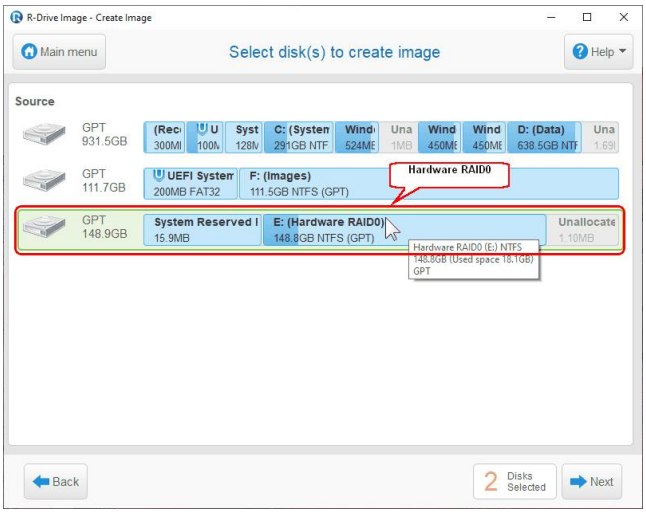
R-Drive Image supports hardware RAIDs created by RAID controllers.

Hardware RAID



Actually, **R-Drive Image** treats them as single hard disks.

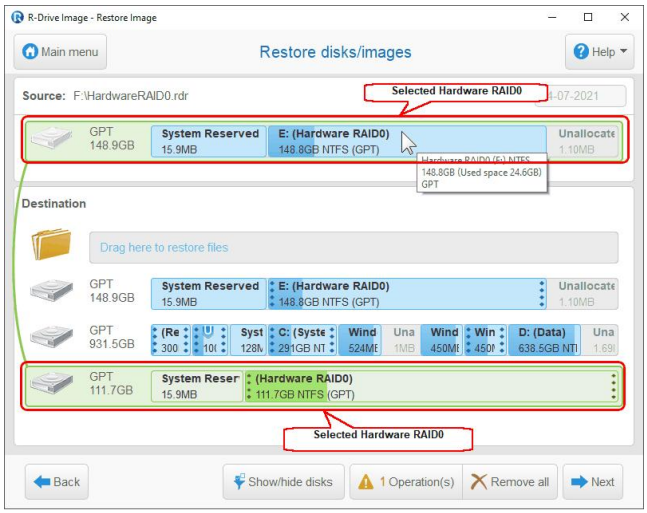
Hardware RAID



Data Restore from an Image of a Hardware RAID

You may restore data from an image of a hardware RAID with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

Hardware RAID



4.2 BitLocker Drive Encryption

BitLocker Drive Encryption, or **BitLocker**, is a data protection feature introduced by Microsoft since Windows Vista. It implements some hard/software measures to encrypt either USB external flash drives or internal system SSD/HDD devices. You may read more about **BitLocker Drive Encryption** on the Microsoft site or Wikipedia.

There are following encryption methods (protectors in the Microsoft terms) that can be utilized in the **BitLocker** protection:

- A TPM/TPM+PIN chip
- A USB key (a flash drive containing a .bek file)
- A user's password (not to confuse with a user's logon password) / recovery key

These methods can be used either individually or as a combination thereof. If they are used as a combination, knowing the decryption information for only one method is enough to unlock the device.

R-Drive Image can unlock devices encrypted with **BitLocker** provided that all the necessary information is known.

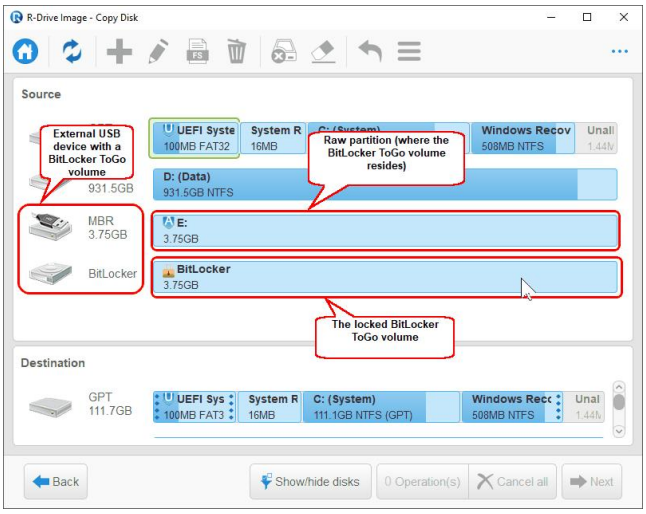
Important: When you backup a **BitLocker** volume as a part of its hard drive, it will be backed up locked. When you back up the **BitLocker** volume form the **BitLocker** section, it will be backed up unlocked if the system has already unlocked it, or **R-Drive Image** will ask for its password/key to unlock the volume.

BitLocker ToGo

This is the method used to lock external removable devices. The password or a recovery key is necessary to know to unlock the device. A recovery key may be in the printed form or contained in a file. A name of such a file has the following pattern: `BitLocker Recovery Key 600397A9-48AA-4DE4-B775-C71EB130EA1B.txt`

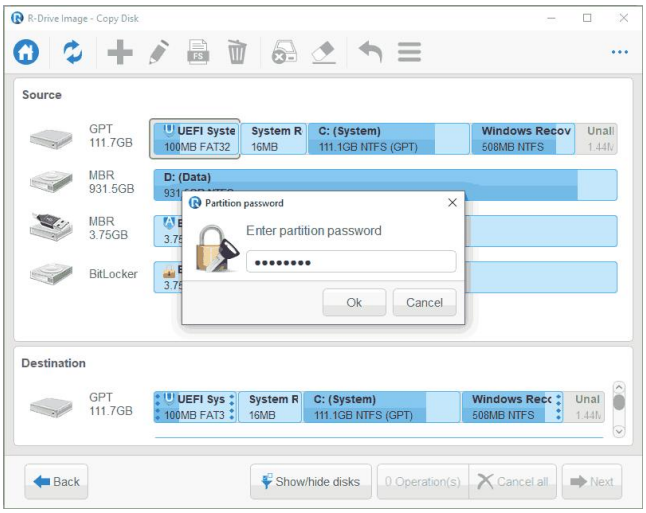
, where the last characters is the **BitLocker** volume identifier. That file contains the **BitLocker** volume identifier and a recovery key.

Locked BitLocker ToGo volume example



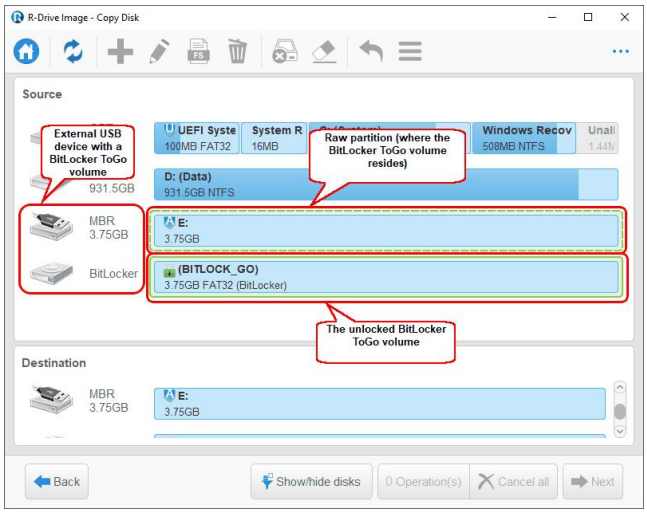
Double-click the locked BitLocker volume and enter its password or recovery key.

BitLocker ToGo volume's password/key



> **R-Drive Image will unlock the volume**

BitLocker ToGo volume's password/key



BitLocker System Drive Encryption

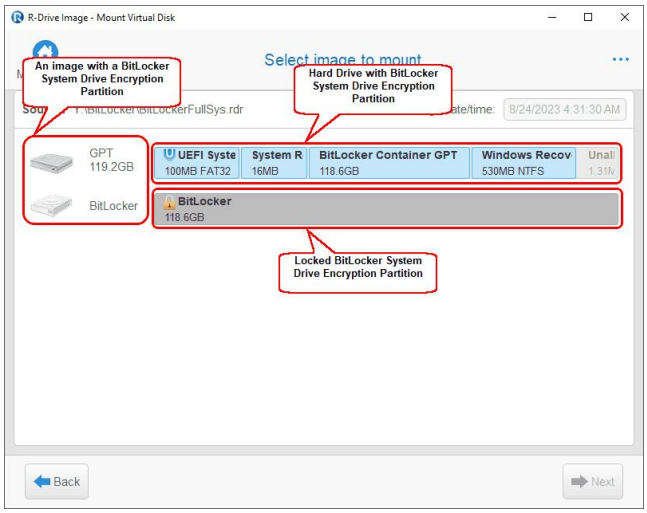
This is the method used to lock internal system drives.

Depending on what methods are used, the following information is necessary to know to unlock the drive.

- A recovery key in the printed form or in a file. A name of such a file has the following pattern: `BitLocker Recovery Key FDA7B96C-635E-45AA-BE63-00C3DB3771EE.txt` , where the last characters is the **BitLocker** volume identifier. That file contains the **BitLocker** volume identifier and a recovery key.
- A password used to start the preboot process. It shouldn't be confused with the password for the user's logon.

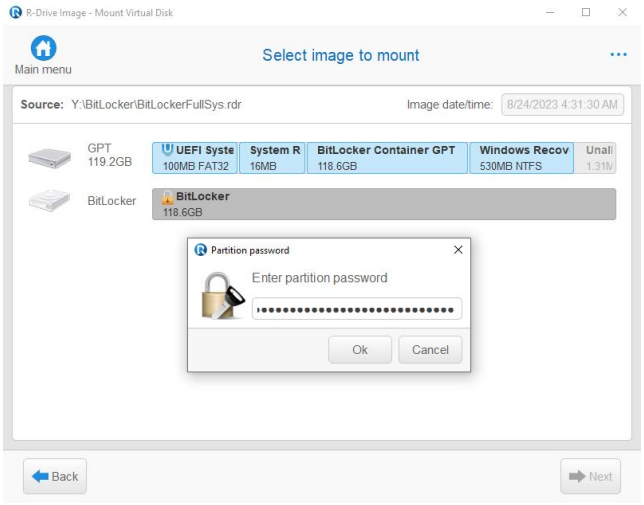
To unlock a system drive with a BitLocker partition,

BitLocker System Drive Encryption



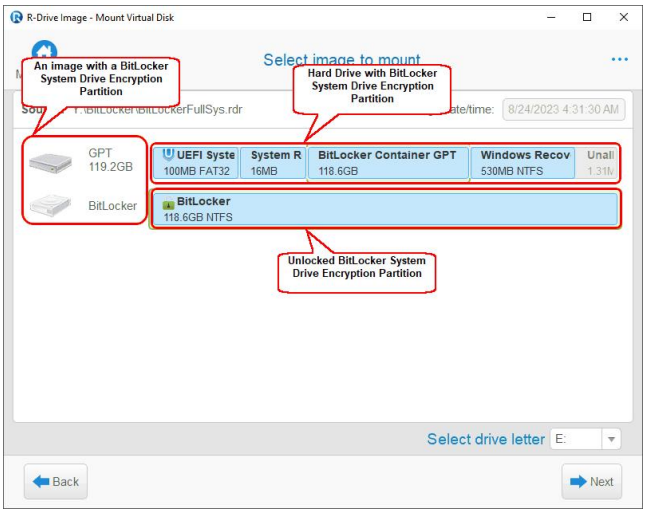
Double-click the locked BitLocker Partition and enter its password or recovery key.

BitLocker System Drive Encryption



> **R-Drive Image will unlock the partition**

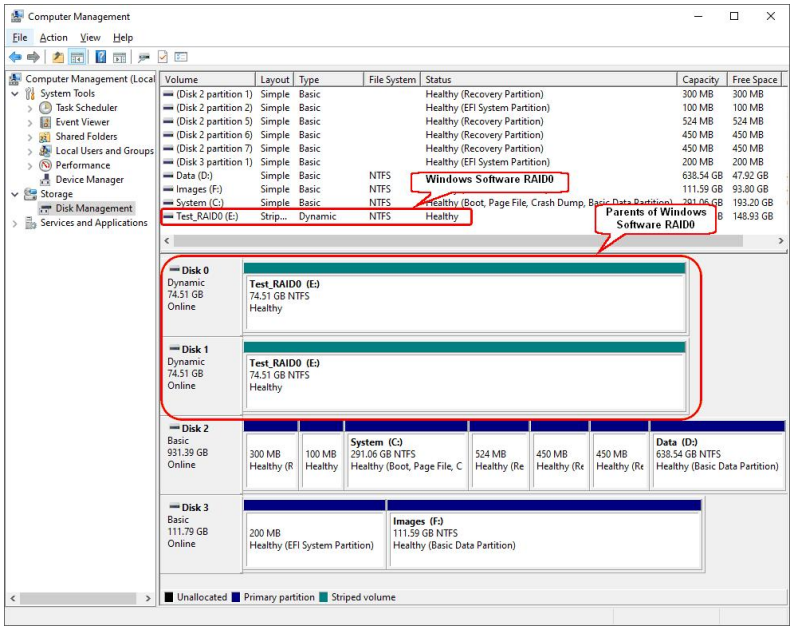
BitLocker System Drive Encryption



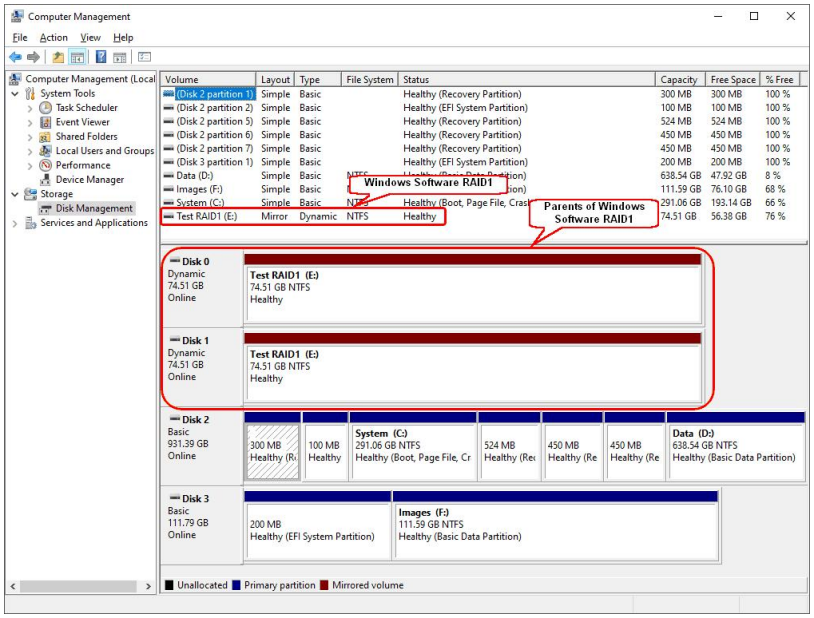
4.3 Windows Software RAIDs, Mirrors, and Spanned Volumes

R-Drive Image supports Windows software RAIDs, mirrors, and spanned volumes. Such objects can be managed using the **Disk Management** item in **Computer management**.

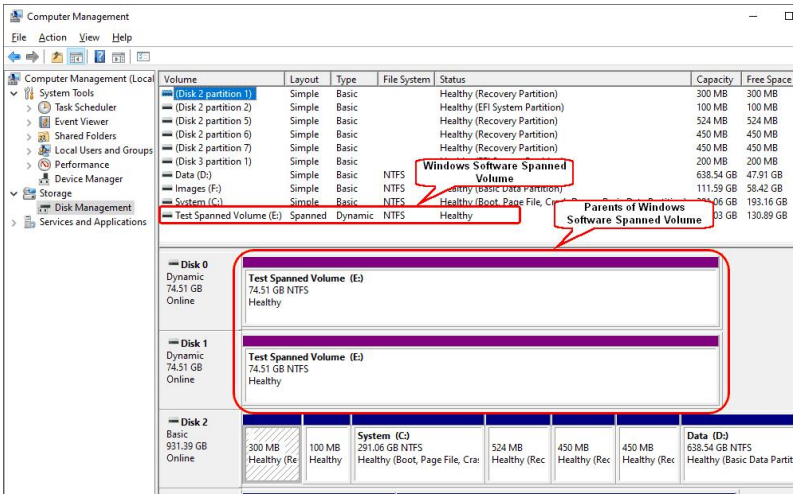
Windows software RAID0



Windows software mirror



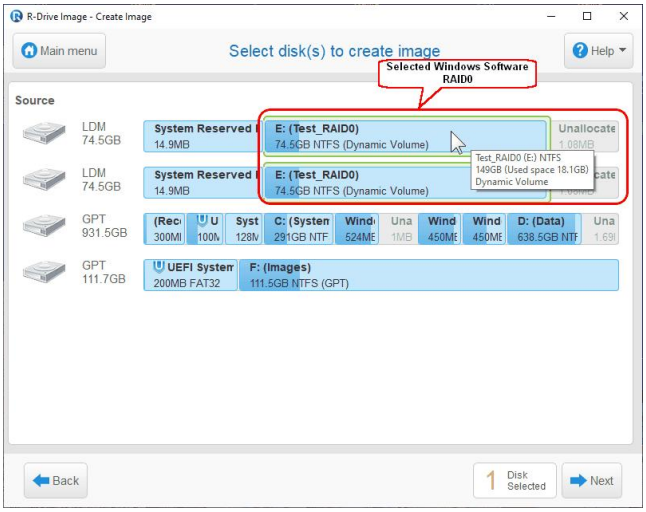
Windows software spanned volume



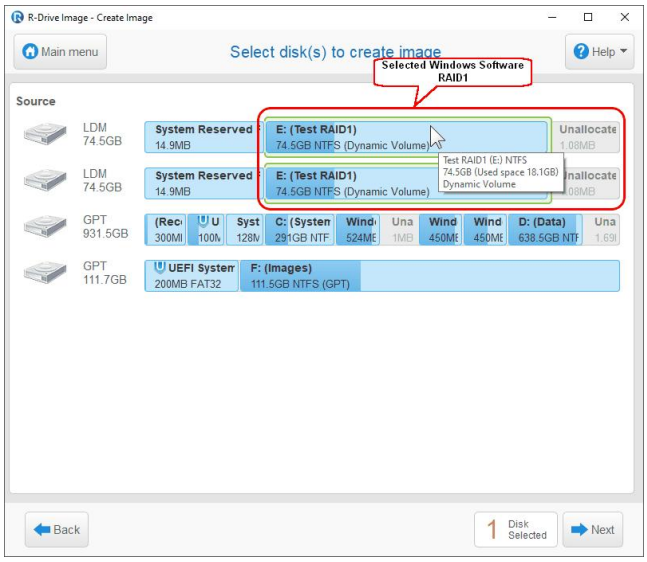
Windows Software RAIDs, Mirrors, and Spanned Volumes Imaging

R-Drive Image displays those objects similar to their representation in the **Windows Disk Manager**.

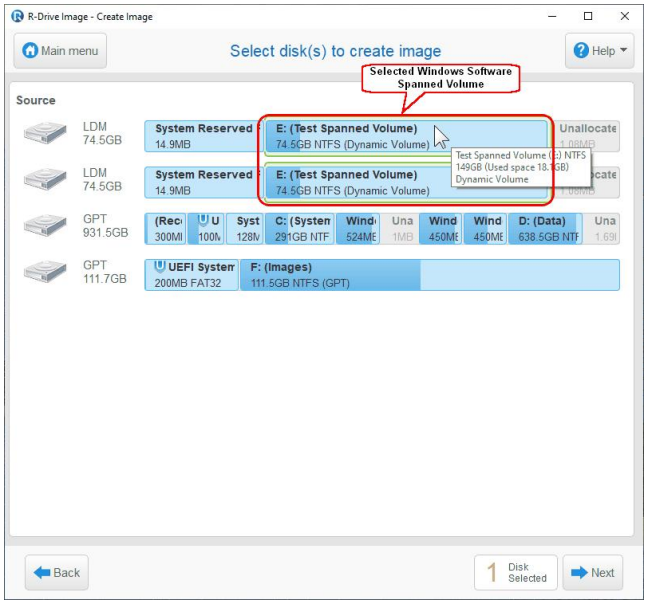
Windows software RAID0



Windows software mirror



Windows software spanned volume

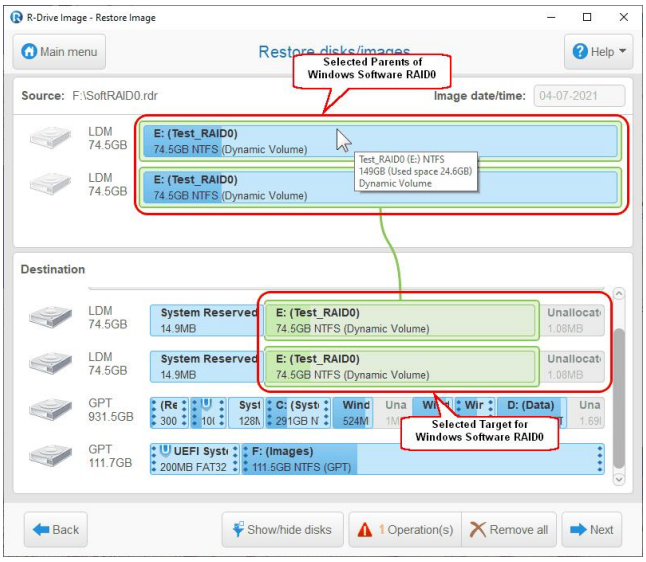


When you select one parent of a Windows software RAID, mirror, or spanned volume, **R-Drive Image** selects the entire object.

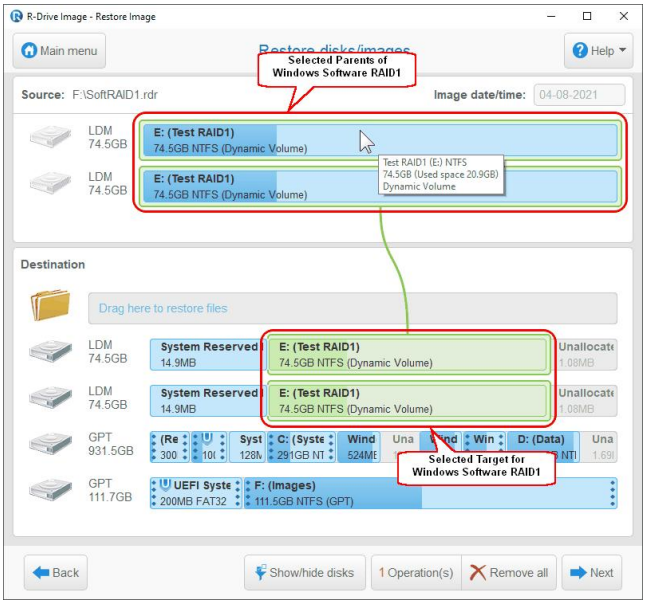
Data Restore from an Image of a Software RAID, Mirror, and Spanned Volume

You may restore data from an image of a Windows software RAID, mirror, and spanned volume with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

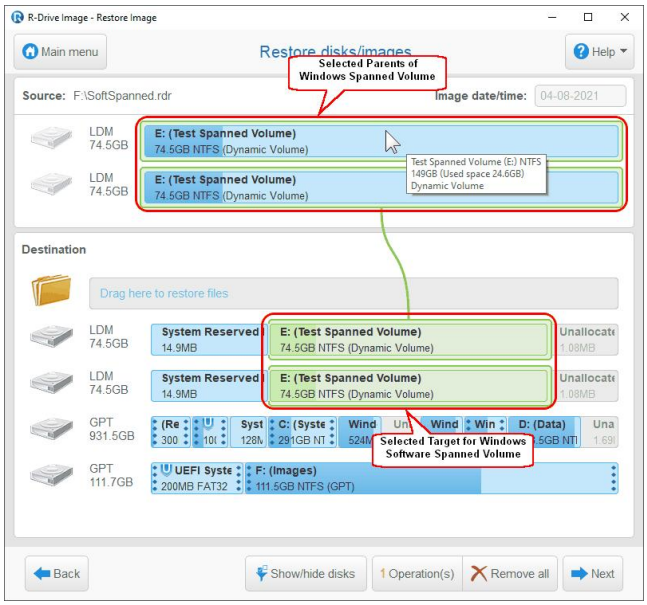
Windows software RAID0



Windows software mirror



Windows software spanned volume

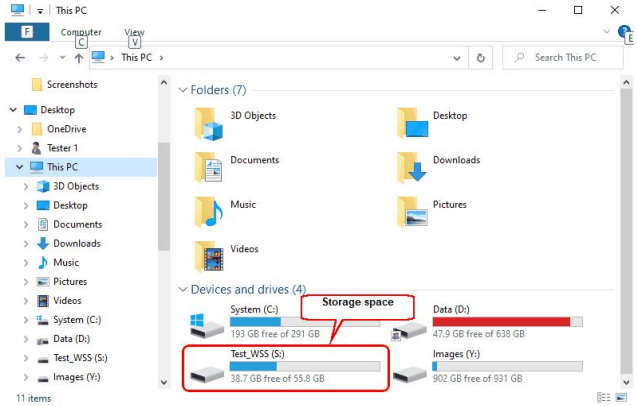


4.4 Windows Storage Spaces

R-Drive Image supports Windows Storage Spaces created by Windows 8/8.1 and Windows 10/Threshold 2/Anniversary/Fall Creators updates. Storage pools and spaces is a new storage technology, first introduced in Windows 8 and Windows Server 2012, that allows the user to combine various (not always similar) hard drives into a kind of a RAID or compound volume. First, the hard drives are combined into a storage pool, then several storage spaces with striping (similar to RAID0), mirroring (similar to RAID1), and parity (similar to RAID5) can be created in that storage pool. You may read more about storage pools and spaces in the Microsoft's Storage Spaces: FAQ.

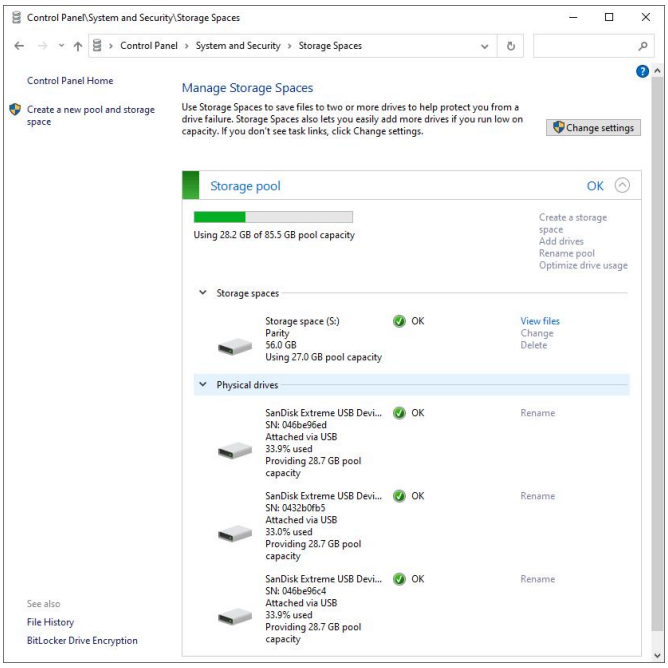
When drives from a storage pool are connected to a Windows computer, it automatically detects them and assembles storage spaces accordingly.

Windows storage spaces



Storage pools and spaces can be managed using the **Storage Spaces** item in the **Control Panel**.

Windows storage spaces

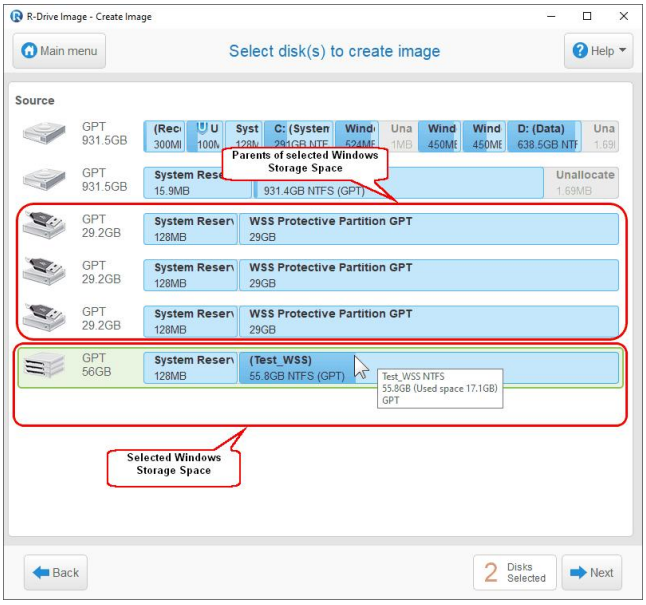


R-Drive Image can image Windows Storage Spaces and then restore data to them with some restrictions.

Windows Storage Space Imaging

R-Drive Image displays both Windows Storage Spaces and their parents on the **Partition Selection** panel.

Windows storage spaces

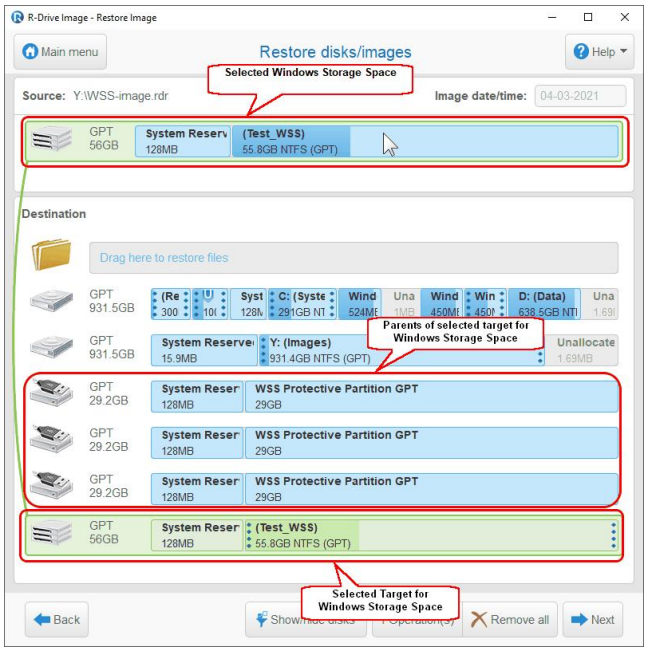


When you select a certain Windows Storage Space, **R-Drive Image** also shows its respective parents.

Data Restore from an Image of a Windows Storage Space

You may restore data from an image of a Windows Storage Space with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

Windows storage spaces

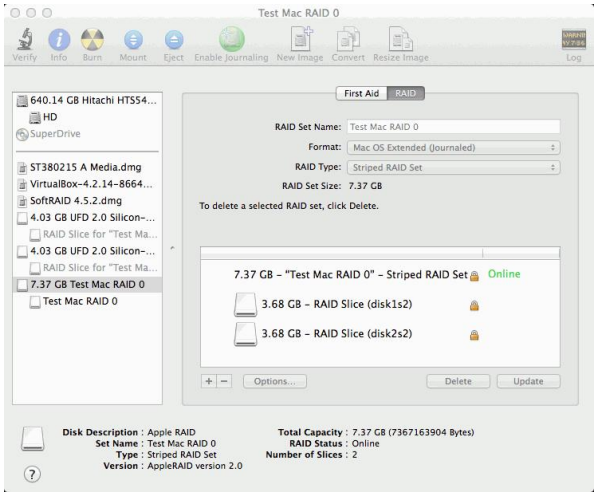


Please, note that **R-Drive Image** can restore data only to fixed-provisional Windows Storage Spaces if the Windows version doesn't support Windows Storage Spaces. The startup version of **R-Drive Image** can restore data only to fixed-provisional Windows Storage Spaces, too. You may read more about thin-provisioned or fixed Windows Storage Spaces in [Microsoft's Storage Spaces Overview](#).

4.5 Apple RAIDs

R-Drive Image supports various software RAIDs that OS X can create from disks connected to a Mac computer: RAID1 (Mirror set), RAID0 (Stripe set), and Concatenated disk set.

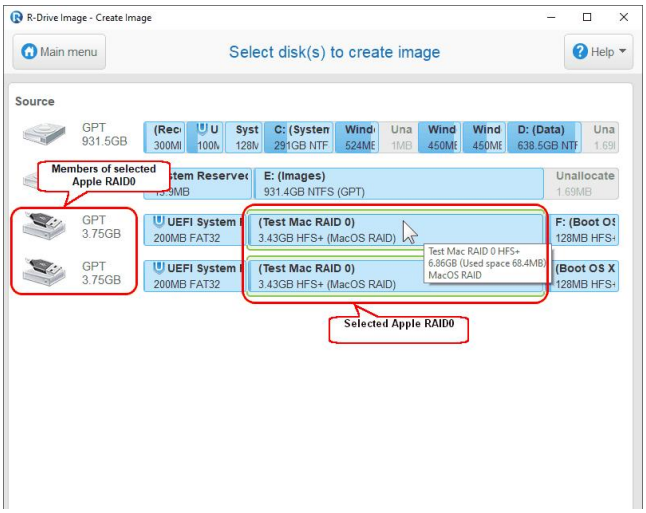
Apple RAID0 example



Apple RAIDs Imaging

R-Drive Image displays both Apple RAIDs and their members on the **Partition Selection** panel.

Apple RAID0

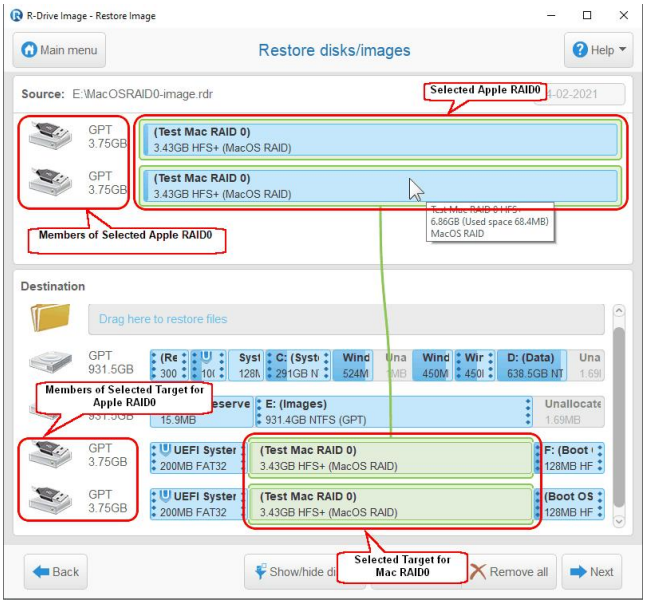


You may select either the Apple RAID, or its members separately.

Data Restore from an Image of an Apple RAID

You may restore data from an image of an Apple RAID with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

Apple RAID0



4.6 Apple CoreStorage/File Vault/Fusion Drive Volumes

The macOS operating system has the following disk management systems:

File Vault, is a disk encrypted utility;

Fusion Drive is an Apple's hybrid drive technology;

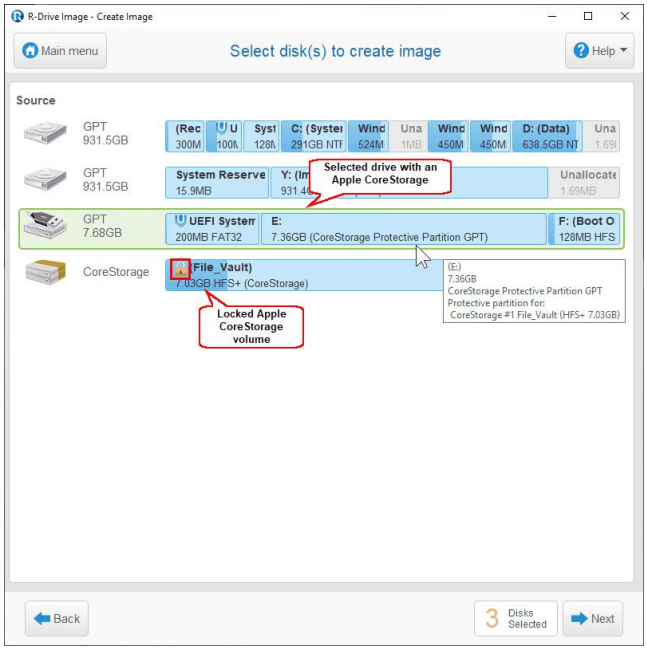
CoreStorage is a logical volume management system.

R-Drive Image supports all these technologies and can unlock their encrypted volumes (hard drives and images).

Apple CoreStorage/File Vault Volume Imaging

R-Drive Image displays both those volumes and their members on the **Partition Selection** panel.

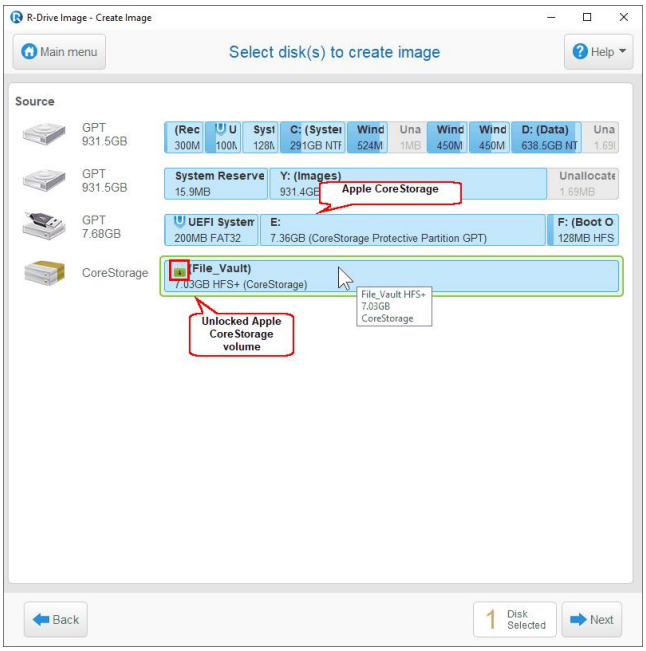
Locked Apple CoreStorage



In the above case, the entire hard drive will be imaged.

You may unlock encrypted volumes and image only them. Click the locked volume and enter the password in the **Unlock encrypted drive** dialog box.

Unlocked Apple CoreStorage



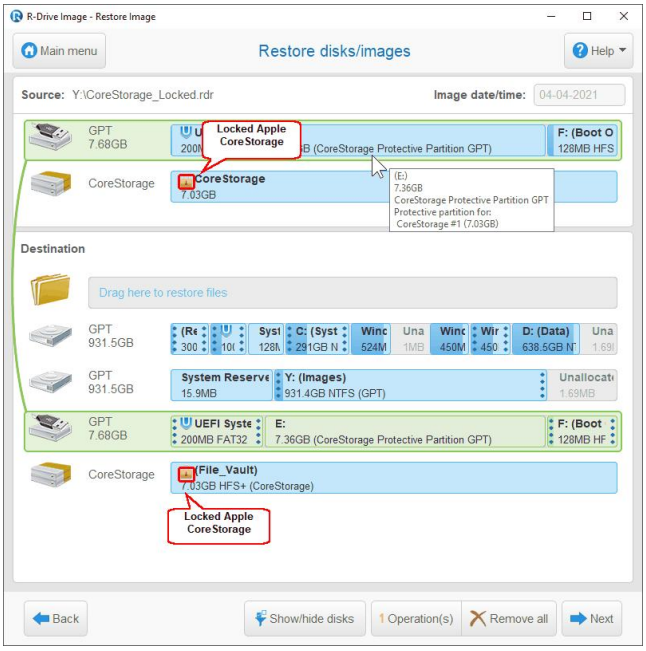
In this case the volume will be image without encryption

Data Restore from an Image of CoreStorage/File Vault Volumes

You may restore data from an image of an Apple CoreStorage/File Vault volume with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

Data restore from an image of an entire storage device to another storage device.

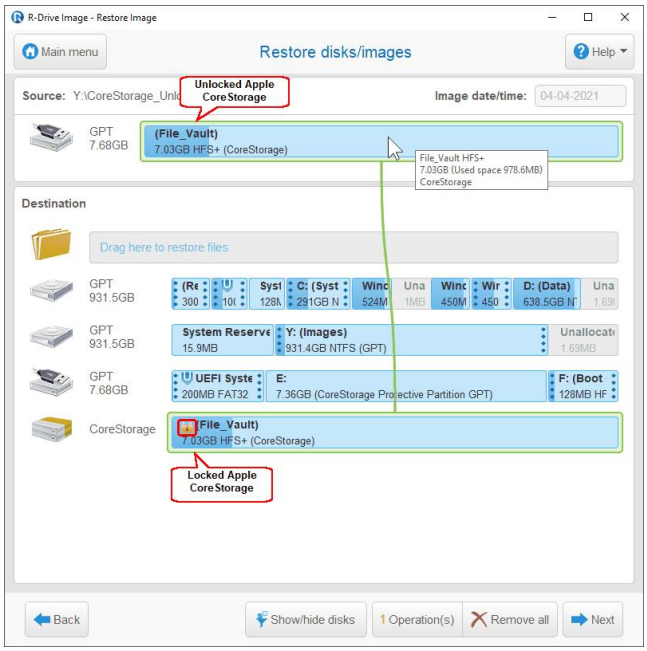
Apple CoreStorage



In this case the result will be the exact copy of the imaged storage device.

Data restore from an image of an unencrypted an Apple CoreStorage/File Vault volume device to the place of a locked encrypted volume.

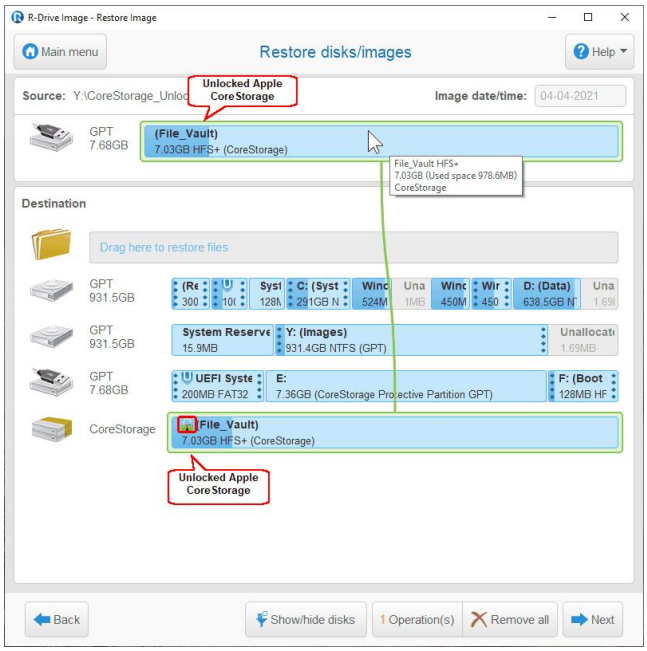
Apple CoreStorage



In this case the result will be an unencrypted volume on the place of the previous encrypted volume.

Data restore from an image of an unencrypted Apple CoreStorage/File Vault volume device to the place of an unlocked encrypted volume.

Apple CoreStorage

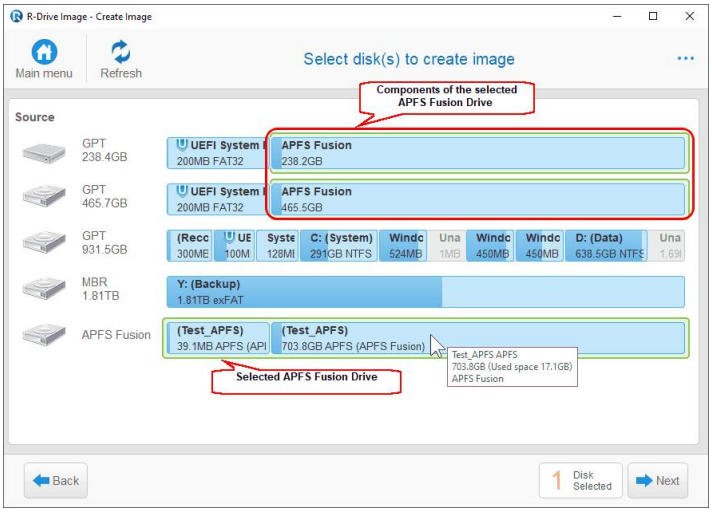


In this case the result will be an encrypted volume on the place of the previous encrypted volume.

Apple Fusion Drive Imaging

R-Drive Image displays both this volume and its members on the **Partition Selection** panel.

Apple Fusion Drive

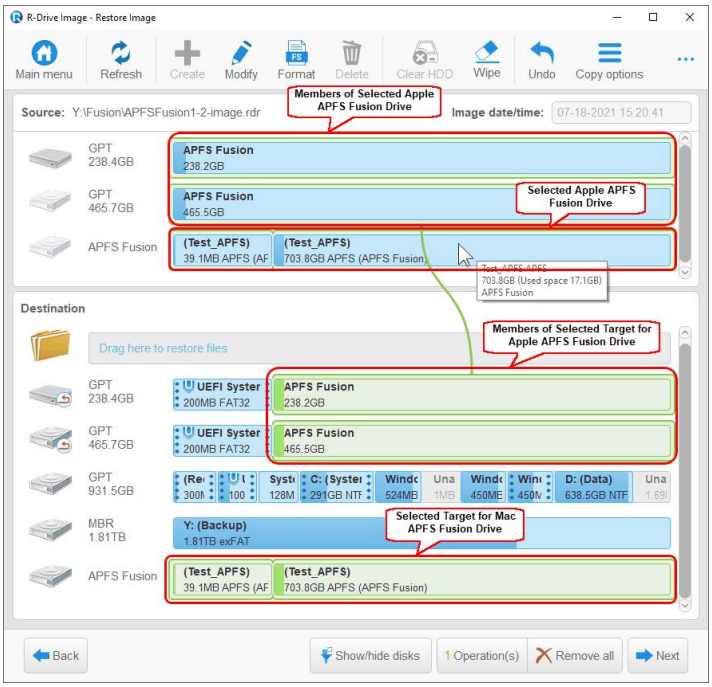


When you select a certain Fusion drive, **R-Drive Image** also shows its respective components.

Data Restore from an Image of Apple Fusion Drive Volumes

You may restore data from an image of an Apple Fusion Drive volume with the limitations described in the [Support for Various Disk Partition Schemes and File Systems] section.

Apple Fusion Drive



4.7 Linux mdadm RAIDs

mdadm is a Linux utility used to manage and monitor software RAID devices.

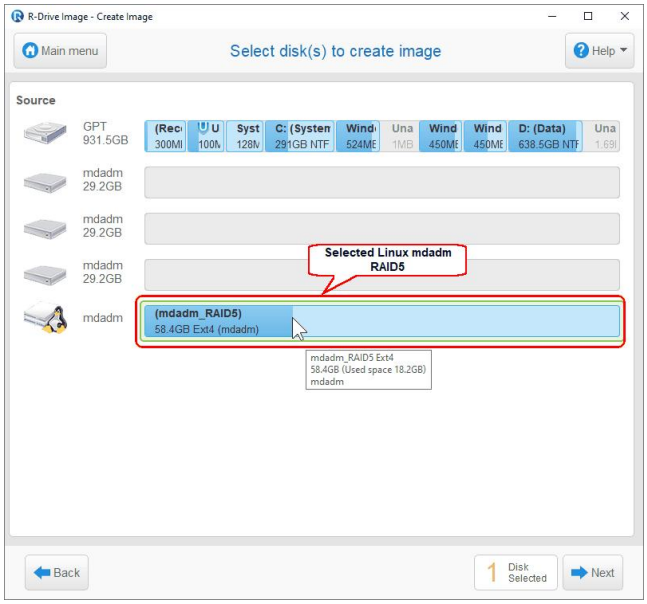
R-Drive Image supports such devices and when drives from a mdadm RAID are connected to a Windows computer, it automatically detects them and assembles mdadm RAIDs accordingly.

Linux mdadm RAIDs

mdadm RAIDs Volume Imaging

R-Drive Image displays both mdadm RAIDs and their components on the **Partition Selection** panel.

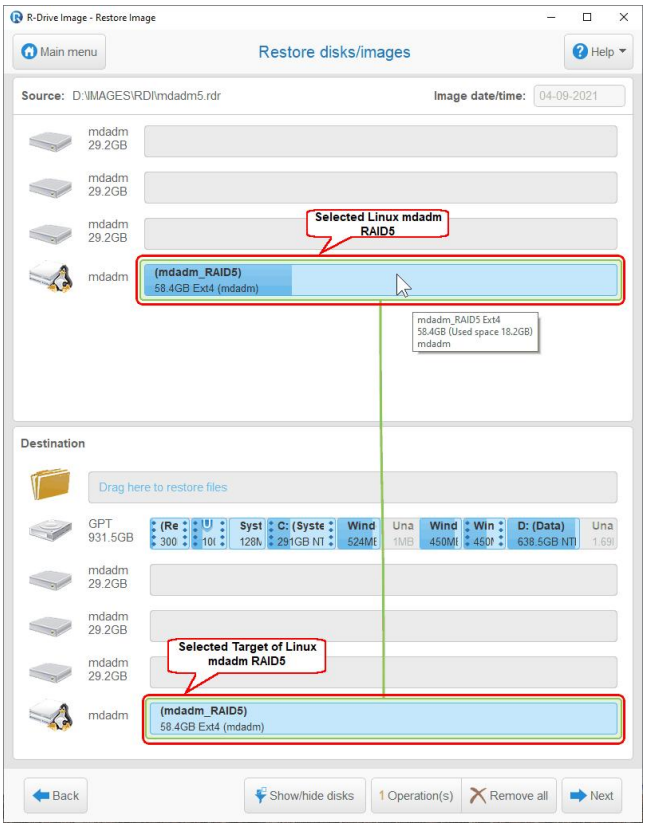
Linux mdadm RAID5



Data Restore from an Image of a mdadm RAIDs Volume

You may restore data from an image of a mdadm RAIDs with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

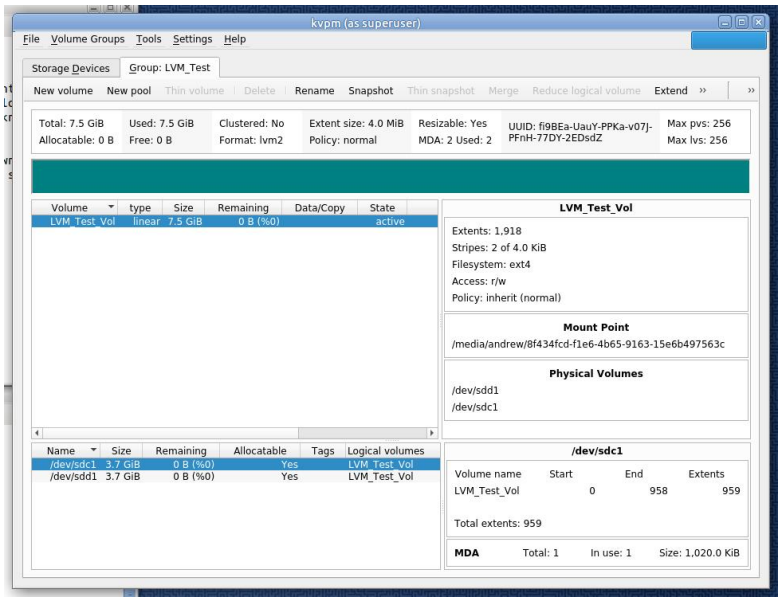
Linux mdadm RAID5



4.8 Linux Logical Volume Manager Volumes

Linux LVM is a logical volume manager for the Linux OS that manages disk drives and other data storage devices. Using it, It is possible to create single logical volumes on several physical disks, add and replace them in a running system, resize logical volumes, create various RAID configuration, and so on. You may read more about Linux LVM on this Wikipedia article: Logical Volume Manager (Linux).

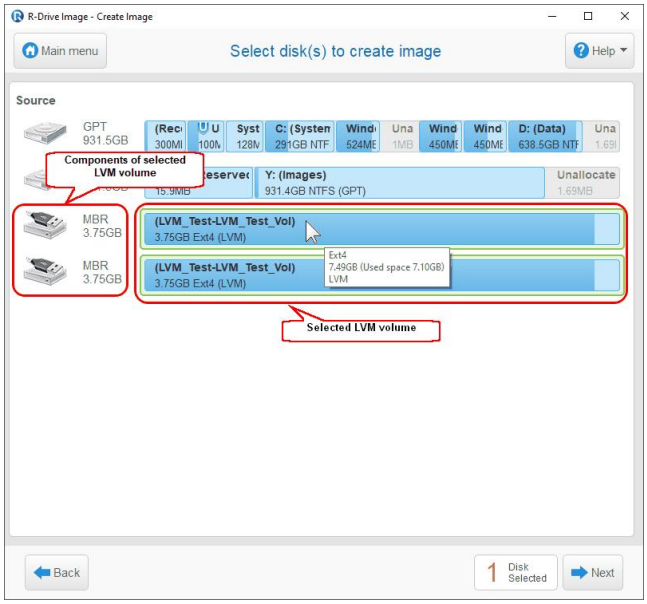
LVM volume example



LVM volume Imaging

R-Drive Image displays both LVM volumes and their components on the **Partition Selection** panel.

LVM Volume

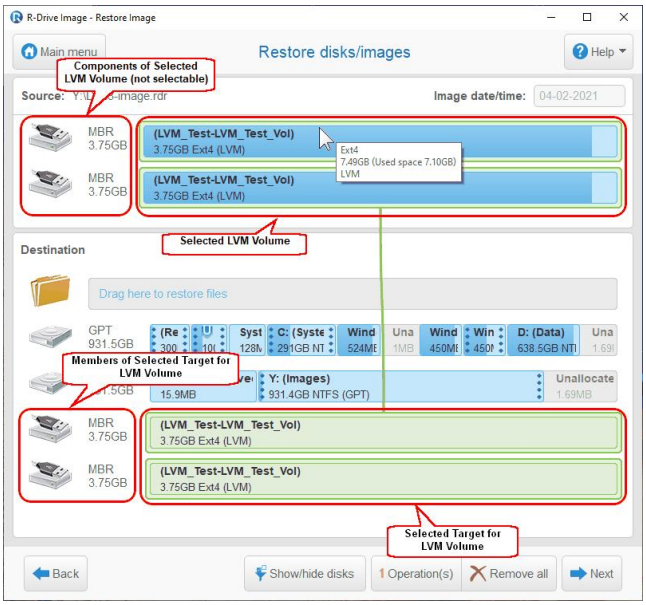


When you select a certain LVM volume, **R-Drive Image** also shows its respective members.

Data Restore from an Image of a LVM volume

You may restore data from an image of a LVM volumes with the limitations described in the **Support for Various Disk Partition Schemes and File Systems** section.

LVM Volume



V Startup Version

There are three types of the **R-Drive Image** startup mode: WindowsPE-based, Linux-based with the Graphic User Interface (GUI). and Linux-based with the Text User Interface (TUI). The interface of the later is actually pseudo-graphic. The Windows-based and Linux-based GUI types have the same interface as that of the Windows version and its operation is similar. You may refer to the respective help pages for detailed instructions. This chapter describes the operation of the TUI startup version.

Note: All startup versions do not work with cloud services.

This chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- **Create Startup Disk**
- **Load Computer into Startup Mode**
- **Restore Data From an Image**
- **Create an Image**
- **Disk to Disk Copy**
- **Create an Image from Files**
- **Partition Manager**
- **Check an Image File**
- **Network Drives**

The **Disk Actions** chapter explains disk actions such as:

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Create an Image from Files**
- **Copy Files to a Folder**
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Manage partition and logical disks**

- **Mount an Image as a Virtual Logical Disk** (read-only)
- **Unmount Virtual Logical Disks**
- **Check an Image File** to check an existing image file

The **RAIDs, and Various Disk and Volume Managers** chapter explains how to perform disk actions with various compound volumes such as:

- **Hardware RAIDs**
- **BitLocker Drive Encryption**
- **Windows Software RAIDs, Spanned, and Other Volumes**
- **Windows Storage Spaces**
- **Apple RAIDs**
- **Apple CoreStorage/File Vault/Fusion Drive Volumes**
- **Linux mdadm RAIDs**
- **Linux Logical Volume Manager Volumes**

The **Scheduled Actions, Command Line Operations, and Scripting** chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

- **Scheduler and Unattended Actions**
- **Scripting and Command Line Operations**
- **Rotation schemes (backup sets)**

The **Technical Information** chapter gives technical information on

- **Creating consistent point-in-time backups**
- **Support for Various non-MBR/GPT Partitioning Schemes**
- **Supported CD and DVD Recorders**
- **List of Hardware Devices Supported in the Startup Mode**

The **R-Drive Image OEM kit** chapter explains how computer system integrators can create system recovery disks for their systems

- **Create a Master Image**
- **Create Startup Media**

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

5.1 Create Startup Disks

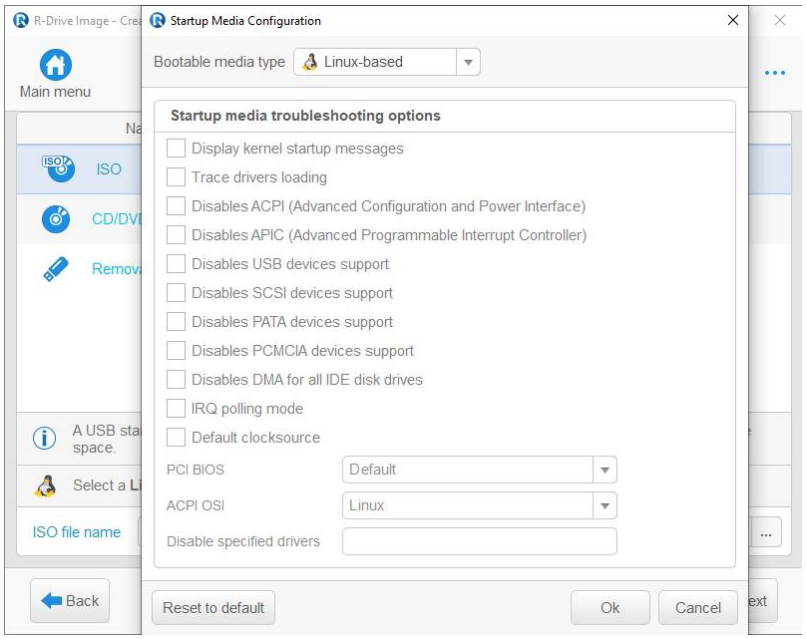
You need to create a startup CD/DVD disc, or USB removable storage device to restore data to a system or other locked disk. You may also create an ISO image of a startup CD disc and burn it using your favorite CD writing software.

You may create a Linux-based or WinPE based startup disk.

A Linux-based disk

If there is a non-IDE disk controller in your system, or you plan to use network disks or external hardware devices, first check the list of supported hardware.

If you have problems with starting you computer up from the **R-Drive Image** startup disks, select **configure startup media troubleshooting options**. Then the **Startup Media Troubleshooting Options** panel will appear. You may configure these options to eliminate those problems.



Those options will help you if you have problems with starting you computer up from the **R-Drive Image** startup disks.

Startup Media Troubleshooting Options

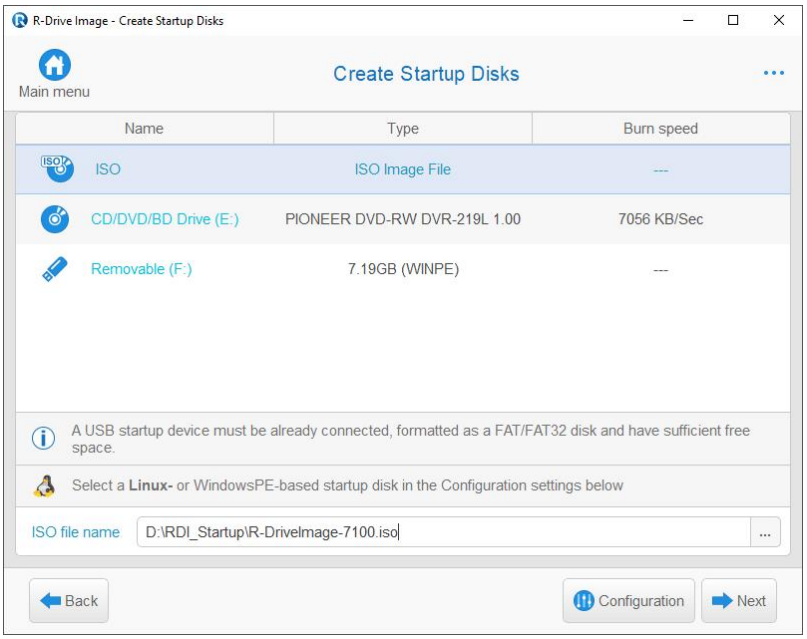
Bootable media type	You may select either a Linux-based or WindowsPE based startup version.
Display kernel startup messages	if this checkbox is enabled, **R-Drive Image** displays all startup messages. That may be useful to locate the source of the problem when your system hangs during **R-Drive Image** startup.
Trace drivers loading	Select this checkbox when you want to see loading drivers to find which one may lock the system.
Disables ACPI Disables APIC	Select these checkboxes when your system detects some hardware incorrectly during **R-Drive Image** startup and displays messages like: `hda: lost interrupt`
Disables USB devices support	Select these checkbox if your system experiences problems with USB devices during **R-Drive Image** startup.
Disables SCSI devices support	Select these checkbox if your system experiences problems with SCSI devices during **R-Drive Image** startup.
Disables PATA devices support	Select these checkbox if your system experiences problems with Parallel ATA devices during **R-Drive Image** startup.
Disables PCMCIA devices support	Select these checkbox if your system experiences problems with PCMCIA

	devices during **R-Drive Image** startup.
Disables DMA for all IDE disk drives	Select these checkbox if your system experiences problems with IDE disks during **R-Drive Image** startup.
IRQ polling mode	Select this checkbox if **R-Drive Image** does not recognize a device although it is in the supported device list.
Default clocksource	Select this checkbox to select computer default clocksource.
PCI BIOS	Select an appropriate option if your system experiences problems with computer hardware.
ACPI OSI	An option informing the computer BIOS which OS type is going to start. Default is Linux, but it may cause the computer BIOS to drop support for some computer hardware. Change this option if the startup version cannot recognize some computer hardware, or it malfunctions.
Disable specified drivers	Enter the drivers that may cause system lock. Driver names should be separated by a space or comma.

To create a startup CD disc:

Supported CD and DVD Recorders

1 Select Create Startup Disks on the Action Selection panel and click the Next button



2 Select the CD-recorder in the list of supported startup devices with removable storage on the Create Sturtup Disk panel and click the Next button

3 Click the Start button on the Processing panel

> R-Drive Image will start creating the startup CD disc

When you click the **Start** button, **R-Drive Image** will open the CD-R/RW drive tray and the **Insert a blank CD-R/RW disc...** message will appear. Insert a blank CD-R/RW disc and click the **OK** button. When **R-Drive Image** finishes creating the startup CD disc, the **Startup disks created successfully** message will appear.

If you mistakenly insert a non-empty CD-R/RW disc, the **CD-R/RW disc is not empty...** message will appear. Change the disc to another empty CD-R/RW disc and click the **OK** button.

To create an ISO image:

1 **Select Create Startup Disks on the Action Selection panel and click the Next button**

2 **Select ISO on the Create Sturtup Disk panel, specify a file name for the ISO image, and click the Next button**

3 **Click the Start button on the Processing panel**

> **When R-Drive Image finishes writing the file with the ISO image, the Startup disks created successfully message will appear**

4 **Create the startup CD using your favorite CD creation software**

Load the created ISO image into the CD creation software. Consult documentation for the software for details.

To create a startup USB removable device:

It may be a USB flash disk, ZIP drive, etc. It should be FAT/FAT32 formatted and connected to the computer before selecting **Create Startup Disks** on the **Action Selection** panel. If there is some data on that device, it will not be overwritten.

1 **Select Create Startup Disks on the Action Selection panel and click the Next button**

2 **Select the required removable device in the list of supported startup devices with removable storage on the Create Sturtup Disk panel and click the Next button**

3 **Click the Start button on the Processing panel**

> **R-Drive Image will start creating the startup USB disc**

When **R-Drive Image** finishes creating the startup USB disk, the **Startup disks created successfully** message will appear.

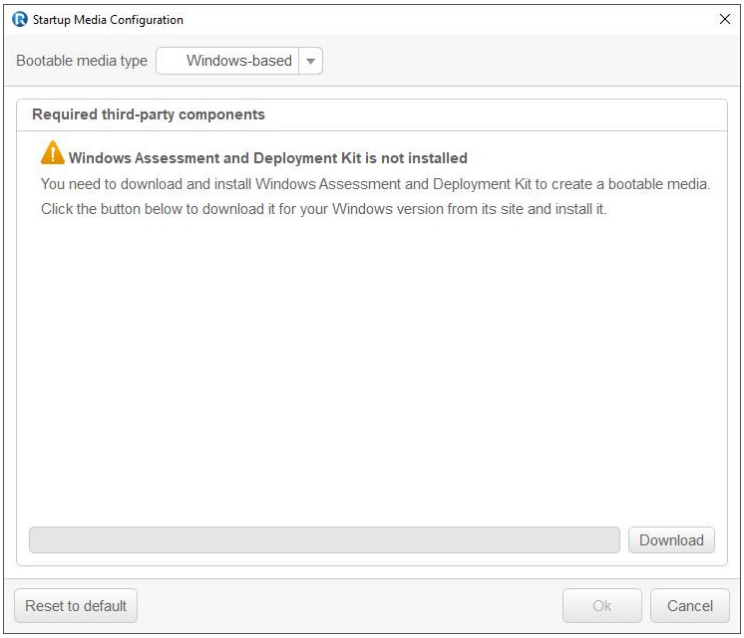
A WindowsPE-based disk

Note: R-Drive Image supports creating WindowsPE startup disks starting from Windows 8.1. It's possible to create such disk from **R-Drive Image** on earlier Windows versions if you yourself correctly install a workable copy of WindowsPE Assessment and Deployment Kit (Windows ADK). Microsoft recommends Windows ADK from Windows 10 version 2004 (20H1) for versions prior to Windows 10.

1 **Select Create Startup Disks on the Action Selection panel and click the Next button**.

2 **Click the Configuration button and select Windows-based in the Bootable media type dropbox.**

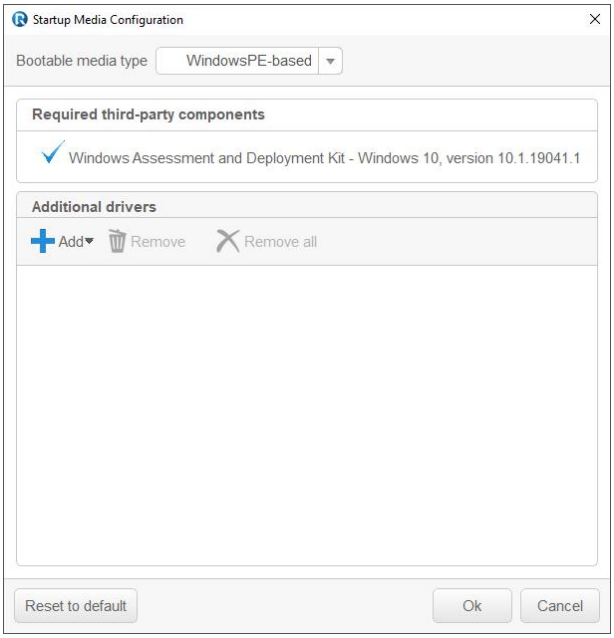
You may need to install additional Windows components.



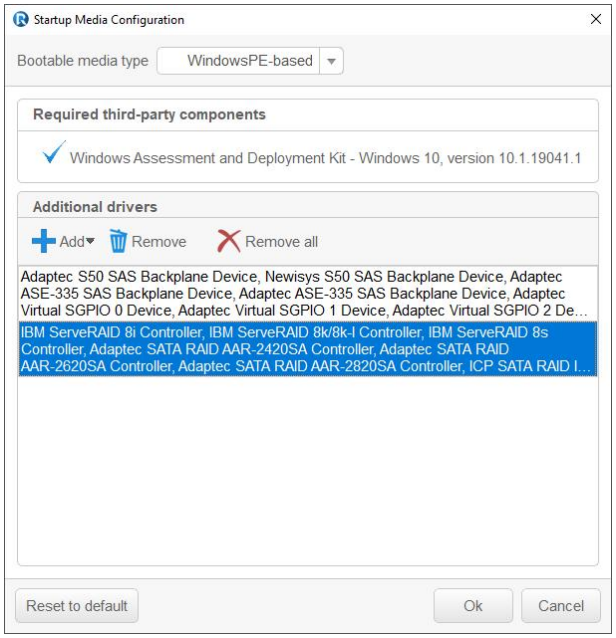
3 Click the Download button and follow the instructions.

4 Click the OK button on the message that will appear when the components have been downloaded.

5 Click the OK button on Startup Media Configuration panel



You may add additional drivers if necessary. Click the **Add** button and select the required `.inf` file. Added drivers will appear on the window.



6 **Return to the Create Sturtup Disk, and click the OK button.**

R-Drive Image will format the disk before writing new data to it. Old data will be therefore deleted from the disk.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

5.2 Load Computer into Startup Mode

Sometimes you may need to start your computer into **R-Drive Image** startup mode, for example, to restore data to a system disk.

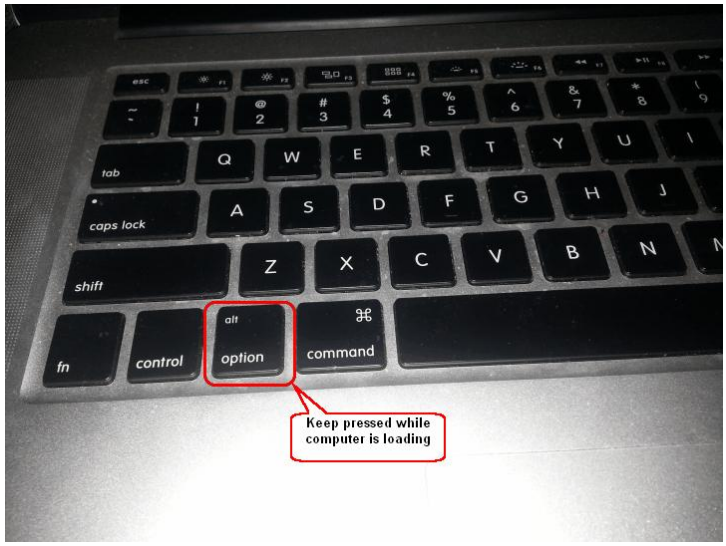
You may do that through the following methods:

If you have a Mac computer...

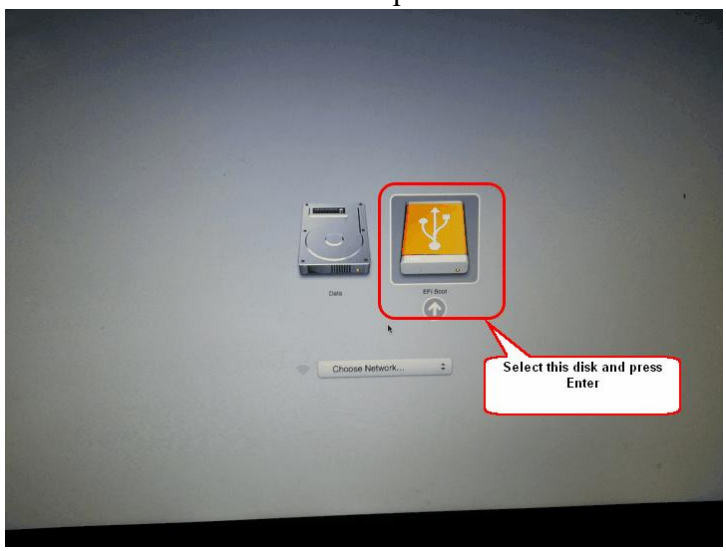
The startup version of **R-Drive Image** can perform basic disk imaging operations for Mac computers. See the Support for Various Disk Partition Schemes and File Systems section for details.

To start a Mac computer with the **R-Drive Image** startup disk,

1. Insert a CD/DVD disc or connect a USB disk
2. Switch the Mac on.
3. While loading, press the **Option** key on the Mac keyboard (the **Alt** key if you use a non-Apple keyboard).



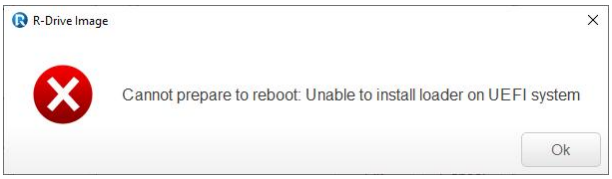
4. Select the **EFI boot** disk and press **Enter**.



From the R-Drive Image Graphical User Interface

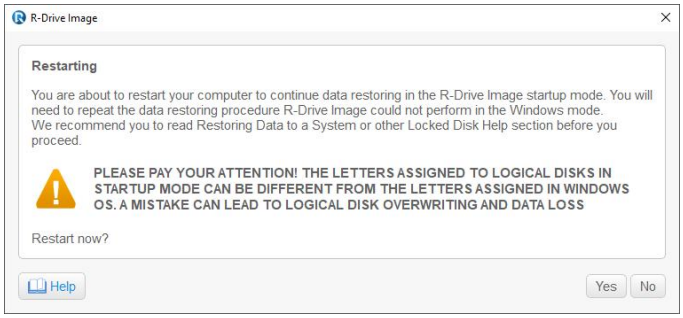
Note: You cannot use this method if your computer uses UEFI to start up. Use external startup media, like a USB or CD disk instead.

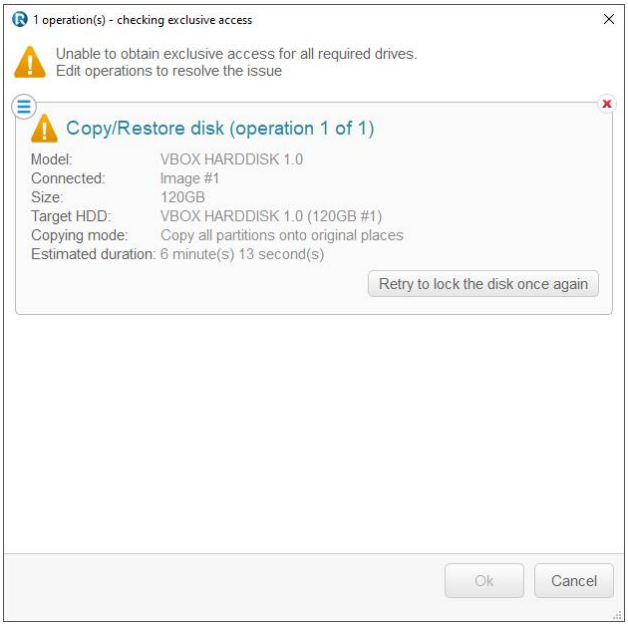
If you try to restart an UEFI computer from the Windows, you'll get a **Cannot prepare to reboot...** message.



1. Select the file with the image, the object in the image file, select the system disk as the destination as it is described in the Restore Data from an Image topic. Do not pay much attention to the image file, as it will be eventually discarded. The only important option at this stage is the image destination. Select the system disk.

2. When you click the **Next** button on the **Image Object Selection** panel, the **Disk not locked** message will appear.
3. Select **Restart computer (recommended)** and click the **OK** button. The **You are about to restart...** message will appear. Click the **Yes** button. (If you click the **Cancel** button on the **Disk not locked** message, the **Cannot lock the disk** message will appear, and **R-Drive Image** will stay on the **Image Object Selection** panel.)





You computer will restart. The following text will appear on the screen:

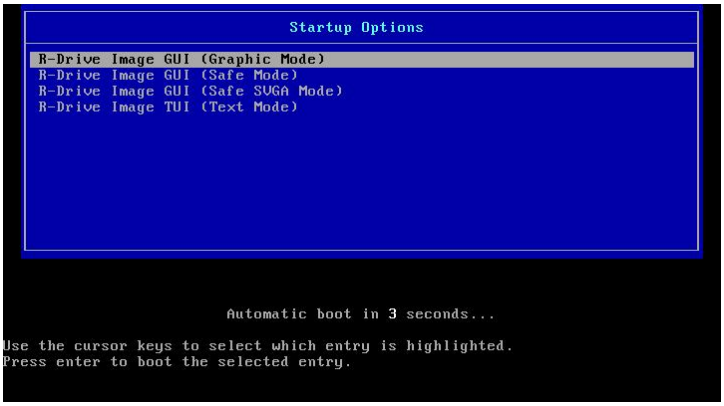
```
Please select the operating system to start:

R-DriveImage Autopart v.2.0
Microsoft Windows XP Professional
```

4. Select **R-DriveImage Autopart v.2.0** and press the **Enter** button. You may select **Microsoft Windows XP Professional** to start Windows normally.

using the R-Drive Image startup USB disk or CD disc

1. Make sure that the first startup device in the system BIOS is the required drive. If you are going to use the Linux-based startup disk, disable "Secure boot" in the system BIOS if your computer is certified to run Windows 8 and later. Refer to your system documentation for details. The WindowsPE-based disk doesn't require this step.
2. Connect the USB disk or insert the CD disc and start your computer.

R-Drive Image will start in the startup mode.and a startup screen will appear:



Select the **R-Drive Image GUI (Graphic Mode)** to run **R-Drive Image** in the graphic mode in which its user interface is similar to the Windows version. if **R-Drive Image** cannot run in this mode, restart the system in the Safe VGA mode (only VESA-compliant) which is compatible with most video cards and monitors. If it fails too, select the Text mode in which the **R-Drive Image** user interface is shown in the pseudo-graphic mode compatible with all video cards. The help below describes this pseudo-graphic mode.

Use the **Tab** key to switch between the control areas and the arrow keys to select options within the control areas. Press the **Enter** key to activate the selected button.

You may also activate a key by pressing the highlighted letter key. You may exit the program by pressing the **x** key.

Secure boot:

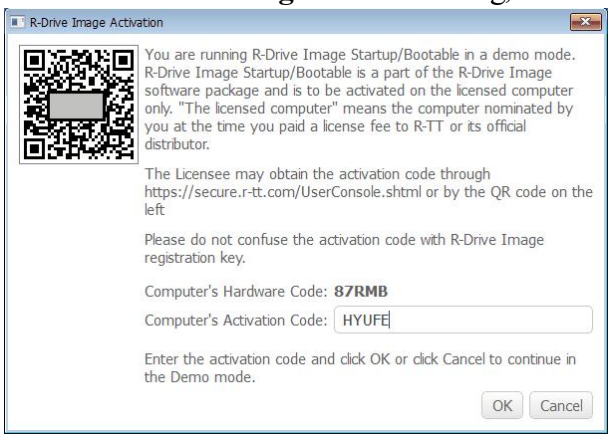
It may be impossible to start a Windows 8 and later certified computer with the R-Drive Image startup disk without some additional actions. This happens because any computer should use a so-called "Secure boot" procedure to comply with Windows 8 hardware certification from Microsoft. In brief, this procedure prevents computer from booting into any operating system that isn't digitally signed with an appropriate digital signature. "Secure boot" is claimed to prevent unauthorized modification of the boot sector by bootkits, viruses, trojans, and other malicious software. To the date, only Windows 8, Windows Server 2012, and selected Linux distributions support this feature. As a side effect, it also prevents most LiveCDs, rescue disks (Linux-based R-Studio and R-Drive Image included), and other OS from running.

Likely enough, the other requirement of Windows 8 hardware certification is to make it possible for the user to disable the Secure boot procedure. Those settings can be done through the system BIOS under the Boot options. Generally, it's enough to enable Legacy support in those options, but sometimes it may require additional actions. Please, refer to your system documentation to learn more about disabling/enabling Secure boot.

When Secure boot is disabled, it should be possible to start the computer with the Linux-based R-Drive Image startup disk.

Please note that you should enable this feature back after using the startup disks because these versions of Windows or Servers may not start properly without the Secure boot feature enabled.

Before **R-Drive Image** starts working, it will require activation. An activation window will appear.

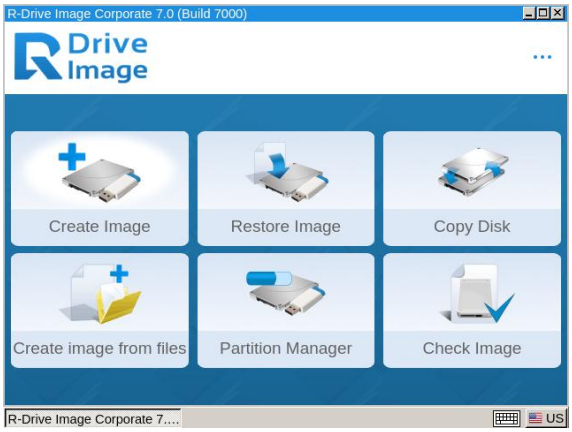


You need to enter a Computer Activation Code to proceed further. You may obtain it by either going to User Console on another computer or by scanning the QR-code by your phone.

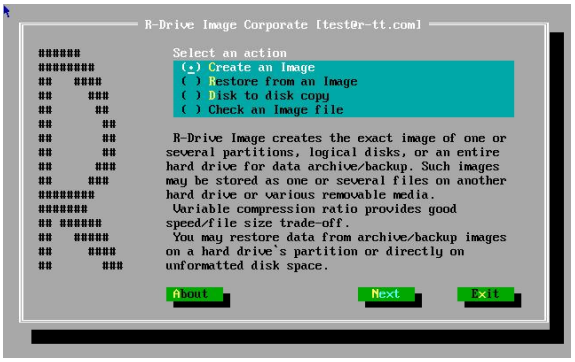
Please note that some license restrictions may apply. The License Transfer help page explains them in detail.

When the **Action Selection** panel will appear.

GUI mode



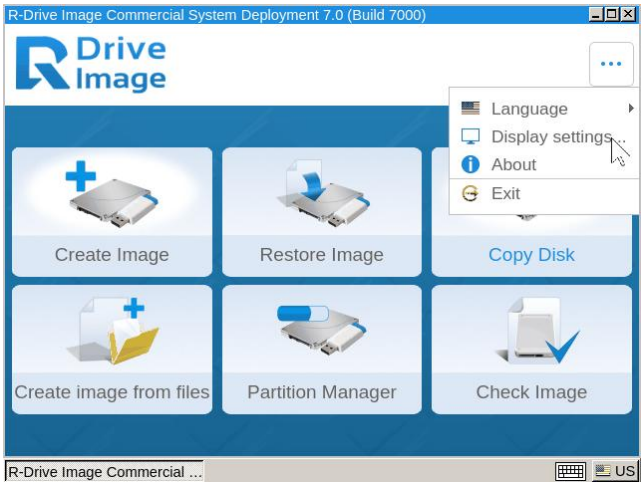
Text mode



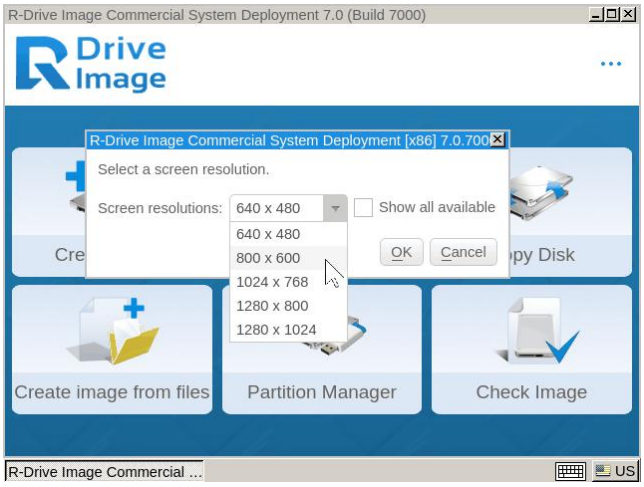
Specifying video settings for the GUI startup version.

You may specify video screen resolution when necessary.

1 Select Display settings in the shortcut menu



2 Select the required screen resolution and click the OK button



5.3 Restore Data from an Image

Restoring data to a system or other locked disk:

Note: This help page describes the operation of the TUI startup version. Go to the **Restore Data from an Image** help page for the GUI version and to the network drives help If necessary.

You cannot restore data to the system (the disk from which Windows starts) or other locked disk the same way you do that to any other disk. You need either to restart **R-Drive Image** in its startup mode, or start your computer from another computer local disk or from specially created startup disk(s).

We recommended that you print out this topic and have the hardcopy on hand while you are performing this action.

If there is a non-IDE disk controller in your system, or you plan to use network disks or external hardware devices, first check the List of Hardware Devices Supported in the Startup Mode.

If you plan to use any external device, turn it on before starting the system.

If the image to restore is located on cloud services or other places that may be unavailable to the startup version, copy it to some other location that **R-Drive Image** can reach.

If the motherboard in your computer supports the Serial ATA (SATA) devices, but IDE disks are also present, only the SATA devices should be set to the Enhanced Mode in BIOS.

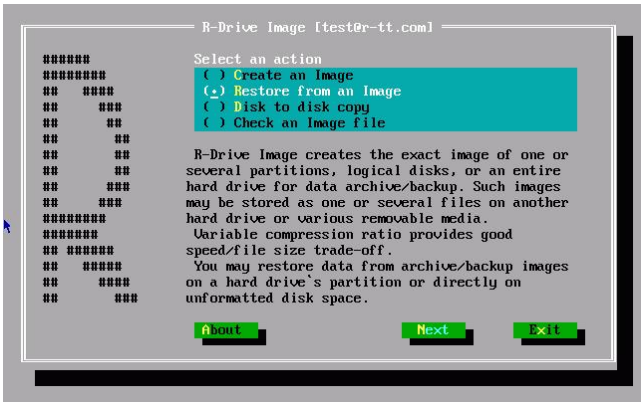
Please, note that the startup version of **R-Drive Image** can restore data only to fixed-provisional Windows Storage Spaces. You may read more about thin-provisioned or fixed Windows Storage Spaces in **Microsoft's Storage Spaces Overview**.

We recommend you stop all other programs before you start restoring data on a partition.

1 **Restart your computer in the startup mode**

2 **Select Restore Image on the Action Selection panel and press the N key**

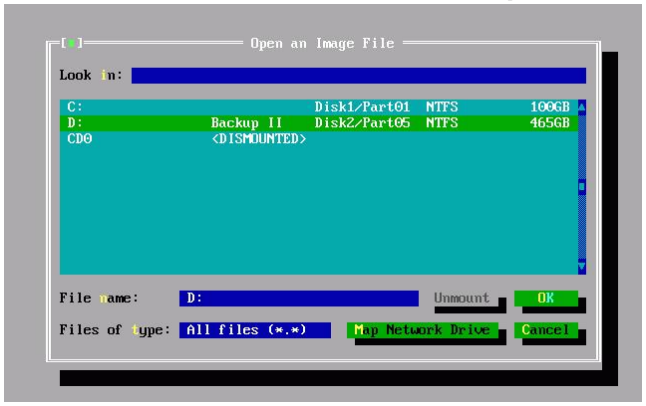
Action Selection Panel

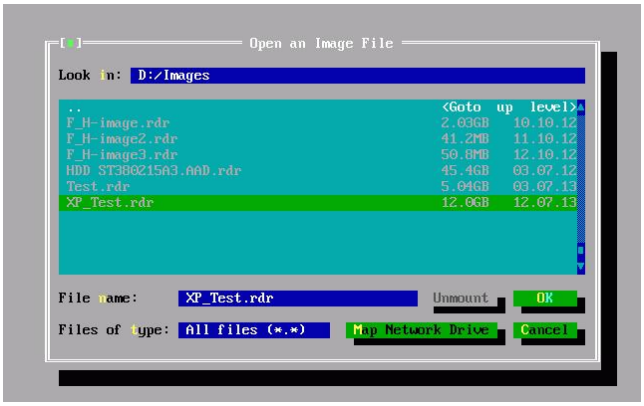


Use the arrow keys to switch between the options.

3 **Select the file with the image on the Open an Image File panel and press the Enter key**

Open an Image File Panel





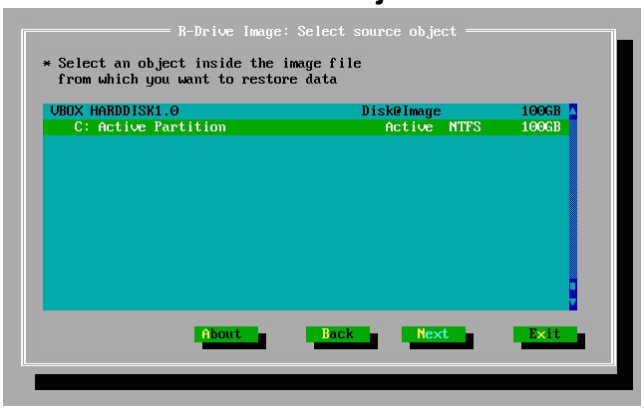
R/O	Read-only disk. You cannot create images on such disks.

Use the **Tab** key to switch between the control areas and the arrow and **Enter** keys to navigate within the **File** area.

You may also connect network drives.

4 **Select the object in the image file on the Select an object panel you want to restore data from and press the N key**

Select Source Object Panel



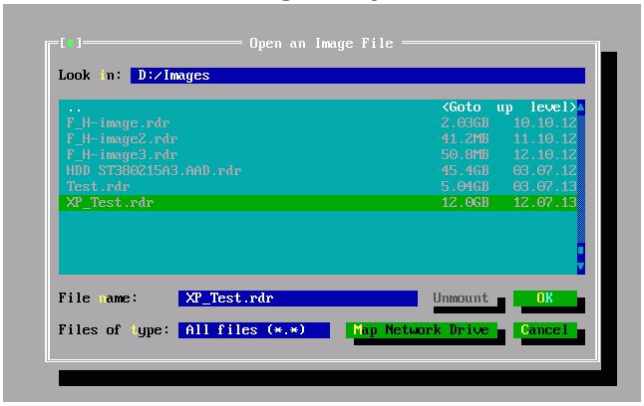
Use the arrow keys to select the object.

5 **Select time and data of the data to restore on the Select Image Date/Time panel and press the N key**

Use the arrow keys to select the object

6 **Select the destination for the data on the Select a target for copy/restore operation panel and press the N key**

Select Target Object Panel

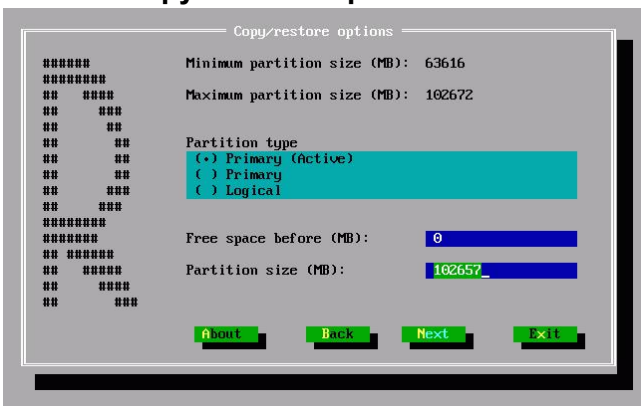


Use the arrow keys to switch between the target objects.

H	Hard drive
P	Primary partition
L	Logical disk
U	Unallocated space

7 **Specify restore parameters on the Copy/restore options panel and press the N key**

Copy/Restore Options Panel

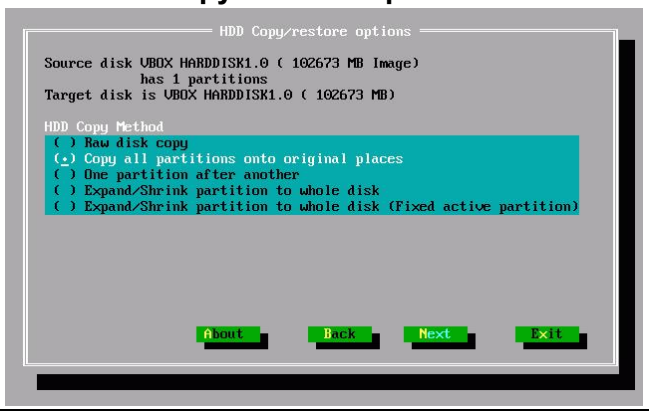


For restoring/copying one or several partition(s):

Restore Options	
Free space before	You may specify the size of free space that will be left on the hard drive before the beginning of the partition.
Partition size	You may specify the size of the partition to be restored. Should be between the minimum and maximum partition size.
Partition type Primary(Active) Primary Logical	You may specify the type of the partition to be restored. Do not change this setting unless you have serious reasons to do so.

For restoring/copying an entire hard drive to another hard drive:

HDD Copy/Restore Options Panel



HDD Copy Method	
Raw disk copy	**R-Drive Image** writes sector-by-sector the data from the original drive or its image to the target one making an exact copy of the original disk regardless of its partitioning method. Can be used if other methods create a non-bootable disk due to incorrect detection of drive's geometry or non-standard loader. Drawback: partition sizes cannot be changed.
Copy all partitions onto original places	**R-Drive Image** copies all partitions to their original places. If **R-Drive Image** detects the drive's geometry correctly, and there is no non-standard loader, it makes the same result as during Raw disk copy.

Realign partitions	**R-Drive Image** will copy the partitions on the disk with a 512KB alignment. This is very useful for SSD and advanced-formatted disks. If there are empty (non-used) spaces between partitions, those spaces will be removed taking into account the alignment.
Expand/Shrink partition to whole disk	If there are empty (not-used) places between the partitions or they occupy less or more space than the target drive, **R-Drive Image** proportionally expands/shrinks them to occupy the entire target drive. Otherwise it is similar to Copy all partitions onto original places.
Fixed active partition	**R-Drive Image** preserves the original offset/size of the active partition (in case the loader has links to it).

See **Support for Various Disk Partition Schemes and File Systems** for details.

When you restore data from an image of a system disk, a disk signature collision may occur. In this case, the **Disk Signature Collision** panel will appear. You may specify the way to resolve this collision on this panel.

Disk Signature Collision Resolving	
Same signature for both disk	**R-Drive Image** will create an identical copy of the source disk with the same signature. To avoid disk signature collision, you'll have to disconnect one of the disks and restart the computer, if necessary. Use this mode if you clone a system disk for another computer or only the target disk will be used in yours.
Different signature on the target disk.	**R-Drive Image** will write another disk signature to the target disk. Don't use this mode if you clone a system disk, Windows won't start from it. To get access to the target disk after cloning, you'll have to restart the computer or re-connect it if it's an external USB disk.
Change the disk signature on the source disk.	**R-Drive Image** will change the disk signature on the source disk. Use this mode if you want to start Windows from the target disk, but be warned: the computer won't start from the source disk anymore.

8 Verify that the information on the Confirm operations panel is correct and press the N key

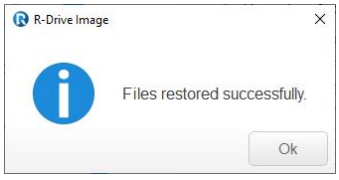
> R-Drive Image will start restoring the data from the image file to the selected destination

The Progress window will show the progress of the current operation and overall process. When the image is restored, the **Operation completed successfully** message will appear.

9 Verify that the information on the Processing panel is correct and click the Start button

> R-Drive Image will start restoring the files from the image file to the selected destination.

When the image is restored, the **Files restored successfully** message will appear.



The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

5.4 Create an Image

Note: You may read about **Support for Various Disk Partition Schemes and File Systems** to learn more about possible options for your specific case.

It is recommended that you print out this topic and have the hardcopy on hand while you are performing this action.

Note: This help page describes the operation of the TUI startup version. Go to the **Create an Image** help page for the GUI version and to the network drives help If necessary.

If there is a non-IDE disk controller in your system, or you plan to use network disks or external hardware devices, first check the list of supported hardware.

If you plan to use any external device, turn it on before starting the system.

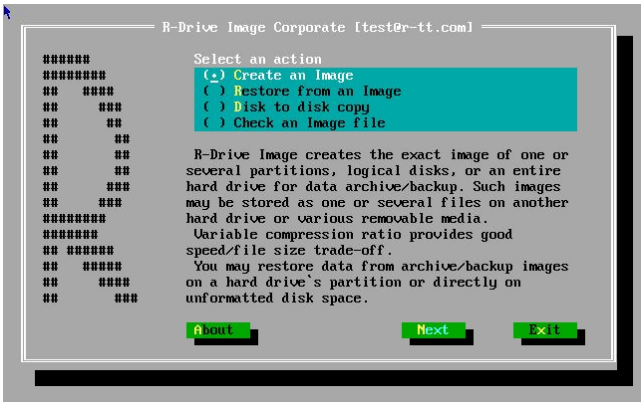
If the motherboard in your computer supports the Serial ATA (SATA) devices, but IDE disks are also present, only the SATA devices should be set to the Enhanced Mode in BIOS.

1 **Restart your computer in the startup mode**

2 **Select Create an Image on the Select an action and press the N key**

Use the arrow keys to switch between the options.

Action Selection Panel



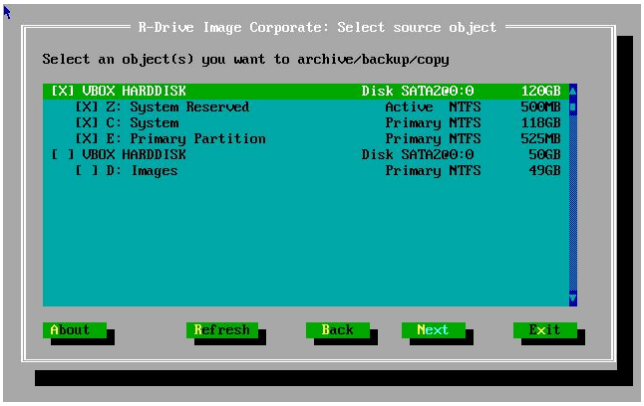
R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress. Then the **R-Drive Image: Select an object you want to archive/backup/copy** panel will show the configuration.

H	Hard drive
P	Primary partition
L	Logical disk
U	Unallocated space

3 **Select an object which image you want to create on the Select source object panel and press the N key**

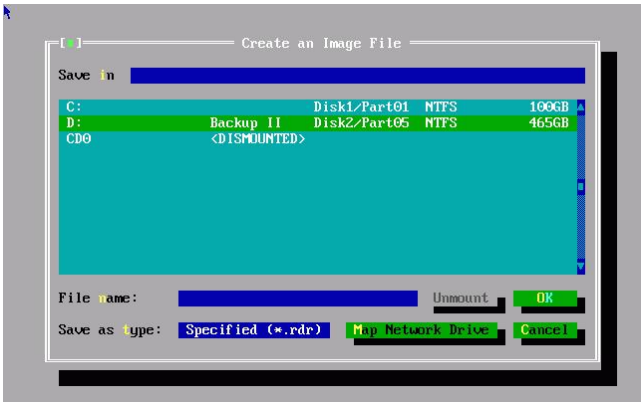
Use the arrow keys to switch between the objects and the **SPACEBAR** to select the object.

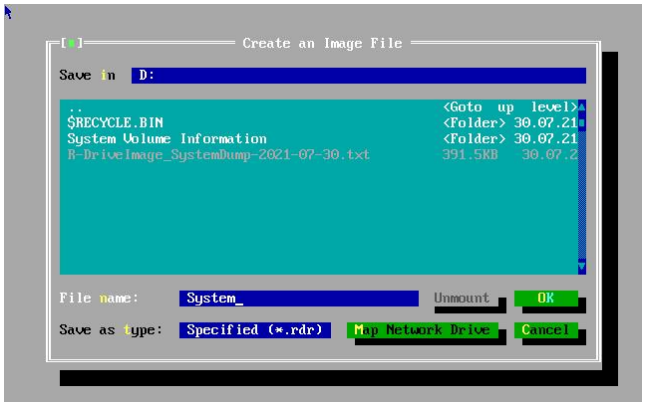
Select Source Object Panel



4 Select the place on the Create an Image panel to which the image files will be written, specify the file name, and press the O key

Create an Image File Panel





R/O	Read-only disk. You cannot create images on such disks

Use the **Tab** key to switch between the control areas.

External USB drives with the NTFS file system: the startup version of **R-Drive Image** can save image files on such disks if they are properly disconnected in a Windows system using the **Safely Remove Hardware** icon in the system tray or while shutting Windows down.

You may also connect network drives.

5 Specify image options on the Image Options panel and click the Next button

You may specify image options on this panel.

Image Options Panel

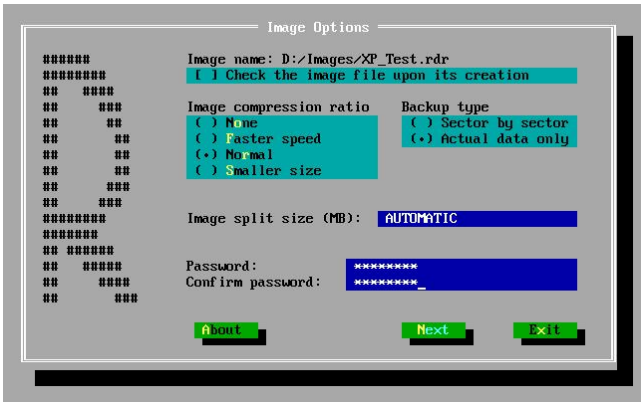


Image options

Options	
Image name:	Shows the file name for the image. You cannot change the file name on this panel.
Check the image file immediately upon its creation	Select this option if your want R-Drive Image to check the newly created file image for its consistency. This may be useful for storing image files with critical data. Please note that this operation requires additional time.
Image compression ratio	You may compress the data in the image to save space. Please note that the smaller size you select the more time will be spent to create the image file and vise versa.
Backup type	You may store in the image either the exact Sector by backup copy of the object or Backup useful information only, that is, you do not have to store empty space of the object in image files. See **Support for Various Disk Partition Schemes and File Systems** for the list of supported file systems.
Estimated size	Shows the estimated size of the image file. An actual image size depends on how much empty space is on the selected partition and what file types are there.
Image split size	You may set this option to Automatic and let Windows decide how to split the image file. This mostly depends on the file system on the destination disk. You may also either explicitly specify the split size, or choose a preset for various devices with removable storage. Select Fixed size for that.
Password	You may protect your image file with a password. **Note:** If you leave the Encrypt image option clear this feature will provide a relatively moderate protection against conventional unauthorized access. If this option is selected, R-Drive Image will encrypt the image using the AES-XTS algorithm.
Image description	You may attach a text description to the image for annotation. Maximum length of the description is 255 characters.

6 Verify that the information on the Confirm operations panel is correct and click the N key

> R-Drive Image will start creating the image file

The Progress window will show the progress of the current operation and overall process. If you selected a read-only disk as the target, you will see the **File is read-only. Press OK to retry**. message.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

5.5 Disk to Disk Copy

It is recommended that you print out this topic and have the hardcopy on hand while you are performing this action.

Note: This help page describes the operation of the TUI startup version. Go to the **Copy a Disk to a Disk** help page for the GUI version and to the network drives help If necessary.

If there is a non-IDE disk controller in your system, or you plan to use network disks or external hardware devices, first check the list of supported hardware.

If you plan to use any external device, turn it on before starting the system.

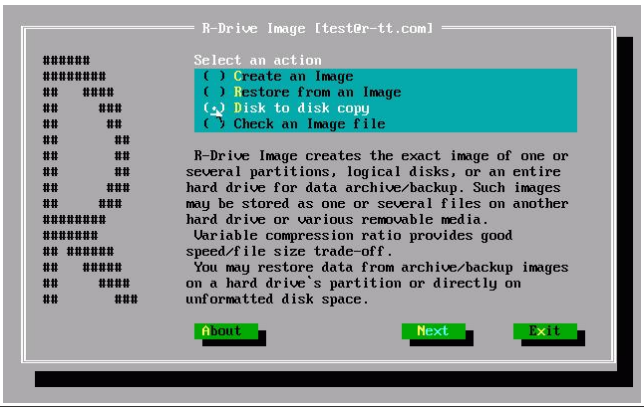
If the motherboard in your computer supports the Serial ATA (SATA) devices, but IDE disks are also present, only the SATA devices should be set to the Enhanced Mode in BIOS.

1 **Restart your computer in the startup mode**

2 **Select Disk to disk copy on the Action Selection panel and press the N key**

R-Drive Image will start analyzing the computer disk configuration, the **Progress...** message showing the progress. Then the **R-Drive Image: Select an object you want to archive/backup/copy** panel will show the configuration.

Action Selection Panel

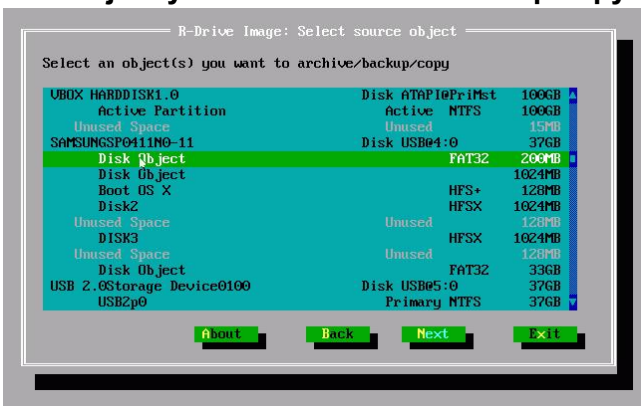


H	Hard drive
P	Primary partition
L	Logical disk
U	Unallocated space

Use the arrow keys to switch between the options.

3 **Select an object you want to copy on the Select an object you want to archive/backup/copy panel and press the N key**

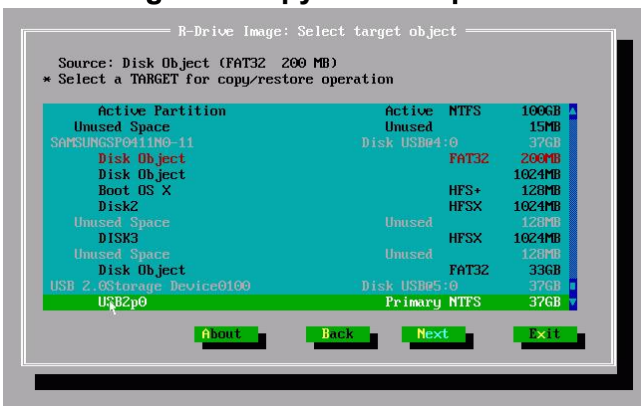
Select an object you want to archive/backup/copy Panel



Use the arrow keys to switch between the objects.

4 **Select the destination for the data on the Select a target for copy/restore operation panel and press the N key**

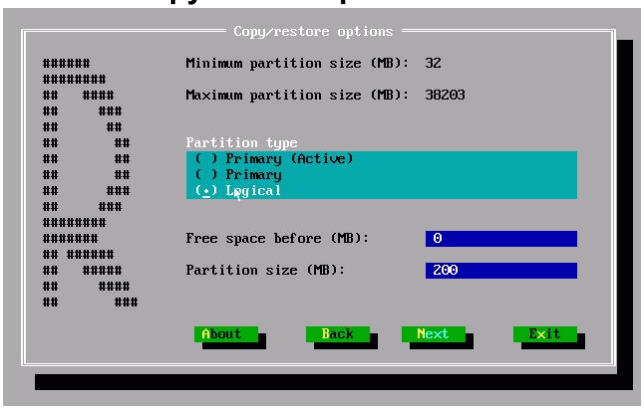
Select a target for copy/restore operation Panel



Use the arrow keys to switch between the target objects.

5 **Specify restore parameters on the Copy/restore options panel and press the N key**

Copy/restore options Panel



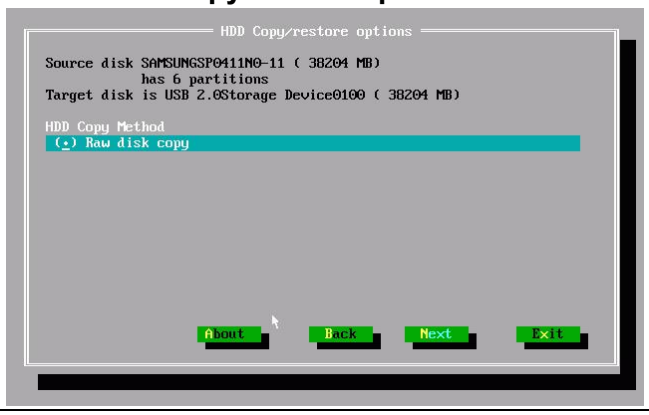
For restoring/copying one or several partition(s):

Restore Options

Free space before	You may specify the size of free space that will be left on the hard drive before the beginning of the partition.
Partition size	You may specify the size of the partition to be restored. Should be between the minimum and maximum partition size.
Partition type Primary(Active) Primary Logical	You may specify the type of the partition to be restored. Do not change this setting unless you have serious reasons to do so.

For restoring/copying an entire hard drive to another hard drive:

HDD Copy/restore options Panel



HDD Copy Method	
Raw disk copy	**R-Drive Image** writes sector-by-sector the data from the original drive or its image to the target one making an exact copy of the original disk regardless of its partitioning method. Can be used if other methods create a non-bootable disk due to incorrect detection of drive's geometry or non-standard loader. Drawback: partition sizes cannot be changed.
Copy all partitions onto original places	**R-Drive Image** copies all partitions to their original places. If **R-Drive Image** detects the drive's geometry correctly, and there is no non-standard loader, it makes the same result as during Raw disk copy.
Realign partitions	**R-Drive Image** will copy the partitions on the disk with a 512KB alignment. This is very useful for SSD and advanced-formatted disks. If there are empty (non-used) spaces between partitions, those spaces will be removed taking into account the alignment.
Expand/Shrink partition to whole disk	If there are empty (not-used) places between the partitions or they occupy less or more space than the target drive, **R-Drive Image** proportionally expands/shrinks them to occupy the entire target drive. Otherwise it is similar to Copy all partitions onto original places.
Fixed active partition	**R-Drive Image** preserves the original offset/size of the active partition (in case the loader has links to it).

See **Support for Various Disk Partition Schemes and File Systems** for details.

When you copy a system disk, a disk signature collision may occur. In this case, the **Disk Signature Collision** panel will appear. You may specify the way to resolve this collision on this panel.

Disk Signature Collision Resolving	
Same signature for	**R-Drive Image** will create an identical copy of the source disk with the same

both disk	signature. To avoid disk signature collision, you'll have to disconnect one of the disks and restart the computer, if necessary. Use this mode if you clone a system disk for another computer or only the target disk will be used in yours.
Different signature on the target disk.	**R-Drive Image** will write another disk signature to the target disk. Don't use this mode if you clone a system disk, Windows won't start from it. To get access to the target disk after cloning, you'll have to restart the computer or re-connect it if it's an external USB disk.
Change the disk signature on the source disk.	**R-Drive Image** will change the disk signature on the source disk. Use this mode if you want to start Windows from the target disk, but be warned: the computer won't start from the source disk anymore.

6 Verify that the information on the Confirm operations panel is correct and click the N key

> R-Drive Image will start copying the data from the source disk to the selected destination

The Progress window will show the progress of the current operation and overall process. When the data is copied, the **Operation completed successfully** message will appear.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

5.6 Create an Image from Files

This action is available on the GUI version only. Go to the the **Create an Image from Files** help page for instruction and to the network drives help If necessary.

5.7 Partition Manager

This action is available on the GUI version only. Go to the the **Partition Manager** help page for instruction and to the network drives help If necessary.

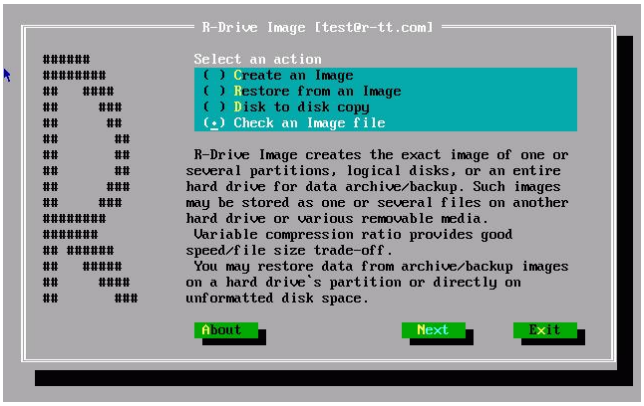
5.8 Check an Image File

Note: This help page describes the operation of the TUI startup version. Go to the **Check an Image File** help page for the GUI version and to the network drives help If necessary.

To check an image file:

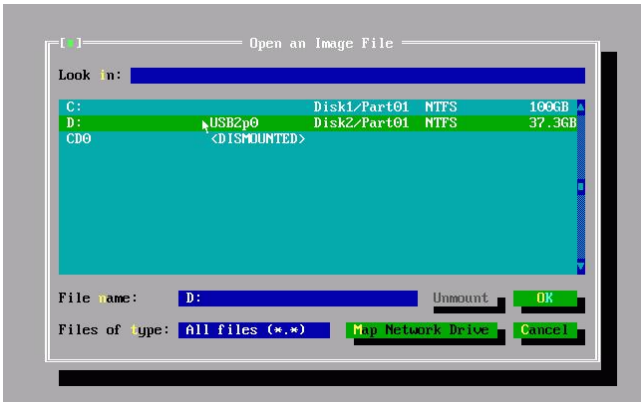
1 Click **Check an Image File** on the **Action Selection** panel

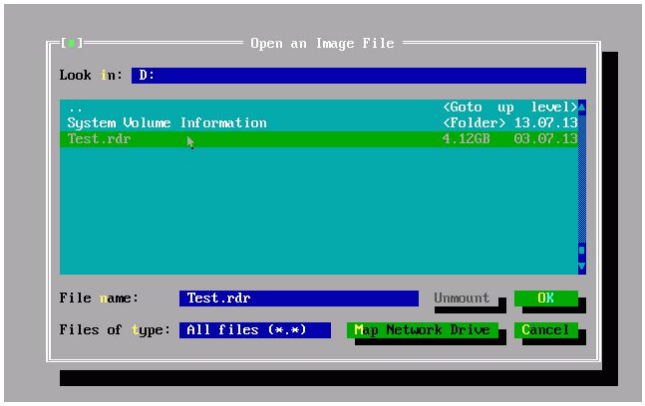
Action Selection Panel



2 Select the file with the image on the **Open an Image File** panel and click the Next button

Open an Image File Panel





You may also connect network drives.

3 **Verify that the information on the Processing panel is correct and click the Start button**

> **R-Drive Image will start checking the data in the image file.**

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

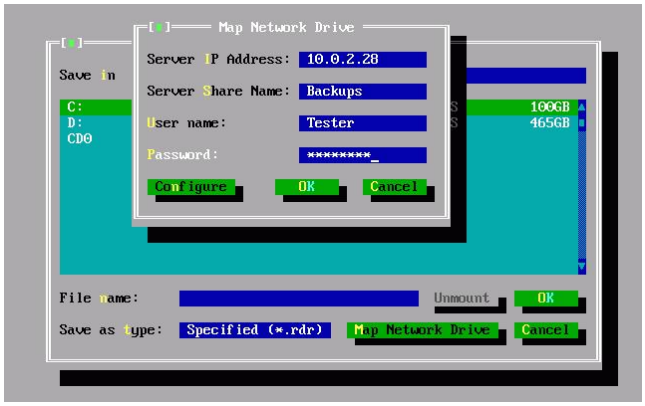
5.9 Network Drives

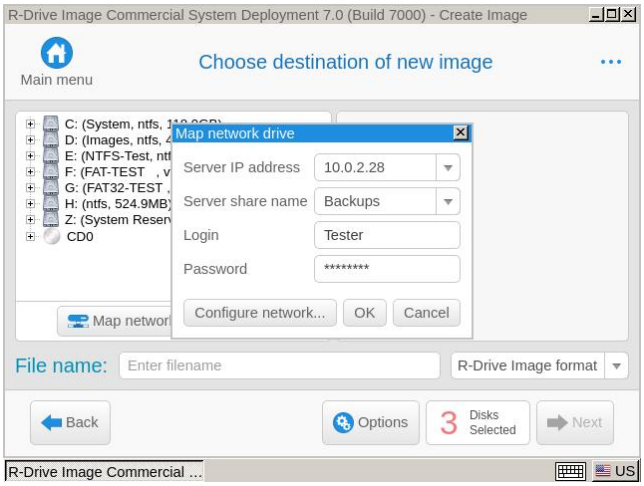
If your computer is on a local network, you may write image files or restore images to / from network drives. To do so, you need to map such a network drive.

To map a network drive,

1 **Click the Map Network Drive button and enter required information**

Map Network Drive

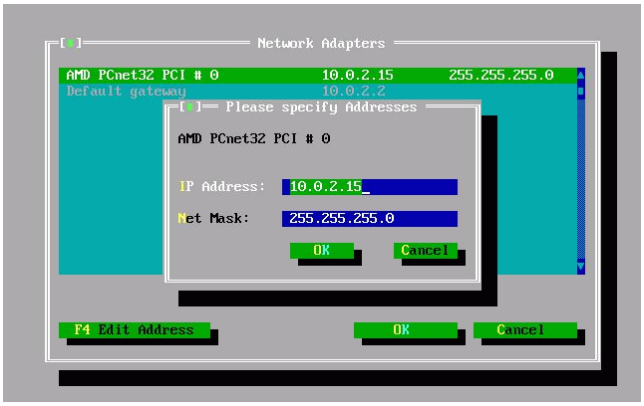


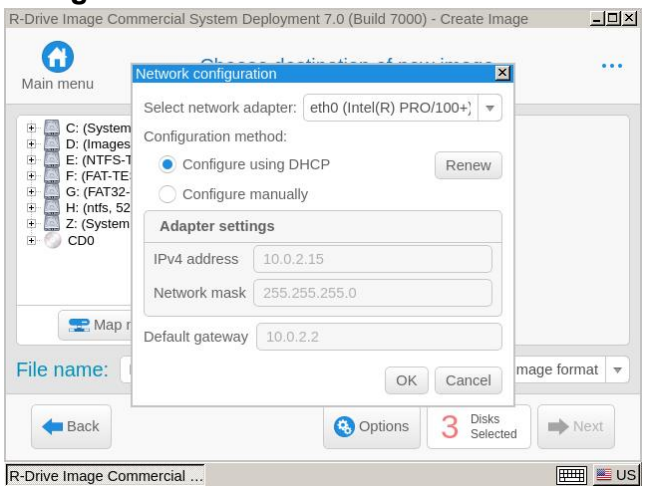


For the network drive' path `//SERVER/Backups`,
Server IP address: The IP address of the `SERVER` computer
Server share name: `Backups`.

Sometimes it may be necessary to manually configure network settings, if, for example, there is no DHCP server on the network. Click the **Configure network** button, select the required field, click the **Edit Address** button, and enter the required information.

Network Settings





The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

VI Scheduled Actions, Command Line Operations, and Scripting

This chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line or command files.

- **Batch Mode**
- **Scheduler and Unattended Actions**
- **Rotation Options (Backup Sets)**
- **Scripting and Command Line Operations**

The **Disk Actions** chapter explains disk actions such as:

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Create an Image from Files**
- **Copy Files to a Folder**
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Manage partition and logical disks**
- **Mount an Image as a Virtual Logical Disk** (read-only)
- **Unmount Virtual Logical Disks**
- **Check an Image File** to check an existing image file

The **RAIDs, and Various Disk and Volume Managers** chapter explains how to perform disk actions with various compound volumes such as:

- **Hardware RAIDs**
- **BitLocker Drive Encryption**
- **Windows Software RAIDs, Spanned, and Other Volumes**
- **Windows Storage Spaces**
- **Apple RAIDs**
- **Apple CoreStorage/File Vault/Fusion Drive Volumes**
- **Linux mdadm RAIDs**
- **Linux Logical Volume Manager Volumes**

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- **Create Startup Disk**
- **Load Computer into Startup Mode**
- **Restore Data From an Image**
- **Create an Image**
- **Disk to Disk Copy**
- **Create an Image from Files**
- **Partition Manager**
- **Check an Image File**
- **Network Drives**

The **Technical Information** chapter gives technical information on

- **Updates**
- **Cloud Services**
- **FTP/FTPS/SFTP Servers**
- **Image Replications**
- **Logging**
- **Creating consistent point-in-time backups**
- **Support for Various Disk Partition Schemes and File Systems**
- **Supported Virtual Disk and Disk Image Formats:**
- **Disk Wiping Algorithms**
- **Supported CD and DVD Recorders**
- **List of Hardware Devices Supported in the Startup Mode**

The **R-Drive Image OEM kit** chapter explains how computer system integrators can create system recovery disks for their systems

- **Create a Master Image**
- **Create Startup Media**

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.1 Scheduler and Unattended Actions

You may schedule some disk actions at a certain time or event, and **R-Drive Image** will perform them unattended. You may also execute a task manually. Right-click the task and select **Execute Now** in the context menu.

- Create a task
- Edit a task
- Delete a task
- Run a Task Manually

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.1.1 Create a Task

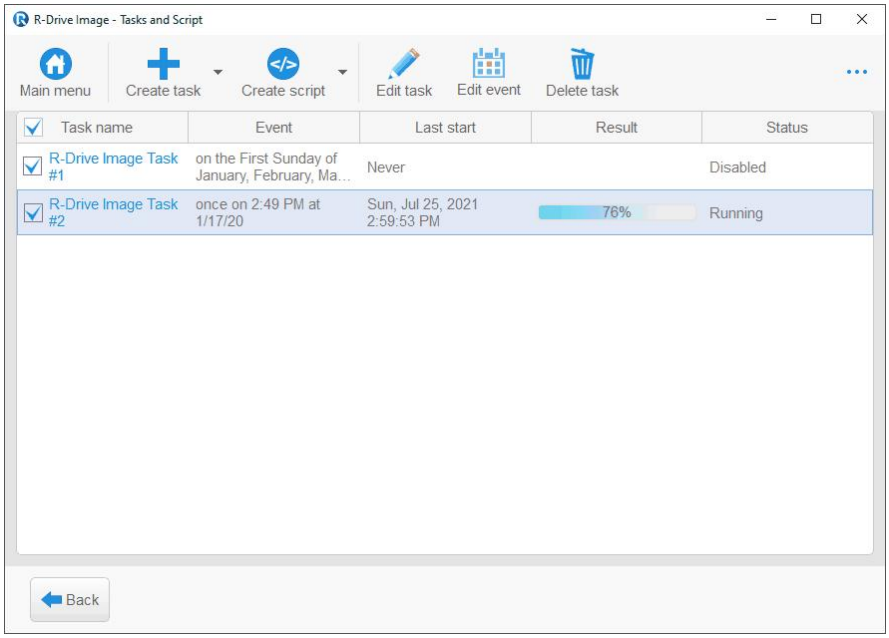
Generally, you may set a scheduled task the same way you set a regular action for creating an image of a disk, partition, or an entire hard drive.

To create a new task:

1 **Click Scheduler/Create Script on the Action Selection panel**

The **Scheduled Tasks** panel will appear.

You may create a task for creating an image, image from files, or verifying an image.



2 **Click the Create Task button on the Scheduled Tasks panel**

3 **Select the objects you want to backup on the Partition Selection panel, image destination on the Image Destination panel, specify necessary parameters on the Image options, Notification options, Backup options panels, and on the Rotation options panel.**

Go through these steps as if you were starting up an actual backup.

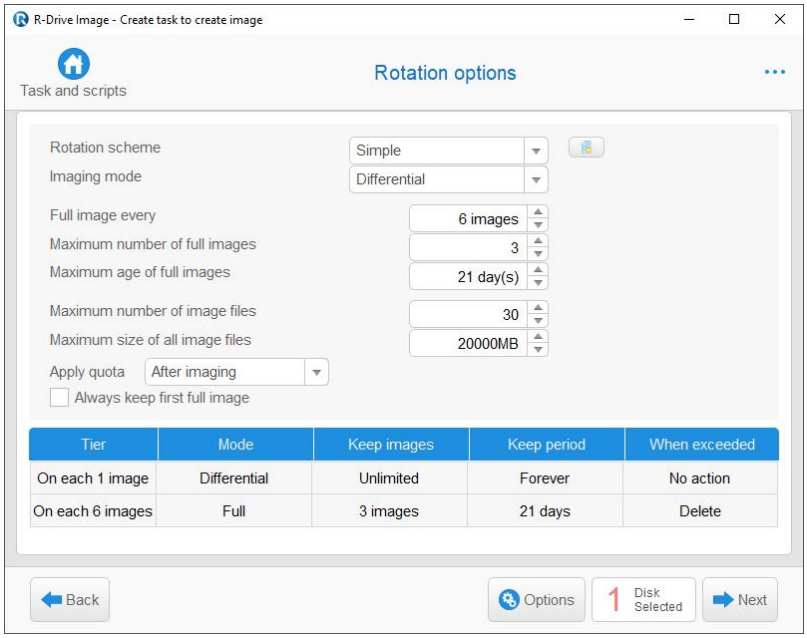
Right-click the selected partition and select **Backup selected files** if you want to backup only individual files on the partition.

Images can be replicated, that is, their copies may be saved to one or other different locations.

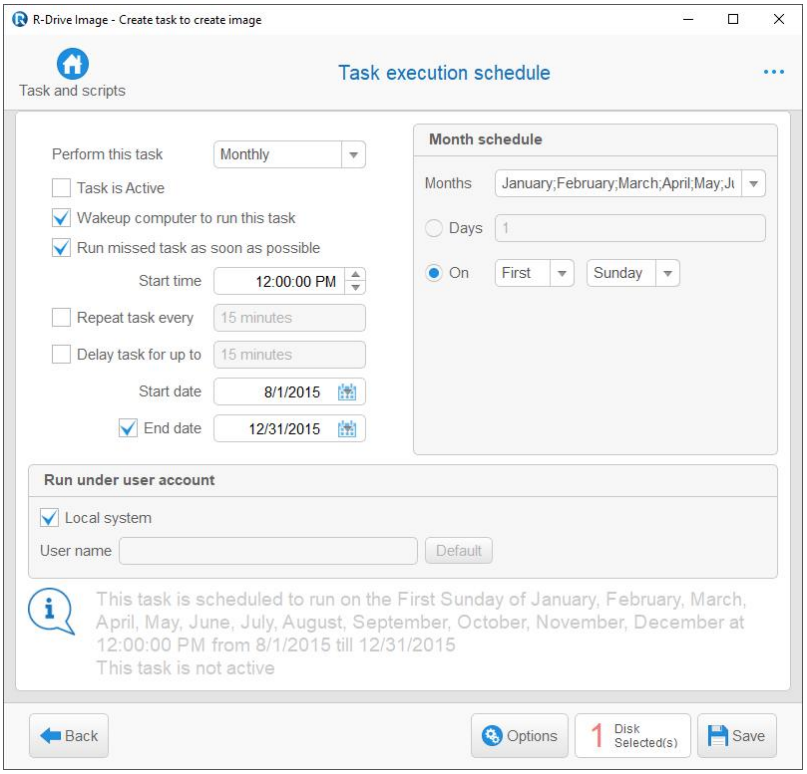
Attention: If you a going to use a network drive, please note that if this drive is connected under your account it will be inaccessible to the task run under the local system account unless this drive is also connected to the local system account using the same disk letter. To avoid this problem, you need either to run the task under your own account, or use a UNC path in the form: `\\[[domain;]username[:password]@]hostname\share\path`.

Go to the **Create an Image** topic for more details.

Please note that you may use Rotation options (backup sets) for creating complex data backup tasks and maintaining data files.



4 Specify the time or event at which the task should start on the Task execution schedule panel and click the Next button



You may specify time/event options on this panel.

Task execution schedule options

Task is active	If this options is not selected, the task will not start at its scheduled time/event
Wakeup the computer to run this task	If this checkbox is selected, your computer will automatically start up to perform this task. You need to check whether Windows is set to wake on all timers. (Control panel -> Hardware and Sound -> Power Options -> Change Plan Settings -> Change Advance Power Settings -> Sleep -> Allow Wake Timers -> Enable. Most computers have this setting to Important Wake Timers Only. Windows won't wake under this settings.)
Run missed task as soon as possible	If this checkbox is selected, this task will start as soon as it's possible.
Perform this task:	
Daily	The task will start repeatedly on a daily time interval
Start time:	Time at which the task will start
Repeat task every:	Time interval in which the task will be repeated within one day
Delay task up to:	Time interval in which the task will randomly start. May be useful when several images are being created simultaneously.
Start date:	Date from which the task will start
Run this task every:	Time interval in days in which the task will regularly start
End date: (optional)	Date from which the task will not start anymore
Weekly	The task will start repeatedly on a weekly time interval

Start time:	Time at which the task will start
Repeat task every:	Time interval in which the task will be repeated within one day
Delay task up to:	Time interval in which the task will randomly start. May be useful when several images are being created simultaneously.
Start date:	Date from which the task will start
Run this task every:	Time interval in weeks in which the task will regularly start
On days:	Days of the week on which the task will start
End date: (optional)	Date from which the task will not start anymore
Monthly	The task will start repeatedly on a monthly time interval
Start time:	Time at which the task will start
Repeat task every:	Time interval in which the task will be repeated within one day
Delay task up to:	Time interval in which the task will randomly start. May be useful when several images are being created simultaneously.
Start date:	Date from which the task will start
Month schedule	
On day... of month	Day of the month on which the task will start
Or...	Weekdays in the month on which the task will start
Months	Months when the task will start
Once	The task will start once or repeat it every certain time interval on one day
Start time:	Time on which the task will start
Repeat task every	Time interval in which the task will regularly start
Delay task up to	Time interval in which the task will randomly start. May be useful when several images are being created simultaneously.
Start date:	Date from which the task will start
At system startup	The task will start at every system startup
At user logon	The task will start every time a user will log on
Manually	This task should be started manually.
Run under user account	A username and password for a user from the Administrators user group.

> **A new task will appear on the Scheduled Tasks panel**

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.1.2 Edit a Task

You may edit a scheduled task.

To rename a task

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Right-click the task which you want to rename on the Scheduled Tasks panel**

3 **Select in the context menu Rename and enter a new task name**
Note: You may also use a keyboard shortcut **F2** to rename a task

To edit the time or event at which a scheduled task should start:

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Select a task which event you want to edit on the Scheduled Tasks panel and click the Edit an Event button**
The **Task execution schedule** panel will appear.
Note: You may also right-click the task and select **Edit an event** in the context menu.

3 **Edit the time or event at which the task should start on the Task execution schedule panel and click the Save button**
Go to the Create a Task topic for details

> **The task will appear on the Scheduled Tasks panel with the new starting Time/Event**

To edit an entire scheduled task:

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Select a task which you want to edit on the Scheduled Tasks panel and click the Edit button**
Note: You may also right-click the task and select **Edit a task** in the context menu.

3 **Edit the objects you want to backup on the Partition Selection panel, image destination on the Choose destination of new image panel, necessary parameters on the Image options, Notification options, Backup options panels, and on the Rotation options panel.**
Go to the Create an Image topic for more details.

4 **Edit the time or event at which the task should start on the Task execution schedule panel, and click the Save button**
Go to the Create a Task topic for more details.

> **The task will appear on the Scheduled Tasks panel with the new options**

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

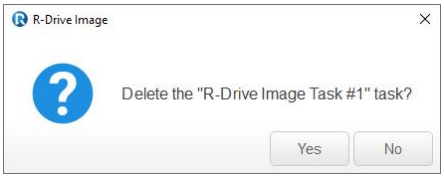
6.1.3 Delete a Task

You may delete a scheduled task that you do not need any more.

To delete a scheduled task:

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Select a task you want to delete on the Scheduled Tasks panel and click the Delete a Task button** or
Right-click the task and select **Delete a Task** in the context menu.
The **Delete selected task** message will appear.



3 **Click the OK button**

> **The task will disappear on the Scheduled Tasks panel**

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.1.4 Run a Task Manually

You may run a task manually at any time.

To run a scheduled task manually:

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Right-click a task you want to run and select Execute now on the context menu.**

You may also create a script from a task and run it manually.

6.2 Rotation Schemes (Backup Sets)

Rotation backup schemes is a way to create sets of files (usually a file for a full image of an object and a number of its incremental/differential backups) which **R-Drive Image** treats as one unit. Those schemes may be used to create images of the same objects with the same filenames but with different parameters.Rotation schemes make it possible for you to flexibly control the parameters of complex backup tasks.
You may specify a total size allocated for the image files, a number of image files you want to keep, and the time for which you want to keep the data, etc. All this can be done on the **Rotation options** panel.

R-Drive Image supports the following types of rotation schemes:

- **Simple Rotation Schemes**

- Custom Rotation Schemes (available only in the **Corporate**, **Technician**, and **Commercial** licenses)

And this page gives an example of the outcome of a rotation scheme:

- An example of a rotation scheme

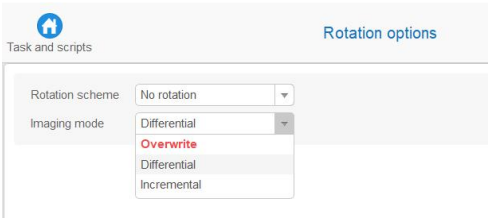
6.2.1 Simple Rotation Schemes

These scheme types are available in all **R-Drive Image** licenses:

The following simple rotation schemes can be used:

No rotation

No rotation



Imaging mode

Specifies how the data will be written to an existing image file.

Incremental: Select this option to preserve the data in the existing image file and append only changes. Appended changes will be those between the last saved changes and the current state. You may restore data as they were on each time of data imaging.

Differential: Select this option to preserve the data in the existing image file and append only changes. Appended changes will be those between the first saved full image and the current state. You may restore data as they were on each time of data imaging.

Overwrite: Select this option if you want to completely replace the data in the image file.

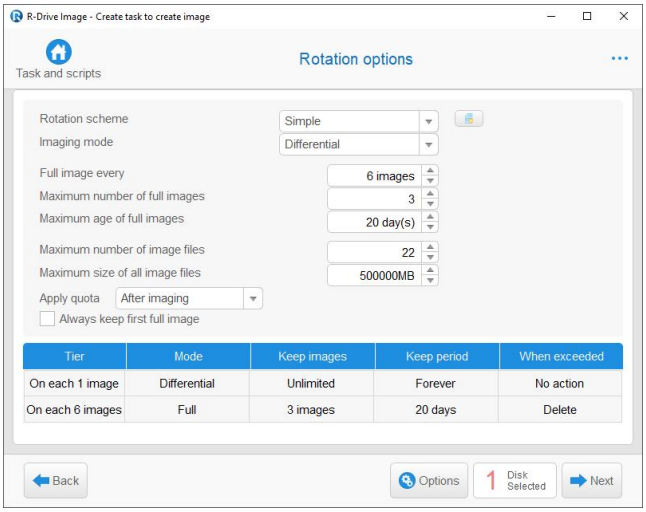
Minimum file sizes: If you need to keep only the latest backup instant, you may use the Ddifferentially option and delete all previous differential files. If you need to keep all instances, you may use the Incrementally option to keep overall file sizes smaller.

Data safety: If any of the differential file is damaged, data will be lost only for that backup instant. If any of the incremental file is damaged, data will be lost for all subsequent backup instances starting from the damaged file until the next full of differential backup.

Rotation scheme outcome: the first image will be a full one, the rest images will be differential ones.

Simple

Simple rotation scheme



Simple rotation schemes options

Imaging mode	Full: All data in the image file will be replaced with the current one. Differentially: Appended changes will be those between the saved full image and the current state. If there is no full image, it will be created instead. When restoring data, you will need the full image and ONLY the differential file created at the instant to which you want to restore data. Incrementally: Appended changes will be those between the last saved changes and the current state. If there is no full image, it will be created instead. When restoring data, you will need the full image and ALL files (both incremental and differential ones) created to the instant to which you want to restore data. **Minimum file sizes:** If you need to keep only the latest backup instant, you may use the Ddifferentially option and delete all previous differential files. If you need to keep all instances, you may use the Incrementally option to keep overall file sizes smaller. **Data safety:** If any of the differential file is damaged, data will be lost only for that backup instant. If any of the incremental file is damaged, data will be lost for all subsequent backup instances starting from the damaged file until the next full of differential backup.
Full image every	Specifies the number of differential/incremental images after which a full image will be created.
Maximum number of full images	Specifies the number of full images. If it is exceeded, the older full backup files will be removed.
Maximum age of full images	Specifies the number of days for which **R-Drive Image** will keep full image files. Then the files will be removed.
Maximum number of image files	Specifies the number of image files. If it is exceeded, the older files will be removed.

Maximum size of all image files	Specifies the total size of all files. If it is exceeded, the older files will be removed.
Apply quota	Before & After imaging: the settings will be applied before creating the image, but as if it's already been created. For example, if the number of files is set to 3, and there are already 3 files,the oldest file will be deleted before creation of the new image file. After imaging: **R-Drive Image** will create the image file first, then deletes the oldest file.
Always leave first full image	If this option is selected, the very first image will always be kept.

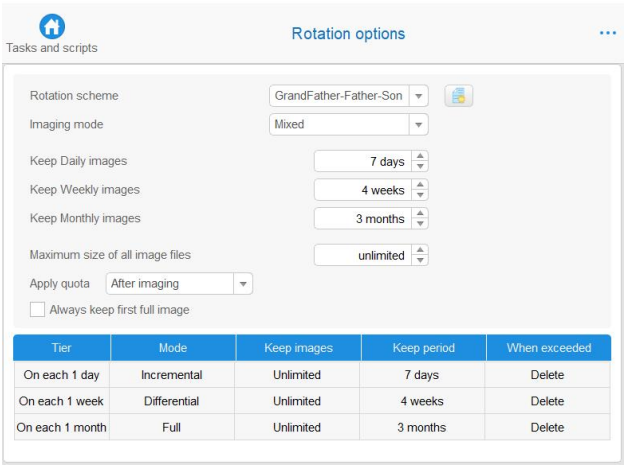
Note: when a full image file is deleted according to the specified options, **R-Drive Image** deletes all differential/incremental image files related to that full image.

Rotation scheme outcome: the first image will be a full one, then next 6 images will be differential ones, then another full image, followed by 6 differential images. One full image and all respective differential imaged will be deleted when 3 full images have been created, You may see the outcome of this scheme on the **An example of a rotation scheme** help page.

You may read more about next rotation schemes in Wikipedia: **Backup rotation scheme**.

Grandfather-Father-Son

Grandfather-Father-Son scheme



Grandfather-Father-Son schemes options

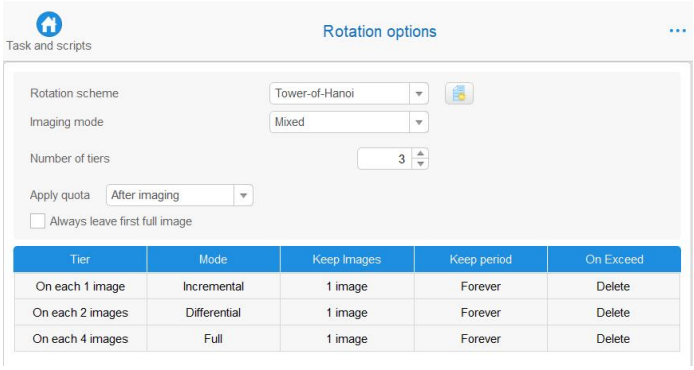
Keep Daily images	Specifies the number of days for which **R-Drive Image** will keep Daily image files. Then the files will be removed.
Keep Weekly images	Specifies the number of weeks for which **R-Drive Image** will keep Weekly image files. Then the files will be removed.
Keep Monthly images	Specifies the number of months for which **R-Drive Image** will keep Monthly image files. Then the files will be removed.
Maximum size of all image files	Specifies the total size of all files. If it is exceeded, the older files will be removed.

Apply quota	Before & After imaging: the settings will be applied before creating the image, but as if it's already been created. For example, if the number of files is set to 3, and there are already 3 files,the oldest file will be deleted before creation of the new image file. After imaging: **R-Drive Image** will create the image file first, then deletes the oldest file.
Always leave first full image	If this option is selected, the very first image will always be kept.

Rotation scheme outcome: the first image will be a full one, then every day a incremental image, every week a differential image, every month a full image. All incremental images will be deleted when a differential image has been created. All differential images will be deleted when a monthly image has been created. The oldest full image and respective differential / incremental images will be deleted in 3 months.

Tower-of-Hanoi

Tower-of-Hanoi



Tower-of-Hanoi schemes options

Number of tiers	Number of successive image creation steps/
Keep Monthly images	Specifies the number of months for which **R-Drive Image** will keep Monthly image files. Then the files will be removed.
Apply quota	Before & After imaging: the settings will be applied before creating the image, but as if it's already been created. For example, if the number of files is set to 3, and there are already 3 files,the oldest file will be deleted before creation of the new image file. After imaging: **R-Drive Image** will create the image file first, then deletes the oldest file.
Always leave first full image	If this option is selected, the very first image will always be kept.

Rotation scheme outcome: the first image will be a full one, the next image will be the differential one, then an incremental one. A full image will be created in 4 images. The rest of the images will be deleted.

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

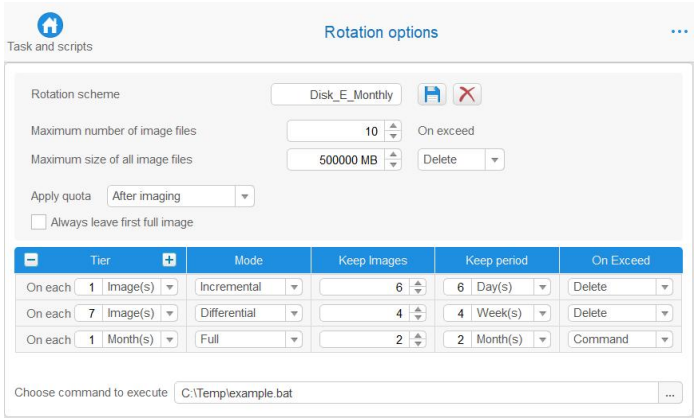
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.2.2 Custom Rotation Schemes

These scheme types are available only in the **Corporate**, **Technician**, and **Commercial** licenses.

It gives much more flexibility to you in controlling the outcome of the rotation scheme.

Custom rotation scheme



Custom rotation schemes options

Rotation scheme	The name of the rotation scheme.
Maximum number of image files	Specifies the number of image files. If it is exceeded, the older files will be removed.
Maximum size of all image files	Specifies the total size of all files. If it is exceeded, the older files will be removed.
On exceed	Specifies the action that performs when the quota is exceeded. The following actions are available: No actions Delete Move Command
Apply quota	Before & After imaging: the settings will be applied before creating the image, but as if it's already been created. For example, if the number of files is set to 3, and there are already 3 files,the oldest file will be deleted before creation of the new image file. After imaging: **R-Drive Image** will create the image file first, then deletes the oldest file.
Always leave first full image	If this option is selected, the very first image will always be kept.

Note: when a full image file is deleted according to the specified options, **R-Drive Image** deletes all differential/incremental image files related to that full image.

Rotation scheme outcome: the first image will be a full one, then next 6 images will be incremental ones, then a differential image, the incremental images will be deleted. then next 6 incremental images and another differential image. A full image will be created once a month.

6.2.3 An example of a rotation scheme

Below is an example to illustrate creation of a rotation scheme. You need to enter your own data to create your own rotation scheme.

The scheme and settings

This scheme is shown on the **Simple Rotation Scheme** help page. It should create a full backup every Sunday and differential backups every other day. The task should start at 5:00 PM and 3 full backup images should always be kept.

It has the following parameters:

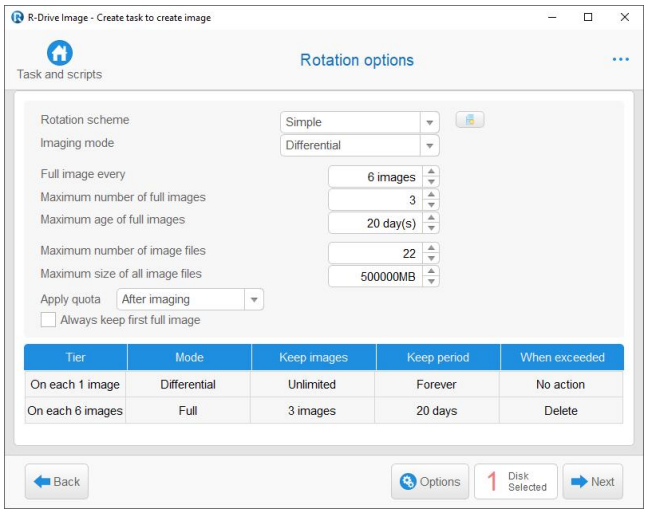
Rotation scheme	Simple
Imaging mode	Differential
Full image every	6 images
Maximum number of full images	3
Maximum image files age	20 days
Maximum number of image files	22
Maximum size of all image files	500000 MB
Apply quota	After imaging
Always leave first full image	No

The setting should be the following:

On the Rotation options panel

The following setting should be specified:

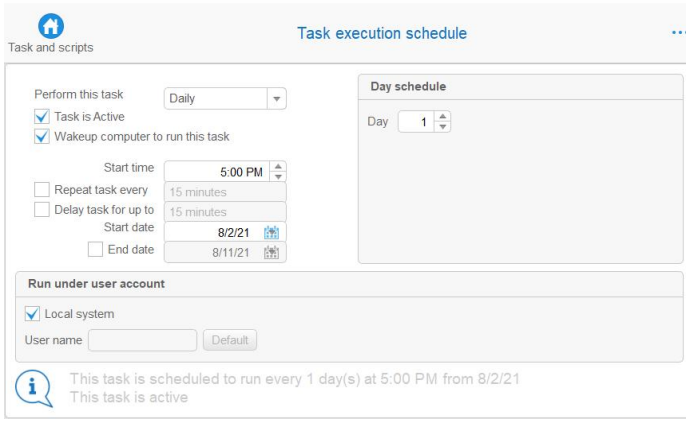
Simple rotation scheme



On the Task execution schedule panel:

The following setting should be specified:

Task execution schedule



And the task should be activated on Monday, say, August 2, 2021.

File name convention:

Full backup: `<FIleName>_<Date_of_First_Backup>_<Time_of_First_Backup>_1.rdr`

Differential backup: `<FIleName>_<Date_of_First_Backup>_<Time_of_First_Backup>_1_N+1.rdr`

N is the number of differential backup

The scheme outcome

The files created

Date Day	Files created on the destination, the last is the newly created on;Comments
8/2/2021 Monday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1

8/3/2021 Tuesday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08022021_05PM0000_1_1.rdr ;Differential backup 1:1
8/4/2021 Wednesday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08022021_05PM0000_1_1.rdr ;Differential backup 1:1 Test_Image_08022021_05PM0000_1_2.rdr ;Differential backup 1:2
8/5/2021 Thursday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08022021_05PM0000_1_1.rdr ;Differential backup 1:1 Test_Image_08022021_05PM0000_1_2.rdr ;Differential backup 1:2 Test_Image_08022021_05PM0000_1_3.rdr ;Differential backup 1:3
8/6/2021 Friday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08022021_05PM0000_1_1.rdr ;Differential backup 1:1 Test_Image_08022021_05PM0000_1_2.rdr ;Differential backup 1:2 Test_Image_08022021_05PM0000_1_3.rdr ;Differential backup 1:3 Test_Image_08022021_05PM0000_1_4.rdr ;Differential backup 1:4
8/7/2021 Saturday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08022021_05PM0000_1_1.rdr ;Differential backup 1:1 Test_Image_08022021_05PM0000_1_2.rdr ;Differential backup 1:2 Test_Image_08022021_05PM0000_1_3.rdr ;Differential backup 1:3 Test_Image_08022021_05PM0000_1_4.rdr ;Differential backup 1:4 Test_Image_08022021_05PM0000_1_5.rdr ;Differential backup 1:5
8/8/2021 Sunday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08022021_05PM0000_1_1.rdr ;Differential backup 1:1 Test_Image_08022021_05PM0000_1_2.rdr ;Differential backup 1:2 Test_Image_08022021_05PM0000_1_3.rdr ;Differential backup 1:3 Test_Image_08022021_05PM0000_1_4.rdr ;Differential backup 1:4 Test_Image_08022021_05PM0000_1_5.rdr ;Differential backup 1:5 Test_Image_08082021_05PM0000_2.rdr ;Full backup 2
8/9/2021 Monday	Test_Image_08022021_05PM0000_1.rdr ;Full backup 1 Test_Image_08082021_05PM0000_2.rdr ;Full backup 2 Test_Image_08082021_05PM0000_2_1.rdr ;Differential backup 2:1
8/10/2021 Tuesday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08082021_05PM0000_2.rdr ;Full backup 2 Test_Image_08082021_05PM0000_2_1.rdr ;Differential backup 2:1 Test_Image_08082021_05PM0000_2_2.rdr ;Differential backup 2:1
8/11/2021 Wednesday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08082021_05PM0000_2.rdr ;Full backup 2 Test_Image_08082021_05PM0000_2_1.rdr ;Differential backup 2:1 Test_Image_08082021_05PM0000_2_2.rdr ;Differential backup 2:2 Test_Image_08082021_05PM0000_2_3.rdr ;Differential backup 2:3
.....	.....
8/14/2021 Saturday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08082021_05PM0000_2.rdr ;Full backup 2 Test_Image_08082021_05PM0000_2_1.rdr ;Differential backup 2:1 Test_Image_08082021_05PM0000_2_2.rdr ;Differential backup 2:2 Test_Image_08082021_05PM0000_2_3.rdr ;Differential backup 2:3 Test_Image_08082021_05PM0000_2_4.rdr ;Differential backup 2:4 Test_Image_08082021_05PM0000_2_5.rdr ;Differential backup 2:5
8/15/2021 Sunday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08092021_05PM0000_2.rdr ;Full backup 2 Test_Image_08152021_05PM0000_3.rdr ;Full backup 3

8/16/2021 Monday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08092021_05PM0000_2.rdr ;Full backup 2 Test_Image_08152021_05PM0000_3.rdr ;Full backup 3 Test_Image_08152021_05PM0000_3_1.rdr ;Differential backup 3:1
8/17/2021 Tuesday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08092021_05PM0000_2.rdr ;Full backup 2 Test_Image_08152021_05PM0000_3.rdr ;Full backup 3 Test_Image_08152021_05PM0000_3_1.rdr ;Differential backup 3:1 Test_Image_08152021_05PM0000_3_2.rdr ;Differential backup 3:2
.....	.....
8/21/2021 Saturday	Test_Image_08042021_05PM0000_1.rdr ;Full backup 1 Test_Image_08092021_05PM0000_2.rdr ;Full backup 2 Test_Image_08152021_05PM0000_3.rdr ;Full backup 3 Test_Image_08152021_05PM0000_3_1.rdr ;Differential backup 3:1 Test_Image_08152021_05PM0000_3_2.rdr ;Differential backup 3:2 Test_Image_08152021_05PM0000_3_3.rdr ;Differential backup 3:3 Test_Image_08152021_05PM0000_4_4.rdr ;Differential backup 3:4 Test_Image_08152021_05PM0000_5_5.rdr ;Differential backup 3:5
8/22/2021 Sunday	;Full backup 1 is deleted Test_Image_08092021_05PM0000_2.rdr ;Full backup 2 Test_Image_08152021_05PM0000_3.rdr ;Full backup 3 Test_Image_08222021_05PM0000_4.rdr ;Full backup 4
8/23/2021 Monday	Test_Image_08092021_05PM0000_2.rdr ;Full backup 2 Test_Image_08152021_05PM0000_3.rdr ;Full backup 3 Test_Image_08222021_05PM0000_4.rdr ;Full backup 4 Test_Image_08222021_05PM0000_4_1.rdr ;Differential backup 4:1
.....	.....

6.3 Scripting and Command Line Operations

You may create scripts for frequently repeated or unattended disk actions and execute them from a command line or file. The same script commands may be executed directly from a command line.

Currently, **R-Drive Image** supports scripts for **creating a new image file**, **appending data to an existing one**, **restoring data from an image**, **check an image**, and **mount/unmount images as virtual logical disk**.

To create a script

- Creating a script from R-Drive Image
- Creating a script manually

To execute a script:

1 Type in the command line:

```
r-driveimagecl [/switches] cmd="<ScriptName>.rdi"
```

where `<ScriptName>` is the script name and its path, if necessary,

and press the Enter key

Note: if `ScriptName` contains no spaces, double quotes (") may be omitted. No characters in `ScriptName` should be escaped.

Incompatibilities with ver.3.x

Script name should be passed using the `cmd` key.	
Ver. 3.x	`r-driveimagecl [/switches] <ScriptName>.rdi`
Ver. 4.x	`r-driveimagecl [/switches] cmd="<ScriptName>.rdi"`

Switch	Description
`a`	A non-interactive mode. **R-Drive Image** will not ask the user any questions. If it cannot perform the action, it will generate an error.
`d`	A debug mode. **R-Drive Image** will display all the information as it was performing the action, but will not perform the actual action.
`f`	If an error occurs, **R-Drive Image** will not exit the script and continue perform it from the following command. Inapplicable to actions started from the command line
`i`	**Not functioning since version 4.7!** The `s` and `d` parameters will use disk indexes rather than disk numbers. Disk indexes are disk serial numbers and can be seen either on the **R-Drive Image Partition Selection** panel or Windows Disk Management.
`o`	If a file with a specified filename exists, **R-Drive Image** will overwrite it quietly.
`off`	will shut down the computer when it finishes the command.

Switches set in the command lines also is used as default values for parameters in scripts.

> R-Drive Image will start executing the script showing the operation parameters and progress.

When **R-Drive Image** completes the operation, the `Commit OK` message will appear in the command prompt.

You may include this command to a command file and automatically run such command file either manually or using any scheduling software for unattended disk actions.

To perform an action from the command line:

1 **Type in the command line:**
`R-DriveImage [/switches] command <params>`
to start **R-Drive Image** application
or
`r-driveimagecl [/switches] command <params>`
to start **R-Drive Image** console application
and press the Enter key.

> **R-Drive Image will start executing the command showing the action's progress.**
When **R-Drive Image** completes the action, the `Commit OK` message will appear in the command prompt.
Note: the `/f` switch is not applicable to the actions performed from the command prompt.

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.3.1 Create a Script from R-Drive Image

You may create scripts directly from **R-Drive Image** the same way you set a regular action for creating an image of a disk, partition, or an entire hard drive.

To create a script from a disk action

1 **Click Create an Image on the Action Selection panel and specify all the options and parameters as it is described on the Create an Image topic.**

2 **Click the Script to Clipboard button on the Processing panel and paste the script to any text-processing utility**

3 **Save the script in a file**
The default extension for **R-Drive Image** scripts is `.rdi`. Go to the Scripting and Command Line Operation topic to learn how to use scripts

To create a script from an existing task

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Right-click the task the Scheduled Tasks panel**

3 **Select Save as Script in the shortcut menu and specify the name of the script**

> **R-Drive Image will save the script in the specified file**
The default extension for **R-Drive Image** scripts is `.rdi`. Go to the Scripting and Command Line Operation topic to learn how to use scripts

To create a new script from the Scheduler

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Click the Create a Script button on the Scheduled Tasks panel**

3 **Select the objects you want to backup on the Select disk(s) to create image panel, image destination on the Choose destination of new image panel, specify necessary parameters on the Image options, Notification options, Backup options panels, and on the Rotation options panel.**
Images can be replicated, that is, their copies may be saved to one or other different locations.
Go to the **Create an Image** topic for more details.
Please note that you may use rotation schemes (backup sets) for creating complex data backup tasks and maintaining data files.

4 **Verify that the information on the Processing panel is correct and click the Save button**
You may also click the **Script to Clipboard** button to copy this script into the Clipboard and paste the script to any text-processing utility.

> **R-Drive Image will save the script in the specified file**
The default extension for **R-Drive Image** scripts is `.rdi`. Go to the Scripting and Command Line Operation topic to learn how to use scripts

To create a script from a scheduled task

1 **Click Scheduler/Create Script on the Action Selection panel**
The **Scheduled Tasks** panel will appear.

2 **Right-click the task from which you want to create a script on the Scheduled Tasks panel**

3 **Select in the context menu either Save as script to save the script in a file or Script to Clipboard (Ctrl+C) to copy and paste the script to any text-processing utility.**

The **Disk Actions** chapter explains basic disk actions.
The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.
The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

6.3.2 Create a Script Manually

R-Drive Image has a very powerful and versatile script language that enables you to create scripts for all your needs.
A script consists of commands and their parameters. All commands, parameter, and their values are case-sensitive.

Incompatibilities with ver.3.x

	Ver. 3.x	Ver. 4.x
File names with " Escaping of the " character has been changed	""	`&quot;`
File names with &	&	`&`

Escaping of the `&` character has been changed		
Partition list Several partitions should be set in one list	`-s="part1" -s="part2" -s="part3"`	`-s="part1 part2 part3"`

General:

The default extension for **R-Drive Image** script files is `.rdi`.

Parameter values may be inclosed in single (') or double (") quotes. if the value does not contain spaces, the quotes may be omitted.

R-Drive Image ignores spaces in the beginning of a line. **R-Drive Image** treats multiple spaces as one space, except when they are in a parameter value enclosed in quotes.

Examples:

Below are equal lines:

```
create -a = "c:\archive.rdr"
    create   -a = "c:\archive.rdr"
```

Below are not equal lines:

```
create -a = "c:\archive 1.rdr"
create -a = "c:\archive    1.rdr"
```

Comments:

R-Drive Image treats lines which the first non-space character is `;` or the first non-space character is `[` and the last one is `]`, as comments.

Examples:

```
; This is a comment line
[This is a comment line]
```

Multiple lines:

If the last non-space character in a line is `\`, **R-Drive Image** appends the next line to it:

Example:

Lines:

```
create -a = "c:\archive.rdr" -s = "1:1" \
c = "5"
```

are equal to the line:

```
create -a = "c:\archive.rdr" -s="1:1" c=  "5"
```

Disk size units

Values specifying disk sizes may be in units.

b	bytes	
Kb	kilobytes	2^10 = 1,024 b
Mb	megabytes	2^20 = 1,024 Kb
Gb	gigabytes	2^30 = 1,024 Mb

If the units are used, enclose the value in quotes.

Default values are Mb (megabytes).

Characters to substitute

If the following characters are to appear in the parameter values, they should be substituted by the following rules:

Character	String to substitute
"	"
'	'
&	&
carriage return	&cr;
new line	&nl;

Note: This is the incompatibility with scripts created for the earlier versions of **R-Drive Image**.

URL paths

For remote hosts, **R-Drive Image** supports URL of two types:

```
\\[[domain;]username[:password]@]hostname\share\path
smb://[[domain;]username[:password]@]hostname[:<port>].share/path
```

They can be used instead local paths.

Script commands and parameters:

Command Its Parameters	Optional/ Mandatory	Description and examples
list		Returns a partition list for local drives or an image file. If the drive contains an APFS container, the command will show both the APFS container and its APFS volumes.
-a=<PathOfNewArchiveFile>	Mandatory	Specifies a path (including its file name) to the image file. Examples: -a=C:\Images\Test.rdr or -a="C:\Image Files\Test 1.rdr"
-p=<Password>	Mandatory/Not used	Specifies an image password. Mandatory if the image file has been already encrypted. It there is a space in the password, the password should be in quotes. Examples: -p=Password or -p='My Password'
-t=<TimeSliceNumber>	Optional	Specifies which incremental data will be used to list the partitions in the image. If the TimeSliceNumber is not specified, the first data in the image will be used. -1 specifies the last incremental data in the image. first: **R-Drive Image** will use the first incremental data in the image. last: **R-Drive Image** will use the last incremental data in the image. +<n>: **R-Drive Image** will use the n-th incremental data from the beginning in the image. -<n>: **R-Drive Image** will use the n-th incremental data from the end in the image. Examples: -t="+2" specifies the second incremental data from the beginning in the image will be used to list partitions.
Example: list -a=C:\Images\Test.rdr -p="mY pasSsworRrd"		

This script command returns a list of partitions stored in the `C:\Images\Test.rdr` image file protected by the password `mY pasSsworRrd`.		
`sysdump`		Creates a system dump that may be necessary to obtain technical support. An image file can be included into that system dump. In this case, the keys `-a`, `-p`, `-t` from the **`list`** command should be used.
`-sysdump="<SysDumpFile>"`	Mandatory	Specifies the filename for the system dump.
Example: `sysdump -sysdump="MySysDump" -a=C:\Images\Test.rdr -p="mY pasSsworRrd"` This script command creates a file with the system dump, its name is `MySysDump`. The system dump includes the image file `C:\Images\Test.rdr` protected by the password `mY pasSsworRrd`.		
`register`		Registers **R-Drive Image** from the command line.
`-reg-user="<UserName>"`	Mandatory	Specifies the user name for registration.
`-reg-key="<RegistrationKey>"`	Mandatory	Specifies the register key for registration.
`-reg-company="<UserCompany>"`	Optional	Specifies the company for registration.
Example: `register -reg-user="Tester 1" -reg-company=R-TT Testing Team" -reg-key="fafaasertghzfvasfje134"` This script command registers **R-Drive Image** for the user Tester 1 from the company R-TT Testing Team using the key `fafaasertghzfvasfje134`.		
Disk descriptors used in the -s and -d commands Below is the list of disk descriptors **R-Drive Image** uses to identify hard drives, logical disks, and partitions. It is written in the order of importance, from the most important descriptor to the least important one. If there are several objects with identical disk descriptors, **R-Drive Image** identifies them using the most important disk descriptor with different values.		
`hdd_vtype`	HDD type.	`real` : a basic disk `dynamic` : a dynamic disk `pure` : disk objects like USB pendrives with only one logical disk on it. Example: `hdd_vtype=real`
`hdd_size`	HDD size	Disk size should be specified in bytes, no KB or MB are allowed. Example: `hdd_size=40060403712`
`hdd_name`	HDD name	Example: `hdd_name=SAMSUNG&#32;SP0411NTW100-11 (&#32;` denotes a space)
`hdd_serial`	HDD serial number	Example: `hdd_serial=S01JJ30X912841`
`hdd_bus_type`	Type of the HDD bus	Can be: `none, ata, atapi, scsi, floppy, usb, firewire, ssa, fibre, raid, smart, abios, sata, sata2.` Example: `hdd_bus_type=ata`

hdd_port_num	Port number for HDD	Example: hdd_port_num=0
hdd_target_id	Target ID for HDD	Example: hdd_target_id=1
hdd_num	Disk number, coincides with the disk number used in the old notations.	Example: hdd_num=1
part_free_space	Free space mark	1 if this object is a disk free space, 0 if not. Example: part_free_space=1
part_ofs	Partition offset in bytes.	Partition offset should be specified in bytes, no KB or MB are allowed. Example: part_ofs=16778264576
part_size	Partition size	Partition size should be specified in bytes, no KB or MB are allowed. Example: part_size=23279435776
part_fs	Partition file system	Can be: none, ntfs, fat12, fat16, fat32, exfat, ext2fs, ext3fs, ext4fs, ufs1, ufs2, hfs ,hfsplus ,hfsx, iso9660 Example: part_fs=ntfs
part_label	Disk label	Example: part_label=Test_Data
part_mounted	Disk letter of folder	Example: part_mounted=G:\
part_num	Partition number, coincides with the partition number used in the old notations. Free space is considered as a partition.	Example: part_num=2
part_id	Partition identifier.	Example: part_id=2
vol_id	APFS volume identifier in an APFS container..	Example: vol_id=3
used_id	Partition identifier when free space is omitted.	Example: used_id=2
unused_id	Free space identifier when	Example: unused_id=1

	partitions are omitted.	
A partition may be identified using its descriptors: `hdd_size=40060403712+part_num=2+hdd_num=1+hdd_target_id=0+hdd_bus_type=ata+part_label=Part2+part_ofs=16778264576+part_mounted=G:\+hdd_name=SAMSUNG&#32;SP0411NTW100-11+part_size=23279435776+hdd_port_num=0+hdd_serial=S01JJ30X912831+part_fs=ntfs+hdd_vtype=real`		
`create`		
`append`		Differentially appends data to an existing image file. If such file does not exist, it will be created.
`-s=<SourceDisk>`	Mandatory	Specifies a source object to create the image or append to it. The `<SourceDisk>` parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for hard drive 1: `-s=1` for the second partition on hard drive 1 (empty space is treated as a partition): `-s=1:2` for the second partition on hard drive 1 skipping empty spaces: `-s=1:p2` for the first empty space on hard drive 1 skipping partitions: `-s=1:f1` for a logical disk: `-s=D:` for several logical disks: `-s="D: F:"`
`-a=<PathOfNewArchiveFile>`	Mandatory	Specifies a path (including its file name) to the image file. Examples: `-a=C:\Images\Test.rdr` or `-a="C:\Image Files\Test 1.rdr"`
`-c=<CompressionLevel>`	Optional	Specifies compression level (1...11). Example: `-c=3`
`-u`	Optional	Backups useful information only. May be used as a Boolean parameter.
`-v=<ArchiveSize>`	Optional	Specifies image split size. May be in the float-point format. Example: `-v=650` or `-v='4.5 Gb'`
`-append-inc`	Optional	Creates an incremental backup.
`-p=<Password>`	Mandatory/Not used	Specifies an image password. Mandatory if the append command is used and the image file has been already encrypted. It there is a space in the password, the password should be in quotes. Examples: `-p=Password` or `-p='My Password'`
`-r=<Description of archive>`	Optional	Specifies an image description. It there is a space in the description, the description should be in quotes.

		Examples: `-r=Description` or `-r="Image Description"`
`-s-xw`	Optional	Makes **R-Drive Image** not to use the Windows snapshot provider.
`-s-xr`	Optional	Makes **R-Drive Image** not to use the R-TT snapshot provider.
`-s-n`	Optional	Notifies system application that a snapshot is being taken.
`-s-b0=<AppBeforeBack>`	Optional	Specifies an application that will start before the backup operation starts. The application should return a 0 exit code. Example: `-s-b0="C:\commands\start.exe"`
`-s-b1=<AppAfterBack>`	Optional	Specifies an application that will start after the backup operation completes. The application should return a 0 exit code. Example: `-s-b1="C:\commands\end.exe"`
`-s-s0=<AppBeforeSnapShot>`	Optional	Specifies an application that will start before the snapshot is taken. The application should return a 0 exit code. Example: `-s-s0="C:\commands\startsnapshot.exe"`
`-s-s1=<AppAfterSnapShot>`	Optional	Specifies an application that will start after the snapshot is taken. The application should return a 0 exit code. Example: `-s-s1="C:\commands\endsnapshot.exe"`
`-xe=<AppIfError>`	Optional	Specifies a command line that will start an application if **R-Drive Image** fails to perform the specified action. If there is a space in the command line, the command line should be in quotes. Examples: `-xe=error.exe` or `-xe="winamp C:\sounds\error.mp3"`
`-xs=<AppIfSucc>`	Optional	Specifies a command line that will start an application if **R-Drive Image** successfully performs the specified action. If there is a space in the command line, the command line should be in quotes. Examples: `-xs=success.exe` or `-xs="winamp C:\sounds\success.mp3"`
`-bs`	Optional	Specifies that **R-Drive Image** will use rotation schemes (backup sets).
`-bs-size="<Quota_in_MB>"`	Optional	May be used only if the `-bs` is set. Specifies the total size in MB on the disk allocated for the backup set. If it is exceeded, the backup set (all its files) will be removed. Example: `-bs-size="20000"`
`-bs-num-b="<Number_of_backs>"`	Optional	May be used only if the `-bs` is set. Specifies the number of rotation schemes (backup sets) If it is exceeded, the older rotation schemes (backup sets) (all their files) will be removed. Example: `-bs-num-b="10"`
`-bs-num-f="<Number_of_files>"`	Optional	May be used only if the `-bs` is set. Specifies the number of files in all rotation schemes (backup sets). If it is exceeded, the older rotation schemes (backup sets) (all their files) will be removed. Example: `-bs-num-f="30"`
`-bs-age="<Days>"`	Optional	May be used only if the `-bs` is set. Specifies the number of days for which **R-Drive Image** will keep the backup set. Then the backup set will be removed. Example: `-bs-age="14"`

`-cd-cache`	Optional	Used when an image file is written to CD discs. **R-Drive Image** creates an ISO image of the CD disc and then copies it to the CD disc. Without it **R-Drive Image** writes data directly to the CD disc.
`-cd-speed=<Speed>`	Optional	Used when an image file is written to CD discs. Specifies burning speed in KB/sec. Example: `-cd-speed="1200"`
`-dvd-cache`	Optional	Used when an image file is written to DVD discs. **R-Drive Image** creates an ISO image of the DVD disc and then copies it to the DVD disc. Without it **R-Drive Image** writes data directly to the DVD disc.
`-dvd-speed`	Optional	Used when an image file is written to DVD discs. Specifies burning speed in KB/sec. Example: `-dvd-speed="3324"`
Example: `create -s="hdd_size=40060403712+part_num=1+hdd_num=2+hdd_target_id=0+hdd_bus_type=ata+part_label=Part1+part_ofs=1048576+part_mounted=F:\+hdd_name=SAMSUNG SP0411NTW100-11+part_size=16777216000+hdd_port_num=0+hdd_serial=S01JJ30X912831+part_fs=ntfs+hdd_vtype=real,hdd_size=40060403712+part_num=2+hdd_num=2+hdd_target_id=0+hdd_bus_type=ata+part_label=Part2+part_ofs=16778264576+part_mounted=H:\+hdd_name=SAMSUNG SP0411NTW100-11+part_size=23279435776+hdd_port_num=0+hdd_serial=S01JJ30X912831+part_fs=ntfs+hdd_vtype=real" -a="I:\Test Image.rdr" -c=3 -u = true -p="My Password" -r="This is a test image" -xe="winamp C:\sounds\error.mp3" -xs="winamp C:\sounds\success.mp3"` This script command creates an image of logical disks F: and H: on the Samsung HDD. The path and filename for this image file is `I:\Test Image.rdr`, with compression level 3, and only useful information on this disk will be written to the image. This image is protected with the password "My Password", and its description is "This is a test image". If the script action has been performed successfully, the winamp application will play the success.mp3 file, and if an error occurs, it will play the error.mp3 file.		
`restore`		Restores data from an image to a specified disk place
`copy`		Copies a disk to a disk.
`-s=<SourceDisk>`	Mandatory	Specifies a source object to copy. The `<SourceDisk>` parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for hard drive 1: `-s=1` for the second partition on hard drive 1 (empty space is treated as a partition): `-s=1:2` for the second partition on hard drive 1 skipping empty spaces: `-s=1:p2` for the first empty space on hard drive 1 skipping partitions: `-s=1:f1` for a logical disk: `-s=D:` for several logical disks: `-s="D: F:"`

-d=<DestinationDisk>	Mandatory	Specifies a destination disk:partition on which the data is to be restored. The <DestinationDisk> parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for hard drive 1: -d=1 for the second partition on hard drive 1 (empty space is treated as a partition): -s=1:2 for the second partition on hard drive 1 skipping empty spaces: -s=1:p2 for the first empty space on hard drive 1 skipping partitions: -s=1:f1 for a logical disk: -d=D:
-a=<PathOfArchiveFile>	Mandatory	**Applicable to `restore` only.** Specifies a path (including its file name) to the image file from which data is to be restored. It there is a space in the path, the path should be in quotes. Examples: -a=C:\Images\Test.rdr or -a="C:\Image Files\Test.rdr"
-k=<"Partition Status">	Optional	Specifies a status (primary/active) for a partition to be restored. Settings: +p is a primary partition -p is a secondary partition +a is an active partition -a is a non-active partition Please note that the combination "-p +a" is invalid. If this parameter is not specified, the data from the image will be used. Examples: -k="+p+a" the partition will be primary and active. -k="+p" the partition will be primary. Information in the image will be used to make the partition either active or non-active.
-ou	Optional	Copy/restore useful information only. May be used as a Boolean parameter.
-t=<TimeSliceNumber>	Optional	**Applicable to `restore` only.** Specifies which incremental data will be used to restore data from the image. If the TimeSliceNumber is not specified, the first data in the image will be used. -1 specifies the last incremental data in the image. first: **R-Drive Image** will use the first incremental data in the image. last: **R-Drive Image** will use the last incremental data in the image. +<n>: **R-Drive Image** will use the n-th incremental data from the beginning in the image. -<n>: **R-Drive Image** will use the n-th incremental data from the end in the image.

		Examples: `-t="+2"` specifies the second incremental data from the beginning in the image will be used to restore data.
`-lr=<DiskLetter>`	Optional	Specifies a disk letter. This parameter is case-insensitive. Examples: `-lr="K"` or `-lr=K`.
`-sz=<PartitionSize>`	Optional	Specifies a partition size. May be in the float-point format. The following predefined values may be used: `min`: shrink the partition to the minimum possible size, `max`: expand the partition to the maximun size. Example: `-sz=512` or `-sz='0.5 Gb'`
`-of=<PartitionOffset>`	Optional	Specifies an offset from the beginning of the destination. May be in the float-point format. Default is `0`. Example: `-of=512` or `-of='0.5 Gb'`
`-bs-use="<Parameter>"`	Optional	**Applicable to `restore` only.** Specifies the backup set **R-Drive Image** will use to restore data. `Parameter` may be: `first`: **R-Drive Image** will use the first backup set. `last`: **R-Drive Image** will use the last backup set. `+<n>`: **R-Drive Image** will use the `n`-th backup set from the beginning. `-<n>`: **R-Drive Image** will use the `n`-th backup set from the end. `<date>`: **R-Drive Image** will use the backup set containing the `date` in its name. Examples: `-bs-use="+3"`: **R-Drive Image** will use the 3-rd backup set from the beginning. `-bs-use="20080521"`: **R-Drive Image** will use the backup set containing the "`20080521`" string in its name.
`-p=<password>`	Mandatory / Not used	**Applicable to `restore` only.** Mandatory for password-protected files. Specifies a password for the archive. Example: -p="my password"
`-hdd-mode="<ModeType>"`	Optional	**Applicable to copy/restore entire hard drives only.** Specifies an HDD copy mode when copying entire hard drives. `Parameter` may be: `0`: The default method `1`: Raw disk copy `2`: Copy all partitions onto original places `19`: One partition after another `20`: One partition after another (Fixed active partition) `51`: Expand/Shrink partition to whole disk `52`: Expand/Shrink partition to whole disk (Fixed active partition)
Example:		

```
restore -a="I:\Test Image.rdr" -
s="hdd_size=40060403712+part_num=1+hdd_num=1+hdd_target_id=0+hdd_bus_type=ata+part
_label=Part2
+part_ofs=16778264576+part_mounted=G:\+hdd_name=SAMSUNG&#32;SP0411NTW100-
11+part_size=23279435776+hdd_port_num=0+hdd_serial=S01JJ30X912831+part_fs=ntfs+hdd
_vtype=real"
-
d="hdd_size=40060403712+part_num=2+hdd_num=1+hdd_target_id=0+hdd_bus_type=ata+part
_label=Part2+part_ofs=16778264576+part_mounted=G:\
+hdd_name=SAMSUNG&#32;SP0411NTW100-
11+part_size=23279435776+hdd_port_num=0+hdd_serial=S01JJ30X912831+part_fs=ntfs+hdd
_vtype=real"
 -p="My Password" -xe="winamp C:\sounds\error.mp3" -xs="winamp C:
\sounds\success.mp3"
```

This script command restores data to the logical disk G: on the Samsung HDD, the source image is stored in the `"I:\Test Image.rdr"`, the data is taken from the first partition in the image. This image is protected with the password "My Password". If the script action has been performed successfully, the winamp application will play the success.mp3 file, and if an error occurs, it will play the error.mp3 file.

restorefiles		Restores individual files from images to a specified destination
`-s="<SourceDisk>"`	Mandatory	Specifies a source object to restore. The `<SourceDisk>` parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for hard drive 1: `-s=1` for the second partition on hard drive 1: `-s=1:2` for a logical disk: `-s=D:`
`-a="<PathOfArchiveFile>"`	Mandatory	Specifies a path (including its file name) to the image file from which data is to be restored. It there is a space in the path, the path should be in quotes. Examples: `-a=C:\Images\Test.rdr` or `-a="C:\Image Files\Test.rdr"`
`-filelist="<ListOfFilesToRestore>"`	Mandatory	Specifies list of files from the image that should be restored. Example: `-filelist="MyPhoto/*,Photo/Picture 001.jpg,Photo/Picture 003.jpg"`
`-outdir="<OutputFolder>"`	Mandatory	Specifies the folder to which files will be restored. Example: `-outdir="D:\1111"`

Example:

```
restorefiles -
s="hdd_size=7509196800+part_num=1+hdd_num=1+hdd_target_id=0+hdd_bus_type=ata+part
_label=NTFS-Test+part_ofs=64512+part_mounted=F:\+hdd_name=WDC&#32;WD75DA-
00AWA107.21L07
+part_size=3141991936+hdd_port_num=0+hdd_serial=WD-
WMA1J1262876+part_fs=ntfs+hdd_vtype=real"
-a="I:\Test_Image.rdr" -t="+1" -filelist="MyPhoto/*,Photo/Picture 001.jpg,
```

Photo/Picture 003.jpg,Photo/Picture 005.jpg,Photo/Picture 007.jpg,Photo/Picture 009.jpg,Photo/Picture 010.jpg,Photo/Picture 011.jpg, Photo/Picture 013.jpg,Photo/Picture 015.jpg,Photo/Picture 016.jpg,Photo/Picture 017.jpg,Photo/Picture 018.jpg,Photo/Picture 019.jpg,Photo/Picture 020.jpg, Photo/Picture 021.jpg,Photo/Picture 022.jpg,Photo/Picture 023.jpg, Photo/Picture 024.jpg,Photo/Picture 025.jpg,Photo/Picture 026.jpg,Photo/Picture 027.jpg,Photo/Picture 028.jpg" -outdir="D:\1111" This script command restores the specified files to the destination path D:\1111 from the source image of the first partition of the hard drive stored in the file I:\Test_Image.rdr.		
check		Checks consistency of the archive
-a=<PathOfArchiveFile>	Mandatory	Specifies a path (including its file name) to the image which integrity is to be checked. It there is a space in the path, the path should be in quotes. Examples: -a=C:\Images\Test.rdr or -a="C:\Image Files\Test.rdr"
Example: check -a="I:\Test Image.rdr" This script command checks the image file I:\Test Image.rdr for its consistency.		
mount		Mounts an image file as a read-only virtual disk.
-a=<PathOfNewArchiveFile>	Mandatory	Specifies a path (including its file name) to the image file. Examples: -a=C:\Images\Test.rdr or -a="C:\Image Files\Test 1.rdr"
-s=<SourceDisk>	Mandatory	Specifies an object in the image to mount. The <SourceDisk> parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for the second partition on hard drive 1: -s=1:2 for a logical disk: -s=D:
-lr=<DiskLetter>	Mandatory	Specifies a disk letter. This parameter is case-insensitive. Examples: -lr="K" or -lr=K.
-t=<TimeSliceNumber>	Optional	Specifies which incremental data in the image will be used to mount a disk. If the TimeSliceNumber is not specified, the first data in the image will be used. -1 specifies the last incremental data in the image. first: **R-Drive Image** will use the first incremental data in the image. last: **R-Drive Image** will use the last incremental data in the image. +<n>: **R-Drive Image** will use the n-th incremental data from the beginning in the image. -<n>: **R-Drive Image** will use the n-th incremental data from the end in the image. Examples: -t="+2" specifies the second incremental data from the beginning in the image will be used to mount a disk.

-bs-use="<Parameter>"	Optional	Specifies the backup set **R-Drive Image** will use to mount as a logical disk. Parameter may be: first: **R-Drive Image** will use the first backup set. last: **R-Drive Image** will use the last backup set. +<n>: **R-Drive Image** will use the n-th backup set from the beginning. -<n>: **R-Drive Image** will use the n-th backup set from the end. <date>: **R-Drive Image** will use the backup set containing the date in its name. Examples: -bs-use="+3": **R-Drive Image** will use the 3-rd backup set from the beginning. -bs-use="20080521": **R-Drive Image** will use the backup set containing the "20080521" string in its name.
Example: mount -a="I:\Test Image.rdr" -s=1:2 lr=F: -t=-1 This script command mounts the second partition of the first hard drive contained in the image file I:\Test Image.rdr. The virtual logical disk will have the F: letter.		
unmount		Unmounts a mounted virtual disk.
-lr=<DiskLetter>	Mandatory	Specifies a disk letter. This parameter is case-insensitive. Examples: -lr="K" or -lr=K.
Example: unmount lr=F: This script command unmounts the virtual logical disk F:.		
activate		Sets a specified partition active. The required partition should be specified
-s=<SourceDisk>	Mandatory	Specifies the partition on the disk to set active. The <SourceDisk> parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for the second partition on hard drive 1: -s=1:2 for a logical disk: -s=D:
Example: activate -s=1:1 This script command set the first partition of the first hard drive active.		
delete		Deletes a partition on a drive The required partition should be specified
-s=<SourceDisk>	Mandatory	Specifies a partition to delete. The <SourceDisk> parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid:

		Old notation examples: for the second partition on hard drive 1: `-s=1:2` for a logical disk: `-s=D:`
Example: `delete -s=F:` This script command deletes the logical disk F:.		
`clear`		Deletes all partitions on a drive
`-s=<SourceDisk>`	Mandatory	Specifies the hard drive where all partitions should be deleted. The `<SourceDisk>` parameter consists of one or several disk descriptors written in the form: descriptor_name1=value[+descriptor_name1=value...]. The disk descriptors are presented in the **Disk descriptors** section of this table. Old notation is also valid: Old notation examples: for hard drive 1: `-s=1`
`-part-type=<PartitionType>`	Optional/Mandatory	Specifies a partitioning scheme type to be created on the hard drive. `<PartitionType>` may be: mbr: **R-Drive Image** will create the MBR scheme. gpt: **R-Drive Image** will create the GPT schemes. If omitted, the existing partitioning schemes table will be cleared. Mandatory if no partitioning schemes exists on the hard drive.
Example: `clear -s=2` This script command deletes all partitions on the second hard drive.		
`fixmbr`	Optional	Installs a default boot loader on a hard drive
`-s=<SourceDisk>`	Mandatory	Specifies the hard drive where the boot loader will be installed. Example: for hard drive 1: `-s=1`
Example: `fixmbr -s=1` This script command installs the default boot loader to the first hard drive.		
`mail`	Optional	Specifies all mail options globally for the entire script
Example: `mail -ms=mail.example.com -ma=rtt1@example.com -mr=rtt2@example.com -ml=rtt1:password -me -mx -mz=ssl` This script command sends e-mails confirming success or error of the action from `rtt1@example.com` to `rtt2@example.com` via the mail.example.com SMTP server using the default (25) port with the `rtt1` login and `password` password. The SSL option is SSL.		
Parameters applicable to all commands These parameters can be used in all commands		
`-log="<LogOptions>"`	Optional	Controls the way **R-Drive Image** logs its command-line activity. By default, it outputs its activity into WinNT event log if started from Windows scheduler, but can create its own xml-type log files. `LogOptions` may be: `#nodefault`: disables the default log output into syslog

		<filename>: writes the log to the specified file name and path. Example: c:\mylogs\mylog.txt. The "," character in the file name should be doubled. <filepath>: writes the log files (a separate one to each session) to the specified folder. Each file name will have the following filename: date_time.rdl. Examples: c:\mydir\, file name: 20081003_215302.rdl. #syslog: output logs into WinNT event log. #sysdir: outputs logs into C:\Documents and Settings\All Users\Application Data\R-TT\R-Drive Image\Logs\. Example: -log="#nodefault,c:\mylog.txt,c:\mydir\,#sysdir" This will make **R-Drive Image** write its logs to the c:\mylog.txt file, and to the c:\mydir\ and C:\Documents and Settings\All Users\Application Data\R-TT\R-Drive Image\Logs\ folders without writing to WinNT event log.
mail options	Optional	Sends e-mail messages if the action fails or succeeds and specifies e-mail parameters. If a personal firewall is installed on your computer, you should allow the r-driveimagecl.exe application to get access to the e-mail server.
-me	Optional	Sends an e-mail message when **R-Drive Image** fails to perform the specified action. May be used as a Boolean parameter.
-mx	Optional	Sends an e-mail message when **R-Drive Image** successfully performs the specified action. May be used as a Boolean parameter.
-ms=<SMTPServer[:port]>	Mandatory/Not used	Mandatory if the -me or/and -mx option is used. Specifies an SMTP server and port (optional). Examples: -ms=mail.example.com or -ms=mail.example.com:25
-ma=<SenderEmail>	Mandatory/Not used	Mandatory if the -me or/and -mx option is used. Specifies a sender's e-mail address. Example: -ma=rtt1@example.com
-mr=<RecepientEmail>	Mandatory/Not used	Mandatory if the -me or/and -mx option is used. Specifies a recipient's e-mail address or addresses. Example: -ma=rtt2@example.com
-ml=<Login:Password>	Optional	Specifies a login and password at the SMTP server. Example: -ml=rtt1:password
-mz=<SSLOptions>	Optional	Specifies the SSL options. Can be auto,no,ssl,tls. Default is auto Example: -mz=ssl
-mn=<SenderName>	Optional	Specifies the sender name. Example: -mn="Jhon Smith"
-mc=<MailSubject>	Optional	Specifies the mail subject.. Example: -mc="Backup Result"

Boolean parameters

Those are parameters that may have Boolean values:

`true`, `1`, `yes`, `false`, `0`, `no`.

They may be used as keys (example: `-u`) or as parameters with values (example: `-u=true`).

Entities or Variables.

Entities may be used as variables to create various text strings. They are start with `&` and end with `;`.

Version Entities.

In the examples below, the **R-Drive Image** version is assumed as 4.1.67

Entity	Description
`&rdi.ver;`	The **R-Drive Image** version. Example: `"4.1"`
`&rdi.ver.build;`	The **R-Drive Image** build. Example: `"4167"`
`&rdi.ver.major;`	The **R-Drive Image** major version. Example: `"4"`
`&rdi.ver.minor;`	The **R-Drive Image** minor version. Example: `"1"`
`&rdi.ver.subminor;`	The **R-Drive Image** sub-minor version. Example: `"67"`

Result Entities

Entity	Description
`&rdi.last_result;`	Returns the last result of **R-Drive Image** operation. May be `undefined`, `success`, `failed`.

Time Entities.

In the examples below, the system time is assumed as 11:10:04 AM

Entity	Description
`&sys.time;`	System time in the locale format. Example: `"11:10:04"`. Please note that it is impossible to use this entity in file names because it contains an invalid character `:`.
`&sys.time.m;`	Minutes
`&sys.time.h;`	Hours in the 24 h format
`&sys.time.h12;`	Hours in the 12 h format
`&sys.time.h24;`	Hours in the 24 h format
`&sys.time.s;`	Seconds
`&sys.time._m;`	PM or AM

Date Entities.

In the examples below, the system date is assumed as February 1, 2007, Thursday

Entity	Description
`&sys.date;`	System date in the locale format. Example: `"29/01/07"`. Please note that it is not recommended to use this entity in file names because that will create a chunk of folders.
`&sys.date.d;`	Month day. Example: `"01"`
`&sys.date.m;`	Month. Example: `"02"`
`&sys.date.y;`	Short year. Example: `"07"`

&sys.date.yyyy;	Long year. Example: "2007"
&sys.date.m.name;	Month name. Example: "February"
&sys.date.m.nm;	Short month name. Example: "Feb"
&sys.date.wd;	Week day number, starting from Sunday. Example: "5"
&sys.date.wd.name;	Week day name. Example: "Thursday"
&sys.date.wd.nm;	Short week day name. Example: "Th"

Enumeration Entities

Entity	Description
&rdi.enum;	Defines the number of calls to this entity. Starts from 0.
&rdi.enum.<Num>;	Defines the number of calls to this entity. Starts from 0. Num specifies the format of the number. Example: &rdi.enum.3; will return 001 for the second calls to this entity.

User-defined entities

You may create your own entities using the set command. Example:

```
set creat_date = "&sys.date.m.name;-&sys.date.d;-&sys.date.y;"
```

You may use this entity, for instance, set a command creating files with their date of creation as the file name:

```
create -a="D:\archive\&creat_date;.rdr" -s="c:"
```

If the date when the script has been run is February 1, 2007, Thursday, this command will create an image of the logical disk C: and write it to the D:\archive\February-01-07.rdr file.

Please note that the set command defines the entities rather than specifies their value. The actual value of an entity will be determined each time the entity is used. Example:

```
set creat_time = "&sys.time.h24;-&sys.time.m;-&sys.time.s;"
```

and the creat_time entity is used in two commands in a script:

```
create -a="D:\archive\&creat_time;.rdr" -s="c:"
create -a="D:\archive\&creat_time;.rdr" -s="c:"
```

R-Drive Image will create two different files with different file names, each representing the time of file creation.

The unset command deletes entities. Example:

```
unset creat_date creat_time
```

After this command the creat_date and creat_time entities cannot be used and cause **R-Drive Image** to generate an error if they appear further in the script.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

VII Technical Information

This chapter gives technical information on

- Updates
- Cloud Services
- FTP/FTPS/SFTP Servers
- Image Replications
- Logging
- Creating consistent point-in-time backups
- Support for Various Disk Partition Schemes and File Systems
- Supported Virtual Disk and Disk Image Formats:
- Disk Wiping Algorithms
- Supported CD and DVD Recorders
- List of Hardware Devices Supported in the Startup Mode

The Disk Actions chapter explains disk actions such as:

- Create an Image of a partition, logical disk, or entire hard drive
- Create an Image from Files
- Copy Files to a Folder
- Restore Data from an Image
- Copy Disk to Disk to make an exact copy of one disk on another
- Manage partition and logical disks
- Mount an Image as a Virtual Logical Disk (read-only)
- Unmount Virtual Logical Disks
- Check an Image File to check an existing image file

The RAIDs, and Various Disk and Volume Managers chapter explains how to perform disk actions with various compound volumes such as:

- Hardware RAIDs
- BitLocker Drive Encryption
- Windows Software RAIDs, Spanned, and Other Volumes
- Windows Storage Spaces
- Apple RAIDs
- Apple CoreStorage/File Vault/Fusion Drive Volumes
- Linux mdadm RAIDs
- Linux Logical Volume Manager Volumes

The Startup Version chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- Create Startup Disk
- Load Computer into Startup Mode
- Restore Data From an Image

- Create an Image
- Disk to Disk Copy
- Create an Image from Files
- Partition Manager
- Check an Image File
- Network Drives

The Scheduled Actions, Command Line Operations, and Scripting chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

- Scheduler and Unattended Actions
- Scripting and Command Line Operations
- Rotation schemes (backup sets)

The R-Drive Image OEM kit chapter explains how computer system integrators can create system recovery disks for their systems

- Create a Master Image
- Create Startup Media

Follow this link to obtain R-Drive Image Contact Information and Technical Support

7.1 Updates

Automatic update

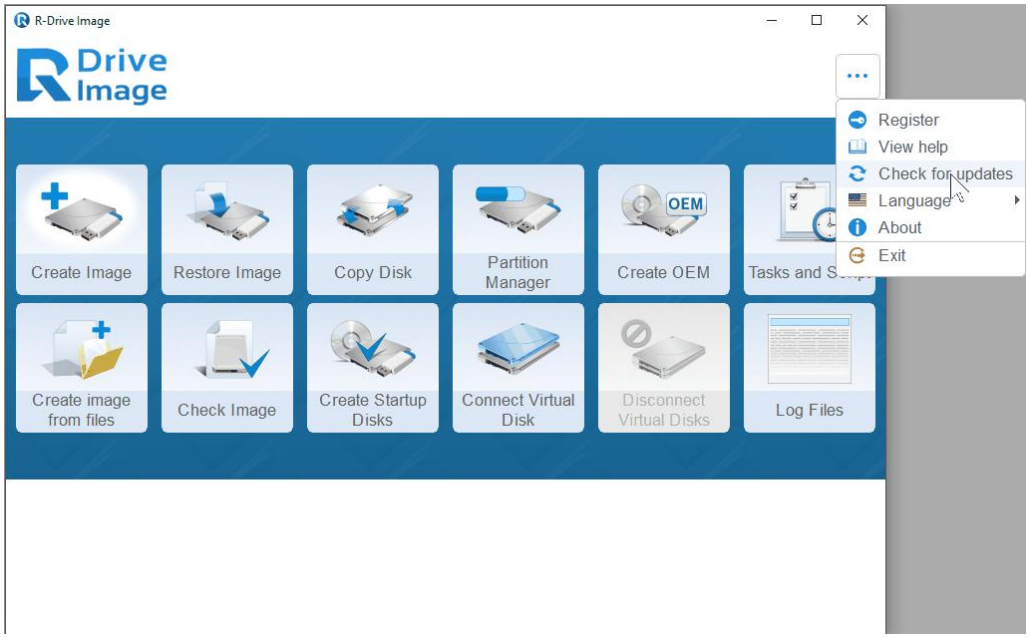
R-Drive Image may automatically check for available updates. When it finds an update it shows a widget on its panel. You may start updating by clicking this widget.

R-Drive Image Action selection panel

Manual update

You may manually update **R-Drive Image** either on the **About R-Drive Image** dialog box, or on the **Action selection** panel.

R-Drive Image Action selection panel



7.2 Cloud Services

Please note: Because **R-Drive Image** software uses cloud storage provider APIs, **R-Tools Technology, Inc** cannot be held responsible for any issues related to the APIs and any services provided by cloud storage companies.

R-Drive Image can save images in cloud services and restore them from those services. The following services are currently supported:

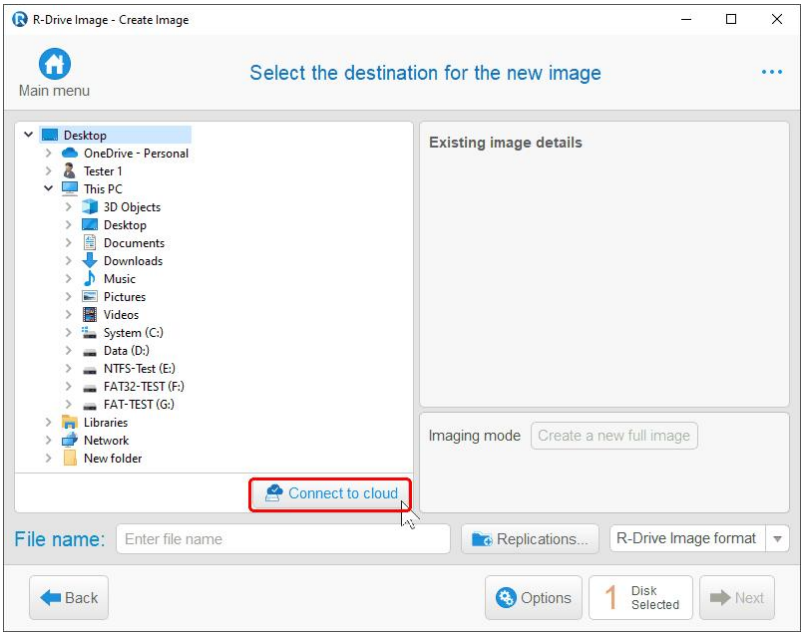
- Google Drive® (Note that for this cloud service, **R-Drive Image** can view, delete, and download only those files that it has created. If you upload an **R-Drive Image** file to your Google Drive account by yourself, **R-Drive Image** will not be able to see it and download.)
- Microsoft OneDrive® (for home and private use)
- Microsoft OneDrive® for Business (for organizations, especially if they use Microsoft 365 or SharePoint)
- Dropbox®
- Amazon S3® (for Amazon S3® and compatible systems)
- Google Cloud Storage® (available in the Corporate, Technician, and Commercial licenses)
- Microsoft Azure® (available in the **Corporate**, **Technician**, and **Commercial** licenses)
- WebDav® (OwnCloud and NextCloud extensions).

You need to connect to the service before you'll be able to use the service. We'll show how to do that using Google Drive as an example.

To connect to the Google Drive:

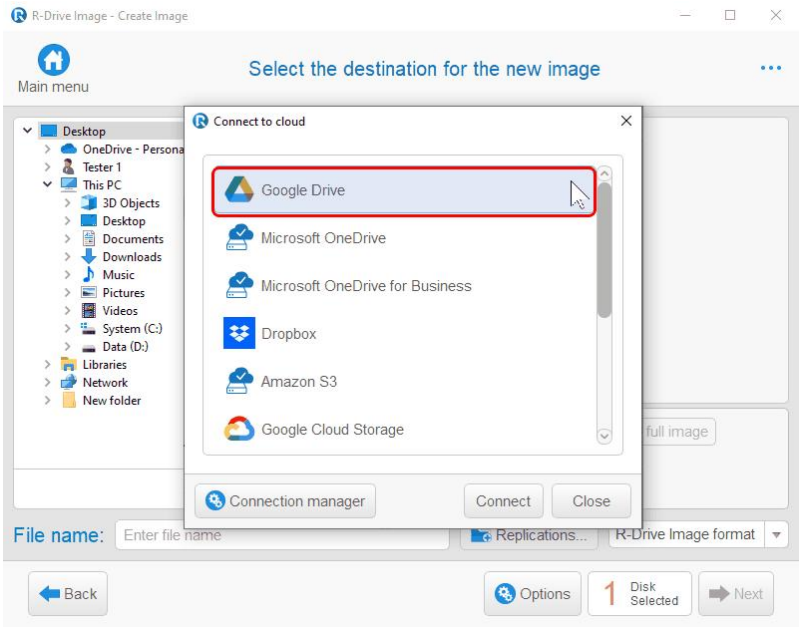
1 **Click the Connection to cloud button**

Connect to cloud



2 **Select the service you want to connect to and double-click it**

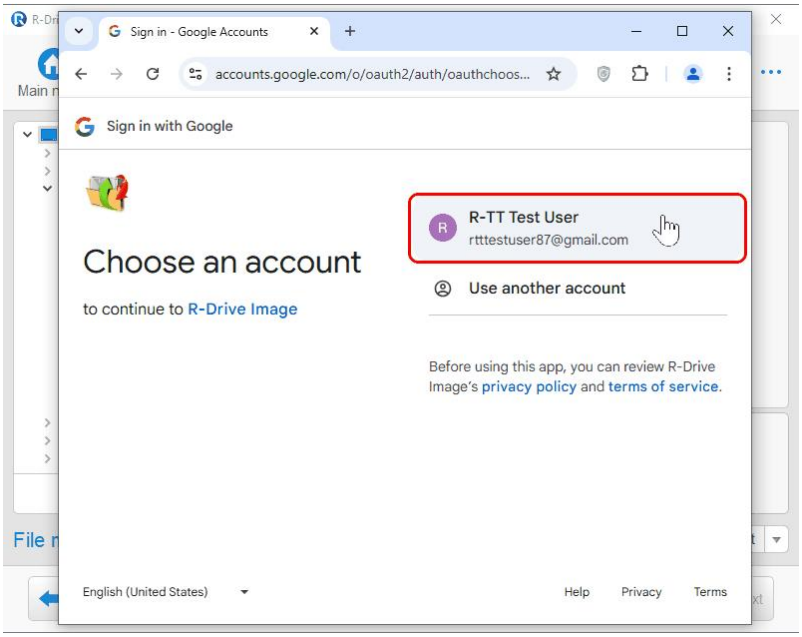
Connect to cloud window



A default browser window will appear.

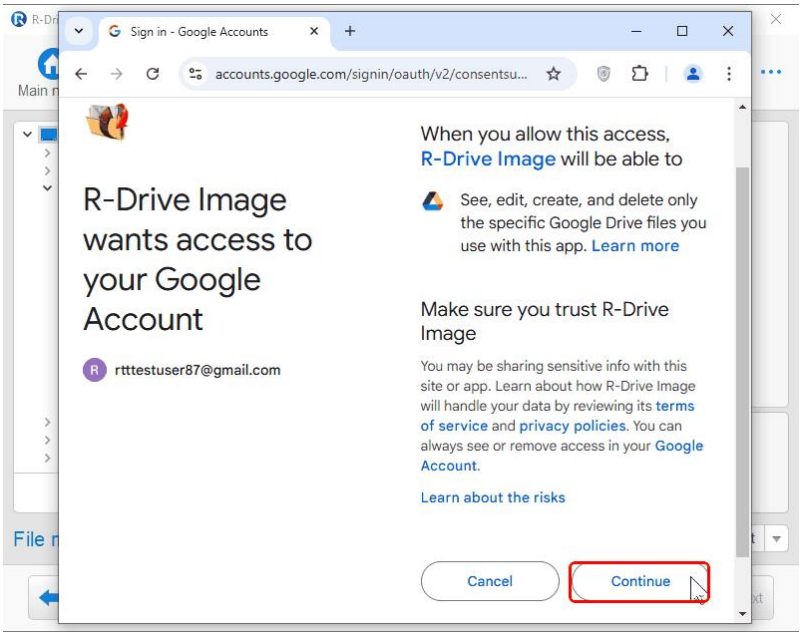
3 Select your Google account and log in to it

Google account



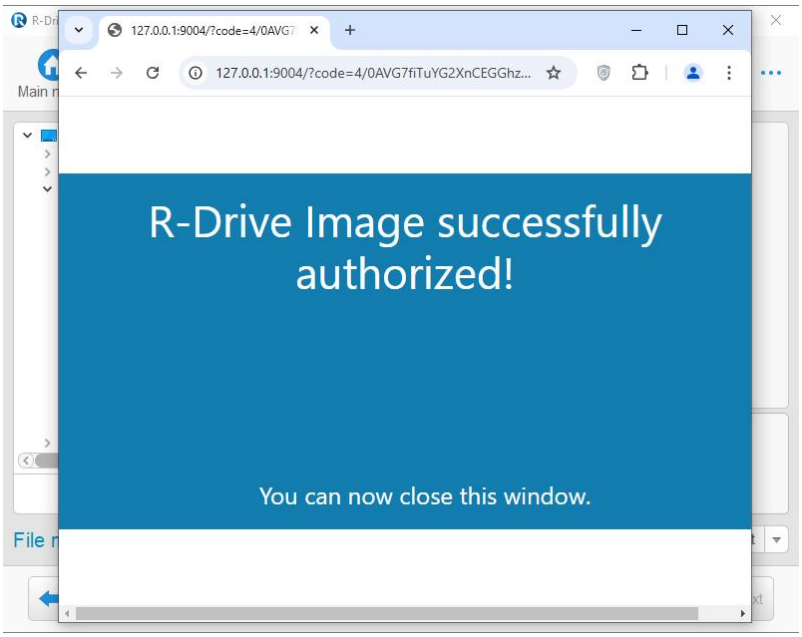
4 Review the permissions for R-Drive Image and click Continue

Google permissions



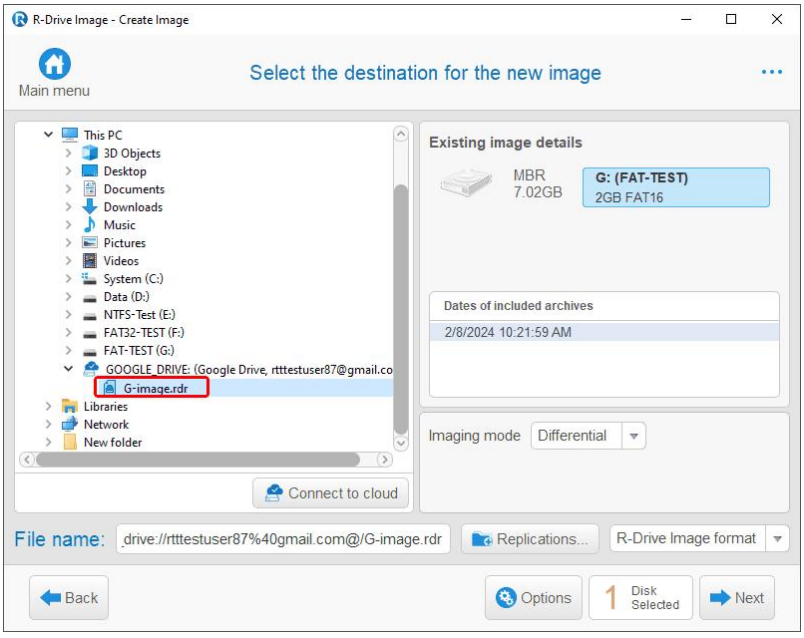
5 Make sure that R-Drive Image successfully authorized and close the browser

R-Drive Image authorized



> R-Drive Image will connect to GoogleDrive

GoogleDrive connection



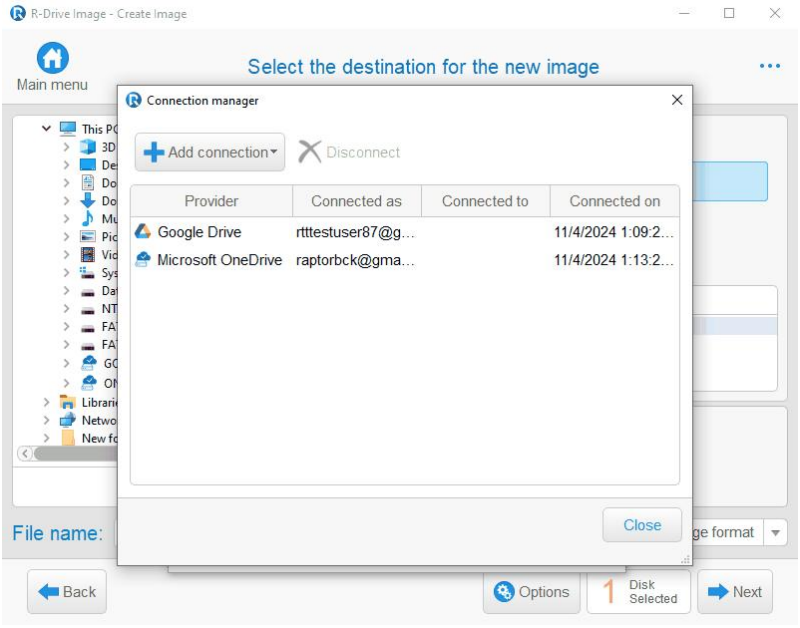
> Now you may save/download image files on/from the cloud service as it was a local drive

These connections will be automatically re-activated upon a new **R-Drive Image** start.

You may manage cloud service connection in Connection Manager.

You may delete existing and create new connections, and deactivate active connections.

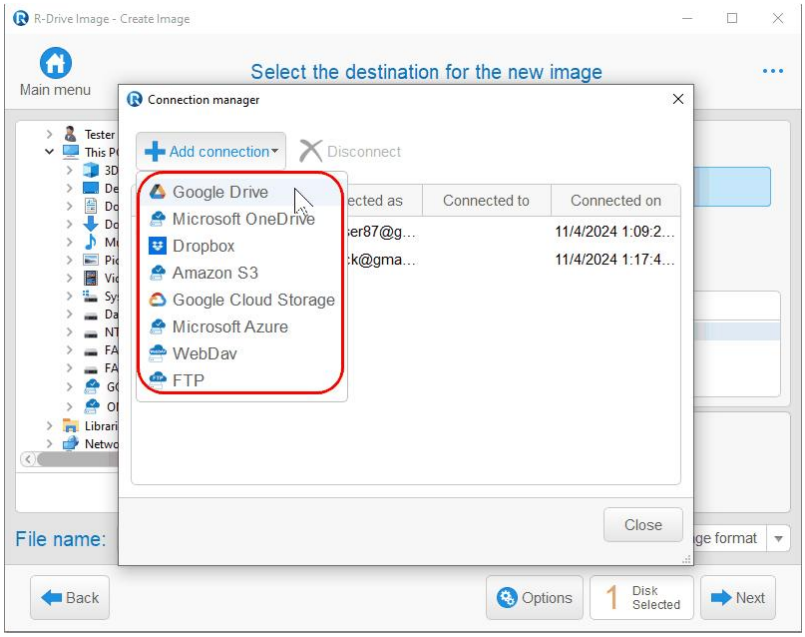
Connection manager



You may create another account in the same cloud service using **Connection manager**.

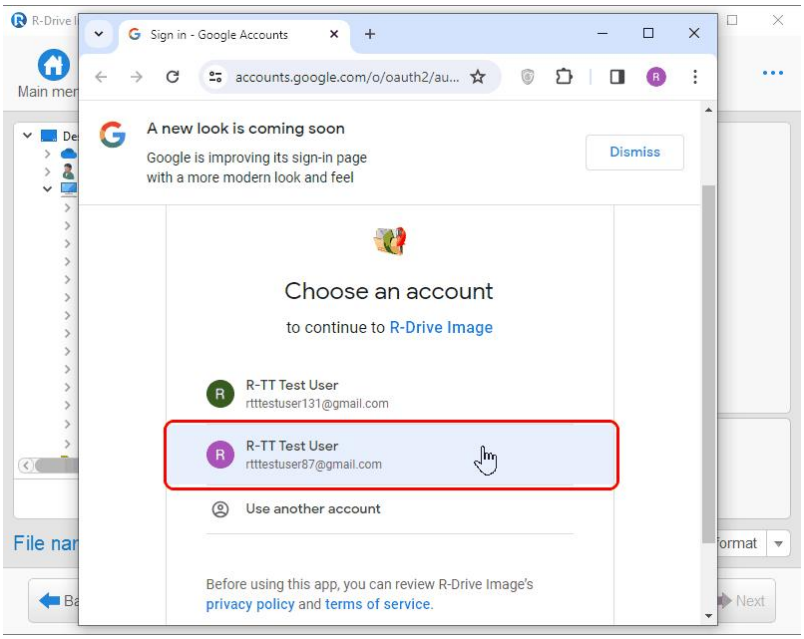
1 **Click the Add connection button and select the service you want to connect to**

Add connection window



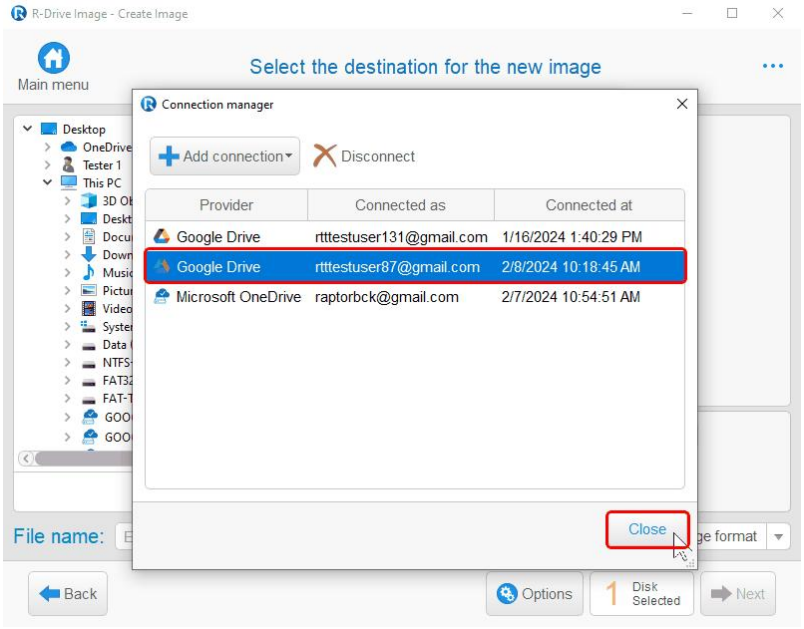
2 **Log in to another Google account**

Another Google account



> **Another connection will appear in Connection manager**

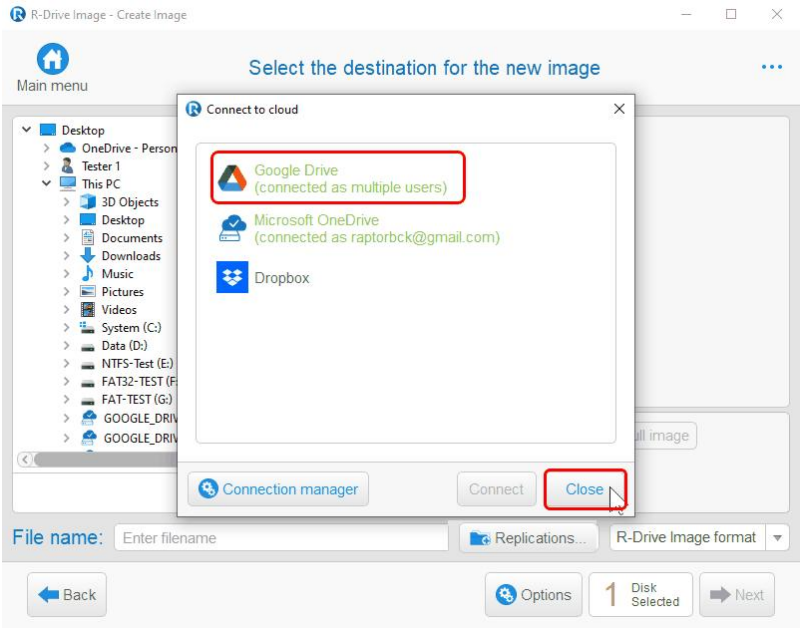
Connection manager with two Google accounts



Then you may close **Connection manager**

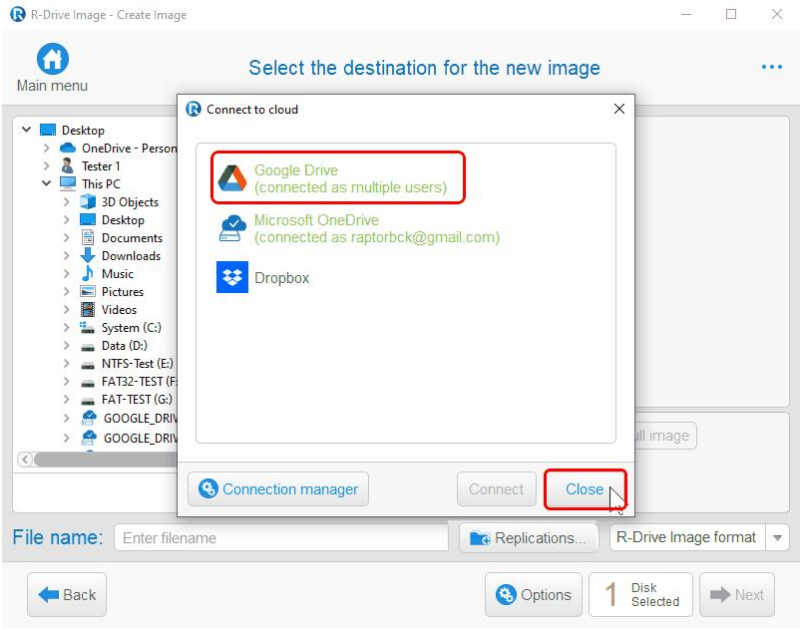
> **Connection to cloud will also show multiple connections**

Connection to cloud window with multiple Google accounts



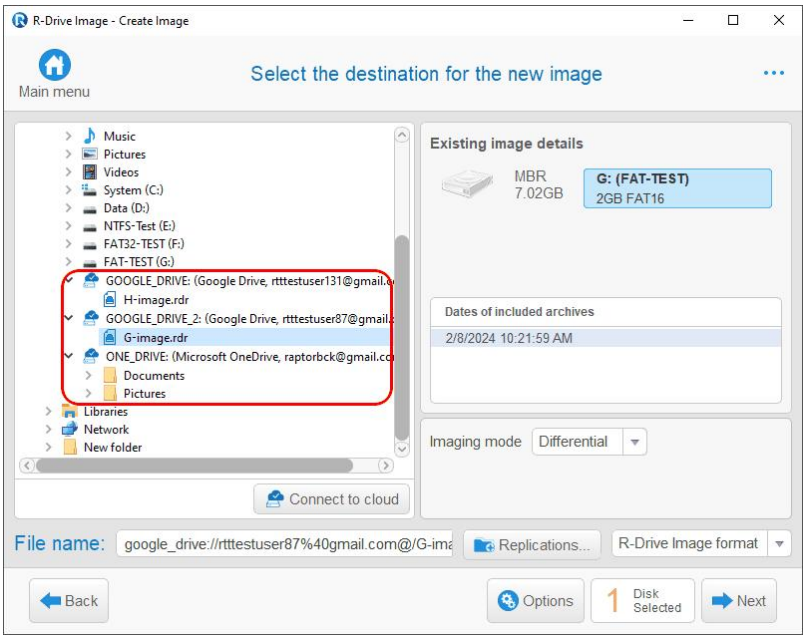
> **Connection to cloud will also show multiple connections**

Connection to cloud window with multiple Google accounts



Now you may chose the cloud service and the account to save/load images.

Accounts of cloud services



7.3 FTP/FTPS Servers

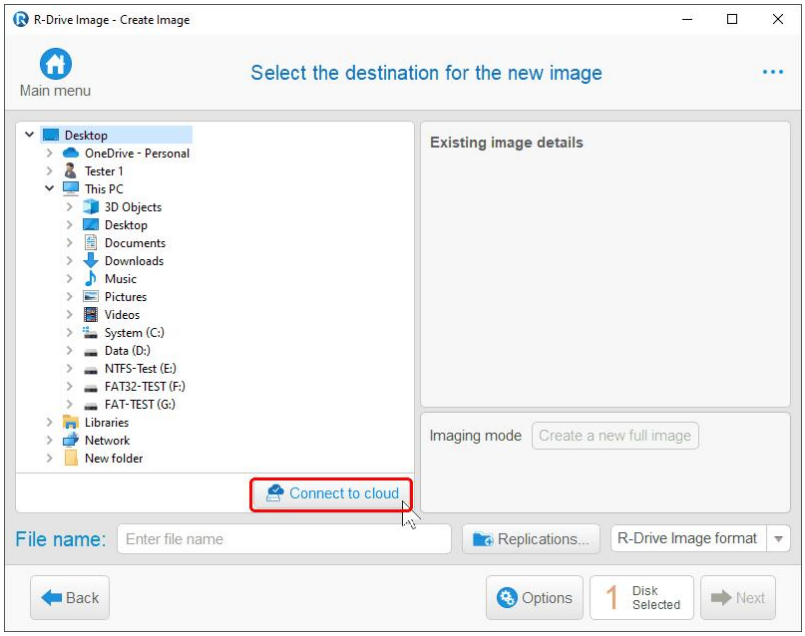
R-Drive Image can save images on FTP/FTPS/SFTP servers and restore them from those servers. Note that incremental/differential imaging modes are disabled for such servers.

You need to connect to the FTP/FTPS/SFTP server before you'll be able to use it.

To connect to an FTP/FTPS/SFTP server:

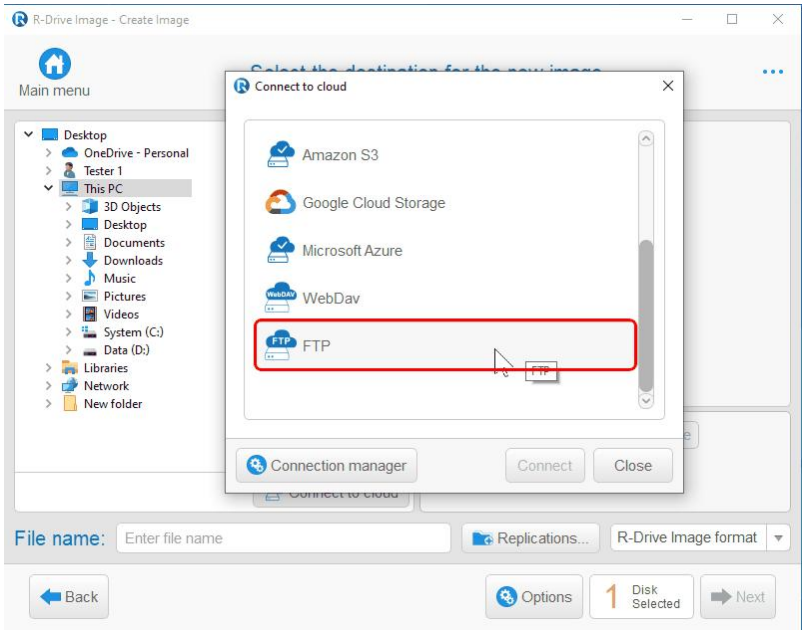
1 Click the Connection to cloud button

Connect to cloud



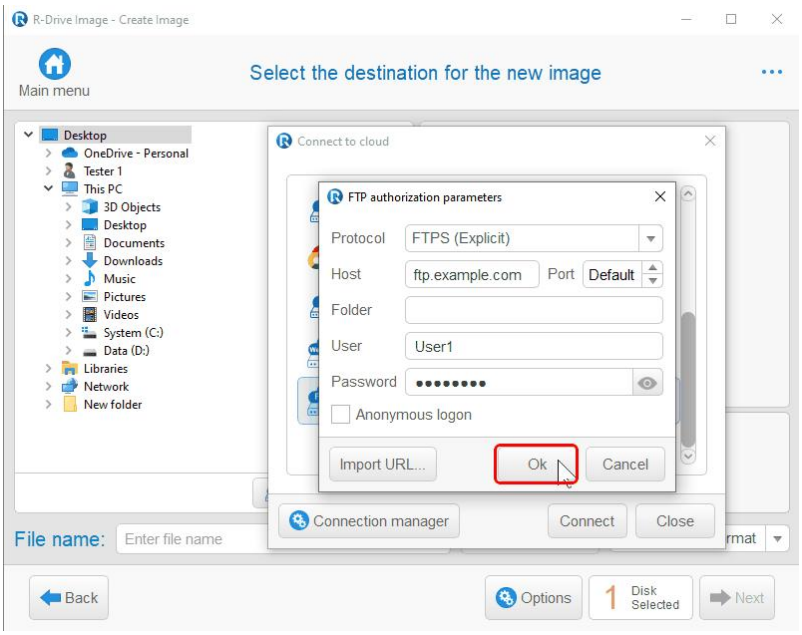
2 Select FTP and double-click it

Connect to FTP



3 Enter the FTP parameters and click the OK button

Connect to FTP



You may select either the FTP, or FTPS, or SFTP protocols.

FTPS has two modes:

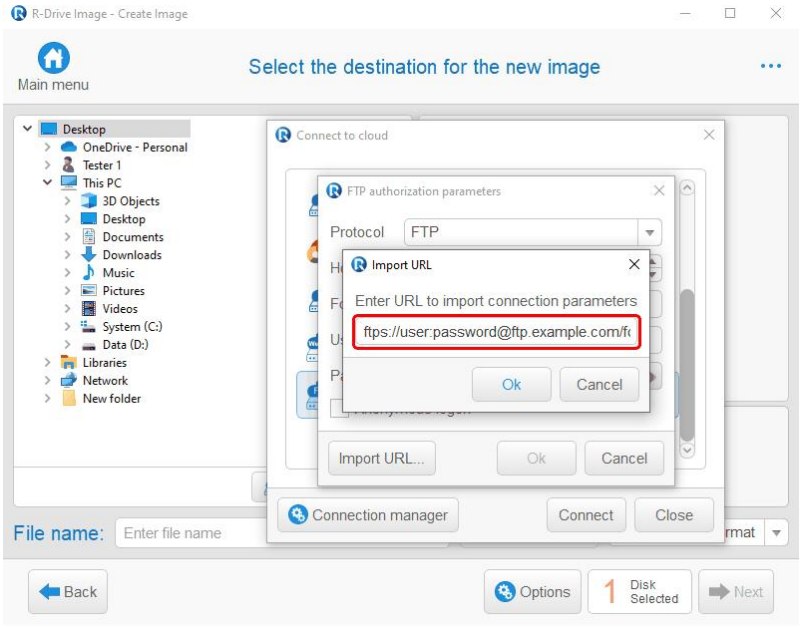
FTPS (Explicit) default port: 21, a plain connect elevated to an SSL/TLS connection.

FTPS (Implicit) default port: 990, an SSL/TLS connect is immediately provided.

Do not use prefixes like ftp:// or ftps:// in the host field.

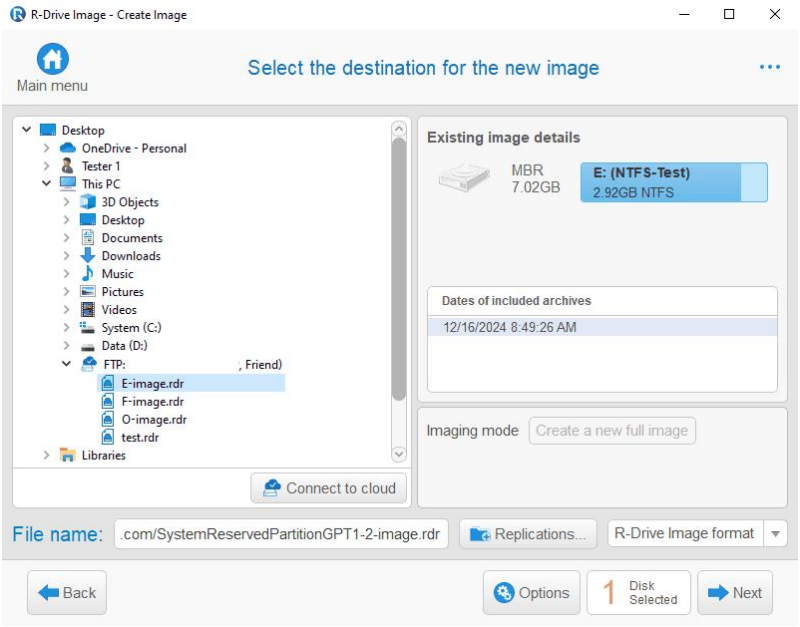
You may import an ftp url in the following form

Import FTP parameters



> **Now a connection to the FTP server appears in the folder tree**

An FTP connection



7.4 Image Replications

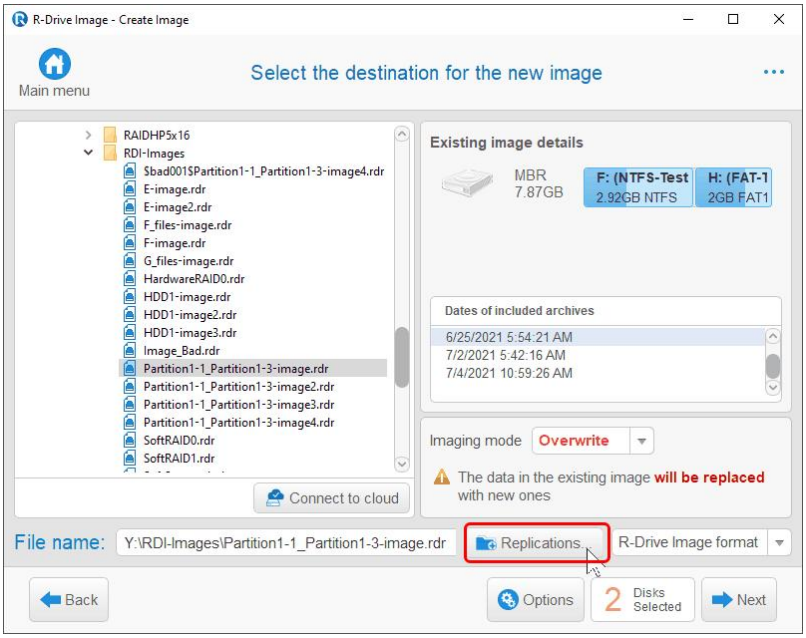
R-Drive Image can save several copies of the same image during one single imaging process. Such process is called "replication". This greatly increases safety of the imaged data. Image replicas can be saved in various locations: in other folders on the same disk (not very safe!), on other local disks, on network drives, or cloud services.

R-Drive Image first creates the main image file in the Main copy folder and then replicates in to other specified places. That is why it's important to create the main image on the fastest location, like a local disk.

To create image replicas:

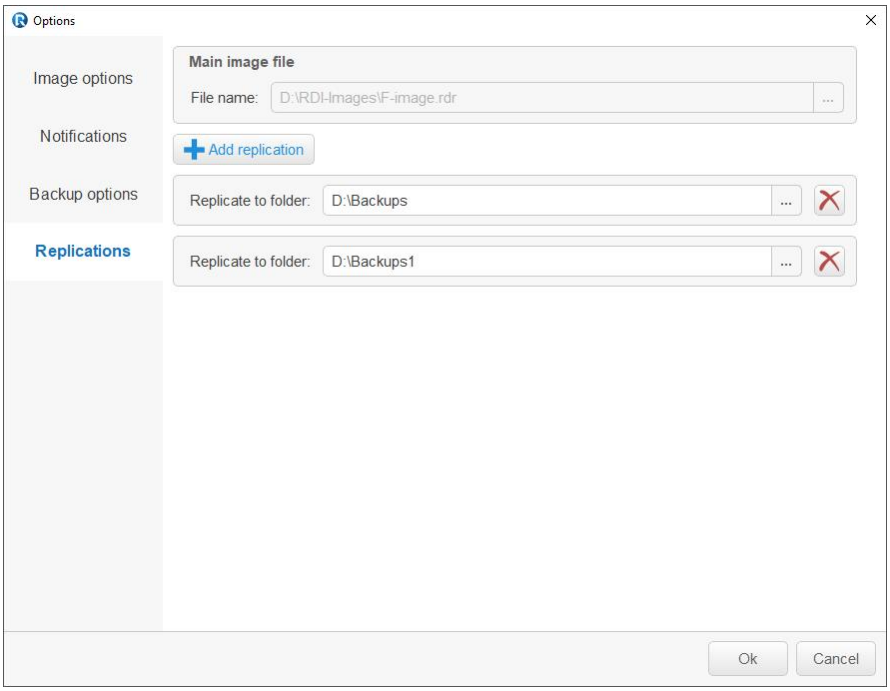
1 **Click the Replications button**

Replications



2 **Specify folders to save image replicas on the Replications tab.**

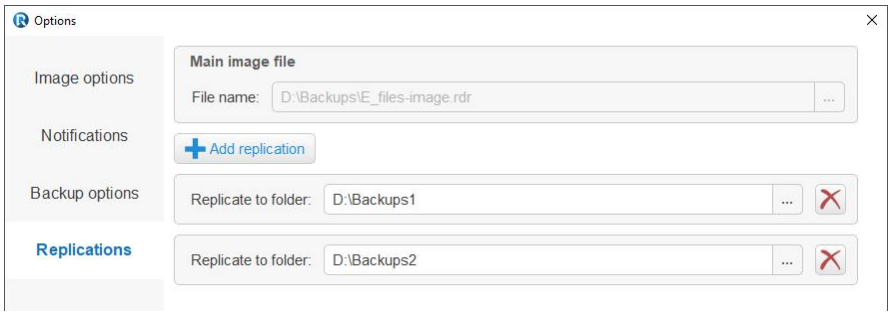
Replications options



> **R-Drive Image will save image replicas in these folders.**

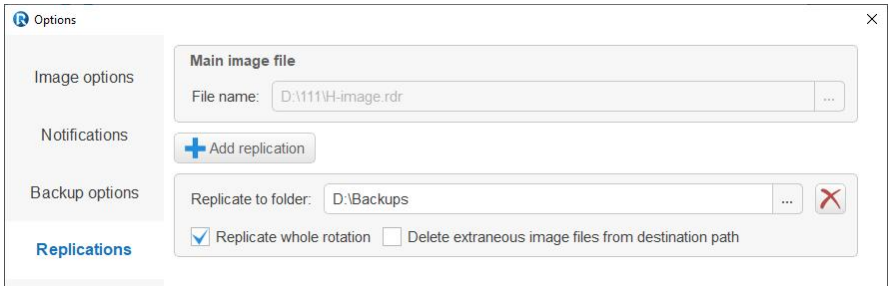
Replications options tab for differential file copy has another look:

Replications options for differential file copy



Replications options tab for rotation schemes has additional items.

Replications options for rotation schemes



Replicate whole rotation	If this checkbox is selected, **R-Drive Image** will replicate all images included in the rotation. If it's clear, it will replicate the last full image and all its differential / incremental images.
Delete extraneous image files from destination path	If this checkbox is selected, **R-Drive Image** will delete those image files in the destination folder which have been removed/deleted among those that are set for replication.

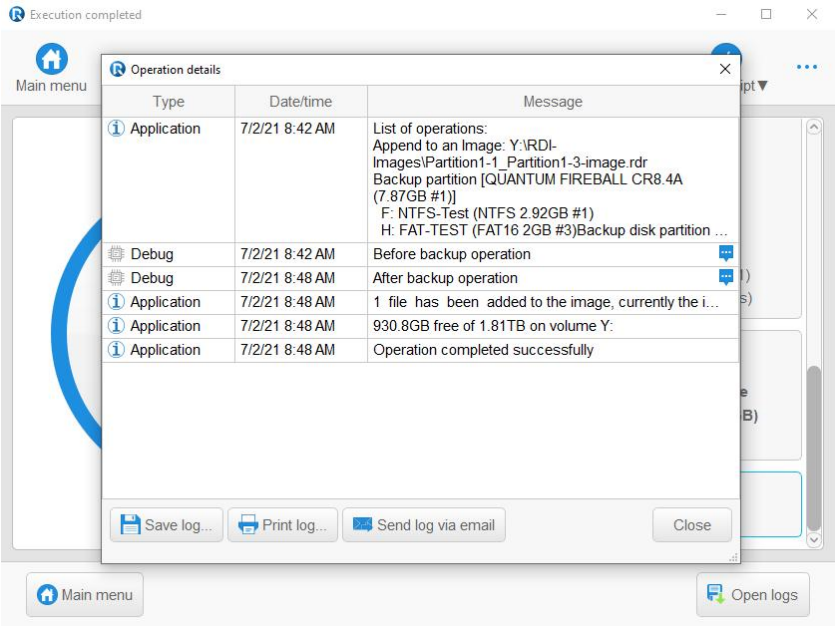
If you set file deletion by various limits on the **Rotation options** tab and want those files deleted in the replications, you need to select both these checkboxes.

7.5 Logging

R-Drive Image stores logs of several last actions. You may see them on the **Executed operation(s) log** panel. The default internal log file extension is `.rdl`. **R-Drive Image** exports logs in this format when executing the **Save log...** / **Save all logs** command from the **Executed operations(s) log** panel. You may view such a file by double-clicking it.

When **R-Drive Image** finishes its work it can show you a brief descriptions and result of the performed operations.

Click the **Open logs** button and the **Operation details** window will appear.



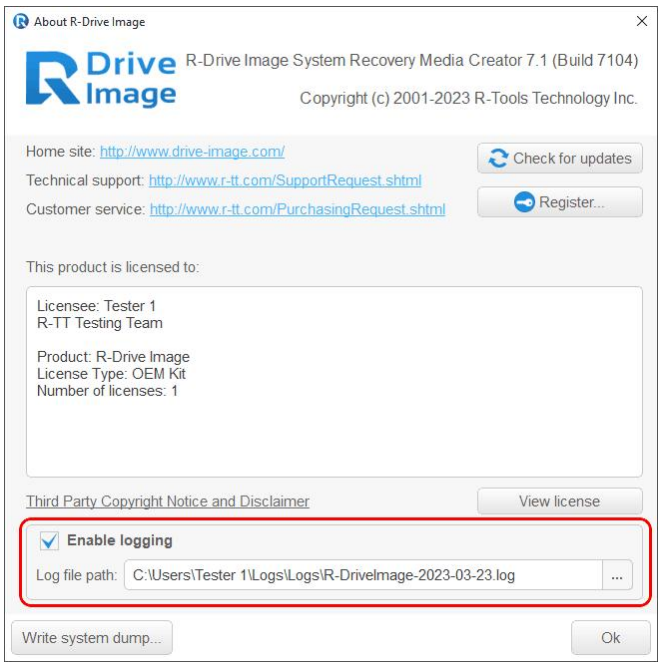
You may save the log, print the log, or send it somewhere via email.
R-Drive Image keeps a log of all performed operations on the **Executed operation(s) log** panel.

You may turn on saving the log into a file.

To turn logging on:

1 **Click the About button**

2 **Select Logging and specify a log file name and its path on the About R-Drive Image dialog box.**



7.6 Creating Consistent Point-in-Time Backups

Some programs may write some data on the disk while **R-Drive Image** is creating a data backup. To avoid data inconsistency, **R-Drive Image** uses two mechanisms for creating consistent point-in-time backups.

Windows XP, Windows Server 2003, Windows Vista, and later

R-Drive Image uses Microsoft Volume Shadow Copy Service (VSS) to notify other applications supporting this service that it is going to start a data backup process in order for them to flash all necessary data to the disk. Most applications like Microsoft Exchange Server, Microsoft SQL Server, and Oracle software support this service.

Options Windows Volume Snapshot Service and Notify system application on the **Backup Options** panel enable/disable the use of this service.

If a software that does not support VSS runs on your computer, you may use Backup AUX applications and Snapshot AUX applications on the **Backup Options** panel (and their respective commands/parameters in scripts) to send special commands to your application that will make that application flush its data to the disk before the backup process starts.

Windows 2000 and earlier

R-Drive Image uses its own driver to create a file system snapshot but it does not notify other applications that it is going to start a backup process. Therefore, if an application stores some of its data in memory, they will not be saved in the backup file. To avoid data inconsistency, we recommend you to use Backup AUX applications and Snapshot AUX applications on the **Backup Options** panel (and their respective commands/parameters in scripts) to send special commands to your application that will make that application flush its data to the disk before the backup process starts.

Option R-TT Volume Snapshot Service on the **Backup Options** panel enables/disables the use of this service.

Backup Options

Snapshot provider	A snapshot provider is a service **R-Drive Image** uses to read the disk content while creating its image. **R-Drive Image** uses the snapshot providers in the order specified on the tab. If it fails to use the first one selected, it tries to use the second one, and so on.
Windows Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use the Windows native snapshot provider. This snapshot provider is able to notify system applications that a snapshot is being taken. If this option is selected, `pagefile.sys` and `hibernate.sys` files are excluded from the image of the system disk.
R-TT Volume Snapshot Service	If this check box is selected, **R-Drive Image** will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.
Notify system applications	If this check box is selected, the snapshot provider, if it supports this feature, notifies system applications that a snapshot is being taken.
Limit I/O rate	Specifies the rate limits for reading/writing data from/to disks
Limit read	The rate limit for reading from the source disk
Limit write	The rate limit for writing to the destination disk
Process priority	These options specify how much computer resources **R-Drive Image** will consume during a backup process.

Backup Process Priority	Specifies the priority of the backup process. Similar to that specified in Windows Task Manager.
Use CPU cores	Specifies how many processor cores **R-Drive Image** will use for the backup process.
Ignore disk read errors (bad sectors)	If this check box is selected, **R-Drive Image** will ignore possible read errors when it tries to read data from bad sectors. **R-Drive Image** works with disks with bad sectors in the following way: It reads a certain part of disk (predefined by Windows) and • If read errors are ignored, the entire part with bad sectors will be filled with zeros. • If read errors are not ignored, **R-Drive Image** reads that part sector by sector and shows a warning message for every bad sector with two options: skip the sector or try to read it again. In this case only the bad sectors will be filled with zeros, but all that requires manual actions and extremely slows the imaging process. Please note that **R-Drive Image** is developed for the work with normally functioning disks. If you need to image a malfunctioning disk, use **R-Studio**, a data recovery utility. It has more controls for imaging, and can create **R-Drive Image**-compatible images even in its demo mode, that is, without registering.
Backup AUX applications	**R-Drive Image** is able to make applications run before and after all backup operations. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before the backup operations starts. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after the backup operations completes. If you need to start several applications, you may use a command file. Example: `"cmd.exe /c example.bat"`
Snapshot AUX applications	**R-Drive Image** is able to make applications run before and after taking the snapshot of one or several volumes. Please note that those application should return a 0 exit code. Leave these fields blank if in doubt.
Before	An application **R-Drive Image** starts before it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`
After	An application **R-Drive Image** starts after it takes the snapshot of one or several volumes. If you need to start several application, you may use a command file. Example: `"cmd.exe /c example.bat"`

If any of Backup AUX applications and Snapshot AUX applications are executed, the following environment variables are set:

`R_CALLBACK_UID`	A unique digital backup id used in all calls for external commands pertaining to that backup process.
`R_CALLBACK_STAGE`	Takes the following values:

	BEFORE_BACKUP AFTER_BACKUP BEFORE_SNAPSHOT AFTER_SNAPSHOT
R_VOLUME_NAMES	A comma-separated name list of partitions to be processed.
R_VOLUME_GUIDS	A comma-separated GUID list of partitions to be processed

Therefore, the same command may be used for all the fields provided it will determine using R_CALLBACK_STAGE in which context it is called.

Below is an example of the variables when disks C: and D: are being backed up:

```
R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_BACKUP
R_VOLUME_NAMES=C:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008},{9636e065-f75e-11dc-981a-
829328f78201}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_SNAPSHOT
R_VOLUME_NAMES=C:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=AFTER_SNAPSHOT
R_VOLUME_NAMES=C:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_SNAPSHOT
R_VOLUME_NAMES=D:
R_VOLUME_GUIDS={9636e065-f75e-11dc-981a-829328f78201}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=AFTER_SNAPSHOT
R_VOLUME_NAMES=D:
R_VOLUME_GUIDS={9636e065-f75e-11dc-981a-829328f78201}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=AFTER_BACKUP
R_VOLUME_NAMES=C:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008},{9636e065-f75e-11dc-981a-
829328f78201}
```

Note: If the system settings permit, several disks may appear in one snapshot. Then the following calls will appear:

```
R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_BACKUP
R_VOLUME_NAMES=?:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008},{9636e065-f75e-11dc-981a-
829328f78201}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_SNAPSHOT
```

```
R_VOLUME_NAMES=?:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008},{9636e065-f75e-11dc-981a-
829328f78201}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=AFTER_SNAPSHOT
R_VOLUME_NAMES=?:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008},{9636e065-f75e-11dc-981a-
829328f78201}

R_CALLBACK_UID=2008
R_CALLBACK_STAGE=AFTER_BACKUP
R_VOLUME_NAMES=?:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008},{9636e065-f75e-11dc-981a-
829328f78201}
```

7.7 Support for Various Disk Partitioning Schemes and File Systems

R-Drive Image supports various non-MBR/GPT disk partition schemes: Dynamic disk, BSD Slice, Apple Partition Map with the following restrictions:

- Changes in disk partitioning schemes are supported for basic (regular) and dynamic MBR/GPT disks. **R-Drive Image** can change partitioning schemes (the number of partitions and their sizes) while restore the data.
- The other partitioning schemes may be backed up and then restored only on their original places or other partitions of the same size. For example, a backup of dynamic disk `D:` may be restored on disk `D:`, or on any other dynamic partition provided that its size matches exactly that of disk `D:`.
- A basic partition may be restored on another partition of another scheme with the above limitation, and a partition of another scheme may be restored as a basic one without limitations.

Partitions with various file systems are supported by **R-Drive Image** differently:

File system	Imaging/Copy	Restore	Partition Resizing*	Virtual Disk Mount	Image creation from files
FAT (16/32), NTFS	Byte-by-byte and Useful Information Only	Entire partition and Selected folders and files.	Yes.	Yes	Yes
exFAT, ReFS	Byte-by-byte and Useful Information Only	Entire partition and Selected folders and files.	No	Yes (if the Windows version supports)	Yes
HFS/HFS+	Byte-by-byte and Useful Information Only	Entire partition and Selected folders and files	Yes	No (Yes, if third-party file system drivers are installed)	No (Yes, if third-party

					file system drivers are installed)
APFS	Byte-by-byte and Useful Information Only	Entire partition and Selected folders and files	No	No (Yes, if third-party file system drivers are installed)	No (Yes, if third-party file system drivers are installed)
Ext2/Ext3/Ext4 FS (Linux) XFS, and Little and Big Endian variants of UFS1/UFS2	Byte-by-byte and Useful Information Only	Entire partition and Selected folders and files.	No	No (Yes, if third-party file system drivers are installed)	No (Yes, if third-party file system drivers are installed)
Unknown	Byte-by-byte	Entire partition	No	No	No

* For non-MBR/GPT disk partition schemes, partition resizing can be done within existing disk partitioning schemes.

7.8 Supported Virtual Disk and Disk Image Formats

Along with file formats used for purely disk backup and imaging purposes, there are file formats for virtual disks. Virtual disks are software components that emulates data storage devices in virtual machines. A the same time, virtual disks can be used for disk backup and imaging, too. That is why it's expedient for disk backup and imaging software to support various file formats for virtual disks. This is especially important for system interoperability, when it's necessary to use disk backup/image files on other machines where the disk backup and imaging software isn't installed.

Currently **R-Drive Image** supports the following virtual disk and disk image formats:

RDR: A proprietary disk image format developed by **R-Tools Technology, Inc (R-TT)**. It is the main format in **R-Drive Image**, **R-Studio**, **R-Linux**, and **R-Undelete**. RDR files are interchangeable, that is, any **R-TT** program may load and process, within its capabilities, any rdr file created in another **R-TT** program.

VHD/VHDX: A virtual disk file format built into Windows. It's a native virtual hard drive for Hyper-V, the Windows virtual machine. You may read more about these file formats in Wikipedia: VHD (file format). **R-Drive Image** creates a special file with some metadata for the VHD file format, its extension is vhr. The VHDX file format contains this metadata within its main file.

VMDK: A virtual disk file format for the most virtual machines like VMware Workstation, VirtualBox, Parallels Desktop for Mac, etc. You may read more about these file format in our Glossary: What is a VMDK Virtual Disk. Available only in **Corporate, Technician**, and **Commercial** licenses.

VDI: A virtual disk file format for the VirtualBox virtual machine. **R-Drive Image** creates a special file with some metadata for the VDI file format, its extension is vdr. You may read more about these file format in Wikipedia: VDI. Available only in **Corporate, Technician**, and **Commercial** licenses.

The main features of these file formats are presented in the table below:

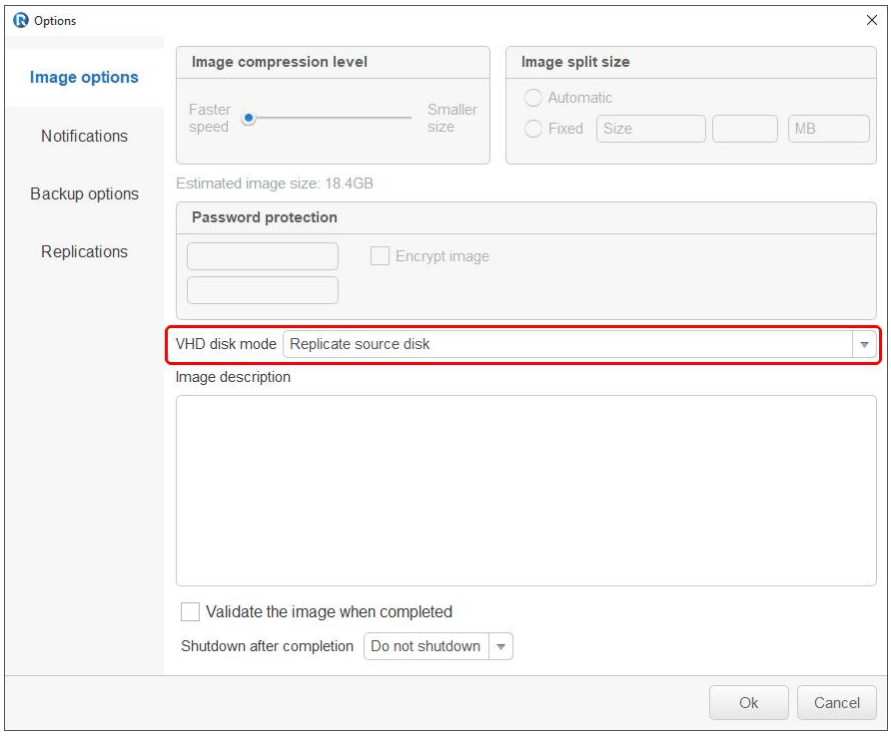
Features	RDR	VHD/VHDX	VMDK	VDI
Several objects from different physical drives in one image	Yes	No	No	No
Compression	Yes	No	Yes	No
Encryption	Yes	No	No	No
Image Split	Yes	No	Yes	No
Native mounting on Windows	No	Yes	No	No
Mounting on Windows using R-Drive Image	Yes	Yes	Yes	Yes

Unlike the image in the RDR format which may contain not only entire hard drives, but also separate disk objects (partitions and free spaces), all other formats can contain only images of entire hard drives. Therefore, **R-Drive Image** uses some special tricks to bypass this restrictions. Those objects still must be on the same hard drive.

Method	
Replicate source disk	The image will contain all objects on the source disk. Objects that are not selected for imaging will be replaced with unallocated space. Unallocated spaces in such images are purely virtual objects and will not increase the size of the resulting file. Such images can be bootable when they contain all necessary partitions for bootable devices, but Windows 11 cannot mount such images by a double click.
Create synthesized disk	A new virtual hard drive will be created. It will contain only the selected disk objects. Windows 11 will be able to mount such images by double clicking the entire hard drive with the selected objects.
Auto	**R-Drive Image** will automatically select the method. If the image is to contain only one non-bootable object, Create synthesized disk will be selected. Otherwise, **R-Drive Image** will select Replicate source disk.

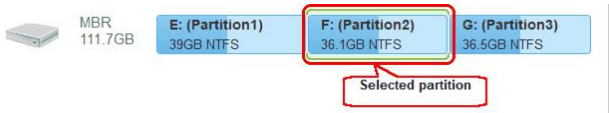
The method can be selected on the **Image options** tab

Disk mode

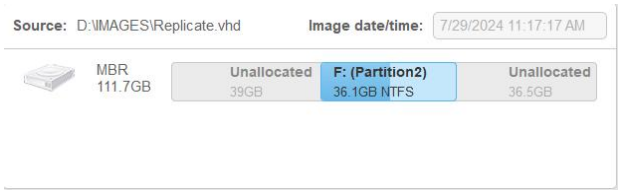


Imaging results

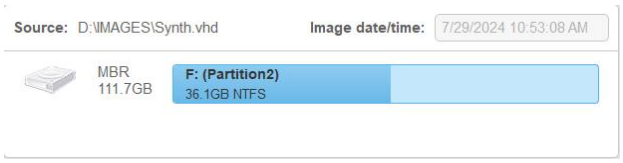
Disk objects to image



The Replicate source disk method



The Create synthesized disk method



Such images may have the following peculiarity: when an additional object is added to an existing image differentially or incrementally, the second image file will have a virtual unallocated space on the places of the

objects already existing in the image. That may sometimes results in the fact that the total free space in the image exceeds the overall disk space.

Additional file formats that can be opened "read-only"

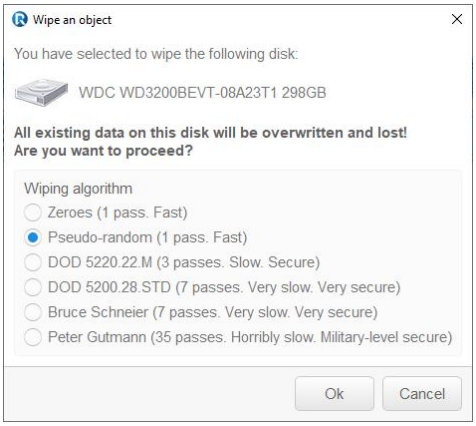
Extensions	Description	Licenses
dmg	Apple Disk Image	All
e01/(ewf)	Expert Witness File Format	**Commercial**
aff	Advanced Forensic Format	**Commercial**

7.9 Disk Wiping Algorithms

Data wiping is necessary only for files stored on conventional hard drives. Data stored on SSD storage devices cannot be effectively wiped out due to the principles of operation of these devices.

Currently **R-Drive Image** supports 5 wiping algorithms:

Wipe an object panel



Wiping algorithms

Zeroes	The disk is filled with zeroes through 1 pass. The fastest but the least secure algorithm. Also it does not conceal the fact that the disk or file has been wiped.
Pseudo-random numbers	The disk is filled with pseudo-random numbers through 1 pass. A slower but little bit more secure algorithm than the **Zeroes** algorithm and it also conceals to some degree the fact that the disk or file has been wiped.
DoD 5220.22-M(3)	The disk is wiped using Department of Defense standard 5220.22-M(3). Provides high-grade data wiping filling the unused space or file with a special digital pattern through 3 passes This algorithm is very secure, but slow.
DoD 5200.28-STD(7)	The disk is wiped using Department of Defense standard 5200.28-STD(7). Provides high-grade data wiping filling the unused space or file with a special digital pattern through 7 passes. This algorithm is very secure, but very slow.
Bruce Schneier(7)	The disk is wiped using the Bruce Schneier's algorithm. Provides high-grade data wiping filling the unused space or file with a special digital pattern through 7 passes. This algorithm is very secure, but very slow.

Peter Gutmann (35)	The disk is wiped using the Peter Gutmann's algorithm. Provides high-grade data wiping filling the unused space or file with a special digital pattern through 35 passes. This algorithm is military-level secure, but horribly slow.

What algorithm is to choose, depends on your specific needs. All of these wiping algorithms make recovery of wiped data with any software-based data recover utility impossible. So if you want to protect your information from a casual snooper, you may safely choose either the **Zeroes** or **Pseudo-random numbers** algorithm. The latter also conceals the fact that you wiped the data.

If you want more security, you need to know the following:

There are some techniques for recovery of wiped data. These techniques are based on the fact that magnetic medium on the hard drive's platters "store" some information about previously written data. Such information cannot be completely removed. Wiped data may be recovered even from mechanically damaged platters. So the only safe way to completely remove data from a hard drive is to mechanically grind the magnetic medium off the drive platters or dissolve them in special chemical solvents.

But in order to recover the wiped data using one of these techniques, a hard drive must be disassembled, its platters placed in a precise magnetic field measurement system, and the results of such measurement statistically processed. All that is very expensive and requires a very qualified and experienced personnel and a specially developed equipment. Only a very advanced organization such as a law enforcement or intelligence agency of a developed nation, or a special high-tech firm can afford this. Moreover, each successive wiping pass makes such data recovery much and much harder. So, the **DoD 5220.22-M(3)** clearing and sanitizing standard overwriting the data with a special pattern through 3 passes is a rather reliable and safe choice for this case.

If you need the ultimate security, use the **DoD 5220.22-M(7)** clearing and sanitizing standard, or even the **Peter Gutmann (35)** wiping algorithm. They render data almost unrecoverable, but they are extremely slow.

7.10 Supported CD and DVD Recorders

Supported CD recorders

All IDE/SCSI/USB/FireWire (IEEE1394) CD recorders compatible with the MMC specification.

Supported DVD recorders

Any DVD+R/RW or DVD-R/RW drives for which packet (UDF) record software is installed (DirectCD/InCD/DLA). DVD discs should be formatted.

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** and **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

7.11 List of Hardware Devices Supported in the Startup Mode

In the startup mode, **R-Drive Image** supports the following hardware devices:

Data Storage Devices ***Networking Devices***

Serial ATA and Parallel ATA drivers

ACPI firmware driver for PATA
ACard AHCI variant (ATP 8620)
AHCI SATA
ALi PATA
AMD/NVidia PATA
ARTOP 6210/6260 PATA
ARTOP/Acard ATP867X PATA
ATI PATA
CMD / Silicon Image 680 PATA
CMD640 PCI PATA
CMD64x PATA
CS5510/5520 PATA
CS5530 PATA
CS5535 PATA
CS5536 PATA
Compaq Triflex PATA
Cypress CY82C693 PATA
EFAR SLC90E66
Generic ATA
HPT 343/363 PATA
HPT 366/368 PATA
HPT 370/370A/371/372/374/302 PATA
HPT 371N/372N/302N PATA
IT8211/2 PATA
IT8213 PATA
Initio 162x SATA
Intel ESB, ICH, PIIX3, PIIX4 PATA/SATA
Intel PATA MPIIX
Intel PATA old PIIX
Intel SCH PATA
JMicron PATA
Legacy ISA PATA
Marvell PATA support via legacy mode
Marvell SATA
NETCELL Revolution RAID
NVIDIA SATA
Nat Semi NS87410 PATA
Nat Semi NS87415 PATA
Ninja32/Delkin Cardbus ATA
3Com 3c574 PCMCIA
3Com 3c589 PCMCIA
3c501 `EtherLink`
3c503 `EtherLink II`
3c505 `EtherLink Plus`
3c507 `EtherLink 16`
3c509/3c529 (MCA)/3c579 `EtherLink III`
3c515 ISA `Fast EtherLink`
3c590/3c900 series (592/595/597) `Vortex/Boomerang`
3cr990 series `Typhoon`
AMD 8111 (new PCI LANCE)
AMD LANCE and PCnet (AT1500 and NE2100)
AMD PCnet32 PCI
AT1700/1720
Adaptec Starfire/DuraLAN
Alteon AceNIC/3Com 3C985/NetGear GA620 Gigabit
Ansel Communications EISA 3200
Apricot Xen-II on board Ethernet
Asix AX88190 PCMCIA
Atheros L1C Gigabit Ethernet
Atheros L1E Gigabit Ethernet
Atheros L2 Fast Ethernet
Atheros/Attansic L1 Gigabit Ethernet
Broadcom 440x/47xx ethernet
Broadcom CNIC
Broadcom NetXtremeII
Broadcom NetXtremeII 10Gb
Broadcom Tigon3
Brocade 1010/1020 10Gb Ethernet Driver
CS89x0
Cabletron E21xx
Chelsio 10Gb Ethernet
Chelsio Communications T3 10Gb Ethernet
Chelsio Communications T4 Ethernet
Chelsio Communications T4 Virtual Function Ethernet
Cisco VIC Ethernet NIC Support
DECchip Tulip (dc2114x) PCI
DL2000/TC902x-based Gigabit Ethernet
Dave ethernet support (DNET)

OPTI FireStar PATA
OPTI621/6215 PATA
Older Promise PATA controller
PCMCIA PATA
Pacific Digital ADMA
Pacific Digital SATA QStor
Platform AHCI SATA
Promise PATA 2027x
Promise SATA SX4
Promise SATA TX2/TX4
QDI VLB PATA
RADISYS 82600 PATA
RDC PATA
SC1200 PATA
SERVERWORKS OSB4/CSB5/CSB6/HT1000 PATA
ServerWorks Frodo / Apple K2 SATA
SiS 964/965/966/180 SATA
SiS PATA
Silicon Image 3124/3132 SATA
Silicon Image SATA
Toshiba Piccolo
ULi Electronics SATA
VIA PATA
VIA SATA
VITESSE VSC-7174 / INTEL 31244 SATA
Winbond SL82C105 PATA
Winbond W83759A VLB PATA

SCSI low-level drivers

3ware 5/6/7/8xxx ATA-RAID
3ware 97xx SAS/SATA-RAID
3ware 9xxx SATA-RAID
7000FASST SCSI
ACARD SCSI
ARECA (ARC11xx/12xx/13xx/16xx) SATA/SAS RAID Host Adapter
Adaptec AACRAID
Adaptec AHA152X/2825
Adaptec AHA1542
Adaptec AIC79xx U320

Davicom DM910x/DM980x
Early DECchip Tulip (dc2104x) PCI
EtherExpress 16
EtherExpressPro support/EtherExpress 10 (i82595)
Exar X3100 Series 10GbE PCIe Server Adapter
Exar Xframe 10Gb Ethernet Adapter
Fujitsu FMV-J18x PCMCIA
Generic DECchip & DIGITAL EtherWORKS PCI/EISA
HP 10/100VG PCLAN (ISA, EISA, PCI)
HP PCLAN (27245 and other 27xxx series)
HP PCLAN+ (27247B and 27252A)
ICL EtherTeam 16i/32
IP1000 Gigabit Ethernet
Intel(R) 10GbE PCI Express adapters
Intel(R) 82575/82576 PCI-Express Gigabit Ethernet
Intel(R) 82576 Virtual Function Ethernet
Intel(R) PRO/100+
Intel(R) PRO/1000 Gigabit Ethernet
Intel(R) PRO/1000 PCI-Express Gigabit Ethernet
Intel(R) PRO/10GbE
JMicron(R) PCI-Express Gigabit Ethernet
LP486E on board Ethernet
Marvell Yukon 2
Marvell Yukon Gigabit Ethernet
Mellanox Technologies 10Gbit Ethernet
Micrel KS8851 MLL
Micrel KSZ8841/2 PCI
Myricom Myri-10G Ethernet
Myson MTD-8xx PCI Ethernet
NE2000 compatible PCMCIA
NE2000/NE1000
NI5210
NI6510
National Semiconductor DP8381x series PCI Ethernet
National Semiconductor DP83820
NetXen Multi port (1/10) Gigabit Ethernet NIC
New Media PCMCIA
OKI SEMICONDUCTOR IOH(ML7223/ML7831) GbE

Adaptec AIC7xxx
Adaptec AIC7xxx Fast -> U160
Adaptec AIC94xx SAS/SATA
Adaptec I2O RAID
AdvanSys SCSI
Always IN2000 SCSI
BusLogic SCSI
DMX3191D SCSI
DTC3180/3280 SCSI
EATA ISA/EISA/PCI (DPT and generic EATA/DMA-compliant boards)
Emulex LightPulse Fibre Channel Support
Future Domain 16xx SCSI/AHA-2920A
Generic NCR5380/53c400 SCSI MMIO
Generic NCR5380/53c400 SCSI PIO
HP Smart Array SCSI driver
HighPoint RocketRAID 3xxx/4xxx Controller
IBM Power Linux RAID adapter
IBM ServeRAID
Initio 9100U(W)
Initio INI-A100U2W
Intel(R) C600 Series Chipset SAS Controller
Intel/ICP (former GDT SCSI Disk Array) RAID Controller
LSI Logic Legacy MegaRAID Driver
LSI Logic Management Module
LSI Logic MegaRAID Driver
LSI Logic MegaRAID SAS RAID Module
LSI MPT Fusion SAS 2.0 Device Driver
Marvell 88SE64XX/88SE94XX SAS/SATA
Microsoft Hyper-V virtual storage driver
NCR53c406a SCSI
PAS16 SCSI
PMC SIERRA Linux MaxRAID adapter
PMC-Sierra SPC 8001 SAS/SATA Based Host Adapter driver
Promise SuperTrak EX Series
QLogic ISP4XXX and ISP82XX host adapter family
QLogic QLA2XXX Fibre Channel Support
Qlogic FAS SCSI
OpenCores 10/100 Mbps Ethernet MAC
PCI NE2000 and clones support (see help)
QLOGIC QLCNIC 1/10Gb Converged Ethernet NIC Support
QLogic QLA3XXX Network Driver Support
QLogic QLGE 10Gb Ethernet Driver Support
RDC R6040 Fast Ethernet Adapter
RealTek RTL-8129/8130/8139 PCI Fast Ethernet Adapter
RealTek RTL-8139 C+ PCI Fast Ethernet Adapter
Realtek 8169 gigabit ethernet
Realtek PCIe GBE Family Ethernet Adapter
SEEQ8005
SMC 9194
SMC 91Cxx PCMCIA
SMC EtherPower II
SMC Ultra
SMSC LAN9420 PCI ethernet adapter
STMicroelectronics 10/100/1000 Ethernet driver
ServerEngines' 10Gbps NIC - BladeEngine
SiS 900/7016 PCI Fast Ethernet Adapter
SiS190/SiS191 gigabit ethernet
Silan SC92031 PCI Fast Ethernet Adapter driver
Solarflare SFC4000/SFC9000-family
Sun Cassini
Sun GEM
Sun Happy Meal 10/100baseT
Sun Neptune 10Gbit Ethernet
Sundance Alta
TI ThunderLAN
Tehuti Networks 10G Ethernet
ULi M526x controller
VIA Rhine
VIA Velocity
WD80*3
Winbond W89c840 Ethernet
Xircom 16-bit PCMCIA
Zenith Z-Note
nForce Ethernet

Qlogic QLA 1240/1x80/1x160 SCSI
SYM53C8XX Version 2 SCSI
Symbios 53c416 SCSI
Tekram DC390(T) and Am53/79C974 SCSI
Tekram DC395(U/UW/F) and DC315(U) SCSI
Trantor T128/T128F/T228 SCSI
UltraStor 14F/34F
UltraStor SCSI
VMware PVSCSI driver
Workbit NinjaSCSI-32Bi/UDE
iSCSI Boot Sysfs Interface

USB support

CF/PCMCIA support for SL811HS HCD
ChipIdea Highspeed Dual Role Controller
Cypress C67x00 HCD
Datafab Compact Flash Reader
Freecom USB/ATAPI Bridge
ISD-200 USB/ATA Bridge
ISP 1760 HCD
ISP116X HCD
ISP1362 HCD
Lexar Jumpshot Compact Flash Reader
OXU210HP HCD
Olympus MAUSB-10/Fuji DPC-R1
R8A66597 HCD
SL811HS HCD
SSB usb host driver
SanDisk SDDR-09 (and other SmartMedia, including DPCM)
SanDisk SDDR-55 SmartMedia
USB 2.0
USB Mass Storage
USB Monitor
USBAT/USBAT02-based storage
xHCI HCD (USB 3.0)

Block devices

Compaq SMART2
Compaq Smart Array 5xxx
Mylex DAC960/DAC1100 PCI RAID Controller
Normal floppy disk

USB Network Adapters

ASIX AX88xxx Based USB 2.0 Ethernet Adapters
CDC EEM
CDC Ethernet support (smart devices such as cable modems)
CDC NCM
Conexant CX82310 USB ethernet port
Davicom DM9601 based USB 1.1 10/100 ethernet devices
GeneSys GL620USB-A based cables
Host for RNDIS and ActiveSync devices
Intellon PLC based usb adapter
MosChip MCS7830 based Ethernet adapters
NetChip 1080 based cables (Laplink, ...)
Option USB High Speed Mobile Devices
Prolific PL-2301/2302/25A1 based cables
SMSC LAN75XX based USB 2.0 gigabit ethernet devices
SMSC LAN95XX based USB 2.0 10/100 ethernet devices
Samsung Kalmia based LTE USB modem
Sharp Zaurus (stock ROMs) and compatible
Simple USB Network Links (CDC Ethernet subset)
USB CATC NetMate-based Ethernet device
USB KLSI KL5USB101-based ethernet device
USB Pegasus/Pegasus-II based ethernet device
USB RTL8150 based ethernet device

Promise SATA SX8

IEEE 1394 (FireWire) support

Legacy alternative FireWire driver stack
Storage devices (SBP-2 protocol)

Other devices

Microsoft Hyper-V Utilities driver
Microsoft Hyper-V client drivers
Microsoft Hyper-V virtual block driver
Microsoft Hyper-V virtual network driver
Microsoft Hyper-V virtual storage driver

The **Disk Actions** chapter explains basic disk actions.

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version**.

The **Technical Information** chapter gives technical information on **Supported CD and DVD Recorders** **and** **List of Hardware Devices Supported in the Startup Mode** and another useful technical information.

Follow this link to obtain **R-Drive Image Contact Information and Technical Support**

VIII R-Drive Image OEM kit

Available in the **Commercial** license.

R-Drive Image OEM kit allows system integrators, consultants, and computer assemblers to create special system recovery disks/devices and include them with their fully assembled computer systems. The license for **R-Drive Image OEM kit** allows its licensee to distribute unlimited number of those system recovery devices with its computers provided that a an unregistered copy of **R-Drive Image OEM** is pre-installed on each distributed computer and the **R-Drive Image** software icon is placed on the end-user desktop.

The end user of such computer systems can use those system recovery disks to restore the system files, registry keys, installed programs, etc., to a state the computer system or hardware was initially set up (a fresh setup).

R-Drive Image OEM kit is intended only to restore the original system disk configuration as part of a service or maintenance procedure. Use of this kit to install software on any other computer or system is strictly prohibited.

R-Drive Image OEM kit consists of three components:

R-Drive Image System Recovery Media Creator (R-Drive Image SRMC)

It can create a special **R-Drive Image System Recovery OEM** media device, that is, startup disk(s) that may be used to restore a computer system after a complete failure when it requires a complete fresh setup (system recovery disks). It may be a CD/DVD/USB disk, ZIP drive or any other removable media device.

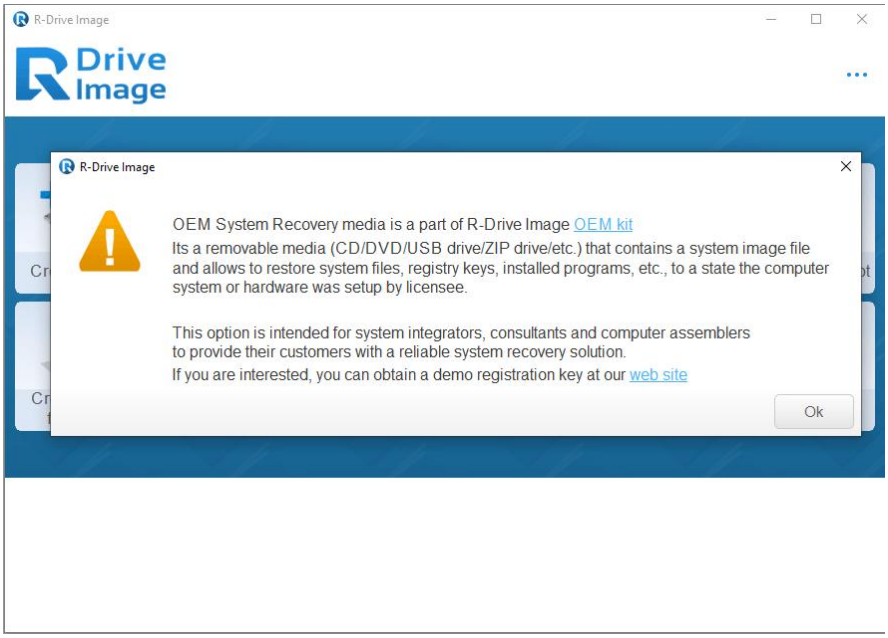
R-Drive Image System Recovery OEM

Actually, **R-Drive Image System Recovery OEM** is a startup device containing a special **R-Drive Image** startup version with a master disk image. This **R-Drive Image** startup version restores data from a master image only to a hard drive or logical disk of a target system.

R-Drive Image OEM

This is a **R-Drive Image** license similar in its functionality to a conventional **R-Drive Image**. **Note:** with one exception: it does not work with cloud services, including copying the OEM message from a cloud service.

Note: You need to obtain an OEM license to activate the OEM functionality in **R-Drive Image**. You may obtain a free demo key on the R-Drive Image site to test that functionality. **OEM System Recovery Media** created in the demo mode will perform all the required operations but without actual data recovery. If you want to disable the OEM functionality after tests, simply enter that free demo key once again. The the OEM functionality will disappear.



When you enter the OEM registration key, this message disappears and the OEM recovery system can be created.

R-Drive Image SRMC Features:

- The master image can be placed on the startup disk(s) or on a separate device.
- Flexible data restoring: **R-Drive Image** may automatically find the disk to restore data to, or the user can manually select places for data recovery.

Creating **OEM System Recovery Media** consists of two steps:

1. **Creating the master image of the system**
2. **Creating the startup media**

When the user will start the system up with such disk(s), **R-Drive Image** will either restore the system automatically, or ask the user to specify the source and target for system requirement, depending on the options specified during the disk creation.

The **Disk Actions** chapter explains disk actions such as:

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Create an Image from Files**
- **Copy Files to a Folder**
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Manage partition and logical disks**
- **Mount an Image as a Virtual Logical Disk** (read-only)
- **Unmount Virtual Logical Disks**
- **Check an Image File** to check an existing image file

The **Startup Version** chapter explains how to perform disk actions using the **R-Drive Image Startup Version** such as:

- **Create Startup Disk**
- **Load Computer into Startup Mode**
- **Restore Data From an Image**
- **Create an Image**
- **Disk to Disk Copy**
- **Create an Image from Files**
- **Partition Manager**
- **Check an Image File**
- **Network Drives**

The **Scheduled Actions, Command Line Operations, and Scripting** chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

- **Scheduler and Unattended Actions**
- **Scripting and Command Line Operations**
- **Rotation schemes (backup sets)**

The **R-Drive Image Features** topic tells more about **R-Drive Image**.
Follow this link to obtain **R-Drive Image Contact Information and Technical Support**.

8.1 Create a Master Image

A master image is the image of the hard drive/logical disk or partition which you will used to restore the system.

The safest way to create a master image for a system rescue disk is to set the system up, turn it off, then start it up with the R-Drive Image startup version and write the master image file either to a network drive or to a USB disk. Please note that you have to connect the USB disk before you start up the system.

If you are going to create the master image in the same way as a regular image, it is necessary to understand how **OEM System Recovery Media** searches for the target drives/partitions to restore data to.

Hard drives: **OEM System Recovery Media** identifies drives by their identity info (vendor+model+revision). So, when creating the master image, avoid connecting the source drive to a non-standard drive controller. It may change the drive name and/or size, making it impossible for **OEM System Recovery Media** to identify the target drive correctly when restoring data.

Partitions: **OEM System Recovery Media** identifies partitions by their offset+size and, with lesser priority, by their file system information (file system type and label). if **OEM System Recovery Media** find one object which properties coincide with those in the master image, it believes that it has found the target partition. If there are several same partitions on different drives, **OEM System Recovery Media** selects the target partition by its HDD identity info.

Note: When creating the master image, specify the Image split size option on the **Image Options** panel according to the requirements of the target where you want to store the master image and do not pay attention to the size requirements of the media type you plan to use. When producing the startup disk, **R-Drive Image** will split the image accordingly.

Do not leave the master image on a cloud service, it will not be available to **R-Drive Image OEM**.

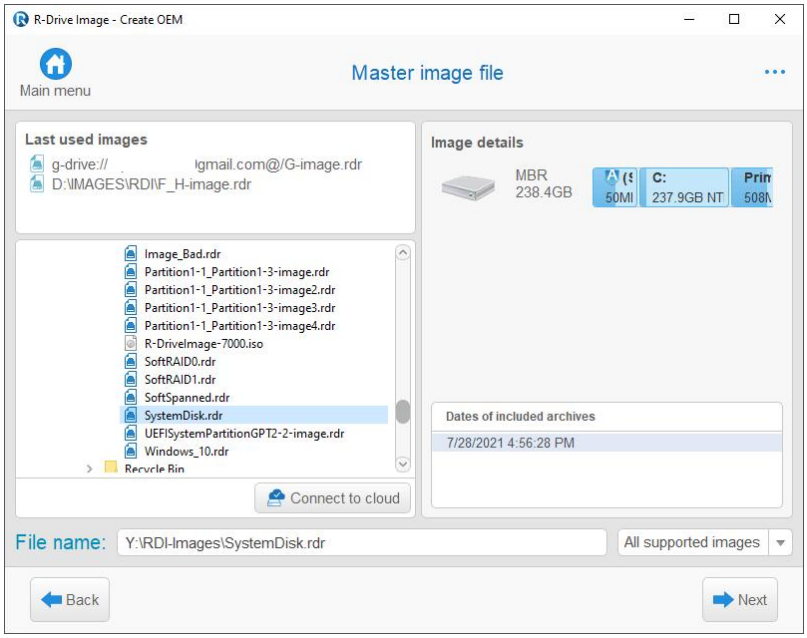
8.2 Create Startup Media

When the master image of the system is created, you may create the startup data recovery disk(s).

To create a startup data recovery disk(s):

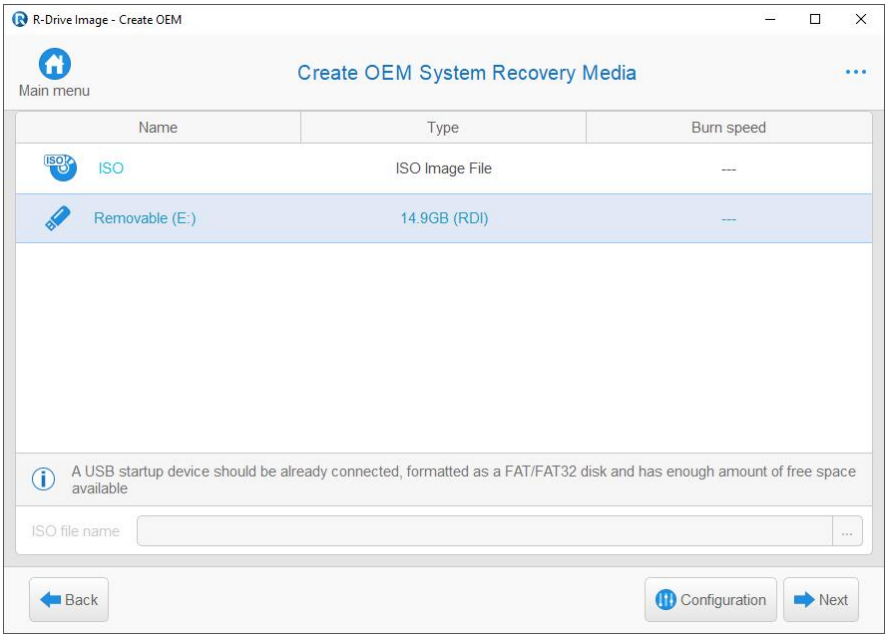
1 **Click Create OEM System Recovery Media on the Action Selection panel**

2 **Select the file with the master image on the Master image file panel and click the Next button**



When you click the file, you may view its content below.

3 **Select the device you want to use to create the the system recovery disks on the Create OEM System Recovery Media panel and click the Next button**



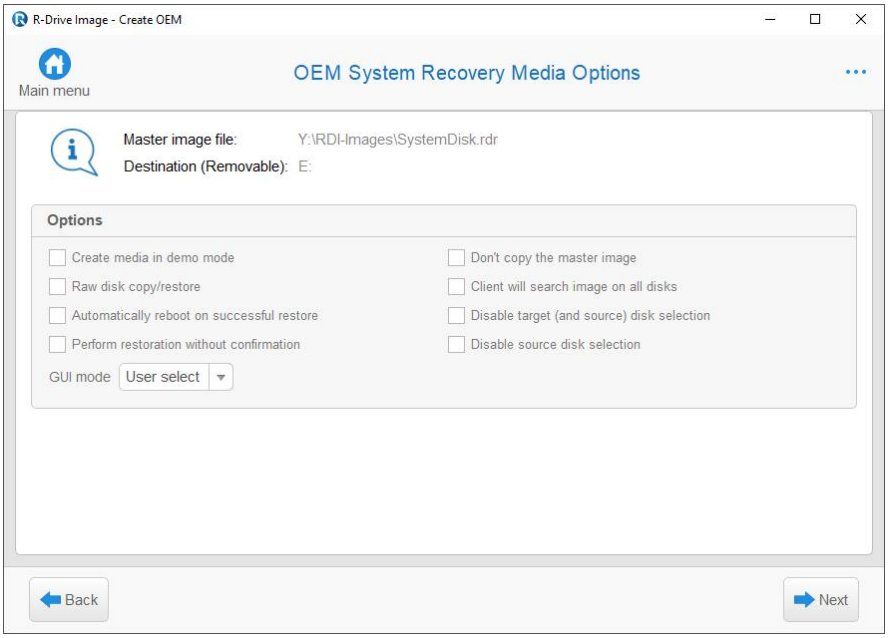
If you have problems with starting the computers up from the **R-Drive Image** startup disks, select **configure startup media troubleshooting options**. Then the **Startup Media Troubleshooting Options** panel will appear. You may configure these options to eliminate those problems.

Those options will help you if you have problems with starting you computer up from the **R-Drive Image** startup disks.

Startup Media Troubleshooting Options

Bootable media type	You may select either a Linux-based or WindowsPE based startup version.
Display kernel startup messages	if this checkbox is enabled, **R-Drive Image** displays all startup messages. That may be useful to locate the source of the problem when your system hangs during **R-Drive Image** startup.
Trace drivers loading	Select this checkbox when you want to see loading drivers to find which one may lock the system.
Disables ACPI Disables APIC	Select these checkboxes when your system detects some hardware incorrectly during **R-Drive Image** startup and displays messages like: `hda: lost interrupt`
Disables USB devices support	Select these checkbox if your system experiences problems with USB devices during **R-Drive Image** startup.
Disables SCSI devices support	Select these checkbox if your system experiences problems with SCSI devices during **R-Drive Image** startup.
Disables PATA devices support	Select these checkbox if your system experiences problems with Parallel ATA devices during **R-Drive Image** startup.
Disables PCMCIA devices support	Select these checkbox if your system experiences problems with PCMCIA devices during **R-Drive Image** startup.
Disables DMA for all IDE disk drives	Select these checkbox if your system experiences problems with IDE disks during **R-Drive Image** startup.
IRQ polling mode	Select this checkbox if **R-Drive Image** does not recognize a device although it is in the supported device list.
Default clocksource	Select this checkbox to select computer default clocksource.
PCI BIOS	Select an appropriate option if your system experiences problems with computer hardware.
ACPI OSI	An option informing the computer BIOS which OS type is going to start. Default is Linux, but it may cause the computer BIOS to drop support for some computer hardware. Change this option if the startup version cannot recognize some computer hardware, or it malfunctions.
Disable specified drivers	Enter the drivers that may cause system lock. Driver names should be separated by a space or comma.

4 Specify the options for the system recovery disks on the OEM System Recovery Media Options panel and click the Next button



OEM System Recovery Media Options

Media:	Select.the media type you would like to have. **R-Drive Image** will automatically split the data accordingly.
Options	
If this check box is selected	
Create media in demo mode	**R-Drive Image** will create a demo recovery disk. During the recovery process, it will be possible to perform all the required operations without actual data recovery. The license count will not be decremented. .
Don't copy the master image	**R-Drive Image** will create the startup version only without copying the master image to the media. Select this option if you want to store the master image separately from the **R-Drive Image** startup version. The master image may be stored on a hidden partition of the hard drive. Do not store the master image on a cloud service, it will not be available.
Client will search image on all disks	**R-Drive Image** will search for the master image on all disks (in their root only) in the system rather than on the startup disk only.
Disable target (and source) disk selection	the user will not be able to specify the target object to which the data will be restored if **R-Drive Image** could not find the target for data recovery automatically. If this option is clear, the user could click the **Back** button on the **Confirm Operation** panel and manually select the target to which the data will be restored. When this option is selected, the Disable source disk selection option will also be selected.
Disable source disk selection	the user will not be able to select the source disk/partition in the master image manually. If this option is clear, the user could click the **Back** button on the

	Confirm Operation panel and manually select the source for data recovery in the image.
Raw disk copy/restore	**R-Drive Image** will enforce the Raw disk copy/restore as the first option during data restoring.
Automatically reboot on successful restore	**R-Drive Image** will open the disk tray for the data recovery CD disc, and restart the system automatically upon data recovery.
Perform restoration without confirmation	**R-Drive Image** will not require action confirmation from the user. If **R-Drive Image** finds the drive/disk corresponding to the master image, it will start data recovery automatically. If not, either an error message will appear, or the user will be asked about the target for data recovery, depending on the Disable target disk selection option.
GUI mode	**R-Drive Image** will start in the following GUI mode: GUI, GUI/Safe, GUI/SVGA, TUI

If you want to start data recovery automatically, select the two last check boxes.

5 Click the Start button on the Processing panel

> R-Drive Image will start creating the startup data recovery disk(s)

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