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, USB removable storage device, or 6 floppy disks) to restore system partitions. It connects 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 partition layouts. See Support for Various Disk Partition Schemes and File Systems for details.

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

The Disk Actions chapter explains disk actions such as:

- Create an Image of a partition, logical disk, or entire hard drive
- Restore Data from an Image
- Copy Disk to Disk to make an exact copy of one disk on another
- Connect an Image as a Virtual Logical Disk (read-only)
- Disconnect 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:

- Windows Software RAIDs, Spanned, and Other Volumes
- Windows Storage Spaces
- Mac 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
- Scripting and Command Line Operations
- Backup sets
The **Technical Information** chapter gives technical information on

- Logging
- Creating consistent point-in-time backups
- Support for Various Disk Partition Schemes and File Systems
- 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**

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### 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, Iomega Zip or Jazz disks, including 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.

**Note:** The current version has a limited support for dynamic disks or other non-MBR/GPT partition layouts. 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 connect that image as a read-only virtual disk and copy those files directly from the image using Windows Explorer or any other file utility.

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 connecting 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 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 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.


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, USB removable storage device, or 6 floppy disks) 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.

The file system of the restored disk can be converted to another one (FAT16 to FAT32 and vise versa.).

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 on another one.

An image can be connected 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.

Support for backup sets. A backup set 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. 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.

R-Drive Image OEM System Recovery Media creation: special 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).

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 Contact Information and Technical Support

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

- **Product Site:** [http://www.drive-image.com/](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](http://www.r-tt.com/Support_request.html)

Drive Imaging & Backup FAQ: [http://www.r-tt.com/Drive_Imaging_Backup_FAQ.shtml](http://www.r-tt.com/Drive_Imaging_Backup_FAQ.shtml)

R-tt Forum: [http://forum.r-tt.com](http://forum.r-tt.com)

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.

### 1.3 R-Drive Image Registration

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**.

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.


**To obtain a registration key,**

- go to the **Buy On Line** page at the **R-TT web site**.

**To register with a registration key,**

1. **Click the Register button on the Trial Version panel**
   - The **Please register R-Drive Image** message will appear.
2 Enter the registration information and click the OK button

The panel will change its name to Registered Version and show the registration information.

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.
II Disk Actions

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

![Action Selection Panel]

Changing the program language
You may select the language of R-Drive Image panels. To do so, click the About button and select the required language using the Language button on the About R-Drive Image dialog box.

To start a required action, select

- **Create an Image** to start creating an image of a partition, logical disk, or entire hard drive
- **Restore from an Image** to start restoring data from an image
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Connect an Image as a Virtual Logical Disk** to start connecting an image as a read-only virtual disk
- **Disconnect Virtual Logical Disks** to start disconnecting virtual logical disks
- **Check an Image File** to check an existing image file

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

- **Windows Software RAIDs, Spanned, and Other Volumes**
- **Windows Storage Spaces**
- **Mac RAID**
- **Linux Logical Volume Manager Volumes**

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

- **Create Startup Disk**
- **Restoring Data to a System or Other Locked Disk**
- **Support for Various Disk Partition Schemes and File Systems**
- **Disk to Disk Copy Using the Startup Disks**
The **Scheduled Actions, Command Line Operations, and Scripting** chapter explains how to start disk actions automatically at scheduled times/events and create scripts that can be performed from a command line.

- **Scheduler and Unattended Actions**
- **Scripting and Command Line Operations**
- **Backup sets**

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

- **Creating consistent point-in-time backups**
- **Support for Various non-MBR/GPT Partition Layouts**
- **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**

## 2.1 Create an Image

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

To create an image:

1. **Click Create an Image on the Action Selection panel**

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

   ![Progress message](image)

   Then the **Partition Selection** panel will show the configuration.

   ![Disk Configuration](image)

   - **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.]===================
! ST3000DM001-9YN166 (2.72TB #1): Health Status: CAUTION
[05] Reallocated Sectors Count: 64736
! ===================[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 **Partition Selection** panel and click the Next button

![More information...](image)

**Selected Objects**
- Primary partition
- Logical disk
- Unallocated space
- Other partition type

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).
3 Select the place on the Image Destination 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.

If you try to overwrite an existing image file, the Imaging Mode panel will appear. You may either overwrite the file or add to the existing image.

<table>
<thead>
<tr>
<th>Imaging Mode Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Append changes differentially to the existing image</td>
<td>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.</td>
</tr>
<tr>
<td>Append changes incrementally to the existing image</td>
<td>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...</td>
</tr>
</tbody>
</table>
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.

| Replace the existing image file with a new one | All data in the image file will be replaced with the current one. |

If you choose to overwrite the file, the **You are about to overwrite an existing image file...** warning will appear on the Imaging Mode panel. You may either overwrite the file or select another file name for the image.

If you try to append data to a password-protected image file, the **Password prompt...** message will appear. Enter the password and click the **OK** button.

4. **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)

   - **Image options**

<table>
<thead>
<tr>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image name:</td>
<td>Shows the file name for the image. You cannot change the file name on this panel.</td>
</tr>
<tr>
<td>Check the image file immediately upon its creation</td>
<td>Select this option if you 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.</td>
</tr>
</tbody>
</table>
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 vice versa.

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.

 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.

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.

You may protect your image file with a password. Note: This feature provides a relatively moderate protection against conventional unauthorized access.

You may attach a text description to the image for annotation. Maximum length of the description is 255 characters.

Specify backup options on the Backup Options panel and click the Next button

You may specify backup options on this panel. They are used to create consistent point-in-time backups.

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.

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.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>If this option is selected, <strong>pagefile.sys</strong> and <strong>hibernate.sys</strong> files are excluded from the image of the system disk.</td>
<td><strong>R-Drive Image</strong> will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.</td>
</tr>
<tr>
<td>R-TT Volume Snapshot Service</td>
<td><strong>R-Drive Image</strong> will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.</td>
</tr>
<tr>
<td>Notify system applications</td>
<td>If this check box is selected, the snapshot provider, if it supports this feature, notifies system applications that a snapshot is being taken.</td>
</tr>
<tr>
<td>Process priority</td>
<td>These options specify how much computer resources <strong>R-Drive Image</strong> will consume during a backup process.</td>
</tr>
<tr>
<td>Backup Process Priority</td>
<td>Specifies the priority of the backup process. Similar to that specified in Windows Task Manager.</td>
</tr>
<tr>
<td>Use CPU cores</td>
<td>Specifies how many processor cores <strong>R-Drive Image</strong> will use for the backup process.</td>
</tr>
</tbody>
</table>
| 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. |
| 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 application, 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 application, 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"

Save as default Click this button to make the current settings default.
Reset Click this button to reset the current settings default.
Restore defaults Click this button to restore default settings.

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

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 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

**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.

Other devices with removable storage

When the removable disk in the device is full, the Disk is full... message will appear. Change the disk and click the OK button. Follow the device instructions on how to change its disks.

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:

<table>
<thead>
<tr>
<th>Disc</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first disk</td>
<td>filename1.rdr</td>
</tr>
<tr>
<td>The second disk</td>
<td>filename2.rdr</td>
</tr>
<tr>
<td>The third disk</td>
<td>filename3.rdr</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

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.
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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort</td>
<td>Click this button to cancel the action</td>
</tr>
<tr>
<td>Retry</td>
<td>Click this button to try to read the bad sectors once again</td>
</tr>
<tr>
<td>Ignore</td>
<td>Click this button to skip this error and fill the bad sectors with zeros</td>
</tr>
<tr>
<td>Ignore All</td>
<td>Click this button to skip all errors and fill the bad sectors with zeros</td>
</tr>
</tbody>
</table>

2.2 **Restore Data from an Image**

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

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.

To restore data from an image:

1. Click Restore from an 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 Image File Selection panel with the disks/folder structure.
2 Select the file with the image on the **Image File Selection** panel and click the **Next** button.

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

- More information...

<table>
<thead>
<tr>
<th>Objects in Image Files</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram of objects" /></td>
</tr>
</tbody>
</table>

- **Primary partition**
- **Logical disk**
- **Unallocated space**
- **Other partition type**

<table>
<thead>
<tr>
<th>Image with one logical disk</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram of image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Image with two logical disks on one hard drive</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram of image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Image with two logical disks on two hard drives</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram of image" /></td>
</tr>
</tbody>
</table>

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, the **Image Date/Time Selection** panel will appear. 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 what you want to restore: an entire disk/partition or selected folders and file on the **Restore Mode Selection** panel, and click the **Next** button.

Restoring selected files and folders will be explained below in the **Restoring selected files and folders** section.
4 Select the object in the image file on the Image Object Selection panel, select a destination, and click the Next button.

![Image Object Selection panel](image)

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

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

![S.M.A.R.T. warning](image)

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

```
* ================[S.M.A.R.T.]===============
! ST3000DM001-9YN166 (2.72TB #1): Health Status: CAUTION
  [05] Reallocated Sectors Count: 64736
! ================[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.
5 Specify restore parameters on the Restore/Copy Parameters panel and click the Next button

### Restore parameters

#### Restore Options

- **Minimum partition size**
  - 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.

- **Minimum partition size**
  - Minimum partition size that may be allocated for the data in the image. Depends on how much free space is in the data in the image and its file system.
Maximum partition size | Maximum partition size that may be allocated for the data in the image. Depends on the file system of the selected object.
---|---
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.
**Partition type** | You may specify the type of the partition to be restored. Do not change this setting unless you have serious reasons to do so.
- Primary (Active)/Primary/Logical

**File system for the selected partitions** | You may select the file system for the partition to be restored.

**Drive letter for the selected partition** | 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.

**Copy disk signature** | This parameter appears when the Primary (Active) option is selected. If you select this option, **R-Drive Image** will write the disk signature of the source object to the target one. This is necessary for the Windows to properly recognize the startup disk, but the disk signature collision may occur. You'll need to disconnect one of the collided disks to enable your computer start up properly.

---

**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.
<table>
<thead>
<tr>
<th>Disk Actions</th>
<th>Drawback: partition sizes cannot be changed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copy all partitions onto original places</td>
<td><strong>R-Drive Image</strong> copies all partitions to their original places. If <strong>R-Drive Image</strong> detects the drive's geometry correctly, and there is no non-standard loader, it makes the same result as during Raw disk copy.</td>
</tr>
<tr>
<td>Realign partitions</td>
<td><strong>R-Drive Image</strong> 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.</td>
</tr>
<tr>
<td>Expand/Shrink partition to whole disk</td>
<td>If there are empty (not-used) places between the partitions or they occupy less or more space than the target drive, <strong>R-Drive Image</strong> proportionally expands/shrinks them to occupy the entire target drive. Otherwise it is similar to Copy all partitions onto original places.</td>
</tr>
<tr>
<td>Fixed active partition</td>
<td><strong>R-Drive Image</strong> preserves the original offset/size of the active partition (in case the loader has links to it).</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Disk Signature Collision Resolving</th>
<th><strong>R-Drive Image</strong> 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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same signature for both disk</td>
<td><strong>R-Drive Image</strong> 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.</td>
</tr>
<tr>
<td>Different signature on the target disk.</td>
<td><strong>R-Drive Image</strong> 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</td>
</tr>
</tbody>
</table>

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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 add other objects from the same image and restore data to several partitions in one process. Select Add another image object in the Next Selection on the Processing panel and click the Next 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:

<table>
<thead>
<tr>
<th>Disk</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first disk</td>
<td><code>filename1.rdr</code></td>
</tr>
<tr>
<td>The second disk</td>
<td><code>filename2.rdr</code></td>
</tr>
<tr>
<td>The third disk</td>
<td><code>filename3.rdr</code></td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort</td>
<td>Click this button to cancel the action</td>
</tr>
<tr>
<td>Retry</td>
<td>Click this button to try to read the bad sectors once again</td>
</tr>
<tr>
<td>Ignore</td>
<td>Click this button to skip this error and fill the bad sectors with zeros</td>
</tr>
<tr>
<td>Ignore All</td>
<td>Click this button to skip all errors and fill the bad sectors with zeros</td>
</tr>
</tbody>
</table>
Restoring selected files and folders

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

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

5 Mark folders and files to restore on the Select Files to Restore panel and click the Next button

Buttons

Find
Click this button to find a particular file/folder.

R-Drive Image searches for files only among files specified by a File Mask.

Find Next
Click this button to find the next object specified in the Find dialog window.
**Find Previous**
Click this button to find the previous object specified in the Find dialog window.

**File Mask**
Click this button to specify a file mask.

**Up**
Click this button to move highlighting one folder up.

**Folders** panel. Right-click a folder to reach its shortcut menu.
- **Files to wipe**
  - Marked folder (all child objects in this folder are marked)
- **F3**
  - Partially marked folder (some child objects in this folder are marked)

**Files** panel:
- **Screen 1.m4a**
  - File marked to restore

The **Find Results** panel.
Appears when file search has been performed.

**Log** panel:
Ready | Marked 620.14 MB in 29 files in 4 folders | Total 1.31 GB in 187 files in 45 folders

**File search**
You may use the advanced search capabilities of **R-Drive Image** to find necessary files. Click the **Find** button and specify the files to find on the Find dialog box.

Note that a **File Mask** may be applied.

You may also reach the Find dialog box by right-clicking a folder on the Folders pane and selecting an appropriate item in the shortcut menu.
### Find/Mark options

You may specify how to treat specified strings. Please note that **R-Drive Image** stores previously entered search strings.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Files</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> treats specified strings as file names. Use <code>?</code> for one unspecified character and <code>*</code> for an unlimited number of them to specify file masks.</td>
</tr>
<tr>
<td><strong>File Extensions</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> treats specified strings as file extensions.</td>
</tr>
<tr>
<td><strong>Regular Expressions</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> treats specified strings as regular expressions.</td>
</tr>
<tr>
<td><strong>All Files</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> applies <a href="#">Advanced Options</a> to all files.</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Match case</strong></td>
<td>If this check box is selected, <strong>R-Drive Image</strong> makes a case-sensitive search.</td>
</tr>
<tr>
<td><strong>Look in</strong></td>
<td>Specifies where <strong>R-Drive Image</strong> searches for, and marks, files. It can look for them on the Entire disk, From current folder, In the Current folder and subfolders, and in the Current folder only. If From current folder is selected, you may also specify the Direction for the search from the current position in the current folder.</td>
</tr>
<tr>
<td><strong>Find/Mark mode</strong></td>
<td>Specifies what <strong>R-Drive Image</strong> does with the found files. It may: Find all matched files. <strong>R-Drive Image</strong> searches for all files that match the search criteria. The search results appear on the Find Results panel. Find first matched file. <strong>R-Drive Image</strong> stops at the first found file. Mark matched files. <strong>R-Drive Image</strong> marks all found files. Unmark matched files. <strong>R-Drive Image</strong> unmarks all found files. Please note, that when performing a new find and mark/unmark task, <strong>R-Drive Image</strong> does not takes into consideration the previous marked/unmarked state of files. For example, if you first mark all doc files, and then all txt files, all doc files remain marked, too. To unmark them, you should specify doc once again and select Unmark matched files.</td>
</tr>
<tr>
<td><strong>Look at</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Files</strong></td>
<td>If this check box is selected, <strong>R-Drive Image</strong> includes files into a search.</td>
</tr>
</tbody>
</table>
Folders
If this check box is selected, **R-Drive Image** includes folders into a search.

**Direction**
 Specifies search direction from the current position. Available only if **From current folder** is selected in **Look in**.

**Advanced Options**
Size from/up to  
Specifies file size limits.

File Id  
Specifies File Id that **R-Drive Image** assigns to a file.

Date  
Specifies file date boundaries. Files may be Modified/Created/Last Accessed.

Use the **Find Next** or **Find Previous** buttons or shortcut menu commands to repeat the search.

You may use file masks to find files visually. Click the **File Mask** button and specify a file mask on the **Mask** dialog box. You may also use the shortcut menu to reach this dialog box.

**Mask dialog box**

![Mask dialog box](image)

**File mask options**

You may specify options for **All Files**, **File Extensions**, **Files**, and **Regular Expressions**

<table>
<thead>
<tr>
<th>Match case</th>
<th>If this check box is selected, <strong>R-Drive Image</strong> makes a case-sensitive search.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show empty folders</td>
<td>If this check box is selected, <strong>R-Drive Image</strong> will show folders with no files matching the mask.</td>
</tr>
</tbody>
</table>

**Advanced Options**

<table>
<thead>
<tr>
<th>Size from/up to</th>
<th>Specifies file size limits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Specifies file date boundaries. Files may be Modified/Created/Last Accessed.</td>
</tr>
</tbody>
</table>

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 **The file exists** message will appear. Click the necessary button to resume the restore operation.

![The file exists](image)

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**

### 2.3 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 to 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...](image)

   You may select all objects on a hard drive by clicking the hard drive icon. ![Selecting hard drive](image). 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**

   ![Object Selection](image)

   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** will show the **Source is larger than Destination** 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 copying the data.

  ![Selected Object and Destination](image)

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

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

  ![S.M.A.R.T. warning](image)

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

  ```
  * ===============[S.M.A.R.T.]===============
  ! ST3000DM001-9YN166 (2.72TB #1): Health Status: CAUTION
  [05] Reallocated Sectors Count: 64736
  ! ===============[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**

<table>
<thead>
<tr>
<th>Restore parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restore Options</strong></td>
</tr>
<tr>
<td>![Image]</td>
</tr>
<tr>
<td><strong>Minimum partition size</strong></td>
</tr>
<tr>
<td><strong>Maximum partition size</strong></td>
</tr>
<tr>
<td><strong>Free space before</strong></td>
</tr>
<tr>
<td><strong>Partition size</strong></td>
</tr>
<tr>
<td><strong>Free space after</strong></td>
</tr>
<tr>
<td><strong>Partition type</strong></td>
</tr>
<tr>
<td><strong>Primary (Active)/Primary/Logical</strong></td>
</tr>
<tr>
<td><strong>File system for the selected partitions</strong></td>
</tr>
<tr>
<td><strong>Drive letter for the selected partition</strong></td>
</tr>
<tr>
<td><strong>Copy disk signature</strong></td>
</tr>
</tbody>
</table>

---

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

<table>
<thead>
<tr>
<th>HDD Copy Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw disk copy</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Copy all partitions onto original places</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Realign partitions</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Expand/Shrink partition to whole disk</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Fixed active partition</strong></td>
<td>R-Drive Image preserves the original offset/size of the active partition (in case the loader has links to it).</td>
</tr>
</tbody>
</table>

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. |

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

You may add other objects and copy data to several destinations in one process. Select Add another object to copy in the Next Selection on the Processing panel and click the Next 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

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort</td>
<td>Click this button to cancel the action</td>
</tr>
<tr>
<td>Retry</td>
<td>Click this button to try to read the bad sectors once again</td>
</tr>
<tr>
<td>Ignore</td>
<td>Click this button to skip this error and fill the bad sectors with zeros</td>
</tr>
<tr>
<td>Ignore All</td>
<td>Click this button to skip all errors and fill the bad sectors with zeros</td>
</tr>
</tbody>
</table>

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

2.4 Connect an Image as a Virtual Logical Disk

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

To connect an image as a Virtual Logical Disk:

1. Click Connect an Image as a Virtual Logical Disk on the Action Selection panel.
   R-Drive Image will show you the Image File Selection panel with the disks/folders structure.

2. Select the file with the image on the Image File Selection panel and click the Next button.
   When you click the file, you may view its content on the right pane.

More information...

<table>
<thead>
<tr>
<th>Objects in Image Files</th>
<th>Image with one logical disk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary partition</td>
<td></td>
</tr>
<tr>
<td>Logical disk</td>
<td></td>
</tr>
<tr>
<td>Unallocated space</td>
<td></td>
</tr>
<tr>
<td>Other partition type</td>
<td></td>
</tr>
</tbody>
</table>

© 2020 R-Tools Technology Inc.
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 connect the disk from Windows explorer by right-clicking the required image file with the .rdr extension and selecting **Connect as Virtual Disk** from the shortcut menu.

If you select an image with incremental data backup, the **Image Date/Time Selection** panel will appear. 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 drive letter, and click the Next button**

![Image Object Selection panel](image.png)

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

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 connecting the selected object as a virtual logical disk.

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

**Connecting images on devices with removable storage**

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

*Note:* While R-Drive Image is connecting 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**

### 2.5 Disconnect Virtual Logical Disks

To disconnect Virtual Logical Disks:

1. **Click Disconnect Virtual Logical Disks** on the **Action Selection** panel

   R-Drive Image will show you the list of virtual disks on the **Connected Virtual Logical Disks** panel.
2 Mark the disks on the **Connected Virtual Logical Disks** panel and click the **Next** button

![More information...](image)

**Marked Connected Virtual Logical Disks**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Size</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>NTFS</td>
<td>2.95GB</td>
<td>NTFS TEST</td>
</tr>
<tr>
<td>M</td>
<td>FAT32</td>
<td>2.01GB</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>FAT16</td>
<td>1.99GB</td>
<td>FAT-TEST</td>
</tr>
</tbody>
</table>

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 disconnecting the selected virtual logical disks

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

![Virtual disk(s) disconnected successfully](image)

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 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 **Image File Selection** panel with the disks/folder structure.

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

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

![More information...](image)

**Objects in Image Files**

- Primary partition
- Logical disk
- Unallocated space
- Other partition type

<table>
<thead>
<tr>
<th>Image with one logical disk</th>
<th><img src="image" alt="Image with one logical disk" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Image with two logical disks on one hard drive</td>
<td><img src="image" alt="Image with two logical disks on one hard drive" /></td>
</tr>
<tr>
<td>Image with two logical disks on two hard drives</td>
<td><img src="image" alt="Image with two logical disks on two hard drives" /></td>
</tr>
</tbody>
</table>

© 2020 R-Tools Technology Inc.
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 RAIDs, and Various Disk and Volume Managers

R-Drive Image supports various RAIDs, and Disk/Volume Managers.
- Hardware RAIDs
- 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
- Restore Data from an Image
- Copy Disk to Disk to make an exact copy of one disk on another
- Connect an Image as a Virtual Logical Disk (read-only)
- Disconnect 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
- Backup sets

The Technical Information chapter gives technical information on
- Logging
- Creating consistent point-in-time backups
- Support for Various Disk Partition Schemes and File Systems
- 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

3.1 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.

3.2 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
3.3 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**

![Partition Selection panel](image)

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**

![Data Restore from Image](image)

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](https://docs.microsoft.com/en-us/ windows-server/storage/storage-spaces/).

### 3.4 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

When you select a certain Apple RAID, R-Drive Image also shows its respective members.

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.
3.5  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 an 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

3.6 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**

Linux mdadm RAIDs displays both mdadm RAIDs and their components on the **Partition Selection** panel.

**mdadm RAIDs Volume Imaging**

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

**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.
3.7 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.
IV  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
- 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
- Restore Data from an Image
- Copy Disk to Disk to make an exact copy of one disk on another
- Connect an Image as a Virtual Logical Disk (read-only)
- Disconnect 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:

- Windows Software RAIDs, Spanned, and Other Volumes
- Windows Storage Spaces
- Mac 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
• **Backup sets**

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

- Creating consistent point-in-time backups
- Support for Various non-MBR/GPT Partition Layouts
- 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 Create Startup Disks

You need to create a startup CD/DVD disc, USB removable storage device, or 6 floppy disks 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.

**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. Please, contact the **R-Drive Image Technical Support Team** for more information.
### Display kernel startup messages
- **Description:** 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
- **Description:** Select this checkbox when you want to see loading drivers to find which one may lock the system.

### Disables ACPI
- **Description:** Select these checkboxes when your system detects some hardware incorrectly during **R-Drive Image** startup and displays messages like: `hda: lost interrupt`

### Disables APIC
- **Description:** 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
- **Description:** Select these checkboxes when your system experiences problems with USB devices during **R-Drive Image** startup.

### Disables SCSI devices support
- **Description:** Select these checkboxes when your system experiences problems with SCSI devices during **R-Drive Image** startup.

### Disables PATA devices support
- **Description:** Select these checkboxes when your system experiences problems with Parallel ATA devices during **R-Drive Image** startup.

### Disables PCMCIA devices support
- **Description:** Select these checkboxes when your system experiences problems with PCMCIA devices during **R-Drive Image** startup.

### Disables DMA for all IDE disk drives
- **Description:** Select these checkboxes when your system experiences problems with IDE disks during **R-Drive Image** startup.

### IRQ polling mode
- **Description:** Select this checkbox if **R-Drive Image** does not recognize a device although it is in the supported device list.

### Default clocksource
- **Description:** Select this checkbox to select computer default clocksource.

### PCI BIOS
- **Description:** Select an appropriate option if your system experiences problems with computer hardware.

### ACPI OSI
- **Description:** 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

![Create Startup Disks](image)

2. Select the CD-recorder in the list of supported startup devices with removable storage on the Removable Storage Device Selection 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 **Removable Storage Device Selection** 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 **Removable Storage Device Selection** 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.

**To create 6 floppy disks:**

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

2 Select the floppy disk drive in the list of supported startup devices with removable storage on the **Removable Storage Device Selection** panel and click the **Next** button

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

> **R-Drive Image** will start creating the startup disks

The **Insert a blank floppy disk** message will appear. Insert a blank floppy disk and click the **OK** button. Then the **Insert the next blank floppy disk...** message will appear. Insert the second floppy disk and click the **OK** button. When **R-Drive Image** finishes creating the startup floppy disks, the **Startup disks created successfully** message will appear, and so on.

**Note:** It is recommended that you mark the floppy disks accordingly.

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**

### 4.2 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.

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

2. When you click the Next button on the Image Object Selection panel, the Disk not locked message will appear.

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

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

Please select the operating system to start:

R-DriveImage Autopart v.2.0
Microsoft Windows XP Professional

4. Select R-DriveImage Autopart v.2.0 and press the Enter button. You may select Microsoft Windows XP Professional to start Windows normally.
using the R-Drive Image startup floppy disks

1. Make sure that the first startup device in the system BIOS is A (Floppy). Disable "Secure boot" in the system BIOS if your computer is certified to run Windows 8. Refer to your system documentation for details.

2. Insert the first startup floppy disk and start your computer.

The following text will appear on the screen:

```
Loading............................
........................................
Uncompressing R-Drive Image... OK, starting the kernel
VFS: Insert the second R-Drive Image boot disk and press ENTER
```

3. Insert the second disk and press ENTER.

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

1. Make sure that the first startup device in the system BIOS is the required drive. Disable "Secure boot" in the system BIOS if your computer is certified to run Windows 8. Refer to your system documentation for details.

2. Insert the CD disc or connect the USB disk and start your computer.

R-Drive Image will start in the startup mode.

The following text will appear on the screen:

```
Loading kernelcd............................
........................................
loading rdrive.fs.......................ready.
Decompressing... Parsing ELF... done.
Starting the kernel.
Initializing R-Drive Image...
```

Then a startup screen will appear:

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

Use the Tab key to switch between the control areas and the arrow keys to select options within the control areas. Press the Enter key to activate the selected button.
You may also activate a key by pressing the highlighted letter key. You may exit the program by pressing the x key.

Secure boot:
It may be impossible to start a Windows 8 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 (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 R-Drive Image startup disk. Please note that you should enable this feature back after using the startup disks because Windows 8 or Server 2012 may not start properly without the Secure boot feature enabled.

4.3 Restore Data from an Image

Restoring data to a system or other locked disk:
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 from an Image on the Action Selection panel and press the N key**

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.
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 For the **R-Drive Image GUI (Graphic Mode):** Select what you want to restore: an entire disk/partition or selected folders and file on the **Restore Mode Selection** panel, and click the Next button.

![Image of Restore Mode Selection]

Restoring selected files and folders will be explained below in the **Restoring selected files and folders** section.

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

![Image of Select Source Object Panel]
Use the arrow keys to select the object.

6. **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.

7. **Select the destination for the data** on the **Select a target for copy/restore operation** panel and press the N key.
Image Object Selection Panel

Use the arrow keys to switch between the target objects.

<table>
<thead>
<tr>
<th>Key</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Hard drive</td>
</tr>
<tr>
<td>P</td>
<td>Primary partition</td>
</tr>
<tr>
<td>L</td>
<td>Logical disk</td>
</tr>
<tr>
<td>U</td>
<td>Unallocated space</td>
</tr>
</tbody>
</table>

8 Specify restore parameters on the Copy/restore options panel and press the N key
For restoring/copying one or several partition(s):

<table>
<thead>
<tr>
<th>Restore Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free space before</td>
<td>You may specify the size of free space that will be left on the hard drive before the beginning of the partition.</td>
</tr>
<tr>
<td>Partition size</td>
<td>You may specify the size of the partition to be restored. Should be between the minimum and maximum partition size.</td>
</tr>
<tr>
<td>Partition type</td>
<td>You may specify the type of the partition to be restored. Do not change this setting unless you have serious reasons to do so.</td>
</tr>
</tbody>
</table>

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

HDD Copy/Restore Options Panel
Restore/Copy Parameters Panel

<table>
<thead>
<tr>
<th>HDD Copy Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw disk copy</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Copy all partitions onto original places</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Realign partitions</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Expand/Shrink partition to whole disk</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Fixed active partition</strong></td>
<td>R-Drive Image preserves the original offset/size of the active partition (in case the loader has links to it).</td>
</tr>
</tbody>
</table>


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.
**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.

9 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.

**Restoring selected files and folders**

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

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

6 Mark folders and files to restore on the **Select Files to Restore** panel and click the Next button

**Select Files to Restore Panel**

**Buttons**
Find
Click this button to find a particular file/folder.
**R-Drive Image** searches for files only among files specified by a 
**File Mask.**

Find Next
Click this button to find the next object specified in the **Find** dialog 
window.

Find Previous
Click this button to find the previous object specified in the **Find** dialog 
window.

File Mask
Click this button to specify a file mask.

Up
Click this button to move highlighting one folder 
up.

**Folders** panel. Right-click a folder to reach its shortcut menu.
- Files to wipe
  - Marked folder (all child objects in this folder 
    are marked)
- F3
  - Partially marked folder (some child objects in 
    this folder are marked)

**Files** panel:
- Screen 1.m4a  
  - File marked to restore

The **Find Results** panel.
Appears when file search has been performed

<table>
<thead>
<tr>
<th>Find Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find All &quot;File Extensions: arc&quot;, &quot;H:&quot;</td>
</tr>
<tr>
<td>F2\Root\Files to Recover\Set45.arc</td>
</tr>
<tr>
<td>F3\Root\Files to Recover\Set45.arc</td>
</tr>
<tr>
<td>F3\Root\Files to Recover\Set45.arc</td>
</tr>
<tr>
<td>F3\Root\Files to Recover.Set45.arc</td>
</tr>
<tr>
<td>F4\Root\Files to Recover\Set45.arc</td>
</tr>
<tr>
<td>F4\Root\Files to Recover\Set45.arc</td>
</tr>
<tr>
<td>Files to wipe\test1.arc</td>
</tr>
<tr>
<td>Files to wipe\test2.arc</td>
</tr>
<tr>
<td>Files to wipe\test3.arc</td>
</tr>
<tr>
<td>Files to wipe\test4.arc</td>
</tr>
<tr>
<td>Files to wipe\test5.arc</td>
</tr>
<tr>
<td>Files to wipe\test6.arc</td>
</tr>
<tr>
<td>Files to wipe\test7.arc</td>
</tr>
</tbody>
</table>

**Log** panel:
Ready  Marked 620.14 MB in 29 files in 4 folders  Total 1.31 GB in 187 files in 43 folders

**File search**
You may use the advanced search capabilities of **R-Drive Image** to find necessary files. Click the **Find** button 
and specify the files to find on the **Find** dialog box.
Note that a **File Mask** may be applied.
You may also reach the **Find** dialog box by right-clicking a folder on the **Folders** pane and selecting an appropriate item in the shortcut menu.

**Find/Mark dialog box**

![Find/Mark options dialog box](image)

<table>
<thead>
<tr>
<th><strong>Find/Mark options</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Files</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> treats specified strings as file names. Use ? for one unspecified character and * for an unlimited number of them to specify file masks.</td>
</tr>
<tr>
<td><strong>File Extensions</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> treats specified strings as file extensions.</td>
</tr>
<tr>
<td><strong>Regular Expressions</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> treats specified strings as regular expressions.</td>
</tr>
<tr>
<td><strong>All Files</strong></td>
<td>If this option is selected, <strong>R-Drive Image</strong> applies <strong>Advanced Options</strong> to all files.</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Match case</strong></td>
<td>If this check box is selected, <strong>R-Drive Image</strong> makes a case-sensitive search.</td>
</tr>
<tr>
<td><strong>Look in</strong></td>
<td>Specifies where <strong>R-Drive Image</strong> searches for, and marks, files. It can look for them on the Entire disk, From current folder, In the Current folder and subfolders, and in the Current folder only. If From current folder is selected, you may also specify the <strong>Direction</strong> for the search from the current position in the current folder.</td>
</tr>
<tr>
<td><strong>Find/Mark mode</strong></td>
<td>Specifies what <strong>R-Drive Image</strong> does with the found files. It may: Find all matched files. <strong>R-Drive Image</strong> searches for all files that match the search criteria. The search results appear on the <strong>Find Results</strong> panel. Find first matched file. <strong>R-Drive Image</strong> stops at the first found file. Mark matched files. <strong>R-Drive Image</strong> marks all found files. Unmark matched files. <strong>R-Drive Image</strong> unmarks all found files. Please note, that when performing a new find and mark/unmark task, <strong>R-Drive Image</strong> does not takes into consideration the previous marked/unmarked state of files. For example, if you first mark all doc files, and then all txt files, all doc files remain marked, too. To unmark them, you should specify doc once again and select Unmark matched files.</td>
</tr>
</tbody>
</table>
Look at

Files | If this check box is selected, **R-Drive Image** includes files into a search.
Folders | If this check box is selected, **R-Drive Image** includes folders into a search.
Direction | Specifies search direction from the current position. Available only if From current folder is selected in Look in.

Advanced Options

Size from/up to | Specifies file size limits.
File Id | Specifies File Id that **R-Drive Image** assigns to a file.
Date | Specifies file date boundaries. Files may be Modified/Created/Last Accessed.

Use the **Find Next** or **Find Previous** buttons or shortcut menu commands to repeat the search.
You may use file masks to find files visually. Click the **File Mask** button and specify a file mask on the **Mask** dialog box. You may also use the shortcut menu to reach this dialog box.

**Mask dialog box**

![Mask dialog box](image)

**File mask options**
You may specify options for All Files, File Extensions, Files, and Regular Expressions

| Match case | If this check box is selected, **R-Drive Image** makes a case-sensitive search. |
| Show empty folders | If this check box is selected, **R-Drive Image** will show folders with no files matching the mask. |

**Advanced Options**

| Size from/up to | Specifies file size limits. |
| Date | Specifies file date boundaries. Files may be Modified/Created/Last Accessed. |

7 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**.

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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**

### 4.4 Create an Image

It is 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 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 Action Selection panel and press the N key**

   Use the arrow keys to switch between the options.

   ![Action Selection Panel](image.png)
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 you want to create an image 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.
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.
Image Destination 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 Panel](image)

- **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 you 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: This feature provides a relatively moderate protection against conventional unauthorized access.

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

4.5 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.

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.

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

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**

![Copy/restore options Panel]

**Restore/Copy Parameters Panel**

![Restore/Copy Parameters Panel]

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

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


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.

<table>
<thead>
<tr>
<th>Disk Signature Collision Resolving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same signature for both disk</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Different signature on the target disk.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Change the disk signature on the source disk.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

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
4.6 Check an Image File

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 **Image File Selection** panel and click the **Next** button

   ![Image File Selection 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.

4.7 Network Drives

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

To map a network drive,

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

Map Network Drive

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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.
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](#)

### V 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.

- **Scheduler and Unattended Actions**
- **Scripting and Command Line Operations**
- **Backup sets**

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

- **Create an Image** of a partition, logical disk, or entire hard drive
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Connect an Image as a Virtual Logical Disk** (read-only)
- **Disconnect 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:
- Windows Software RAIDs, Spanned, and Other Volumes
- Windows Storage Spaces
- Mac 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 **Technical Information** chapter gives technical information on
- Creating consistent point-in-time backups
- Support for Various Disk Partition Schemes and File Systems
- 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 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**
5.1.1 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.

2. **Click the Create a 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, imaging mode on the Imaging Mode panel, image options on the Image Options panel, and backup options on the Backup Options panel.**

   Go to the Create an Image topic for more details.

   Please note that you may use backup sets for creating complex data backup tasks and maintaining data files.
4 Specify the time or event at which the task should start on the **Time/Event** panel and click the **Next** button.

You may specify time/event options on this panel.

<table>
<thead>
<tr>
<th><strong>Time/event options</strong></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>task is active</strong></td>
<td>If this options is not selected, the task will not start at its scheduled time/event</td>
</tr>
<tr>
<td><strong>Perform this task:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Daily</strong></td>
<td>The task will start repeatedly on a daily time interval</td>
</tr>
<tr>
<td><strong>Start time:</strong></td>
<td>Time at which the task will start</td>
</tr>
<tr>
<td><strong>Repeat task every:</strong></td>
<td>Time interval in which the task will be repeated within one day</td>
</tr>
<tr>
<td><strong>Delay task up to:</strong></td>
<td>Time interval in which the task will randomly start. May be useful when several images are being created simultaneously.</td>
</tr>
<tr>
<td><strong>Start date:</strong></td>
<td>Date from which the task will start</td>
</tr>
<tr>
<td><strong>Run this task every:</strong></td>
<td>Time interval in days in which the task will regularly start</td>
</tr>
<tr>
<td><strong>End date:</strong> (optional)</td>
<td>Date from which the task will not start anymore</td>
</tr>
<tr>
<td><strong>Weekly</strong></td>
<td>The task will start repeatedly on a weekly time interval</td>
</tr>
<tr>
<td><strong>Start time:</strong></td>
<td>Time at which the task will start</td>
</tr>
<tr>
<td><strong>Repeat task every:</strong></td>
<td>Time interval in which the task will be repeated within one day</td>
</tr>
<tr>
<td><strong>Delay task up to:</strong></td>
<td>Time interval in which the task will randomly start. May be useful when several images are being created simultaneously.</td>
</tr>
<tr>
<td><strong>Start date:</strong></td>
<td>Date from which the task will start</td>
</tr>
<tr>
<td><strong>Run this task every:</strong></td>
<td>Time interval in weeks in which the task will regularly start</td>
</tr>
<tr>
<td><strong>On days:</strong></td>
<td>Days of the week on which the task will start</td>
</tr>
<tr>
<td><strong>End date:</strong> (optional)</td>
<td>Date from which the task will not start anymore</td>
</tr>
<tr>
<td><strong>Monthly</strong></td>
<td>The task will start repeatedly on a monthly time interval</td>
</tr>
<tr>
<td><strong>Start time:</strong></td>
<td>Time at which the task will start</td>
</tr>
<tr>
<td><strong>Repeat task every:</strong></td>
<td>Time interval in which the task will be repeated within one day</td>
</tr>
</tbody>
</table>
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

wake the computer to run this task If this checkbox is selected, your computer will automatically start up to perform this task

5 Specify a user name and password of a user from the Administrators user group on the User/Password panel and click the Next button.

Click the Default button to make R-Drive Image to run as your default user.
6 Specify mail notification options (optional) and applications you want to run when the task will end successfully or failed (optional) on the Mail Notification/Aux Applications panel and click the Next button.

These options are not mandatory and you may leave this panel empty.

More information...

Requirements

Applications
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.

Shutdown the computer on task completion
If this checkbox is selected, R-Drive Image will shut your computer down when completed the task.

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

7 Verify that the information on the Processing panel is correct and click the Save button

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.
5.1.2 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 Time/Event 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 Time/Event panel and click the Next button
   Go to the Create a Task topic for details
4. Click the Next button several times until you go to the Processing panel
5. Verify that the information on the Processing panel is correct and click the Save button
   > 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 Image Destination panel, imaging mode on the Imaging Mode panel, image options on the Image Options panel, and backup options on the Backup 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 Time/Event panel, the user name and password of a user from the Administrators user group on the User/Password panel, mail notification options (optional) and applications you want to run when the task will end successfully or failed (optional) on the Mail Notification/Aux Applications panel, and click the Next button
   Go to the Create a Task topic for more details.
5. Verify that the information on the Processing panel is correct and click the Save button
   > 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**

### 5.1.3 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**

### 5.1.4 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.

### 5.2 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 **connect/disconnect 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

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

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

5.2.1 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 **Partition Selection** panel, image destination on the **Image Destination** panel, imaging mode on the **Imaging Mode** panel, image options on the **Image Options** panel, and backup options on the **Backup Options** panel.
   
   Go to the [Create an Image](#) topic for more details.
   
   Please note that you may use backup sets for creating complex data backup tasks and maintaining data files.

4 Specify mail notification options (optional) and applications you want to run when the task will end successfully or failed (optional) on the **Mail Notification/Aux Applications** panel and click the **Next** button.
   
   These options are not mandatory and you may leave this panel empty.

   More information...

   **Applications**
   
   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.

   **Shutdown the computer on task completion**
   
   If this checkbox is selected, **R-Drive Image** will shut your computer down when completed the task.

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

5 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**.
5.2.2 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

<table>
<thead>
<tr>
<th></th>
<th>Ver. 3.x</th>
<th>Ver. 4.x</th>
</tr>
</thead>
<tbody>
<tr>
<td>File names with &quot;</td>
<td>&quot;</td>
<td>&quot;quot;</td>
</tr>
<tr>
<td>Escaping of the &quot; character has been changed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>File names with &amp;</td>
<td>&amp;</td>
<td>&amp;</td>
</tr>
<tr>
<td>Escaping of the &amp; character has been changed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partition list</td>
<td>-s=&quot;part1&quot; -s=&quot;part2&quot; -s=&quot;part3&quot;</td>
<td>-s=&quot;part1 part2 part3&quot;</td>
</tr>
<tr>
<td>Several partitions should be set in one list</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>b</th>
<th>bytes</th>
<th>(2^{10} = 1,024) b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kb</td>
<td>kilobytes</td>
<td>(2^{10} = 1,024)</td>
</tr>
<tr>
<td>Mb</td>
<td>megabytes</td>
<td>(2^{20} = 1,024)</td>
</tr>
<tr>
<td>Gb</td>
<td>gigabytes</td>
<td>(2^{30} = 1,024)</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Character</th>
<th>String to substitute</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>'</td>
<td>'</td>
</tr>
<tr>
<td>&amp;</td>
<td>&amp;</td>
</tr>
<tr>
<td>carriage</td>
<td>&amp;cr;</td>
</tr>
<tr>
<td>return</td>
<td>&amp;nl;</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Command</th>
<th>Optional/ Mandatory</th>
<th>Description and examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>list</td>
<td></td>
<td>Returns a partition list for a local drive or an image file</td>
</tr>
<tr>
<td>-a=&lt;PathOfNewArchiveFile&gt;</td>
<td>Mandatory</td>
<td>Specifies a path (including its file name) to the image file. Examples: <code>-a=C:\Images\Test.rdr</code> or <code>-a=&quot;C:\Image Files\Test 1.rdr&quot;</code></td>
</tr>
<tr>
<td>-p=&lt;Password&gt;</td>
<td>Mandatory/Not used</td>
<td>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: <code>-p=Password</code> or <code>-p='My Password'</code></td>
</tr>
<tr>
<td>-t=&lt;TimeSliceNumber&gt;</td>
<td>Optional</td>
<td>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.</td>
</tr>
</tbody>
</table>
**R-Drive Image** will use the $n$-th incremental data from the beginning in the image.

- **-t** : 
  - **+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`.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>sysdump</strong></td>
<td>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 <code>-a</code>, <code>-p</code>, <code>-t</code> from the <code>list</code> command should be used.</td>
</tr>
</tbody>
</table>
| ```
-sysdump="<SysDumpFile>"
``` | Mandatory |
| Specifies the filename for the system dump. |

Example:
```
sysdump -sysdump="MySysDump" -a=C:\Images\Test.rdr -p="mY pasSsworRrd"
```
This script command creates a file with the system dump, its name is `MySysDump`. The system dump includes the image file `C:\Images\Test.rdr` protected by the password `mY pasSsworRrd`.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>register</strong></td>
<td>Registers <strong>R-Drive Image</strong> from the command line.</td>
</tr>
</tbody>
</table>
| ```
-reg-user="<UserName>
-reg-company="<Company>
-reg-key="<RegisterKey>
``` | Mandatory |
| Specifies the user name for registration. |

**Examples:**
```
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.

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>hdd_vtype</strong></td>
<td>HDD type.</td>
</tr>
<tr>
<td>- <strong>real</strong> : a basic disk</td>
<td></td>
</tr>
<tr>
<td>- <strong>dynamic</strong> : a dynamic disk</td>
<td></td>
</tr>
<tr>
<td>- <strong>pure</strong> : disk objects like USB pendrives with only one logical disk on it.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>hdd_vtype=real</code></td>
<td></td>
</tr>
<tr>
<td><strong>hdd_size</strong></td>
<td>HDD size</td>
</tr>
<tr>
<td>Disk size should be specified in bytes, no KB or MB are allowed.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>hdd_size=40060403712</code></td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>hdd_name</td>
<td>HDD name</td>
</tr>
<tr>
<td>hdd_serial</td>
<td>HDD serial number</td>
</tr>
<tr>
<td>hdd_bus_type</td>
<td>Type of the HDD bus</td>
</tr>
<tr>
<td>hdd_port_num</td>
<td>Port number for HDD</td>
</tr>
<tr>
<td>hdd_target_id</td>
<td>Target ID for HDD</td>
</tr>
<tr>
<td>hdd_num</td>
<td>Disk number, coincides with the disk number used in the old notations. Example: hdd_num=1</td>
</tr>
<tr>
<td>part_free_space</td>
<td>Free space mark</td>
</tr>
<tr>
<td>part_ofs</td>
<td>Partition offset in bytes.</td>
</tr>
<tr>
<td>part_size</td>
<td>Partition size</td>
</tr>
<tr>
<td>part_fs</td>
<td>Partition file system</td>
</tr>
<tr>
<td>part_label</td>
<td>Disk label</td>
</tr>
<tr>
<td>part_mounted</td>
<td>Disk letter of folder</td>
</tr>
<tr>
<td>part_num</td>
<td>Partition number, coincides with the partition number used in</td>
</tr>
</tbody>
</table>

Example: part_num=2
A partition may be identified using its descriptors:

```
hdd_size=40060403712+part_num=2+hdd_num=1+hdd_target_id=0+hdd_bus_type=ata+part_label=Part2+part_ofs=16778264576+part_mounted=G:+hdd_name=SAMSUNG\#32;SP04I1NTW100-11+part_size=23279435776+hdd_port_num=0+hdd_serial=S01JJ30X912831+part_fs=ntfs+hdd_vtype=real
```

### create

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;SourceDisk&gt;</code></td>
<td>Specifies a source object to create the image or append to it. The <code>&lt;SourceDisk&gt;</code> 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 <strong>Disk descriptors</strong> section of this table. Old notation is also valid: Old notation examples: for hard drive 1: <code>-s=1</code> for the second partition on hard drive 1: <code>-s=1:2</code> for a logical disk: <code>-s=D:</code> for several logical disks: <code>-s=&quot;D: F:&quot;</code></td>
</tr>
<tr>
<td><code>-a=&lt;PathOfNewArchiveFile&gt;</code></td>
<td>Specifies a path (including its file name) to the image file. Examples: <code>-a=C:\Images\Test.rdr</code> or <code>-a=&quot;C:\Image Files\Test 1.rdr&quot;</code></td>
</tr>
<tr>
<td><code>-c=&lt;CompressionLevel&gt;</code></td>
<td>Specifies compression level (1...11). Example: <code>-c=3</code></td>
</tr>
<tr>
<td><code>-u</code></td>
<td>Optional Backups useful information only. May be used as a <strong>Boolean parameter</strong>.</td>
</tr>
<tr>
<td><code>-v=&lt;ArchiveSize&gt;</code></td>
<td>Specifies image split size. May be in the float-point format. Example: <code>-v=650</code> or <code>-v='4.5 Gb'</code></td>
</tr>
<tr>
<td><code>-append-inc</code></td>
<td>Optional Creates an incremental backup.</td>
</tr>
<tr>
<td><code>-p=&lt;Password&gt;</code></td>
<td>Specifies an image password. Mandatory if the append command is used and the image file has already encrypted. It there is a space in the password, the password should be in quotes. Examples: <code>-p=Password</code> or <code>-p='My Password'</code></td>
</tr>
<tr>
<td><code>-r=&lt;Description of archive&gt;</code></td>
<td>Specifies an image description. It there is a space in the description, the description should be in quotes. Examples: <code>-r=Description or </code>-r=&quot;Image Description&quot;`</td>
</tr>
<tr>
<td><code>-s-xw</code></td>
<td>Optional Makes <strong>R-Drive Image</strong> not to use the Windows snapshot provider.</td>
</tr>
<tr>
<td><code>-s-xr</code></td>
<td>Optional Makes <strong>R-Drive Image</strong> not to use the R-TT snapshot provider.</td>
</tr>
<tr>
<td><code>-s-n</code></td>
<td>Optional Notifies system application that a snapshot is being taken.</td>
</tr>
<tr>
<td><code>-s-b0=&lt;AppBeforeBack&gt;</code></td>
<td>Specifies an application that will start before the backup operation starts. The application should return a 0 exit code. Example: <code>-s-b0=&quot;C:\commands\start.exe&quot;</code></td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td><code>-s-b1=&lt;AppAfterBackup&gt;</code></td>
<td>Specifies an application that will start after the backup operation completes. The application should return a 0 exit code. Example: <code>-s-b1=&quot;C:\commands\end.exe&quot;</code></td>
</tr>
<tr>
<td><code>-s-s0=&lt;AppBeforeSnapshot&gt;</code></td>
<td>Specifies an application that will start before the snapshot is taken. The application should return a 0 exit code. Example: <code>-s-s0=&quot;C:\commands\startsnapshot.exe&quot;</code></td>
</tr>
<tr>
<td><code>-s-s1=&lt;AppAfterSnapshot&gt;</code></td>
<td>Specifies an application that will start after the snapshot is taken. The application should return a 0 exit code. Example: <code>-s-s1=&quot;C:\commands\endsnapshot.exe&quot;</code></td>
</tr>
<tr>
<td><code>-xe=&lt;AppIfError&gt;</code></td>
<td>Specifies a command line that will start an application if <em>R-Drive Image</em> fails to perform the specified action. If there is a space in the command line, the command line should be in quotes. Examples: <code>-xe=error.exe</code> or <code>-xe=&quot;winamp C:\sounds\error.mp3&quot;</code></td>
</tr>
<tr>
<td><code>-xs=&lt;AppIfSuccess&gt;</code></td>
<td>Specifies a command line that will start an application if <em>R-Drive Image</em> successfully performs the specified action. If there is a space in the command line, the command line should be in quotes. Examples: <code>-xs=success.exe</code> or <code>-xs=&quot;winamp C:\sounds\success.mp3&quot;</code></td>
</tr>
<tr>
<td><code>-bs</code></td>
<td>Specifies that <em>R-Drive Image</em> will use backup sets.</td>
</tr>
<tr>
<td><code>-bs-size=&quot;&lt;Quota_in_MB&gt;&quot;</code></td>
<td>May be used only if the <code>-bs</code> 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: <code>-bs-size=&quot;20000&quot;</code></td>
</tr>
<tr>
<td><code>-bs-num-b=&quot;&lt;Number_of_backs&gt;&quot;</code></td>
<td>May be used only if the <code>-bs</code> is set. Specifies the number of backup sets. If it is exceeded, the older backup sets (all their files) will be removed. Example: <code>-bs-num-b=&quot;10&quot;</code></td>
</tr>
<tr>
<td><code>-bs-num-f=&quot;&lt;Number_of_files&gt;&quot;</code></td>
<td>May be used only if the <code>-bs</code> is set. Specifies the number of files in all backup sets. If it is exceeded, the older backup sets (all their files) will be removed. Example: <code>-bs-num-f=&quot;30&quot;</code></td>
</tr>
<tr>
<td><code>-bs-age=&quot;&lt;Days&gt;&quot;</code></td>
<td>May be used only if the <code>-bs</code> is set. Specifies the number of days for which <em>R-Drive Image</em> will keep the backup set. Then the backup set will be removed. Example: <code>-bs-age=&quot;14&quot;</code></td>
</tr>
<tr>
<td><code>-cd-cache</code></td>
<td>Used when an image file is written to CD discs. <em>R-Drive Image</em> creates an ISO image of the CD disc and then copies it to the CD disc. Without it <em>R-Drive Image</em> writes data directly to the CD disc.</td>
</tr>
<tr>
<td><code>-cd-speed=&lt;Speed&gt;</code></td>
<td>Used when an image file is written to CD discs. Specifies burning speed in KB/sec. Example: <code>-cd-speed=&quot;1200&quot;</code></td>
</tr>
<tr>
<td><code>-dvd-cache</code></td>
<td>Used when an image file is written to DVD discs. <em>R-Drive Image</em> creates an ISO image of the DVD disc and then copies it to the DVD disc. Without it <em>R-Drive Image</em> writes data directly to the DVD disc.</td>
</tr>
<tr>
<td><code>-dvd-speed</code></td>
<td>Used when an image file is written to DVD discs. Specifies burning speed in KB/sec.</td>
</tr>
</tbody>
</table>
Example:
```bash
create -
s="hdd_size=4006403712+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=4006403712+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=23279455776+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: `-s=1:2`
      - for a logical disk: `-s=D:`

- `-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: `-d=1:2`
      - 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.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>-t=&lt;TimeSliceNumber&gt;</code></td>
<td>Optional</td>
</tr>
<tr>
<td>Specifies which incremental data will be used to restore data from the image. If the <code>TimeSliceNumber</code> is not specified, the first data in the image will be used. <code>-1</code> specifies the last incremental data in the image.</td>
<td></td>
</tr>
<tr>
<td><strong>first</strong></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the first incremental data in the image.</td>
<td></td>
</tr>
<tr>
<td><strong>last</strong></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the last incremental data in the image.</td>
<td></td>
</tr>
<tr>
<td><code>+&lt;n&gt;</code></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the <code>n</code>-th incremental data from the beginning in the image.</td>
<td></td>
</tr>
<tr>
<td><code>-&lt;n&gt;</code></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the <code>n</code>-th incremental data from the end in the image.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>-t=&quot;+2&quot;</code> specifies the second incremental data from the beginning in the image will be used to restore data.</td>
<td></td>
</tr>
<tr>
<td><code>-lr=&lt;DiskLetter&gt;</code></td>
<td>Optional</td>
</tr>
<tr>
<td>Specifies a disk letter. This parameter is case-insensitive.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>-lr=&quot;K&quot;</code> or <code>-lr=K</code>.</td>
<td></td>
</tr>
<tr>
<td><code>-sz=&lt;PartitionSize&gt;</code></td>
<td>Optional</td>
</tr>
<tr>
<td>Specifies a partition size. May be in the float-point format.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>-sz=512</code> or <code>-sz='0.5 Gb'</code></td>
<td></td>
</tr>
<tr>
<td><code>-of=&lt;PartitionOffset&gt;</code></td>
<td>Optional</td>
</tr>
<tr>
<td>Specifies an offset from the beginning of the destination. May be in the float-point format. Default is 0.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>-of=512</code> or <code>-of='0.5 Gb'</code></td>
<td></td>
</tr>
<tr>
<td><code>-bs-use=&quot;&lt;Parameter&gt;&quot;</code></td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Applicable to restore only.</strong></td>
<td></td>
</tr>
<tr>
<td>Specifies the backup set R-Drive Image will use to restore data. Parameter may be:</td>
<td></td>
</tr>
<tr>
<td><strong>first</strong></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the first backup set.</td>
<td></td>
</tr>
<tr>
<td><strong>last</strong></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the last backup set.</td>
<td></td>
</tr>
<tr>
<td><code>+&lt;n&gt;</code></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the <code>n</code>-th backup set from the beginning.</td>
<td></td>
</tr>
<tr>
<td><code>-&lt;n&gt;</code></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the <code>n</code>-th backup set from the end.</td>
<td></td>
</tr>
<tr>
<td><code>&lt;date&gt;</code></td>
<td></td>
</tr>
<tr>
<td>: R-Drive Image will use the backup set containing the <code>date</code> in its name.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>-bs-use=&quot;+3&quot;</code> R-Drive Image will use the 3-rd backup set from the beginning.</td>
<td></td>
</tr>
<tr>
<td><code>-p=&lt;password&gt;</code></td>
<td>Mandatory / Not used</td>
</tr>
<tr>
<td>Mandatory for password-protected files. Specifies a password for the archive.</td>
<td></td>
</tr>
<tr>
<td>Example: <code>-p=&quot;my password&quot;</code></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>restorefiles</th>
<th>Restores individual files from images to a specified destination</th>
</tr>
</thead>
</table>
| -s="<SourceDisk>" | Manditory  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>" | Manditory  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>" | Manditory  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:
```bash
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+W75DA-00AWA107.21L07+
part_size=3141991936+hdd_port_num=0+hdd_serial=WDA-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.

<table>
<thead>
<tr>
<th>check</th>
<th>Checks consistency of the archive</th>
</tr>
</thead>
<tbody>
<tr>
<td>-a=&lt;PathOfArchiveFile&gt;</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

Example:
```bash
check -a="I:\Test Image.rdr"
```

This script command checks the image file I:\Test Image.rdr for its consistency.

<table>
<thead>
<tr>
<th>mount</th>
<th>Connects an image file as a read-only virtual disk.</th>
</tr>
</thead>
<tbody>
<tr>
<td>-a=&lt;PathOfNewArchiveFile&gt;</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

| s=<SourceDisk> | Mandatory | Specifies an object in the image to connect. 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 connect 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. |

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<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+&lt;n&gt;:</td>
<td><strong>R-Drive Image</strong> will use the n-th incremental data from the beginning in the image.</td>
</tr>
<tr>
<td>-&lt;n&gt;:</td>
<td><strong>R-Drive Image</strong> will use the n-th incremental data from the end in the image.</td>
</tr>
<tr>
<td>Example:</td>
<td>-t=&quot;+2&quot;: <strong>R-Drive Image</strong> will use the second incremental data from the beginning in the image to connect a disk.</td>
</tr>
<tr>
<td>-bs-use=&quot;&lt;Parameter&gt;&quot;</td>
<td>Specifies the backup set <strong>R-Drive Image</strong> will use to connect as a logical disk. Parameter may be:</td>
</tr>
<tr>
<td>first:</td>
<td><strong>R-Drive Image</strong> will use the first backup set.</td>
</tr>
<tr>
<td>last:</td>
<td><strong>R-Drive Image</strong> will use the last backup set.</td>
</tr>
<tr>
<td>+&lt;n&gt;:</td>
<td><strong>R-Drive Image</strong> will use the n-th backup set from the beginning.</td>
</tr>
<tr>
<td>-&lt;n&gt;:</td>
<td><strong>R-Drive Image</strong> will use the n-th backup set from the end.</td>
</tr>
<tr>
<td>&lt;date&gt;:</td>
<td><strong>R-Drive Image</strong> will use the backup set containing the date in its name.</td>
</tr>
<tr>
<td>Example:</td>
<td>-bs-use=&quot;+3&quot;: <strong>R-Drive Image</strong> will use the 3-rd backup set from the beginning.</td>
</tr>
<tr>
<td></td>
<td>-bs-use=&quot;20080521&quot;: <strong>R-Drive Image</strong> will use the backup set containing the &quot;20080521&quot; string in its name.</td>
</tr>
<tr>
<td>Example:</td>
<td>mount -a=&quot;I:\Test Image.rdr&quot; -s=1:2 lr=F: -t=-1</td>
</tr>
<tr>
<td></td>
<td>This script command connects 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.</td>
</tr>
<tr>
<td>unmount</td>
<td>Disconnects a mounted virtual disk.</td>
</tr>
<tr>
<td>-lr=&lt;DiskLetter&gt;</td>
<td>Specifies a disk letter. This parameter is case-insensitive.</td>
</tr>
<tr>
<td>Example:</td>
<td>unmount lr=F:</td>
</tr>
<tr>
<td></td>
<td>This script command disconnects the virtual logical disk F:.</td>
</tr>
<tr>
<td>activate</td>
<td>Sets a specified partition active. The required partition should be specified.</td>
</tr>
<tr>
<td>-s=&lt;SourceDisk&gt;</td>
<td>Specifies the partition on the disk to set active. The &lt;SourceDisk&gt; parameter consists of one or several disk descriptors written in the form: descriptor_name=value[+descriptor_name=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:</td>
</tr>
<tr>
<td>Example:</td>
<td>activate -s=1:1</td>
</tr>
<tr>
<td></td>
<td>This script command set the first partition of the first hard drive active.</td>
</tr>
<tr>
<td>delete</td>
<td>Deletes a partition on a drive. The required partition should be specified.</td>
</tr>
</tbody>
</table>

© 2020 R-Tools Technology Inc.
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
</table>
| `-s=<SourceDisk>` | 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>` | 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>` | Specifies a partition layout type to be created on the hard drive. `<PartitionType>` may be:
  mbr: R-Drive Image will create the MBR layout.
  gpt: R-Drive Image will create the GPT layout.
  If omitted, the existing partition layout table will be cleared. Mandatory if no partition layout exists on the hard drive. |
| **Example:** `clear -s=2` | This script command deletes all partitions on the second hard drive. |
| `fixmbr` | Installs a default boot loader on a hard drive |
| `-s=<SourceDisk>` | 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` | 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.
<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>-log&quot;&lt;LogOptions&gt;&quot;</code></td>
<td>Optional</td>
<td>Controls the way <strong>R-Drive Image</strong> 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:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>#nodefault: disables the default log output into syslog  &lt;filename&gt;: writes the log to the specified file name and path. Example: c:\mylogs\mylog.txt. The &quot;,&quot; character in the file name should be doubled.  &lt;filepath&gt;: 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: <code>-log=&quot;#nodefault,c:\mylog.txt,c:\mydir\,#sysdir&quot;</code> This will make <strong>R-Drive Image</strong> 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.</td>
</tr>
<tr>
<td><code>mail options</code></td>
<td>Optional</td>
<td>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.</td>
</tr>
<tr>
<td><code>-me</code></td>
<td>Optional</td>
<td>Sends an e-mail message when <strong>R-Drive Image</strong> fails to perform the specified action. May be used as a <strong>Boolean parameter</strong>.</td>
</tr>
<tr>
<td><code>-mx</code></td>
<td>Optional</td>
<td>Sends an e-mail message when <strong>R-Drive Image</strong> successfully performs the specified action. May be used as a <strong>Boolean parameter</strong>.</td>
</tr>
<tr>
<td><code>-ms=&lt;SMTPServer[:port]&gt;</code></td>
<td>Mandatory/Not used</td>
<td>Mandatory if the <code>-me</code> or <code>-mx</code> option is used. Specifies an SMTP server and port (optional). Examples: <code>-ms=mail.example.com</code> or <code>-ms=mail.example.com:25</code></td>
</tr>
<tr>
<td><code>-ma=&lt;SenderEmail&gt;</code></td>
<td>Mandatory/Not used</td>
<td>Mandatory if the <code>-me</code> or <code>-mx</code> option is used. Specifies a sender's e-mail address. Example: <code>-ma=rtt1@example.com</code></td>
</tr>
<tr>
<td><code>-mr=&lt;RecipientEmail&gt;</code></td>
<td>Mandatory/Not used</td>
<td>Mandatory if the <code>-me</code> or <code>-mx</code> option is used. Specifies a recipient's e-mail address or addresses. Example: <code>-ma=rtt2@example.com</code></td>
</tr>
<tr>
<td><code>-ml=&lt;Login:Password&gt;</code></td>
<td>Optional</td>
<td>Specifies a login and password at the SMTP server. Example: <code>-ml=rtt1:password</code></td>
</tr>
<tr>
<td><code>-mz=&lt;SSLOptions&gt;</code></td>
<td>Optional</td>
<td>Specifies the SSL options. Can be auto, no, ssl, tls. Default is auto. Example: <code>-mz=ssl</code></td>
</tr>
<tr>
<td><code>-mn=&lt;SenderName&gt;</code></td>
<td>Optional</td>
<td>Specifies the sender name. Example: <code>-mn=&quot;Jhon Smith&quot;</code></td>
</tr>
</tbody>
</table>
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 start with & and end with ;.

Version Entities.

In the examples below, the R-Drive Image version is assumed as 4.1.67

<table>
<thead>
<tr>
<th>Entity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;rdi.ver;</td>
<td>The R-Drive Image version. Example: &quot;4.1&quot;</td>
</tr>
<tr>
<td>&amp;rdi.ver.build;</td>
<td>The R-Drive Image build. Example: &quot;4167&quot;</td>
</tr>
<tr>
<td>&amp;rdi.ver.major;</td>
<td>The R-Drive Image major version. Example: &quot;4&quot;</td>
</tr>
<tr>
<td>&amp;rdi.ver.minor;</td>
<td>The R-Drive Image minor version. Example: &quot;1&quot;</td>
</tr>
<tr>
<td>&amp;rdi.ver.subminor;</td>
<td>The R-Drive Image sub-minor version. Example: &quot;67&quot;</td>
</tr>
</tbody>
</table>

Result Entities

<table>
<thead>
<tr>
<th>Entity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;rdi.last_result;</td>
<td>Returns the last result of R-Drive Image operation. May be undefined, success, failed.</td>
</tr>
</tbody>
</table>

Time Entities.

In the examples below, the system time is assumed as 11:10:04 AM

<table>
<thead>
<tr>
<th>Entity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;sys.time;</td>
<td>System time in the locale format. Example: &quot;11:10:04&quot;. Please note that it is impossible to use this entity in file names because it contains an invalid character :.</td>
</tr>
<tr>
<td>&amp;sys.time.m;</td>
<td>Minutes</td>
</tr>
<tr>
<td>&amp;sys.time.h;</td>
<td>Hours in the 24 h format</td>
</tr>
<tr>
<td>&amp;sys.time.h12;</td>
<td>Hours in the 12 h format</td>
</tr>
<tr>
<td>&amp;sys.time.s;</td>
<td>Seconds</td>
</tr>
<tr>
<td>&amp;sys.time._m;</td>
<td>PM or AM</td>
</tr>
</tbody>
</table>

Date Entities.

In the examples below, the system date is assumed as February 1, 2007, Thursday

<table>
<thead>
<tr>
<th>Entity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;sys.date;</td>
<td>System date in the locale format. Example: &quot;29/01/07&quot;. Please note that it is not recommended to use this entity in file names because that will create a chunk of folders.</td>
</tr>
<tr>
<td>&amp;sys.date.d;</td>
<td>Month day. Example: &quot;01&quot;</td>
</tr>
</tbody>
</table>
&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
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;rdi.enum;</td>
<td>Defines the number of calls to this entity. Starts from 0.</td>
</tr>
<tr>
<td>&amp;rdi.enum.&lt;Num &gt;;</td>
<td>Defines the number of calls to this entity. Starts from 0. Num specifies the format of the number. Example: &amp;rdi.enum.3; will return 001 for the second calls to this entity.</td>
</tr>
</tbody>
</table>

### 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**

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5.3 Backup Sets

A backup set 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. Backup sets may be used when a number of tasks/scripts are used to create images of the same objects with the same filenames but with different parameters. Backup sets 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.

You may do that on the Imaging Mode panel.

Backup sets parameters

Note: R-Drive Image will keep at least one backup set, regardless of the parameters specified.

Zero parameter value disables the parameter.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup set size quota</td>
<td>Specifies the total size on the disk in MB allocated for the backup set. If it is exceeded, the older backup set (all its files) will be removed when a new backup set is created.</td>
</tr>
<tr>
<td>Maximum number of backup sets</td>
<td>Specifies the number of backup sets. If it is exceeded, the older backup sets (all their files) will be removed when a new backup set is created.</td>
</tr>
<tr>
<td>Maximum number of image files</td>
<td>Specifies the number of files in all backup sets. If it is exceeded, the older backup sets (all their files) will be removed when a new backup set is created.</td>
</tr>
<tr>
<td>Maximum backup set age</td>
<td>Specifies the number of days for which R-Drive Image will keep the oldest backup set. Then the backup set will be removed when a new backup set is created.</td>
</tr>
<tr>
<td>Also apply the settings before creating a new image</td>
<td>If this option is selected, the settings will be applied twice, before and after a new image file has been created. For example, if the number of files is set to 2, and there are 2 files already, one file will be deleted before a new image file will be created.</td>
</tr>
</tbody>
</table>

Backup set example

For example, you want to create an image file of your disk with the following conditions:

- A full backup of a disk once a week (Friday, 8:00 PM) and incremental backups on other days at the same time.
- The total size on the disk that may be used to store the image files is 20 GB.
- The number of backup sets is 3, the total number of files not exceeding 30.
- The oldest backup set should be removed in 21 days when a new backup set is created.

Then you need to create two tasks: one for the full data backup on Friday, the second one for the incremental data backup at 8:00 PM on all days except Friday.

The setting should be the following:

On the Image Destination panel

For the both task:

File name: I:\Test_Image.rdr
On the Imaging Mode panel:

**For the both task:**
- Use backup sets: Selected
- Backup size quota: 20000
- Maximum number of backup sets: 3
- Maximum number of image files: 30
- Maximum backup set age: 21

**For the full data backup task**
- Create a new full image: Selected

**For the incremental backup task**
- Append changes incrementally to the last image in the backup set: Selected

On the Time/Event panel:

**For the full data backup task**
- Perform the task: Weekly
- Run this task every: 1 week(s)
- On the days: Friday
- Start time: 8:00 PM
- Start Date: 4/4/2008

**For the incremental backup task**
- Perform the task: Weekly
- Run this task every: 1 week(s)
- On the days: Sunday, Monday, Tuesday, Wednesday, Thursday, Saturday
- Start time: 8:00 PM
- Start Date: 4/4/2008

File name convention:

Full backup: `<FileName>_<Date_of_First_Backup>_<Time_of_First_Backup>_1.rdr`
Incremental backup: `<FileName>_<Date_of_First_Backup>_<Time_of_First_Backup>_N+1.rdr`

N is the number of incremental backup

The files created

<table>
<thead>
<tr>
<th>Date</th>
<th>Files created on the destination;Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/4/2008</td>
<td>Test_Image_04042008_200000_1.rdr ;Full backup 1</td>
</tr>
<tr>
<td>4/5/2008</td>
<td>Test_Image_04042008_200000_1.rdr ;Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ;Incremental backup 1:1</td>
</tr>
<tr>
<td>4/6/2008</td>
<td>Test_Image_04042008_200000_1.rdr ;Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ;Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ;Incremental backup 1:2</td>
</tr>
<tr>
<td>Date</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>4/7/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td>4/8/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td>4/9/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td>4/10/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td>4/11/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td>4/12/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td>4/13/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_2.rdr ; Incremental backup 2:1</td>
</tr>
</tbody>
</table>

.............

.............
<table>
<thead>
<tr>
<th>Date</th>
<th>Backup Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/17/2008</td>
<td>Test Image 04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_2.rdr ; Incremental backup 2:1</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_3.rdr ; Incremental backup 2:2</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_4.rdr ; Incremental backup 2:3</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_5.rdr ; Incremental backup 2:4</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_6.rdr ; Incremental backup 2:5</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_7.rdr ; Incremental backup 2:6</td>
</tr>
<tr>
<td>4/18/2008</td>
<td>Test Image 04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_2.rdr ; Incremental backup 1:1</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_2.rdr ; Incremental backup 2:1</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_3.rdr ; Incremental backup 2:2</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_4.rdr ; Incremental backup 2:3</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_5.rdr ; Incremental backup 2:4</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_6.rdr ; Incremental backup 2:5</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_7.rdr ; Incremental backup 2:6</td>
</tr>
<tr>
<td></td>
<td>Test Image 18042008_200000_1.rdr ; Full backup 3</td>
</tr>
<tr>
<td>4/19/2008</td>
<td>Test Image 04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_2.rdr ; Incremental backup 1:1</td>
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<tr>
<td></td>
<td>Test Image 04042008_200000_3.rdr ; Incremental backup 1:2</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_4.rdr ; Incremental backup 1:3</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_5.rdr ; Incremental backup 1:4</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_2.rdr ; Incremental backup 2:1</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_3.rdr ; Incremental backup 2:2</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_4.rdr ; Incremental backup 2:3</td>
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<td></td>
<td>Test Image 11042008_200000_5.rdr ; Incremental backup 2:4</td>
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<td>Test Image 11042008_200000_6.rdr ; Incremental backup 2:5</td>
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<tr>
<td></td>
<td>Test Image 11042008_200000_7.rdr ; Incremental backup 2:6</td>
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<tr>
<td></td>
<td>Test Image 18042008_200000_1.rdr ; Full backup 3</td>
</tr>
<tr>
<td>4/20/2008</td>
<td>Test Image 04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_2.rdr ; Incremental backup 1:1</td>
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<tr>
<td></td>
<td>Test Image 04042008_200000_3.rdr ; Incremental backup 1:2</td>
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<td>Test Image 04042008_200000_4.rdr ; Incremental backup 1:3</td>
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<td></td>
<td>Test Image 04042008_200000_5.rdr ; Incremental backup 1:4</td>
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<tr>
<td></td>
<td>Test Image 04042008_200000_6.rdr ; Incremental backup 1:5</td>
</tr>
<tr>
<td></td>
<td>Test Image 04042008_200000_7.rdr ; Incremental backup 1:6</td>
</tr>
<tr>
<td></td>
<td>Test Image 11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td>Date</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4/24/2008</td>
<td>Test_Image_11042008_200000_1.rdr ; Incremental backup 2:1</td>
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<tr>
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<td>Test_Image_11042008_200000_2.rdr ; Incremental backup 2:2</td>
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<td>Test_Image_11042008_200000_3.rdr ; Incremental backup 2:3</td>
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<td>Test_Image_11042008_200000_4.rdr ; Incremental backup 2:4</td>
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<td>Test_Image_11042008_200000_5.rdr ; Incremental backup 2:5</td>
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<td>Test_Image_11042008_200000_6.rdr ; Incremental backup 2:6</td>
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<tr>
<td></td>
<td>Test_Image_18042008_200000_1.rdr ; Full backup 3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_18042008_200000_2.rdr ; Incremental backup 3:1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_18042008_200000_3.rdr ; Incremental backup 3:2</td>
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<td>Test_Image_18042008_200000_4.rdr ; Incremental backup 3:3</td>
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<td>Test_Image_18042008_200000_5.rdr ; Incremental backup 3:4</td>
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<td>Test_Image_18042008_200000_6.rdr ; Incremental backup 3:5</td>
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<tr>
<td></td>
<td>Test_Image_18042008_200000_7.rdr ; Incremental backup 3:6</td>
</tr>
<tr>
<td>4/25/2008</td>
<td>Test_Image_04042008_200000_1.rdr ; Full backup 1</td>
</tr>
<tr>
<td></td>
<td>Test_Image_04042008_200000_2.rdr ; Incremental backup 1:1</td>
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<tr>
<td></td>
<td>Test_Image_04042008_200000_3.rdr ; Incremental backup 1:2</td>
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<td>Test_Image_04042008_200000_4.rdr ; Incremental backup 1:3</td>
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<td>Test_Image_04042008_200000_5.rdr ; Incremental backup 1:4</td>
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<td>Test_Image_04042008_200000_6.rdr ; Incremental backup 1:5</td>
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<tr>
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<td>Test_Image_04042008_200000_7.rdr ; Incremental backup 1:6</td>
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<tr>
<td></td>
<td>Test_Image_11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_2.rdr ; Incremental backup 2:1</td>
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<td>Test_Image_11042008_200000_3.rdr ; Incremental backup 2:2</td>
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<td>Test_Image_11042008_200000_4.rdr ; Incremental backup 2:3</td>
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<td>Test_Image_11042008_200000_5.rdr ; Incremental backup 2:4</td>
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<td>Test_Image_11042008_200000_6.rdr ; Incremental backup 2:5</td>
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<td>Test_Image_11042008_200000_7.rdr ; Incremental backup 2:6</td>
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<td></td>
<td>Test_Image_18042008_200000_1.rdr ; Full backup 3</td>
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<td>Test_Image_18042008_200000_2.rdr ; Incremental backup 3:1</td>
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<td>Test_Image_18042008_200000_3.rdr ; Incremental backup 3:2</td>
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<td>Test_Image_18042008_200000_4.rdr ; Incremental backup 3:3</td>
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<td>Test_Image_18042008_200000_5.rdr ; Incremental backup 3:4</td>
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<td>Test_Image_18042008_200000_6.rdr ; Incremental backup 3:5</td>
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<tr>
<td></td>
<td>Test_Image_18042008_200000_7.rdr ; Incremental backup 3:6</td>
</tr>
<tr>
<td>4/26/2008</td>
<td>Test_Image_11042008_200000_1.rdr ; Full backup 2</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_2.rdr ; Incremental backup 2:1</td>
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<tr>
<td></td>
<td>Test_Image_11042008_200000_3.rdr ; Incremental backup 2:2</td>
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<td>Test_Image_11042008_200000_4.rdr ; Incremental backup 2:3</td>
</tr>
<tr>
<td></td>
<td>Test_Image_11042008_200000_5.rdr ; Incremental backup 2:4</td>
</tr>
</tbody>
</table>
Test_Image_11042008_200000_6.rdr ; Incremental backup 2:5
Test_Image_11042008_200000_7.rdr ; Incremental backup 2:6
Test_Image_18042008_200000_1.rdr ; Full backup 3
Test_Image_18042008_200000_2.rdr ; Incremental backup 3:1
Test_Image_18042008_200000_3.rdr ; Incremental backup 3:2
Test_Image_18042008_200000_4.rdr ; Incremental backup 3:3
Test_Image_18042008_200000_5.rdr ; Incremental backup 3:4
Test_Image_18042008_200000_6.rdr ; Incremental backup 3:5
Test_Image_18042008_200000_7.rdr ; Incremental backup 3:6
Test_Image_18042008_200000_2.rdr ; Full backup 4
Test_Image_18042008_200000_2.rdr ; Incremental backup 4:1

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Please note, that the oldest backup set would be deleted if the total size exceeds 20 GB or the number of all files from all backup sets exceeds 30.
VI Technical Information

This chapter gives technical information on

- Updates
- Logging
- Creating consistent point-in-time backups
- Support for Various Disk Partition Schemes and File Systems
- 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
- **Restore Data from an Image**
- **Copy Disk to Disk** to make an exact copy of one disk on another
- **Connect an Image as a Virtual Logical Disk** (read-only)
- **Disconnect 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:

- Windows Software RAIDs, Spanned, and Other Volumes
- Windows Storage Spaces
- Mac 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
- Scripting and Command Line Operations
- 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](#).

### 6.1 Updates

You may get R-Drive Image updates either on the **About R-Drive Image** dialog box, or on the Startup panel.

**R-Drive Image startup panel**

![R-Drive Image startup panel](image)

### 6.2 Logging

You may turn on logging.

**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.

![About R-Drive Image dialog box](image)

### 6.3 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.


**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.

<table>
<thead>
<tr>
<th><strong>Backup Options</strong></th>
<th>A snapshot provider is a service <strong>R-Drive Image</strong> uses to read the disk content while creating its image. <strong>R-Drive Image</strong> 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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Volume Snapshot Service</td>
<td>If this check box is selected, <strong>R-Drive Image</strong> 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.</td>
</tr>
<tr>
<td>R-TT Volume Snapshot Service</td>
<td>If this check box is selected, <strong>R-Drive Image</strong> will try to use R-TT snapshot provider. This snapshot provider is not able to notify system applications that a snapshot is being taken.</td>
</tr>
<tr>
<td>Notify system applications</td>
<td>If this check box is selected, the snapshot provider, if it supports this feature, notifies system applications that a snapshot is being taken.</td>
</tr>
<tr>
<td>Process priority</td>
<td>These options specify how much computer resources <strong>R-Drive Image</strong> will consume during a backup process.</td>
</tr>
<tr>
<td>Backup Process Priority</td>
<td>Specifies the priority of the backup process. Similar to that specified in Windows Task Manager.</td>
</tr>
<tr>
<td>Use CPU cores</td>
<td>Specifies how many processor cores <strong>R-Drive Image</strong> will use for the backup process.</td>
</tr>
</tbody>
</table>
| 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 application, 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 application, 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`

**Save as default**

Click this button to make the current settings default.

**Reset**

Click this button to reset the current settings default.

**Restore defaults**

Click this button to restore default settings.

If any of **Backup AUX applications** and **Snapshot AUX applications** are executed, the following environment variables are set:

<table>
<thead>
<tr>
<th>Environment Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R_CALLBACK_UID</strong></td>
<td>A unique digital backup id used in all calls for external commands pertaining to that backup process.</td>
</tr>
<tr>
<td><strong>R_CALLBACK_STAGE</strong></td>
<td>Takes the following values:</td>
</tr>
<tr>
<td></td>
<td>BEFORE_BACKUP</td>
</tr>
<tr>
<td></td>
<td>AFTER_BACKUP</td>
</tr>
<tr>
<td></td>
<td>BEFORE_SNAPSHOT</td>
</tr>
<tr>
<td></td>
<td>AFTER_SNAPSHOT</td>
</tr>
<tr>
<td><strong>R_VOLUME_NAMES</strong></td>
<td>A comma-separated name list of partitions to be processed.</td>
</tr>
<tr>
<td><strong>R_VOLUME_GUIDS</strong></td>
<td>A comma-separated GUID list of partitions to be processed</td>
</tr>
</tbody>
</table>
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:

```plaintext
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}
```

```plaintext
R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_SNAPSHOT
R_VOLUME_NAMES=C:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008}
```

```plaintext
R_CALLBACK_UID=2008
R_CALLBACK_STAGE=AFTER_SNAPSHOT
R_VOLUME_NAMES=C:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008}
```

```plaintext
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}
```

Note: If the system settings permit, several disks may appear in one snapshot. Then the following calls will appear:

```plaintext
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}
```

```plaintext
R_CALLBACK_UID=2008
R_CALLBACK_STAGE=BEFORE_SNAPSHOT
R_VOLUME_NAMES=?:,D:
R_VOLUME_GUIDS={d5f570a1-2978-11dc-83bf-005056c00008}
```

```plaintext
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}
```

```plaintext
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}
```
6.4 Support for Various Disk Partition 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 partition layout are supported for basic (regular) and dynamic MBR/GPT disks. **R-Drive Image** can change partition layout (the number of partitions and their sizes) while restore the data.
- The other partition layouts 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 layout with the above limitation, and a partition of another layout may be restored as a basic one without limitations.

Partitions with various file systems are supported by **R-Drive Image** differently:

<table>
<thead>
<tr>
<th>File system</th>
<th>Imaging/Copy</th>
<th>Restore</th>
<th>Partition Resizing*</th>
<th>Virtual Disk Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAT (16/32), NTFS</td>
<td>Byte-by-byte and Useful Information Only</td>
<td>Entire partition and Selected folders and files.</td>
<td>Yes.</td>
<td>Yes</td>
</tr>
<tr>
<td>exFAT, ReFS</td>
<td>Byte-by-byte and Useful Information Only</td>
<td>Entire partition and Selected folders and files.</td>
<td>No</td>
<td>Yes (if the Windows version supports)</td>
</tr>
<tr>
<td>HFS/HFS+</td>
<td>Byte-by-byte and Useful Information Only</td>
<td>Entire partition and Selected folders and files.</td>
<td>Yes</td>
<td>No (Yes, if third-party file system drivers are installed)</td>
</tr>
<tr>
<td>APFS</td>
<td>Byte-by-byte and Useful Information Only</td>
<td>Entire partition and Selected folders and files.</td>
<td>No</td>
<td>No (Yes, if third-party file system drivers are installed)</td>
</tr>
<tr>
<td>Little and Big Endian variants of UFS1/UFS2 and Ext2/Ext3/Ext4 FS (Linux)</td>
<td>Byte-by-byte and Useful Information Only</td>
<td>Entire partition and Selected folders and files.</td>
<td>No</td>
<td>No (Yes, if third-party file system drivers are installed)</td>
</tr>
<tr>
<td>Unknown</td>
<td>Byte-by-byte</td>
<td>Entire partition</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

* For non-MBR/GPT disk partition schemes, partition resizing can be done within existing disk partition layout.
6.5  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](#)

6.6  List of Hardware Devices Supported in the Startup Mode

In the startup mode, **R-Drive Image** supports the following hardware devices:

### Data Storage 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

### Networking Devices
- 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
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VIA SATA
VITESSE VSC-7174 / INTEL 31244 SATA
Winbond SL82C105 PATA
Winbond W83759A VLB PATA

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- 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
- 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
- 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
- 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
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
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 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 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

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Olympus MAUSB-10/Fuji DPC-R1
R8A66597 HCD
SL811HS HCD
SSB ush 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
- 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
VII R-Drive Image OEM kit

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, a new item will appear on the Action Selection Panel.
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
- Restore Data from an Image
- Copy Disk to Disk to make an exact copy of one disk on another
- Connect an Image as a Virtual Logical Disk (read-only)
- Disconnect 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.
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**.

### 7.1 Create a Master Image

A master image is the image of the hard drive/logical disk or partition which you will use 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.
7.2 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 Selection 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 system recovery disks on the Removable Media Device Selection 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.

4 Specify the options for the system recovery disks on the OEM System Recovery Media Options panel and click the Next button.

<table>
<thead>
<tr>
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<tr>
<td><strong>Media:</strong></td>
</tr>
<tr>
<td>Select the media type you would like to have. R-Drive Image will automatically split the data accordingly.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Options</th>
</tr>
</thead>
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<tr>
<td>If this check box is selected</td>
</tr>
<tr>
<td>Create media in demo mode</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>
**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.

<table>
<thead>
<tr>
<th>Client will search image on all disks</th>
<th><strong>R-Drive Image</strong> will search for the master image on all disks (in their root only) in the system rather than on the startup disk only.</th>
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<tr>
<td>Disable target (and source) disk selection</td>
<td>the user will not be able to specify the target object to which the data will be restored if <strong>R-Drive Image</strong> could not find the target for data recovery automatically. If this option is clear, the user could click the Back button on the <strong>Confirm Operation</strong> 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.</td>
</tr>
<tr>
<td>Disable source disk selection</td>
<td>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 <strong>Confirm Operation</strong> panel and manually select the source for data recovery in the image.</td>
</tr>
<tr>
<td>Raw disk copy/restore</td>
<td><strong>R-Drive Image</strong> will enforce the Raw disk copy/restore as the first option during data restoring.</td>
</tr>
<tr>
<td>Automatically reboot on successful restore</td>
<td><strong>R-Drive Image</strong> will open the disk tray for the data recovery CD disc, and restart the system automatically upon data recovery.</td>
</tr>
<tr>
<td>Perform restoration without confirmation</td>
<td><strong>R-Drive Image</strong> will not require action confirmation from the user. If <strong>R-Drive Image</strong> 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.</td>
</tr>
<tr>
<td>GUI mode</td>
<td><strong>R-Drive Image</strong> will start in the following GUI mode: GUI, GUI/SVGA, TUI</td>
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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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