User's Manual

R-Drive Image

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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**.

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- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
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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:
- **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**
- **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**
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The **Technical Information** chapter gives technical information on

- **Updates**
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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**
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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 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 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**, **Commercial**, **OEM System Recovery Media** versions). 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** and **OEM System Recovery Media** versions.

- 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**, **Commercial**, and **OEM System Recovery Media** versions.
- **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 versions can run:

- All versions: Windows 11/10/8.1/8/7/Vista/XP/2000 Windows (including 64 bits editions).
- Corporate, Technician, Commercial versions: 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.
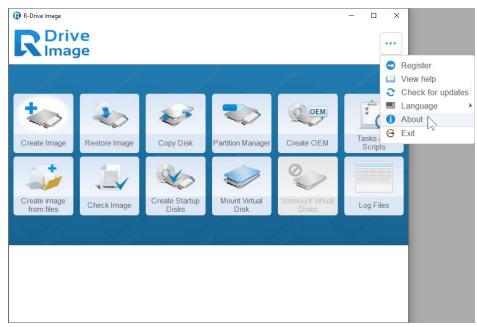
Tech. Support: support@r-tt.com

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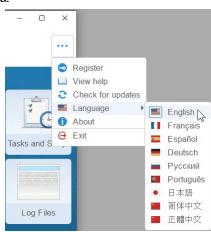
To obtain a registration key directly from R-Drive Image,

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.

This product licensed to:

Licensee: Tester 1
R-TT Testing Team
test@
Product: R-Drive Image
License Type: Corporate
Number of licenses: 1

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.

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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.
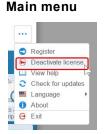
For example, you have **R-Drive Image** installed on Computer A. You may transfer the license from Computer A to Computer B, and **R-Drive Image** will work on Computer B. But it won't run on Computer A under this license anymore, even if you deactivate this license on Computer B and remove **R-Drive 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 <u>our customer support team</u> and they will help you deactivate the license for computers that you do not have access to.

II   Disk Actions

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 H**elp** 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**
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- **Linux Logical Volume Manager Volumes**

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

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- **Support for Various Disk Partition Schemes and File Systems**
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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**

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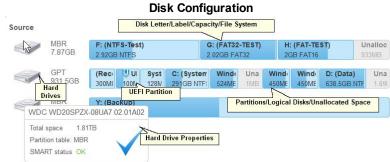
1   Click **Create image** on the **Action Selection** panel

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

   R-Drive Image

   Analyzing partition D:\ ...

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

   ⊟ *More information...*

Disk Configuration

Source

Disk Letter/Label/Capacity/File System

| MBR 7.87GB | F: (NTFS-Test) 2.92GB NTFS | G: (FAT32-TEST) 2.02GB FAT32 | H: (FAT-TEST) 2GB FAT16 | Unalloc 933MB |

| GPT 931.5GB | (Rec) 300MI | U UI 100M | Syst 128M | C: (System 291GB NTF: | Wind 524ME | Una 1MB | Wind 450ME | Wind 450ME | D: (Data) 638.5GB NTF | Una 1.69I |

Hard Drives

UEFI Partition

MBR   Y: (Backup)

WDC WD20SPZX-08UA7 02.01A02

Total space   1.81TB
Partition table: MBR
SMART status OK   ✓

Partitions/Logical Disks/Unallocated Space

Hard Drive Properties

   ⊟ *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. Drugging the cursor over the drive will show a tooltip explaining that warning.

Source

| GPT 931.5GB | (Reco 300MB | U UE 100ME | Syste 128ME | C: (System) 291GB NTFS | Windo 524MB |

| MBR | A E: (System Res | I: (System) 297.5GB NTFS |

SAMSUNG HM320HJ 2AK10001

Total space   298GB
Partition table MBR
SMART status Alert   ⚠

Health Status: BAD
[01] Read Error Rate

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 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**, **Commercial**, and **OEM System Recovery Media** versions).

⊟ *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**, **Commercial**, and **OEM System Recovery Media** versions support this format.
VDI	A common VDI for the VirtualBox virtual machine. Only the **Corporate**, **Technician**, **Commercial**, and **OEM System Recovery Media** versions 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 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.

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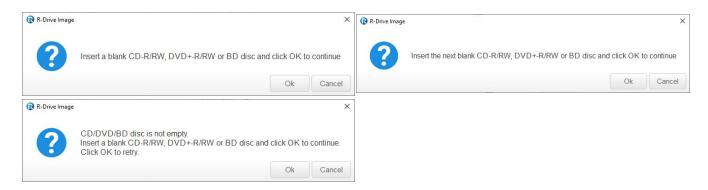
If you mistakenly insert a non-empty CD-R/RW disc, the **CD-R/RW disc is not empty...** message will appear. Change the disc to another empty CD-R/RW disc and click the **OK** button.

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.

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**
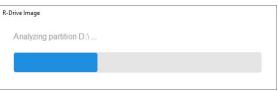
2.2   Create an Image from Files

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.

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**, or any other devices with removable storage. 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**, or any other devices with removable storage. 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.

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

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. Drugging the cursor over the drive will show a tooltip explaining that warning.

Warnings will also appear in confirming e-mails for <u>scheduled actions</u>.

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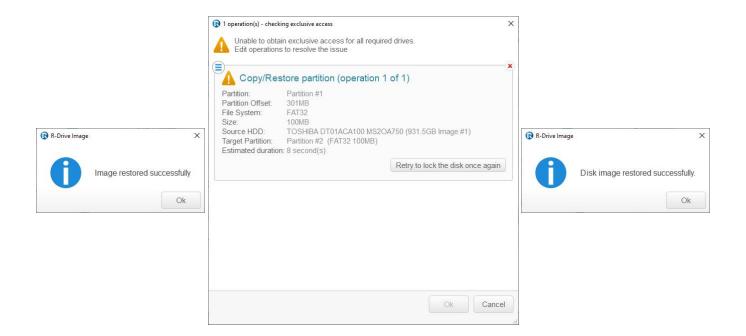
    When the image is restored, the **Image restored successfully** message will appear.

    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

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. Drugging 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:

Entire hard drives: 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.

Entire hard drive

To convert 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 Convert to GPT/MBR on 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 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.
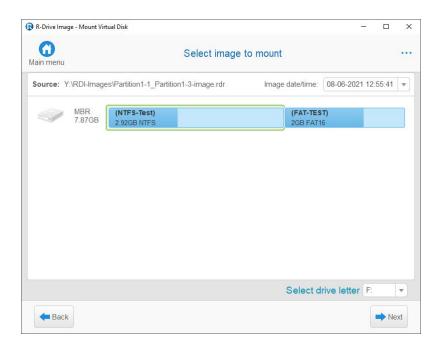
If you select an image with incremental or differential data backup, select the date and time of image creation and click the **Next** button.

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...*

Selected Object

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.
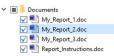
An importance notice about marking a folder.
If you mark all files in the folder but not the folder itself, its mark will be the following:

The folder was not marked)
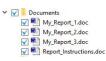
The batch will look like:

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**
- **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.

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.
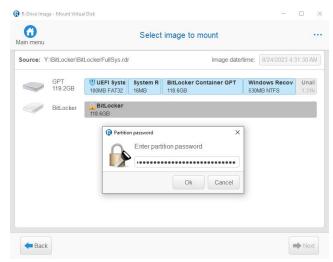
To unlock a system drive with a BitLocker partition,

BitLocker System Drive Encryption

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

BitLocker System Drive Encryption
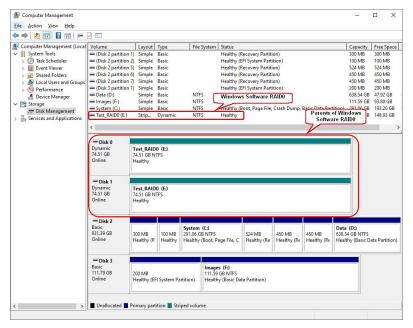
> **R-Drive Image** will unlock the partition

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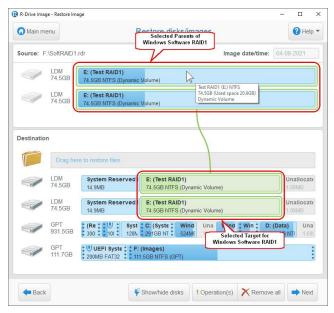
Data Restore from an Image of a Software RAID, Mirror, and Spanned Volume

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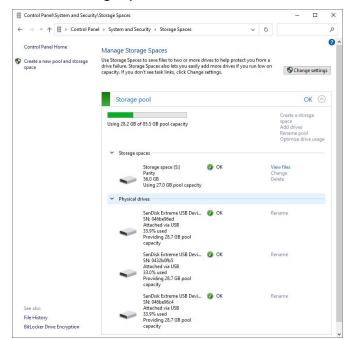
When drives from a storage pool are connected to a Windows computer, it automatically detects them and assembles storage spaces accordingly.

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
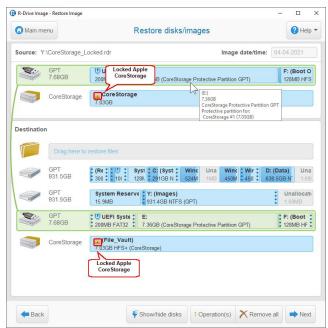
In this case the volume will be image without encryption

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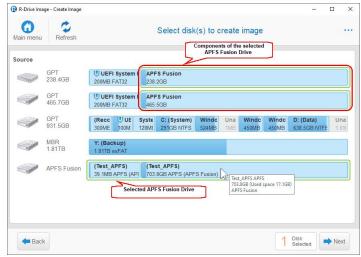
In this case the result will be an encrypted volume on the place of the previous encrypted volume.

Apple Fusion Drive Imaging

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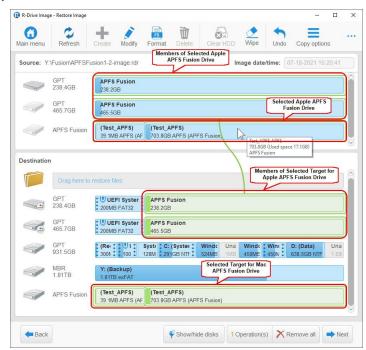
Apple Fusion Drive

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.
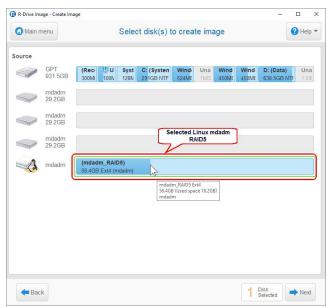
Linux mdadm RAIDs

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.

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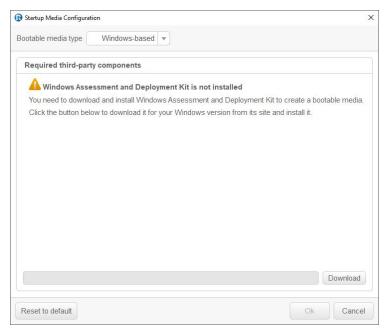
It may be a USB flash disk, ZIP drive, etc. It should be FAT/FAT32 formatted and connected to the computer before selecting **Create Startup Disks** on the **Action Selection** panel. If there is some data on that device, it will not be overwritten.

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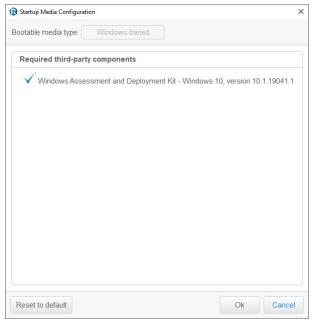
1 Select **Create Startup Disks** on the **Action Selection** panel and click the Next button.

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,

return to the Create Sturtup Disk, and click the OK 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**

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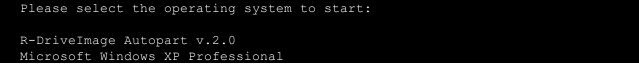
1. Select the file with the image, the object in the image file, select the system disk as the destination as it is described in the [Restore Data from an Image](#) topic. Do not pay much attention to the image file, as it will be eventually discarded. The only important option at this stage is the image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

R-Drive Image window:

Restarting

You are about to restart your computer to continue data restoring in the R-Drive Image startup mode. You will need to repeat the data restoring procedure R-Drive Image could not perform in the Windows mode. We recommend you to read Restoring Data to a System or other Locked Disk Help section before you proceed.

⚠️ PLEASE PAY YOUR ATTENTION! THE LETTERS ASSIGNED TO LOGICAL DISKS IN STARTUP MODE CAN BE DIFFERENT FROM THE LETTERS ASSIGNED IN WINDOWS OS. A MISTAKE CAN LEAD TO LOGICAL DISK OVERWRITING AND DATA LOSS

Restart now?

📖 Help | Yes | No

1 operation(s) - checking exclusive access

⚠️ Unable to obtain exclusive access for all required drives. Edit operations to resolve the issue

⚠️ **Copy/Restore disk (operation 1 of 1)**

Model: VBOX HARDDISK 1.0
Connected: Image #1
Size: 120GB
Target HDD: VBOX HARDDISK 1.0 (120GB #1)
Copying mode: Copy all partitions onto original places
Estimated duration: 6 minute(s) 13 second(s)

Retry to lock the disk once again

Ok | Cancel

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:

```
                    Startup Options

 R-Drive Image GUI (Graphic Mode)
 R-Drive Image GUI (Safe Mode)
 R-Drive Image GUI (Safe SVGA Mode)
 R-Drive Image TUI (Text Mode)




            Automatic boot in 3 seconds...

Use the cursor keys to select which entry is highlighted.
Press enter to boot the selected entry.
```

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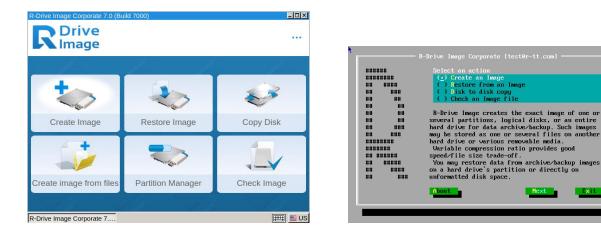
You need to enter a Computer Activation Code to proceed further. You may obtain it by either going to User Console on another computer or by scanning the QR-code by your phone.

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**
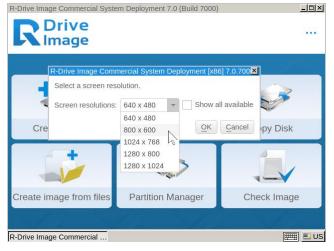
Specifying video settings for the GUI startup version.

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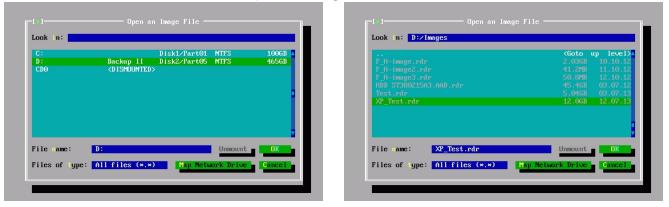
1 **Restart your computer in the startup mode**

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/restore options ─┐

 Source disk VBOX HARDDISK1.0 ( 102673 MB Image)
            has 1 partitions
 Target disk is VBOX HARDDISK1.0 ( 102673 MB)

 HDD Copy Method
  ( ) Raw disk copy
  (•) Copy all partitions onto original places
  ( ) One partition after another
  ( ) Expand/Shrink partition to whole disk
  ( ) Expand/Shrink partition to whole disk (Fixed active partition)



        [About]      [Back]      [Next]      [Exit]
```

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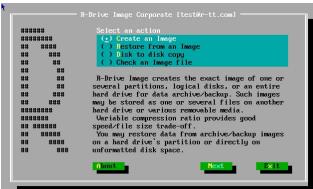
1 **Restart your computer in the startup mode**

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 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.

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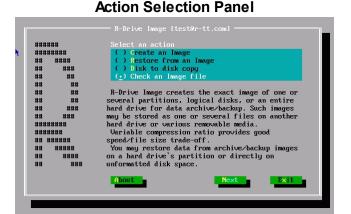
This action is available on the GUI version only. Go to the the **Partition Manager** help page for instruction and to the network drives help If necessary.

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**
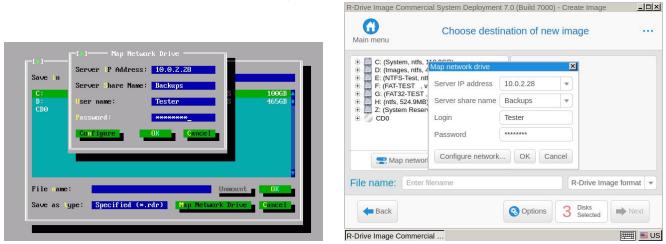
5.9   Network Drives

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

<div align="center">

Map Network Drive

</div>

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**
- **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.**

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.

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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
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
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**, **Commercial**, and **OEM System Recovery Media** versions)

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** versions:

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*
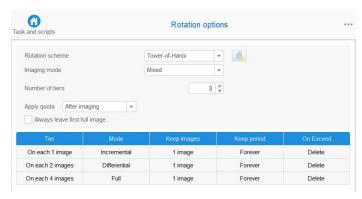
Keep Daily images	Specifies the number of days for which **R-Drive Image** will keep Daily image files. Then the files will be removed.
Keep Weekly images	Specifies the number of weeks for which **R-Drive Image** will keep Weekly image files. Then the files will be removed.
Keep Monthly images	Specifies 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 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**, **Commercial**, and **OEM System Recovery Media** versions.

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

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	""	"
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="<Sys DumpFile>"`	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="<UserNa me>"`	Mandatory	Specifies the user name for registration.
`-reg-key="<Registr ationKey>"`	Mandatory	Specifies the register key for registration.
`-reg-company="<Use rCompany>"`	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 SP0411NTW100-11` `( ` 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_lab`
`el=Part2+part_ofs=16778264576+part_mounted=G:\+hdd_name=SAMSUNG `
`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=<AppBefore Back>`	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=<AppAfterB ack>`	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=<AppBefore SnapShot>`	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=<AppAfterS napShot>`	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&#32;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&#32;
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=<PartitionOfset>`	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**
- **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
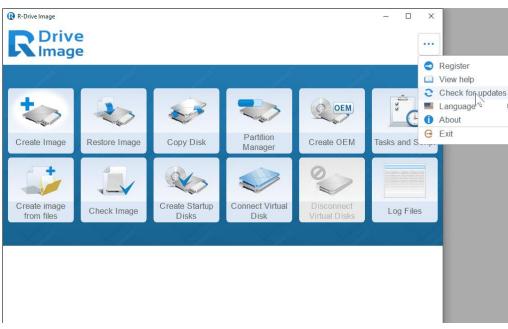
R-Drive Image may automatically check for available updates. When it finds an update it shows a widget on its panel. You may start updating by clicking this widget.

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®
- Dropbox®.

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
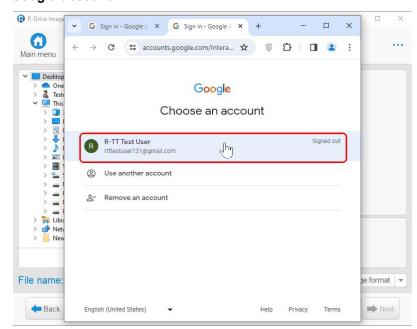
2 Select the service you want to connect to and double-click it

Connect to cloud window
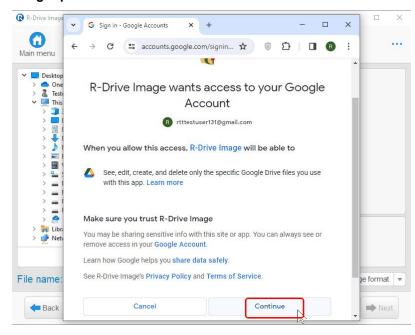
A default browser window will appear.
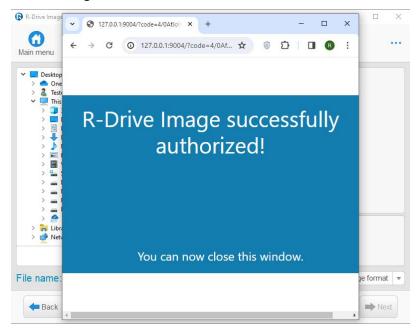
3   Select your Google account and log in to it

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
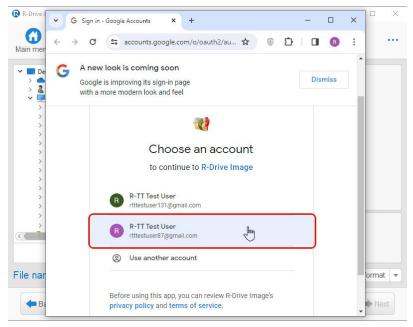
You may create another account in the same cloud service using **Connection manager**.

1   Click the Add connection button and select the service you want to connect to

Add connection window

1   Log in to another Google account

Another Google account

>   Another connection will appear in Connection manager

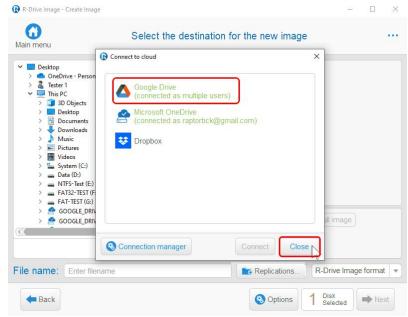**Connection manager with two Google accounts**

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

Google Drive® is a trademark of Google Inc. Use of this trademark is subject to Google Permissions.
Microsoft OneDrive® is a trademarks of the Microsoft group of companies.
Dropbox® is a trademark of Dropbox, Inc.
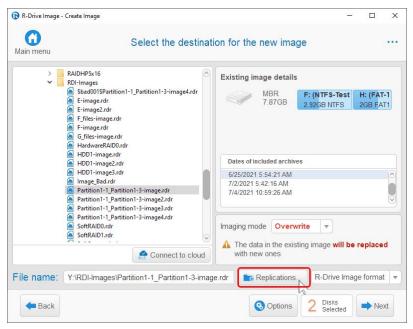
7.3   Image Replications

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.

7.4 Logging

R-Drive Image stores logs of several last actions. You may see them on the **Executed operation(s) log** panel.

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.

7.5 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}
```

7.6 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
FAT (16/32), NTFS	Byte-by-byte and Useful Information Only	Entire partition and Selected folders and files.	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)
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)
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)

Little and Big Endian variants of UFS1/UFS2 and Ext2/Ext3/Ext4 FS (Linux)	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)
Unknown	Byte-by-byte	Entire partition	No	No

* For non-MBR/GPT disk partition schemes, partition resizing can be done within existing disk partitioning schemes.

7.7   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.

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.

The main features of these file formats are presented in the table below:

Features	RDR	VHD/VHDX	VMDK	VDI
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

Additional file formats that can be opened "read-only"

Extensions	Description	Licenses
dmg	[Apple Disk Image](#)	All
e01/(ewf)	[Expert Witness File Format](#)	**Commercial** and **OEM System Recovery Media**
aff	[Advanced Forensic Format](#)	**Commercial** and **OEM System Recovery Media**

7.8 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.

7.9   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**

7.10   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 **System Recovery Media Creator** version.

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
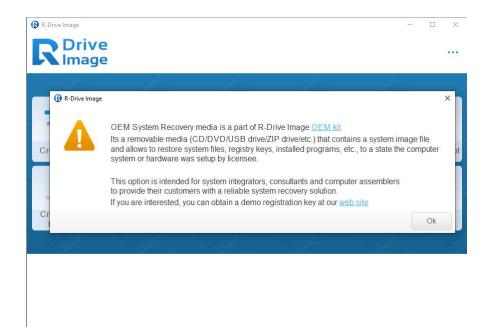
Actually, **R-Drive Image System Recovery OEM** is a startup device containing a special **R-Drive Image** startup version with a master disk image. This **R-Drive Image** startup version restores data from a master image only to a hard drive or logical disk of a target system.

R-Drive Image OEM

This is a **R-Drive Image** version similar in its functionality to a conventional **R-Drive Image**.

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.

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.
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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