did you save your data today?

Continuous backup
1 Data are money

You will value an asset latest when you have lost it. This is very true for the data stored on our computers. No matter whether it’s the pictures of the children’s wedding, proposals sent to customers or the payments due handled by the book keeping software. As far as private data are concerned the loss is “only” annoying. But for companies or self-employed people a loss of data means additional costs and additional trouble.

For risk management backing up data is a must. More and more documents are processed electronically. A lack of forehandedness against the threat of losing data is culpable negligence. In most cases human errors cause sudden loss of data. Second winner is buggy software. Failing hardware is comparably seldom among the causes for unexpected loss of data.

Software produces data that have to be stored permanently. These data are vulnerable and are exposed to many dangers.

Once the data are gone recreating them takes time or is even impossible. Dig cam pictures taken will be gone definitely. An order book with all progress report of last week can be keyed in again, but it’s an awful job to do. Account statements can be reloaded from the bank for the last 90 days, all others would have to be keyed manually.

Buggy software is one of the reasons for unexpected data loss. According to Murphy’s Law your text program will crash shortly before you finished your document. A book keeping system might delete all outstanding orders during the year end run.

Nevertheless the ultimate cause for loss of data is the user. This is not aimed at the “dummy” but at mistakes that are easily made when working with a computer. Unfortunately the best of these bloomers originate instantaneous loss of data. Using an existing letter as a template for a new one without changing the file name will reliably override the existing letter by saving the changed file. A hastily click answerer a question might have been the “yes” for “are you sure to delete …”

RAID-Disk and redundant server are no remedy at all for human errors. The same is true for mirrored disks: Any error made, may it be human or software, will be mirrored very reliable to the 2nd disk. Real protection against sudden loss of data only derives from backing up data. Best would be to back up data every time the data changes. This is what rReplikator is about.

rReplikator monitors your data and will instantly make a copy of every file that changes. In addition, a copy is made to a “history” folder, where versions of the changed files are stored. All this is done in the background without any user action necessary. In case of any problem with a file or all your data, the file or all your folders can be easily restored with rRestaurator. In addition rReplikator will create zip-files of all changed files on a scheduled basis. Burning these files to CDs or online storing them is all you have to do for archiving.
2 Automate your backup without any hassle.

rReplikator is watching all folders containing your data. As soon as a file changes, rReplikator will copy the file to "another place". "Another place" might be a directory on the same hard disk the data reside on. Even better is a copy to another disk. If the data disk fails, the other disk still contains a timely copy. For sure, "another place" may be on another computer or server in a network.

rReplikator mirrors all changes. If a file is renamed, the copy will be renamed as well. If a file is moved to another folder, the file will be moved in the copy as well. Renaming a file or a folder is replicated. Well, deleting files gets replicated in an instant, too. To be harboured against accidental deletion of files and to be able to fall back to former versions of a file, rReplikator stores versions of changed data in a history folder. The target the history folder may as well reside on a separate disk or a server in a network. All operations like copy, rename or versioning are done in the background and are not visible for the user (besides a flicker of the hard disk LED from time to time).

The following example of Joe’s plumber shop explains how rReplikator is working for you.

2.1 A picture is worth a thousand words

Joe is running a plumbers shop. He is maintaining all his data on his computer. Joe uses rReplikator to backup his data to a 2nd hard drive attached to his computer.
Automate your backup without any hassle.
Picture (1) – how Joe organizes data and replication.

These are Joe’s data

Here we’ve got Joe’s data replicated …

… and versions of Joe’s data
Joe has got a new customer: Abe Incorporated. Joe is going to set up a new folder for them in his customer folder.

... the new folder is replicated immediately ...

... to history as well
Picture (3) – a created file gets replicated

Joe sets up a file for the address information.

The new file is replicated immediately …

…and a version with a timestamp is stored.
Picture (4) – a version of a changed file is stored

Email-address was missing…
… Joe changes the address file

The changed file is replicated immediately …

…and a 2nd version is stored to history
2. **Replikator** manual

Automate your backup without any hassle.

Picture (5) – a file is created and gets replicated

Joe is setting up a sheet for the payments due

The sheet is replicated immediately …

… and a 2nd version is stored to history
Picture (6) – a file is renamed. New name is set in target folder and history folder.

Oops – there has been a typo. Joe corrects the file name…

… correction is replicated immediately …

… to versions as well.
Picture (7) – a file is created. The file gets copied to target and history.

On the 4th Joe adds an entry to Abe Inc’s due payments

… sheet gets replicated …

… and versioned.
Picture (8) – a file is created. The file gets replicated and versioned.

Joe writes a letter to Sam Abe

... letter gets replicated ...

... and versioned
Picture (9) – a file is changed. The file gets replicated and versioned.

Joe adds some changes to the calc sheet.

… sheet gets replicated …

… and versioned
Picture (10) – a file is deleted. The file is deleted in target but remains untouched in history.

Oh sh… by mistake Joe deleted the due payments sheet.

… deletion has been replicated immediately …

… for sake the latest version is still available here

Joe copies the file from the history folder to his working directory, renames the file back to "Abe Inc payments Due.xls" and the matter is solved.
3 Installation and License

3.1 Install rReplikator

rReplikator is shipped in a single file "rReplikatorProgramInstaller[EN].msi".

Before installing rReplikator please ensure that the Microsoft .NET ® library is installed on your computer. You can check if you already have the .NET Framework 2.0 or 3.0 installed by clicking [Start] on your Windows desktop, selecting [Control Panel], and then double-clicking the Add or [Remove Programs] icon. When that window appears, scroll through the list of applications. If you see Microsoft .NET Framework x.x listed, the latest version is already installed and you do not need to install it again. To install the .NET framework you can use the automated procedure with http://windowsupdate.microsoft.com or download the installation file from http://www.microsoft.com/downloads.

Invoking rReplikatorProgramInstaller.msi" without having the .NET-framework installed will result in the following dialogue:

Clicking yes will connect you to Microsoft’s download pages, if you are connected to the InterNet
Please be aware that rReplikator will only under Windows XP, Windows 2003 server, Windows 2000 (service pack 2 recommended) and Windows NT 4.0 (service pack 6 needed).

To install rReplikator double click " rReplikatorProgramInstaller.msi" in your file explorer and follow the instructions. If you already have a version of rReplikator installed the installation de-install it before installing a new version (see De-Install on page 20 on how to de-install). You have to exit rReplikator before de-installing or installing a new version.

The installation will add "rReplikator" to your start-up-folder to ensure rReplikator is started every time you start your computer. An entry "rReplikator" is added to your start folder as well – there you will find "rReplikator | rReplikator" to start the program manually. After finishing the installation rReplikator will be started automatically.
The default language is English. All currently supported languages are listed – you may switch to the language of your choice.

If you did not buy a license yet you can test rReplikator for 30 days. Decide what functionality you want to test (you may re-decide on every start of rReplikator):

<table>
<thead>
<tr>
<th>Feature</th>
<th>Basic</th>
<th>Premium</th>
<th>Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realtime replication source local, target any</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Versioning of files in a history folder</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Copy jobs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>encryption and decryption</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>aArchivator</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>rRestaurator</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>eMail messages</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Compression of copied files</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Encryption of copied files</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Realtime replication source any, target any</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Bandwidth testing before activation</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Recognise networks for automatic profile switching</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Copy jobs for FTP-sites</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Several targets for replication</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Several targets for copy jobs</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Runs on Windows 2003 server operating systems</td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

Click the button “use trial period” to start rReplikator. To buy a license online either choose buying a basic, a premium or a server license. Only the premium version comprises eMailing (page 46), aArchivator (page 48) and rRestaurator (page 56), only the server version is able to monitor files on folders on other computers in the network. To enter a license, click the enter license button. A new dialog will appear where you will enter the license data:
Please enter your name exactly as shown in the email that contains your license without the leading and trailing hyphens but with leading spaces. Using copy & paste will avoid typos. The license information will be stored together with your name and will be shown in the set-up dialog of rReplikator.

Please do not use unauthorized copies of rReplikator — it was a tough job to implement and deploy this neat piece of software.

### 3.2 De-Install

To de-install rReplikator run "rReplikatorProgramInstaller.msi" again and choose the remove option.
rReplikator will be de-installed. Your settings in “C:\Program Files\rReplikator” will not be deleted and your license will not be deleted. (How to delete the license see 

The other way to de-install rReplikator is invoking Start | Control Panel | Add or Remove Programs:
3. Replikator manual

Installation and License

![Add or Remove Programs window showing Replikator software installed]
The actual list you will see depends on the software you have installed. Scroll to Replikator and choose Remove.

### 3.3 Test license expired

30 days after the first installation your test license expires. When starting Replikator or invoking SetUp you will see the following dialogue:

- The „Buy“ buttons will start your Internet Explorer and open the respective web site at ShareIt’s. ShareIt is the company handling the procurement.
- “enter License” will open the license form
- “cancel” will leave rReplikator

### 3.4 Several users share a computer

Several user accounts may be set up on a computer. But rReplikator will only be available for the user who installed rReplikator. In order to make rReplikator available for other users logging on to this computer it is necessary to install rReplikator for this user.
No installation after the first installation will be given another test period. You will have to enter your license for every additional user. No, you do not have to buy additional licenses, you only have to enter it again. When installing rReplikator on a second computer, you will need a second license. Otherwise the poor programmer who made rReplikator will starve.

Let’s assume that Andy has an account on the computer you are working on. To make rReplikator available for Andy, please follow these steps:

1. Log on to your computer as Administrator.
2. Andy does not have administrator rights. For installing software, these rights are needed.
3. Please change Andy’s account under „Control Panel | User Accounts“
4. Log off
5. Log on as Andy (if necessary let Andy key in his password)
6. Start the rReplikator installation file and install rReplikator
7. Start rReplikator. There will be an error message that the license could not be read. Click ok and restart rReplikator. You will see the enter license form. Please enter your license and click ok.
8. Log off as Andy
9. Log on as administrator
10. Set Andy’s account back to the original rights

All set – Andy will be able to set up his own rReplikators. Please bear in mind that rReplikator will not be able to check various user settings against each other. If users do not log off but switch users, several rReplikator instances will be running. Please make sure, that these will not compete e.g. for target folders.

Important: A user that de-installs rReplikator will de-install it for all users. The settings and the license will still be there for all users, but the program itself will be deinstalled. At least one user will have to re-install rReplikator.
4 For mobile users

4.1 Automatic profile switching

Those who use their laptop in the office and at home or do travel a lot and use different kinds of network access use profiles to trigger rReplikator’s behavior.

A profile “office” might replicate local data to a company server with plenty of versions saved, a profile “traveling” might replicate to a USB-Stick with only two versions in history.

rReplikator will recognize the network your computer is attached to. As unique identifier the server’s network card MAC is used together with the servers name. Find out the MAC address of your server by using the command “ipconfig /all”. You will see all networks recognized in the following dialogue:

If your computer is not attached to a network then you will see an entry „(local) – YourComputersName“. For linking a profile to a network first click the network then click the profile and then the “<<<<<<<” button. The tree view on the left site will show the linkage:

To unlink a profile click the network shown in the tree view and click the „>>>>>>>“ button. Clicking a profile name in the tree and the „>>>>>>>“ button will unlink all networks shown for that profile.

After program start, awaking from hibernate or switching networks rReplikator will check whether any profile is linked to the current network. If so the respective profile will be started. Otherwise the startup profile will be started.
4.2 Bandwidth threshold

Laptop users know about the issue of accessing a network via a slow connection – using the connection might be like walking through mud, very, very slow.

Define a bandwidth threshold for rReplikator activation using the “Setup | rReplikator | Admin” page. When this option is set rReplikator will check the bandwidth achieved for copying to all targets and the history folder. In case the bandwidth is lower than the threshold set the respective rReplikator will not be activated. Status monitor will show all connections as green but the rReplikator in red as disabled.
5 Setting up and changing rReplikators

5.1 Where to find the program

When running rReplikator shows a yellow icon in your taskbar. The start menu has an entry “rReplikator | rReplikator to start the program. Each time you start your computer, rReplikator will be started due to an entry to “programs | startup”.

The mouse over the rReplikator-icon will show the currently active profile and its rReplikators and their status. In this example the profile “Netzwerk” is active with two rReplikators are set up, their names are “business” and “Letters”. Both rReplikators are active (enabled), shown by the leading “+” sign. A leading “-“ would indicate a status “inactive” (disabled).

By right clicking the rReplikator-icon it is possible to

- invoke the SetUp form
- invoke the monitor window
- start rRestaurator
- start eArchivar
- ReSync all defined rReplikators
- invoke all defined copy jobs
- leave rReplikator

5.2 rReplikator Wizard

When starting rReplikator for the first time invoke the rReplikator Wizard from the setup menu by clicking the “new rReplikator” button. The wizard will guide you through the steps for setting up a rReplikator:
The **Cancel** button will always exit the set-up wizard.

With **Back** you may go back on step.

**Next** will bring you to the next step in setting up a new rReplikator.

First step – select the source folder.
This is the folder containing the files you want to be replicated. If you have several folders to replicate, choose the first one. For the others you will invoke the set-up wizard again.

The folder browser.
Choose the source folder.
Please select the source folder.
It allows you to make a new folder and the highlighted folder. It is possible to rename or remove folders by using the "right mouse button menu".

**Cancel** will bring you one step back in the wizard.
**OK** will bring you to the next wizard step.

Second step – choose the target folder.
The target folder is the folder all files from the source folder will be replicated to. The name of the source folder will be iterated in the target folder.

Example:
Your source folder is c:\Data\ImportantStuff.
When choosing "D:\Save" as target folder, rReplikator will add "ImportantStuff" to the target path.
The folder browser. Choose the target folder or make a new folder for the target.

- Click on the highlighted folder to make a new folder under the highlighted folder. It is possible to rename or remove folders by using the “right mouse button menu”.
- Click on the folder browser to bring you to the next wizard step.

Third step – Versioning

`Replikator` can save versions of your files (history) in another folder.

- Click on “No” to skip the step “define versioning”.
- Click on “Yes” to bring you to the next step in defining the versioning.

The folder browser. Choose the history folder or make a new folder for the versions.

- Click on the highlighted folder to make a new folder under the highlighted folder. It is possible to rename or remove folders by using the “right mouse button menu”.
- Click on the folder browser to bring you one step back in the wizard.
- Click on the folder browser to bring you to the next wizard step.
Third step – Versioning. How many versions?
Every time a file already there is changed, rReplikator will save a copy in the history folder. But only until the maximum number of versions to be saved is reached. rReplikator will then delete the eldest file before saving a new version. The default value is 100. It's possible to set a higher number, but please be aware that every new version eats up a piece of your disk space. It is possible to change this value later in the set-up form.

Third step – Versioning. When to save a new version?
Files might change very often, so that it makes no sense to save a new version for every change. In this step you define the amount of time (in seconds) that has to elapse, before a new version will be stored. The default value is one hour (3600 seconds). It is possible to change this value later in the set-up form.

Fourth step – Initial copy
rReplikator can copy all files found in the source folder to the target folder thus making a first back up of your data.

Last step – everything ok?
Please check again the settings as shown in the wizard progress field.

5.2.1 The SetUp – Dialog

Before starting with set up you may again choose your language with English.
You may define several rReplikators. The middle part of the set up form lets you choose the rReplikator to work on:
5. Setting up and changing rReplikators

With the arrows and you do move forward and backward through the list of defined rReplikators. You now may change the settings of a rReplikator defined with the wizards aid or set up a new rReplikator by invoking the wizard with

5.2.2 Directories

Click to enter the source directory – the one that contains the data you want to replicate. Select an existing folder with the folder browser dialog

With you determine the target directory – this is the directory all files from the source will be replicated to. The target path might be a different directory on the same drive. That would not protect hardware failure of the disk itself but it can help with damaged files. Putting the target directory on a second disk as done in this example protects against hardware failure – the data are on a different disk. If your computer is part of a workgroup or a domain you can choose to put your target directory to a different computer. Navigate to “My Network Places” in the folder browser and choose the computer, drive and folder for your target path. It is possible to choose a removable drive like a DVD-RAM for your target directory. If you do so you will have to ensure that the right medium is present when rReplikator is expected to do its work.

The server version allows to define several targets. All targets will be shown in the list. You may disable a target temporarily by unchecking the check mark. This state will be saved.

With you set up the path, where the version history of your files will be stored. Please be aware that a multiple of the disk space occupied by the data in the source directory will be necessary for the history. Every time a file is changed in the source directory a new version will be stored in the history directory: 

www.rReplikator.com
5. Setting up and changing rReplikators

Every file in the history folder is a self-contained copy of the original file. You can use it without any other tool but the tool you created it with. The button for the history path is disabled as long as the history settings have not been made.

5.2.3 History Settings

With the number of versions is set. With zero no versions will saved at all, versioning is switched off. It is recommended to hold at least 10 versions of your files. As soon as the given number of versions will be reached, rReplikator will delete the oldest file in the version history.

With rReplikator is told to wait a given time before saving a new history version – for example you might choose that a new history version will only be written 15 minutes after the last saving of history version, no matter how often the file was saved in the meantime. Typical intervals are 10 minutes or 1 hour. Saving a new version every day will save disk space but might lead to a loss of intraday work.
5.2.4 Additional targets

The server version is able to replicate files to additional targets. This option allows for example to replicate files to two different servers in the network to increase resilience.

After having defined a rReplikator with the wizard, just add additional files by clicking the “target” button. The folder browser will open and let you choose an additional target.

If more than one target is defined, changed files will be first copied to the temporary folder you defined for your profile. The default temporary folder is “c:\temp”. Copying first to a temporary folder avoids long blocking of the source file while copying to various targets.

There is a context menu for managing the additional targets:

The checkmark shown in the list for every target enables or disables replication to that target. This state (enabled or disabled) will be saved. For temporarily disabling a target (or the whole rReplikator) please use the status monitor status tree view.
5.2.5 What files types will be replicated?

Not all files found in the source folders should be replicated. What seems to be a contradiction to the basic idea of mirroring all files is rather reasonable when looking at temporary files. Most applications produce these temporary files that are deleted after their use. Word for example produces temporary files like “~bla1932.tmp”. Mirroring these files would be a futile waste of resources. Therefore rReplikator knows several policies how to determine whether to replicate a file or not:

You may for example want to restrict the type of files to be replicated. The file type is represented by a file’s extension – e.g. .DOC for word files or .JPG for pictures compressed according to the JPEG-standard. By adding “.JPG” to the black list, all files showing the letters “.JPG” in their name will not be replicated (they are “black listed”).

![RReplikator Configuration Interface](image)
These are the 5 different policies.

### 5.2.5.1 No black listed

Replicate all files that are not black listed

The default is to replicate all file types found in the source folder. After having set up a rReplikator with the SetUp Wizard, all file types found in the source folder will be looked at as candidates for replication. They will be replicated when changed. If there are file types you do not want to be replicated, add their extension to the black list (see “Managing the lists” on page 40). If you do not want files being replicated that match a pattern in their name, add this pattern to the black list.

Example: your camera sets the filenames of all pictures taken to “Image 0135.jpg”, where the “0135” is used for numbering the pictures “Image 0136.jpg”, “Image 0137.jpg” etc. When you transfer the pictures from your camera to your computer into a replicated folder, all these pictures would be replicated immediately. You will change the names of the pictures to self explaining texts like “Sam in Holidays 2005.jpg” and probably you will put some effort in enhancing the pictures. The resulting files should be replicated.

In order to prevent replication, add “Image” to the black list. But bear in mind, that all files that have the letters “image” in their name, will not be replicated. The picture “How to make an image.doc” is black listed, there are the letters “image” in the file name (uppercase is seen as lowercase).

### 5.2.5.2 No black listed, only registered or white listed file types

If a file is black listed, do not replicated. Is it not black listed, then only do replicate it if it’s type is either registered or white listed.
The default setting “No black listed” may lead to many files being replicated, that should not be replicated like backup files or temporary files. When software is installed on your computer it registers its valid file types as well. The file type is seen as the extension of a filename. Word, for example, registers “doc”, “docxhtml”, “dot” and “doxhtml” as Word file types. On a typical PC the list of registered file types shows about 500 to 800 entries. For rReplikator all files registered on a computer are to replicate by default. In other words: Every file with an extension found in the registered file types will be replicated.

There might be files in your directories which you want to be replicated but that do not have a registered file type. Add this types to the white list and they will be replicated.
5.2.5.3 No black listed, ask me for unknown types.

If a file is black listed, do not replicated. If it is not black listed, but its type is neither registered nor white listed, then ask me.

Maintaining a white list until all file types you want to be replicated are in there might be a lengthy job. In this strategy for every unknown, not black listed file type a question will pop up.

Adding the file type to the white list will replicate the file now and in future. Adding the file type to the black list will prevent rReplikator from replicating this file and in future.

When using the policy “Ask me” make sure to sit in front of your computer to answer the questions popping up. rReplikator will be waiting for your answer.

You can preset the white list with all file types found in the source directory by choosing “learn file types” in the white list’s context menu (see “Managing the lists” on page 40). When choosing “ask me” the SetUp | Admin option “learn new file types” will be set to “off”.

5.2.5.4 Only white listed

This is a restrictive policy: Only replicate files when their type is white listed.

Let’s assume that you are working in a document of type “.doc” using a lot of pictures and tables you add in. You are publishing the document as a PDF. If you want only the document and the generated PDF to be replicated, but all the other stuff not, then choose “only white listed”, clear the white list and add the two types “.doc” and “.pdf”.

Please make sure to have at least one type white listed, otherwise no file will be replicated at all.
5.2.5.5 No black listed, Only white listed

This is the most restrictive policy: Only replicate files when their type is white listed, but only if not black listed.

Taking the example of “5.2.5.4 Only white listed” you might want to exclude “.doc” files you produce for quality assurance by others. Add a “ForQA” to your black list and name all the documents delivered to quality assurance like “Manual V03.026 [English] ForQA.doc”. These files will then not be replicated.

5.2.5.6 The file options

There are 3 additional options that apply for every policy:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replicate files without extension</td>
<td>Some applications generate valid files without an extension. What is a bit silly, because these files are of no type. Per default, these files will be copied. If you need to exclude these files because for example an application generates temporary files that should not be replicated, switch this option off</td>
</tr>
<tr>
<td>Try replicating system files</td>
<td>System files are normally in use and can not be copied. rReplikator will per default not even try to replicate files that show the attribute “system”. By checking this option you will force rReplikator to try to replicate a changed system file. What does not guarantee that the file will be replicated. It might be locked as long as windows is running.</td>
</tr>
<tr>
<td>Try replicating hidden files</td>
<td>Some applications hide for example the files where they store their settings. Per default, these files would not be copied (they are made hidden by purpose). By setting this option you will force rReplikator to try to copy these files.</td>
</tr>
</tbody>
</table>
5.2.6 Managing the lists

Every list has a right click context menu to manage the list.

5.2.6.1 Managing the white list

<table>
<thead>
<tr>
<th>List</th>
<th>Registered Types</th>
<th>Block list</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Add an entry to the white list. Edit your entry in the input field and click OK to add this entry or cancel adding.</td>
<td></td>
</tr>
<tr>
<td>Delete</td>
<td>Before deleting an entry please left clicks to the entry you want to delete. The entry will be highlighted. The right click to invoke the context menu and choose delete. The entry will be deleted immediately. You’ve chosen the wrong one to delete? Click “Undo” to go back to the settings you saved.</td>
<td></td>
</tr>
<tr>
<td>Save</td>
<td>You can save all white list entries to a “.txt” file to save it for further use or to edit it with an editor of your choice. Please select the directory to save the list to, key in a file name and click ok.</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>Loads a list previously saved or manually compiled. The current list will be replaced by the list loaded.</td>
<td></td>
</tr>
<tr>
<td>To black list</td>
<td>To move a file type from white list to black list, highlight it by left clicking and then right clicking “to black list” in the context menu.</td>
<td></td>
</tr>
<tr>
<td>All to black list</td>
<td>This function will move all white listed file types to the black list</td>
<td></td>
</tr>
<tr>
<td>Learn file types</td>
<td>rReplikator will collect all file types of the source folder defined and add the file types found but not registered to the white list. This makes sure, that all file types currently in your source directory will be replicated when choosing a white list based policy.</td>
<td></td>
</tr>
<tr>
<td>Clear white list</td>
<td>Will delete all items of the white list (there is the undo button).</td>
<td></td>
</tr>
</tbody>
</table>

5.2.6.2 Managing the black list
## Setting up and changing rReplikators

### Table of Actions

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Add</strong></td>
<td>Add an entry to the black list. Edit your entry in the input field and click OK to add this entry or cancel adding.</td>
</tr>
<tr>
<td><strong>Delete</strong></td>
<td>Before deleting an entry please left clicks to the entry you want to delete. The entry will be highlighted. The right click to invoke the context menu and choose delete. The entry will be deleted immediately. You’ve chosen the wrong one to delete? Click “Undo” to go back to the settings you saved.</td>
</tr>
<tr>
<td><strong>Save</strong></td>
<td>You can save all black list entries to a “.txt” file to save it for further use or to edit it with an editor of your choice. Please select the directory to save the list to, key in a file name and click ok.</td>
</tr>
<tr>
<td><strong>Load</strong></td>
<td>Loads a list previously saved or manually compiled. The current list will be replaced by the list loaded.</td>
</tr>
<tr>
<td><strong>To white list</strong></td>
<td>To move a file type from black list to white list, highlight it by left clicking and then right clicking “to black list” in the context menu.</td>
</tr>
<tr>
<td><strong>Browse for file</strong></td>
<td>This function lets you add the name of a dedicated file. In the file browser that opens navigate to the file you have in mind an click OK. The name plus extension will be added to the black list.</td>
</tr>
<tr>
<td><strong>Clear black list</strong></td>
<td>Will delete all items of the black list (there is the undo button).</td>
</tr>
</tbody>
</table>
5.2.6.3 Using the list of registered file types

The list of registered files is filled during program start. You can not edit this list but make use of the items listed:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>To black list</td>
<td>Moves a registered type to the black list. This prevents this file type from being replicated in the policies that use the black list.</td>
</tr>
<tr>
<td>All to black list</td>
<td>If you want to exclude many registered files by black listing, it might be convenient, to add all registered files to the black list, export the black list to a txt file and edit the black list there.</td>
</tr>
<tr>
<td>Delete all in black list</td>
<td>Will delete all file types found in black list, that are registered as well.</td>
</tr>
</tbody>
</table>
5.3 Exceptions

If you have data with different life cycles in your data directory and you do want rReplikator to handle different files differently, it's possible to define exceptions. An exception is valid for all files and subfolders of a folder. It is possible to define an exception for a subfolder of a folder that already has an exception defined.
Exceptions may override the settings for:

- **Replication enabled:**
  By disabling replication for a folder none of the files in this folder and its subfolders will be replicated.

- **Number of versions**
  Can be set to be more or less than the settings for this rReplikator. Setting the number of versions to zero has the same effect than disabling replication.

- **The time interval for versioning**
  May be changed to set more or less frequent versioning. Setting the interval to zero will create a new version every time the file is changed.

To add an exception to an existing rReplikator choose the exceptions tab page and activate the context menu with a right mouse click.

### 5.3.1 Define an exception

Choose the subfolder you want to set the exception for in the tree view: The path you have chosen will be shown in the status field.
Set number of versions and time interval between versions as appropriate for your data.

It is possible to define exceptions for subfolders that already have an exception. The rule is that for a given full name like `f:\business\book keeping\payroll\MyData` the exception with the longest name will be applied.

If you defined

- "f:\business\book keeping" with 25 versions and an interval of 5 minutes

and

- "f:\business\book keeping\payroll" with 2 versions and an interval of 60 minutes

the rule "f:\business\book keeping\payroll" will be applied for a file "f:\business\book keeping\payroll\John.xls"
For data residing in the same main directory but having different needs for versioning it is more appropriate to define exceptions within the main directory than defining several rReplikators. Every rReplikator defined would have its own white and blacklist, target and history folder etc.

5.3.2 Exceptions context menu
The context menu allows the following actions:
5.4 eMail Alert

If rReplikator runs on a server or a machine not always paid attention to by a user problems may be reported without anyone taking notice of this. A target that is not available will be reported by a message on the screen. If there is no one to look at it, it will be in vain. For these cases rReplikator is able to send emails!

You define the account information of your mail server as you would do it in your common eMail program. You may enter more than one address in the field “Send copy to”, separate them by a semicolon like Joe@biz.com; Steve@biz.com; Fritze@busy.de.
The button **Send a test eMail** will try to send an eMail with the entered parameters. If it succeeds this will be reported with a “test succeeded” in the text field right to the button.

There are several events that may be set to send an eMail:

- A **rReplikator** is started. Please be aware that as many eMails will be sent as **rReplikators** are defined and started, when the **rReplikator** program starts.
- A **rReplikator** is disabled manually
- The target of a **rReplikator** is not accessible. If several **rReplikators** have the same target and this target is not accessible, several eMails will be sent.
- The folder for the versions a **rReplikator** tries to write to is not accessible
- Arching was started by the scheduler and was successfully finished
- Archiving was started by the scheduler but failed
- Copy Job messages (successfully finished, Source, target or History folder are not accessible, finished with errors)
5.5 Profiles

A profile is a complete set of all settings and parameters including all rReplikators, copy jobs, zip jobs, eMail settings etc. It is possible to define several profiles with different settings to suite for example the needs of laptop users.

A laptop might be used sometimes attached to a network and sometimes standalone. When attached to the network the laptop data should be replicated to a server. But when travelling the replication target should instead be a USB drive. For situations where even no USB-drive is available there should be a profile “nothing”.

By clicking a profile you choose this profile for set up and changes.

The profile context menu has the following options:
Setting up and changing rReplikators

New Profile Define a new profile. You will be asked for the profile name and a description.

Set as StartUpProfile The highlighted profile will be set as start up profile – this is the one that will be loaded when the program is started.

Set as active profile Set the highlighted profile as the active profile. The currently running rReplikators and jobs will be disabled and the ones defined in this profile will be started instead.

Change profile name Invokes the profile name dialogue where you can change the name and the description.

Copy parameters Copy all parameters of the highlighted profile to a temporary store.

Paste parameters Paste all parameters from the temporary store to the currently highlighted profile.

Delete profile The highlighted profile will be deleted.

Save Profile Will invoke a folder browser for choosing the location where to save the settings to. A folder showing the name of the rReplikator will be made.

Load Profile Will invoke a folder browser for choosing the location where to load the settings from. The settings will be loaded to a new profile.

Password Protect this profile against unauthorized access. Be careful not to loose the password of a password protected rReplikator. You may delete the password by leaving the fields of the password entry dialog empty and clicking ok. But to start the password word of a protected rReplikator you will need the password ....
6 Zip files for archiving data

rReplikator copies changed files to another location and writes versions of changed files to a third location. This can be done instantly, because hard drives and networks are fast enough for the most purposes. Replicating data to other drives is a very good protection against data loss. But the data are still stored on very touchy media and are damageable.

A virus that destroys data may as well destroy the copies and versions rReplikator made. A disaster that destroys the physical media the data are stored on may destroy the disks that hold the replicas as well. Therefore it is very advisable to store the data on robust media that may be stowed away in a safe place like a bank safe or your brother’s in law locker. CDs and DVDs are perfectly suited for this purpose. It’s easy to burn files to CDs or DVDs, it can be done rather quick and they are small enough to be stowed away.

But is does not make much sense to archive the very same data again and again. It’s sufficient to save the data that changed since the last archiving and to do a full archiving monthly or weekly.

rReplikator has the functionality to store all data or only the changed data to Zip files. The zip format is a very common format that can be read by many popular programs. Therefore you do not depend on rReplikator to restore files from the generated zip files.

rReplikator allows manual or scheduled archiving to zip files.
6.1 Archivator for manual zipping of data
Zip files for archiving data

Status label showing progress or files to archive

The files of the chosen rReplikators will be zipped

If zipped changed files exceed the sum several zip files will be generated

Click to choose all rReplikators defined

Check number of files to be archived without zipping them

Zip only files that changed since last archiving

Start zipping

Define scheduled archive role for daily or weekly zipping

Choose folder to save the zip files to
The list box shows all rReplikators defined. You choose rReplikators for archiving by checking the checkmarks. The checkmark √ All rReplikators sets or removes the checkmarks for all rReplikators.

The settings will be saved when you leave the Archivator form.

Search files will look for files in the target folders of all rReplikators selected for archiving. Depending on the option selected, rReplikator will look for files that changed since the last archiving or for all files. The result will be shown in the status field as number of files to be archived and the total size in MB.

Zip to lets you define the drive and folder the zip files will be stored to. rReplikator will open a new folder for every archiving done using the current date and time.

An example: \Server\Archive\rRepZip is set as the folder for the zip-files. You will find there folders like

\Server\Archive\rRepZip[2004-06-14 21'12'00]
\Server\Archive\rRepZip[2004-06-15 21'11'00]
\Server\Archive\rRepZip[2004-06-16 21'12'02]

For every rReplikator zip files will show the name of the rReplikator with a time stamp. The size of the zip files may be limited to ensure that the files will fit on a single CD or do not overgrow the 2GB-limit of certain file systems. rReplikator will not produce split zip files but start a new zip file to ensure, that zip files will be readable independently. Imagine what happens with a zip file that spans several CDs and one of these CDs passed away. The whole zip file might be worthless then. Large files that are even zipped larger than the set limit will result in zip files bigger than the set limit.

Start Archiving will start the zip process. The process can be ended by clicking

The generated zip files can be burned to CDs with any burn program of your choice. rReplikator does not bring with it an own burning feature.

6.2 Scheduled Zipping

rReplikator is a tool to relive you of the burden of manual backups. For sure, there is an option to automate the generation of archive files.

www.rReplikator.com
For every *rReplikator* several points in time can be defined to start archiving of all files or only the files that changed.

A very common scheme is to daily archive all files that changed and once a week archive all files. This ensures that no much data has to be zipped daily but there is always a complete set of data not less recent than a week.

To set such a scheme, checkmark Monday, set the time for example to one o’clock in the morning and checkmark “only changed files”:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Daily Archiving</th>
<th>Monthly Archiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mo</td>
<td>00:00</td>
<td>Only changed</td>
<td>Monthly Archiving</td>
</tr>
<tr>
<td>Tu</td>
<td>00:00</td>
<td>Only changed</td>
<td>Day of month</td>
</tr>
<tr>
<td>We</td>
<td>00:00</td>
<td>Only changed</td>
<td>Only changed files</td>
</tr>
<tr>
<td>Th</td>
<td>00:00</td>
<td>Only changed</td>
<td>Only changed files</td>
</tr>
<tr>
<td>Fr</td>
<td>00:00</td>
<td>Only changed</td>
<td>Only changed files</td>
</tr>
<tr>
<td>Sa</td>
<td>00:00</td>
<td>Only changed</td>
<td>Only changed files</td>
</tr>
<tr>
<td>Su</td>
<td>00:00</td>
<td>Only changed</td>
<td>Only changed files</td>
</tr>
</tbody>
</table>
6.

**Zip files for archiving data**

With the **Set all days as Monday’s settings** option, you copy the settings to all the other days. The **uncheck “only changed files”** for example for Monday to have all files zipped during the night from Sunday to Monday one o’clock in the morning.

The button **Set all to these settings** you may copy the settings to all the other rReplikator defined, so that all files of all rReplikator will be zipped following the same schedule.

Another scheme might do daily zipping of all changed files and a full zip only once a month. The lower part of the form has the fields to define a monthly point in time: The nth day of a month.

The settings may be copied to the other rReplikator using the **Set all to these settings** button.

If sending eMail for the zipping events is set rReplikator will send eMails about success or failure of the zipping process. Reasons for failures might be not available folders or running out of disk space.
7 rRestaurator

rReplikator is there to protect against data loss. If for any reason files have to be restored, rRestaurator is the tool to perform this task. With rRestaurator it’s possible to find a dedicated version of a single file or to restore the versions of all files in dedicated folder.

(1) Choose the rReplikator you want to restore data from

(2) Choose the folder where the files to restore are in

(3) The files found in that folder are shown here

(4) The versions found for the chosen file
7.1 Restoring a single file

Step 1 – choose the rReplikator.
In this example we choose “business” out of the 4 defined rRepilators.

Step 2 – choose the folder
Expand a node by left clicking the “+” icons in the folder tree. rReplikator will refresh the selected branch of the tree and the expand it. The files of the chosen folder will be shown in the files list.

Step(3) – choose the file
Choose the file to be restored by right clicking filename in the list of files.
7. Step (4) – choose the version
Invoke the restore context menu by right clicking the version you want to restore.
Choose “Restore to another folder” to obtain a restored file that can be checked before proceeding. Just to be sure to have chosen the right file.
Restoring to the original folder will make rReplikator this now “changed” file to target and to save a version to the history.
Step (5) – copy the file manually where it belongs to

7.2 Restore a complete folder

To restore a complete folder choose the folder in the folder tree by expanding the nodes until the folder is visible and highlighted. The full path of the folder will be shown in the status label, the folder’s place in source in the field below.
Invoke the context menu by right clicking the path in the status field. You have the option to restore to the original place or to another folder. If you prefer to check the restored data before overwriting data in source choose “restore to a different location” and check the data first.
When having several versions of the data you want to restore you can trigger the version to be restored by setting a point in time. The latest version saved before this point in time will then be restored. Otherwise the latest version will be restored.
It’s possible to restore the files of a folder without the subfolders and subfolders’ files by unchecking the option “include subfolder”.

7.3 Deleting a folder from history
This option will delete the currently chosen folder and all its subfolders from history. Be carefully with this option, it cannot be undone.

### 7.4 Deleting orphaned files in the history

To be protected against unintended deletion of files the operation "delete" does not get replicated to the history. But with ongoing deletions the history will contain more and more orphaned files.

Choose the folder to be de-orphaned in the folder tree. Invoke the status field's context menu by right clicking the path name and choose "Delete orphaned files".

If the whole folder and its subfolders is obsolete you may delete the folder from history as well.

Please use this option carefully – deleted orphans will be gone.

### 7.5 Delete superfluous versions

How to get rid of versions that are no longer needed, because there is an archived zip file or work on a document has finished?

Use the function “delete versions older than” from the tree view context menu. You can apply this to any branch of the tree view (any folder). This dialogue will come up:

Choose the age of the versions you want to get rid off as date and time. All versions stored before that date will be deleted. To trigger how many versions should remain use the “keep at least N versions” field. To delete all versions and to keep only one, leave the current date and set N to 1.

### 7.6 Restoring versions from archives
Archive jobs can zip daily all changed files. Your history then does not have to hold to many versions, reaching back some days will be enough. For restoring a version from history you do not have to manually flip through all your archived zip-files. rRestaurator will read all zip files and rebuild a versions folder. Click “Restore versions from archives”. Select the folder holding your archive files and click ok. Select the folder you want the versions to be restored in and click ok.

Restoring the versions in your current versions folder will allow you to use rRestaurator for file search and restore, but with the next change of a file all versions exceeding the number of versions to be hold will be deleted beginning with the oldest version.
8 Scheduled Copy

For the cases where real-time replication of data is inappropriate there is this functionality for scheduled copies. Source or target may be any folder on a drive you can access – even FTP-sites are possible.

As you do it for a rReplikator you define Source and Target. If you wish to store versions of your files as well you define a folder for the versions to got and you set a maximum number of versions to be held. In addition you define a point in time when this scheduled copy should run.

Either you define a point in time for every day of the week, a certain day of the week or you define cyclic copy jobs that copy e.g. all changed data every two hours.

The copy procedure is the same that is used to re-sync data.

The scheduled copy is useful to transfer all changed data to another server overnight or to fetch data from a computer that does not run rReplikator.

Clicking a copy job in the tree view will switch to the copy jobs page. You may invoke the copy job context menu either with a right click to the tree view or a right click to the list of copyjobs:
8.1 Setting up a new copy job

Invoke the scheduled copy context menu by right clicking the job list. Choose “new copy job”. For changing an existing copy job either double click the copy job in the tree view or use the context menu “change copy job”.

Choose the source folder. That may be any folder you have access to, but not the target of another copy job. It is possible to define several copy jobs for the same source. For example to broadcast a set of files to several computers. The name for each copy job has to be unique. If you use a name a 2nd time, rReplikator will add a number to
Choose the target folder: This may again be any folder you have access to is possible, but not the source of another copy job. Otherwise it would be possible to define closed loops.

The server version allows choosing multiple targets e.g. for propagating files to a number of different computers. All targets will be shown in the list. The target button will always add an entry to the list.

Decide about the kind of schedule:

- **Daily copy**

  You may set a point in time for every day of the week when the copy job should start. To set the same time for every day set the schedule for Monday and set then this setting to all the other days with the button “Set all to Monday”

  ![Daily copy](image)

- **Cyclic copy**

  This option will start the copy job every N hours. For example every 2nd hour. Be cautious and do not define to short cycles. rReplikator will not check whether a started copy job will lap a formerly started copy job.

  ![Cyclic copy](image)

Decide whether versions should be written. Every copy job is able to write versions to third directory. Setting the number of versions to a value different to zero enables the elements to choose the history folder.

Should file types or files be excluded? The blacklist is there to exclude files from being copied. To exclude a file type enter the extension with a leading ., e.g. .jpg. Otherwise all files showing the blacklist item as a fragment of their name will be excluded.

Decide about orphans Set the option “Delete orphans” to delete files in the target drive that do longer have a corresponding file in the source file. Versions will not be deleted by this option.

Should it run silent and unattended? The option “silent mode” triggers whether to show the same progress window as the “SetUp | Admin | ReSync”. The copy job results will be shown in status monitor log. Checking silent mode will suppress all alerts.
and questions, only logging to the status monitor will be done.

Do you want to be informed by eMail?
The option “send eMail” will send an eMail to the defined recipients (see 4.4 eMail Alert).

Should files be excluded?
If necessary define black list items for this copy job. Invoke the context menu with a right mouse click and invoke “add”.

Set a speed limit
rReplikator uses low level functions for the file copy to achieve best performance. During a copy job other programs running on the same box will be slowed down. Setting a speed limit will reduce rReplikator’s resource usage. The price you’ll have to pay is waiting longer for the copy job to finish. For copying files from an internal disk to another internal disk a speed limit of 2 MB/sec. For external drives attached to a USB 1.1 limiting the speed down to 0,3 MB/sec should lower resource consumption.

Changed during the N last days
If you do not want to copy all files of a folder, but only those changed for example during the last 5 days, may be to save recently changed data to a USB-stick, then set this option.

Changed between
This option will only copy files changed between the two dates you enter.

Compress files
Will compress all files before copying them. His will lower the bandwidth use of your network but put more load on the box rReplikator is running on.

Encrypt files
Every file will be encrypted before copying. Please store your password in a save hide. We use strong encryption and there is no way (besides tons of computing time) to recover encrypted files without the password. Use the crypto dialogs for decrypting a dedicated file or a complete folder.
8.2 Copy jobs for FTP-sites

Before setting up a copy job that copies files to or from an FTP-Site define the FTP-site’s access parameters in the FTP-site list:

To create a new entry right click the list to invoke the context menu and choose “New FTP-Site”.

www.rReplikator.com
Name

Use a unique name to reference the FTP-Site. If a name already used for another FTP-site is found, rReplikator will add a "-1" to the name chosen.

FTP-Site

The FTP-site's name for accessing the FTP-Site, like "MyFTPSite.org".

User

The username you want to use to log on to this FTP-site. If log on is anonymous leave the field blank.

Password

The password necessary for the user to log on.

FTP port

Per default port 21 is used. If you need to use a different port e.g. due to firewall settings, set the field to the appropriate value.

Passive FTP

Some sites only allow passive access.

Use Internet Explorer Settings

If you already successfully configured your Internet Explorer checkmark this option. rReplikator will use the settings found for Internet Explorer.

Proxy

If you access the Internet via a proxy type in the proxy's name, something like "myProxy.OurCompany"

ProxyPort

You need to know the port used to access the proxy, e.g. 80 or 3125.

Test Settings

Clicking this button tells rReplikator to try to access the FTP-sites with the settings made so far. Depending on your Internet connection and the time outs set this may take up to 15 seconds to respond.
8.3 Managing copy jobs

Double click a copy job in the tree view to start the copy job dialog.

The tree view and the copy job list have a context menu that provides functions to manage the copy jobs:

- Changing an existing job will invoke the form for scheduled copies with pre-set values.
- Delete will delete the highlighted copy job
- Enable / disable toggles the job's activity. Disabled jobs will not be performed, but the information about the job is stored to make later activation possible.
- Save copy job will save the information about the copy job to an text file that may be edited
- Load copy job will load all jobs defined in the file, one job per line. If the data found in the file do not conform the expected syntax the read process will be aborted. Here is an example of a file defining several copy jobs:

```
DIGCAD4|C:\DIGCAD4|F:\Shared Data|x|x|F:\DasiHistory\Shared Data
History[5]+++|0|0#00:00:00#0#0#1#0#0#1#0#0#1#18000#0#0#0#0#0#0#0
TestCases\\Server 1\Development\Testcase\Shared Data\testCases|x|x|F:\DasiHistory\Shared Data
History[5]+++|0|0#00:00:00#0#0#1#0#0#1#0#0#1#18000#0#0#0#0#0#0#0
TestCases Olli\\Ollis\Shared\test\Cases\'new ones|F:\Shared Data\Testcases\Ollis|x|x|F:\DasiHistory\Shared Data
History[5]+++|0|0#00:00:00#0#0#1#0#0#1#18000#0#0#0#0#0#0#0
```
9 rReplikator’s Admin-Settings
These options trigger rReplikator’s behaviour at start up and run time. Please be very cautious using these options. “Try to copy locked files” for example might lead to high load on your computer if files are often written to. rReplikator will try to copy this file every time it’s changed. With most files rReplikator will succeed in copying, therefore a lot of copy processes will take place.

**Multi threaded copy**

rReplikator is able to perform multiple copies in parallel. If you have lots of small files or a mixture of huge and small files then use threaded copy. If you have only huge files then switch this option off to gain maximum performance.

**Try to copy locked files**

Programs do lock files to protect them against accesses, because the content of the files is matter of change. Unfortunately programs tend to lock files until the program ends. If the “try to copy locked files” option is set, rReplikator will try to do so – copy a file although its locked. For some applications (outlook is among them) this attempt will fail. There is no chance then to replicate the files until the application releases them. If a locked file changes the status monitor will show this.

**Replicate File deletion**

This option triggers whether a file deleted in Source will be deleted in target as well. Bear in mind that deletion will not be replicated to the history at all to prevent accidental data loss. Use rRestaurator to delete orphaned files in history (files with no correspondence in source).

Switching off replication of file deletion harbours you against data loss by accidental deletion. To avoid your target folders getting messy run a resync with deletion of orphaned files from time to time.

**Replicate file renaming**

Per default every file renamed in source will be renamed in target and history as well. Switching off will result in doubling a renamed file: it will remain under its old name and will be copied under its new name.

**Resync after start**

If you have files that will not be replicated during normal operation because they are for example locked all the time then switch on this option to automatically resync this rReplikator during start up.

Switching this option on will slow down the start up process of your computer but will increase the safety of your backup.

**Learn new file types**

Replication policies using the white list to decide whether to replicate a file or not depend on up-to-date white lists. With this option switched on rReplikator will scan the source folder for new file types during start up and will add new ones to the white list. Use this option after installing new software or similar changes.

**Delete orphaned files when resyncing**

This switch triggers whether during resync only source files not found in target will be replicated or in addition target files not found in source will be deleted. Use this option in conjunction with the open “Replicate file deletion” – a resync will then tidy up your target folder. Not your history folder! Use rRestaurator instead.

**Report successful replication**

Every successful replication will be reported in the status monitor. If switched off only failed replications will be reported.
Try to reconnect

If source, target or the history are not accessible due to network down or external drives not available, rReplikator will switch off. Did you set “Try to reconnect” rReplikator will check every minute, whether the connection is there. If target / history is available again, rReplikator will switch on again.

If you want to back up your files only from time to time e.g. to an USB-stick, then use this option together with “Resync when reconnected”. rReplikator will monitor the availability – as soon as the USB-stick is plugged in and found accessible, all changed files will be replicated. Then you can unplug the USB-stick again and rReplikators switches off again.

Watch out: Checking availability of networked resource takes some seconds, if the resource is not available. If you defined several networked folders and these are not available, the check will take some time.

Resync when connected

Set rReplikator to an automated resync, when target / history was not accessible and is available again.

Only log target not available

User dialogues asking questions do not make much sense when running rReplikator unattended. Use this option to switch off the dialogue reporting that target or history is not available. The information will be logged and an eMail will be sent, if eMailing is set.

Show progress

Switch on or off showing the progress monitor for resyncing. Switching off suppresses all dialogues as well.

Delay

After a file system event, for example a “File xyz has changed” rReplikator will wait a given number of seconds before trying to copy the respective file. Applications need time e.g. to finish saving a file, but the first event will be fired when starting the save process. If you experience problems with applications complaining that their files are not accessible, then set this value higher. 8-10 seconds has been found to be sufficient.

Memory

rReplikator has to buffer all operations on the source directory to ensure that no action is lost. Replicating stuff to target and history takes time especially if it is a different computer or a comparable slow removable media. For normal use the default setting of 16 is sufficient.. If you should experience losses of actions (there are files missing in the target directory or the history) after heavy load, e.g. by copying or deleting lots of files or directories you should increase the value. The maximum value of 64 ensures that you will not loose events (tested with a full copy of > 700.000 small files and backup to a DVD-RAM) but will eat up some of your memory.

Do not replicate files bigger than

Huge files will keep your system busy while rReplikator cares about them. What threshold should be used to cut off replication is determined by the disk performance of your system (how long does it actually take to copy a file) and on the frequency of changes in these files. Be cautious with this parameter. If the size of a file is growing by time it might overgrow the threshold. rReplikator will ignore this file from then on without any warning.
Ask if bigger than

The purpose is similar to “do not replicate files bigger than” – the difference is that rReplikator will ask you, whether to replicate or not. Please be aware that a pending question may block replication.

Be cautious with this option. It’s meant to let you decide whether a copy should be allowed to slow down your box and lock a file so you can not work on it. For sure you will often push the “no, not now” button. But your file is then not backed up.

Pop status if bigger than

It might be irritating if your computer starts to rattle without an obvious reason. This options tells rReplikator to pop up the status monitor if a file bigger than the threshold is being replicated.

Disable / enable the rReplikator

Disables file replication without leaving the rReplikator program itself. Enables replicating after disabling it (it's a toggle key). As long as you do not save your settings, the rReplikator will only be disabled / enabled temporarily.

You can toggle the enabled / disabled status as well from the status monitor by left clicking a rReplikator in the status tab. Right clicking will invoke the setup form for this rReplikator.
10. Replication, ReSync and Copy Jobs

10.1 Three mechanisms to copy data

Data are copied from the source folder to the target folder. There are three mechanisms in place that copy data:

- rReplikator: this is the real time stuff. Changes on files trigger events to which rReplikator reacts. Depending on the event files or folders will be copied from source to target or rename in target or deleted in target.

- ReSync: this is either manually invoked or run at program start. If for any reasons replication has not been possible, e.g. network was down or you were travelling with your laptop, then this replication will copy all changed or new files from source to target.

- Copy Job: this is either manually invoked or invoked at a given point in time. All files and folders found in source but not in target will be copied from source to target. All files with a “last change date” more recent in source as in target will be copied as well.

10.2 How to handle deleted files?

rReplikator is there to protect your data against accidental deletion or getting corrupted by buggy software or human errors. But rReplikator replicates file deletion from source to target – if you delete a file in source, by purpose or accidentally, the file will be deleted in target as well. What protection against deletion is this then?

The basic idea is to have target be a mirror of source. If you do not replicate deletions but delete files in source, target will get messy by time. If you do replicate deletions then accidental deletion will leave you with no file at all – deletion is mirrored to target!

Well – there are several ways to avoid this. Best practice is versioning – although it is eating up disk space. As a shelter against accidental deletion all three mechanisms are able to copy to a third place, the so called history.

History does not only protect against accidental deletion, it protects against file corruption and errors “smuggling in” as well. This is done by writing versions of files. Never ever file or folder deletion will be replicated to history (the version folder). Every time a file gets copied to target, another copy will go to history. In order to not overwrite existing files in history a time stamp is added to the file name. In case of deletion or any other emergency there still is an older version of your file you can fall back to.

Another way to be protected against deletion is to set “replicate file deletion” in Admin settings to “off”. No files will be deleted in target at all. If target gets messy it’s possible to manually invoke a resync with “delete orphaned files when resyncing” set to “on”. All files and folders found in target but not in source will be deleted from source. But again, nothing will be deleted from history. The only way to delete orphans from history is through rRestaurator (see page 59).
11 Encryption and Decryption

Crypto offers encryption and decryption of individual files or complete folders. Decrypted and encrypted files may be put in the same folder as the source files or in a different location. If the option “put to different folder” is set, you will be asked for the destination folder.

Encrypted files will have the file type rRcrypt.

Please do not forget the password you used to encrypt files. We use strong encryption and there is now way (besides tons of computing time) to decipher encrypted files without the password.
12 The Monitor

Invoking - Status - from the notify context menu will open a window showing current status and pending actions.

12.1 Progress Monitor
If rReplikator is copying one or several files this will be shown here. For files bigger than one MegaByte the progress will be shown (MByte per second, estimated time left). The letters “T” and “H” indicate whether the copy goes to target or to history.

A double click will close the status monitor.

### 12.2 Status Monitor

The second page shows all rReplikators defined:

Green indicates an active rReplikator, red a disabled one. Disabled is either manually disabled in the admin settings or disabled because source or all targets are not available. Targets, history or source shown in red indicate a folder that is not accessible. If the option "Try to reconnect" is set, there will be a re-check every 20 seconds for every folder not accessible.

The checkmarks shown are there for temporarily disabling a whole rReplikator, individual targets or writing the history. Changes to the check marks will not be saved.
In this example, the rReplikator “daten” is disabled. Source, the two targets and history are accessible – obviously the rReplikator has been disabled manually by unchecking it. Unchecking a target would prevent rReplikator from replicating to this target. All manual disabling in the status monitor is temporarily and will not be saved.

A right click on a rReplikator line will bring you to the set up dialog for that rReplikator. A left click will toggle enable / disable for this rReplikator.

**12.3 Exceptions Monitor**

The 3d page shows the exceptions defined for all rReplikators.

A right click on an exception will invoke the SetUp form for the exceptions of that rReplikator.

**12.4 Log**
The 4th page shows the rReplikator log since the program was started. The log will not be stored when the program ends. The log shows essential events like start and stop or failure of replication or file zipping. The log is shown in an editable field to make cut and paste possible.
13 Unattended Installation

Unattended installation for example performed using SystemManagementServer (SMS) may set the license and rReplikators and copy jobs by predefined files. rReplikator will read this information when starting for the first time.

The system performing the unattended installation has to copy the predefined files to „..\Program Files\rReplikator\PreDefined\...“.

The predefines settings will be read with the first program start after installation and then be ignored

13.1 IgnoreUsers

You can prevent rReplikator from starting if a certain user is logged on. For unattended installation a user different from the actual system user will be logged on and predefined settings would go to the wrong user directory.

A file “IgnoreUsers.txt” in „..\Program Files\rReplikator\PreDefined\...“ containing a list of usernames each name in new line defines the users to ignore.

13.2 Predefined Profiles

Predefined profiles are saved to the program folder in „C:\Program Files\rReplikator\"PreDefined". The filename always starts with „Profile-“, the profile name follows the hyphen. For defining a profile “traveling” the file name will be „C:\Program Files\rReplikator\"PreDefined\Profile-Travelling.txt“.

Here is an example for the content of a predefined profile:

```
Language = English
SilentMode = True
TempFolder = %Temp%
```

Use filenames to trigger how unattended installation will treat existing profiles:

DeleteExistingProfile-xyz  If a profile exists under the name „xyz”, it will be deleted and a new profile will be added using the predefined values

OverWriteProfile-xyz  If a profile exists under the name „xyz”, all predefined values will overwrite existing values.

Profile-xyz  If a profile exists under the name „xyz”, the predefined profile will be ignored.
These variables can be used to define a profile:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AttachedToNetWork</td>
<td>What networks will this profile be attached to? Networks are identified by the server’s network adapter’s MAC-address and the server’s name. The command „ipconfig /all“ will reveal your server’s MAC address. Example: “(00:00:A1:C4:11:07)-CompanyNet”. The definition AttachedToNetWork = (00:00:A1:C4:11:07)-CompanyNet AttachedToNetWork = (00:00:03:BF:AA:1E)-Home Will attach the profile to two networks, one named „CompanyNet“ and the other one named „Home“</td>
</tr>
<tr>
<td>Description</td>
<td>Profile description</td>
</tr>
<tr>
<td>EndWhenHibernating</td>
<td>True to end rReplikator when hibernating</td>
</tr>
<tr>
<td>Password</td>
<td>Passwort for accessing the Profile</td>
</tr>
<tr>
<td>aArchivatorPath</td>
<td>Folder (full path) aArchivator will save zip-files to</td>
</tr>
<tr>
<td>Language</td>
<td>Language for this profile (deutsch, English, francais, espanol, nederlands)</td>
</tr>
<tr>
<td>ShowTooltips</td>
<td>True to show the yellow stickers</td>
</tr>
<tr>
<td>SilentMode</td>
<td>True to suppress all messages</td>
</tr>
<tr>
<td>eMailerArchivingFailed</td>
<td>True to send an eMail for failed zip-jobs</td>
</tr>
<tr>
<td>eMailerArchivingSucceeded</td>
<td>True to send eMail for successfull zip-jobs</td>
</tr>
<tr>
<td>eMailerHistoryNotAccessible</td>
<td>True to send eMail when History is not accessible</td>
</tr>
<tr>
<td>eMailerP</td>
<td>Password for logging on to the mail server</td>
</tr>
<tr>
<td>eMailerPOPname</td>
<td>address of the POP to be used</td>
</tr>
<tr>
<td>eMailerSMTPName</td>
<td>Address oft he SMTP tob e used</td>
</tr>
<tr>
<td>eMailerSendTo</td>
<td>List of recipients, seperated by semi colon</td>
</tr>
<tr>
<td>eMailerSender</td>
<td>Senders eMail address, necessary for logging on</td>
</tr>
<tr>
<td>eMailerStarted</td>
<td>True,</td>
</tr>
<tr>
<td>eMailerStopped</td>
<td>True, wenn eine eMail bei Stop eines rReplikator versendet werden soll</td>
</tr>
<tr>
<td>eMailerTargetNotAccessible</td>
<td>True, wenn eine eMail bei Nichtverfügbarkeit des Zielverzeichnis werden soll</td>
</tr>
<tr>
<td>eMaileruser</td>
<td>Anmeldenamen für den Mailserver</td>
</tr>
<tr>
<td>eMailerCC</td>
<td>Adresse für die auf Kopie zu setzenden Empfänger. Die Liste der Empfänger wird durch Semikolon getrennt.</td>
</tr>
</tbody>
</table>
13.3 Predefined rReplikators

Files containing the information for predefined rReplikators will be copied to rReplikator\"PreDefined\rReplikators, For example to

C:\Programme\rReplikator\"PreDefined\rReplikators"
or
C:\Program Files\rReplikator\"PreDefined\rReplikators"

Here is an example for the content of such a file:

<table>
<thead>
<tr>
<th>Name</th>
<th>TestData</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>D:Data</td>
</tr>
<tr>
<td>Target</td>
<td>%Server\backup%%User%\Data</td>
</tr>
<tr>
<td>History</td>
<td>%Server\backup%%User%\Versions\Data</td>
</tr>
<tr>
<td>HistoryFiles</td>
<td>25</td>
</tr>
<tr>
<td>HistorySeconds</td>
<td>3600</td>
</tr>
<tr>
<td>Exception</td>
<td>D:\Data\Temp# D:\Data\Temp</td>
</tr>
</tbody>
</table>

The following fields are available to specify the rReplikator:

<table>
<thead>
<tr>
<th>Name</th>
<th>rReplikator's name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Source folder</td>
</tr>
<tr>
<td>Target</td>
<td>Target folder. Server version is able to replicate to more than one source. Use a line “target = …” for every target.</td>
</tr>
<tr>
<td>History</td>
<td>Version's folder (“history”)</td>
</tr>
<tr>
<td>InitialReSync</td>
<td>True … an initial reSync will be performed</td>
</tr>
<tr>
<td>MaxFileSize</td>
<td>File with a size bigger than MaxFileSize will not be replicated. The unit is MegaByte</td>
</tr>
<tr>
<td>InPrincipalEnabled</td>
<td>True, if the rReplikator shall replicate files False, if you want the rReplikator definition to be set, but not to be active</td>
</tr>
<tr>
<td>Policy</td>
<td>Replikation policies</td>
</tr>
</tbody>
</table>

0 Ask me
1 Only registered and white listed, but no blacklisted.
### 13. Unattended Installation

#### Table

<table>
<thead>
<tr>
<th>Number</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>No blacklisted</td>
</tr>
<tr>
<td>3</td>
<td>Only white listed</td>
</tr>
<tr>
<td>4</td>
<td>Only white listed, but no blacklisted</td>
</tr>
<tr>
<td>5</td>
<td>All files</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rReplicationWO</td>
<td>True = files without extension will be replicated,</td>
</tr>
<tr>
<td>ThreadCopy</td>
<td>True = allows concurrent replication</td>
</tr>
<tr>
<td>CopyLockedFiles</td>
<td>True = try to copy locked files</td>
</tr>
<tr>
<td>PopSize</td>
<td>Replication will be indicated by a small pop up window if file size in</td>
</tr>
<tr>
<td></td>
<td>MegaByte exceeds PopSize</td>
</tr>
<tr>
<td>LearnWhenStarted</td>
<td>True will put all file types found in the source folder to the white list</td>
</tr>
<tr>
<td>HistoryFiles</td>
<td>Number of versions to be held in history</td>
</tr>
<tr>
<td>HistorySeconds</td>
<td>Time (in seconds) after which a new version will be saved. Changes within</td>
</tr>
<tr>
<td></td>
<td>the time set will override the latest version.</td>
</tr>
<tr>
<td>reSyncWhenStarted</td>
<td>True = perform a reSync every time rReplikator is started</td>
</tr>
<tr>
<td>TryToReconnect</td>
<td>True = monitor connection to source, target(s) and history in case of</td>
</tr>
<tr>
<td></td>
<td>lost connection</td>
</tr>
<tr>
<td>ChangeTypeDeleted</td>
<td>True = replicate file deletion</td>
</tr>
<tr>
<td>ChangeTypeRenamed</td>
<td>True = replicate renaming of files and folders</td>
</tr>
<tr>
<td>DeleteOrphaned</td>
<td>True = delete orphaned files and folders during reSync</td>
</tr>
<tr>
<td>AskSize</td>
<td>rReplikator will ask whether to replicate a file if file size exceeds</td>
</tr>
<tr>
<td></td>
<td>AskSize. The unit is MegaByte.</td>
</tr>
<tr>
<td>HistoryNumbers</td>
<td>True will attach running numbers to versions</td>
</tr>
<tr>
<td>HistoryTimeStamp</td>
<td>True will attach a time stamp to versions</td>
</tr>
<tr>
<td>ReSyncWhenReConnected</td>
<td>True will start a reSync if connection is up again after loosing connection to source, target(s) or history.</td>
</tr>
</tbody>
</table>
### Archive Schedule

Schedule for the archive job. Variables have to be separated by "|". Example:

```
0|1|00:00:00|0|0|0|x|0|0|x|0|0|x|0|0|x|0|0|x|0|0|x|0|0|x|0|0|x|0
```

The fields:

<table>
<thead>
<tr>
<th>Nr</th>
<th>Action</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Monthly archiving</td>
<td>X = yes</td>
</tr>
<tr>
<td>1</td>
<td>Day of the month</td>
<td>1..31</td>
</tr>
<tr>
<td>2</td>
<td>Time for the archive job to start</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>3</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>4</td>
<td>Archiving on Sundays</td>
<td>X = yes</td>
</tr>
<tr>
<td>5</td>
<td>Time Sunday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>6</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>7</td>
<td>Archiving on Mondays</td>
<td>X = yes</td>
</tr>
<tr>
<td>8</td>
<td>Time Monday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>9</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>10</td>
<td>Archiving on Tuesdays</td>
<td>X = yes</td>
</tr>
<tr>
<td>11</td>
<td>Time Tuesday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>12</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>13</td>
<td>Archiving on Wednesdays</td>
<td>X = yes</td>
</tr>
<tr>
<td>14</td>
<td>Time Wednesday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>15</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>16</td>
<td>Archiving on Thursdays</td>
<td>X = yes</td>
</tr>
<tr>
<td>17</td>
<td>Time Thursday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>18</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>19</td>
<td>Archiving on Fridays</td>
<td>X = yes</td>
</tr>
<tr>
<td>20</td>
<td>Time Friday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>21</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>22</td>
<td>Archiving on Saturdays</td>
<td>X = yes</td>
</tr>
<tr>
<td>23</td>
<td>Time Saturday</td>
<td>HH:MM:SS</td>
</tr>
<tr>
<td>24</td>
<td>Only changed files</td>
<td>X = yes</td>
</tr>
<tr>
<td>25</td>
<td>Cyclic start</td>
<td>Cycle in seconds</td>
</tr>
</tbody>
</table>
13. rReplikator Manual

Unattended Installation

| **ArchiveTo** | Folder to put the archives to |
| **ArchiveFrom** | Are several targets defined this will define the target to archive from (e.g. the from the target with the fastest connection) |
| **ShowProgress** | True will show the progress window |
| **Tempolimit** | Speed limit in MegaByte, e.g. 5.0 or 0.2 |
| **Delay** | rReplikator will wait Delay seconds before starting replication of a changed file to give programs time for wrap up. |
| **Blacklist** | Adds an item to the black list. |
| **WhiteList** | Adds an item to the white list |
| **Exception** | Exceptions for a folder. The fields have to be split by „|“. Example: |

```
D:\Data\Temp#D:\Data\Temp|+++|10|01:00:00
```

The folders fullpath has to be in there twice seperated by „#“. |

<table>
<thead>
<tr>
<th>Nr</th>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Folder’s full path</td>
<td>Full path</td>
</tr>
<tr>
<td>1</td>
<td>Folder’s full path</td>
<td>Full path</td>
</tr>
<tr>
<td>2</td>
<td>Replikation</td>
<td>+++ = yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>---- = suppress replication</td>
</tr>
<tr>
<td>3</td>
<td>Versions</td>
<td>0 .. 999999</td>
</tr>
<tr>
<td>4</td>
<td>Intervall</td>
<td>HH:MM:SS</td>
</tr>
</tbody>
</table>

**ProfileSilentMode** | True … sets silent mode for the profile active. |

Additionally the following parameters may be used:

- `%Favorites%` Will be replaced by the user’s favorite folder
- `%Desktop%` Will be replaced by the user’s Desktop foldert
- `%MyDocuments%` Will be replaced by the user’s document folder ("MyDocuments")
- `%UserName%` Will be replaced by the user’s login name.
13.4 Predefined copy jobs

Files predefining copy jobs will have to be copied to ".C:\program files\rReplikator\PreDefined\CopyJobs". The filename defines the profile, all copy jobs defined in that file will go to.

For defining a copy job please set up this copy job in a running installation of rReplikator and save this copy job to a file. This is then your predefined copy job.

The files content will look like this example:

```
Business -> temp|D:\Business|D:\temp|x|||0|+++|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|0|x|| | | | |5|| | |C:\temp||0|xD:
```

Additionally the following parameters may be used:

- `%Favorites%`  Will be replaced by the user's favorite folder
- `%Desktop%`  Will be replaced by the user's Desktop folder
- `%MyDocuments%`  Will be replaced by the user's document folder ("MyDocuments")
- `%UserName%`  Will be replaced by the user's login name.

13.5 Setting the license

Please ask Sales@rReplikator.com to send you a file containing your encrypted license. rReplikator will look for a file "C:\Program Files\rReplikator\PreDefined\License.txt" and will read the license if the file exists.
14 Usage examples

14.1 It may happen: hard disk gone

Joe installed a 2\textsuperscript{nd} hard disk in his computer and told \texttt{rReplikator} to replicate “c:\Document and Settings\Joe” to “D:\JoeSettings”.

Before starting further work Joe copied all the files from “c:\Document and Settings\Joe” to “D:\JoeSettings”. That included his internet favourites, his outlook files and setting of his desktop.

Obviously Joe had a good idea when installing a second disk – his old one passed away some weeks later.

Well, Joe installed another hard disk, reinstalled Windows and all the programs he needs. After setting up an account for Joe he copied all file from “D:\JoeSettings” to “c:\Document and Settings\Joe” – his data were rescued!

14.2 The old-file-as-template problem

Using an old file as template and overriding the old file with new content by accident – the old file is gone.

Find your old version in the history

Barbara often writes letters with similar wording but to different addressees. She’s used to grab an old file as a template for a new letter. Sometimes Barbara forgets to change the filename and saves the new letter under the old filename – the old file is gone.

Let’s assume that the old file had the name “Andrew Chen dose report.doc” in the directory “c:\Data\DoseReports\2003\”. Barbara used that letter as basis for a new letter to Baldrin Jack. When. Some days later Barbara wants to look up the letter she sent to Andrew Chen but only to find out that this is the letter to Baldrin Jack no matter what the filename says.

Good she uses \texttt{rReplikator}! In the history directory there still is a copy of the original letter with the date and time stamped to the filename. Barbara will see at least two files in “D:\History\Data\DoseReports\2003:\D\History\Data\Dose Reports\2003\Andrew Chen dose report [2003-11-17 14-31-17].doc” and “D:\History\Data\DoseReports\2003\Andrew Chen dose report [2003-11-19 08-15-01].doc”.

For sure the version saved on the 17\textsuperscript{th} at 2 o’clock is the original version for Andrew Chen and the version from the 19\textsuperscript{th} is the version to Baldrin Jack. Barbara renames “D:\History\Data\DoseReports\2003\:Andrew Chen dose report “ to “D:\History\Data\DoseReports\2003\:Baldrin Jack dose report “. Then she copies the file “Andrew Chen dose report [2003-11-17 14-31-17].doc” to the directory “c:\Data\DoseReports\2003” and renames it to “Andrew Chen dose report.doc”. Done!
14.3 Someone else changed a file before I synced my data

Christian is a salesman. He is working on a huge proposal together with his colleagues from product management and development. They agreed to use a common directory on the server “Spencer” named “\Spencer\customers\Miller&Miller\proposals\NewSystem”. New versions of the proposal file “MillersNewSystem.doc” will be versioned by adding numbers. Being under timer pressure with his proposal Christian decides to work on the proposal over the weekend. As always he uses an “xcopy \Spencer\customers\Miller&Miller\*.* c:\MyData\Millers\*.* /S /D /Y /C
“xcopy c:\MyData\Millers\*.* \Spencer\customers\Miller&Miller\*.* /S /D /Y /C

to copy the latest documents to his laptop. “MillersNewSystem017.doc” is among the files. He spends hours working on the proposal and saves it as “MillersNewSystem018.doc” The following Monday Christian checks files in and out using the very same xcopy statements. Unfortunately one of the colleagues opened “MillersNewSystem017.doc” early on Monday to type in some remarks and saved the document as “MillersNewSystem018.doc”. This “MillersNewSystem018.doc” is more recent as Christian’s when Christian applies the xcopies. His file and all the work is gone.


Well, that did save a lot of work and quarrels.
15 Typical Settings

15.1 A single user with a single PC

To make the best use of rReplikator it is recommended to attach a 2nd hard drive to the computer. External USB drives are very convenient because they are easy to install and in case of any problems with the computer the drive can be attached to another computer:

Normally your data reside in “My Documents” inside your user folder in “C:\Documents and Settings”. My Documents can be chosen as the source folder for rReplikator. Set the target folder and the history folder to folders on the attached USB drive. That’s it!
15.2A work group using a file server

If all files of all users are stored on a central server, rReplikator will be installed on that server as well. Depending on the folder structure chosen for the server one or several rReplikators are defined to replicate the user data. The target and history files may be stored to another disk in the server or to another server. Hanna, Sue, Joe and Steve are working together in a group. To be able to share the files they work all files are stored centrally on the file server.

They have decided to organize their data theme centred with a folder for every theme:

- proposals
- contracts
- customer projects
- reporting

Each of this folders is organized by customer and process. A proposals for the customer “Hybrid transportation Inc” about a new CAD-System made in June 2004 will be stored in \\server.

When Hybrid Inc decides to buy the system, a project folder will be set up for that project: \\server.

The contract for the proposal will be found under
The reporting files with financial data etc. will be stored in `\server`.

On every workstation a logical drive “Z:” is mapped to `\server` to make data access more convenient. Everyone in this workgroup has full access right to all the data.

To ensure automatic backup of the data, `rReplikator` is installed on the server. The server has three hard drives: One for operating system and programs, one for the data and one for the real-time backup of data.

`rReplikator` is set as follows:

<table>
<thead>
<tr>
<th>Computer</th>
<th>Source</th>
<th>Target</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
<td>D:\Data</td>
<td>F:\BackUps</td>
<td>F:\Versions</td>
</tr>
</tbody>
</table>

A scheduled copy job is set up as well to copy all the changed data to another server in the company every Sunday morning 6.00 am. This other server is maintained by the IT-staff who do backup on tapes for disaster recovery.

Data are stored on two computers and three drives (well, and archived by the IT-chaps):
- Data on `\server`
- Data on `\server\backUp\Data` and Versions on `\server\BackUp\Versions`
- Data on a third server in the IT-department

The four decided as well that only Hanna will be allowed to restore data from F:\Versions. Everyone who needs a former version of a file has to ask her. This is to ensure that no one will try to restore data that are worked on by a third person. Hanna would know because she’s the “bottleneck”.
15.3 A work group storing data locally

In another scenario Hanna, Sue, Joe and Steve decide to store the data they work on locally to their workstations. This has mainly performance reasons. To ensure instant backup and versioning they use rReplikator and every machine.

rReplikator will be installed on every one of the four workstations. Joe, Sue, Hanna and Steve store their data in “My Documents”, therefore the source will have the same name on every machine.

The Server has three disks:
- System (C) for operating system and programs
- Two (D) for the workgroup data
- Three (F) for a mirror of the workgroup data

On disk Two a folder “BackUp” was created. The workstation rReplikator will store the copies to subfolder in \Server\two\BackUp using their Names. Versions will go to to \server.

On the server a rReplikator shuffles all changed data from the two folders D:\Backup and D:\Versions to the disk F:\, where rReplikator will create the folders BackUp and Versions.

The settings on the 5 different machines:
At the end of the day N+1 licenses are necessary for N Workstations with one file server, to have all data stored on three separate disks:
- locally on the workstation
- central on the servers drive two. Versions go here as well
- mirrored to servers drive three.

For archive purposes am archiving job was scheduled to zip all changed files stored in `\Server\Backup` to the temporary folder `C:\Temp\DailyZip`. Steve has the job to burn these zipfiles to a DVD every morning. A monthly zip of all data to `C:\temp\MonthlyZip` is scheduled as well for the 1st day of every month. Steve uses several DVDs to burn these data.
15.4A central server backs up several others

In this scenario the IT people installed a central server replicating the data housed on decentral department servers.
rReplikator server has been installed on the central server. The server drives are

- System (C:) for operating system and applications
- Data (D:) The RAID-Array for data backup and versioning

The central server has a system drive and a built RAID-array with a lot of disk space. For every server a directory “BackUp-XX” and a directory “Versi-XX” has been created, where “XX” stands for the department. rReplikator delay has been set to 120 seconds to avoid conflicting file accesses. Department servers store data in a directory “Data”.

For every department a rReplikator has been defined:

<table>
<thead>
<tr>
<th>rReplikator Name</th>
<th>Source</th>
<th>Target</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dep-A1</td>
<td>\Server-A1\Two\Data</td>
<td>\Two\Backup-A1</td>
<td>\Two\Versi-A1</td>
</tr>
<tr>
<td>Dep-HQ</td>
<td>\Server-HQ\Two\Data</td>
<td>\Two\Backup-HQ</td>
<td>\Two\Versi-HQ</td>
</tr>
<tr>
<td>Dep-QA</td>
<td>\Server-QA\Two\Data</td>
<td>\Two\Backup-QA</td>
<td>\Two\Versi-QA</td>
</tr>
<tr>
<td>Dep-E1</td>
<td>\Server-E1\Two\Data</td>
<td>\Two\Backup-E1</td>
<td>\Two\Versi-E1</td>
</tr>
<tr>
<td>Dep-P1</td>
<td>\Server-P1\Two\Data</td>
<td>\Two\Backup-P1</td>
<td>\Two\Versi-P1</td>
</tr>
<tr>
<td>Dep-P2</td>
<td>\Server-P2\Two\Data</td>
<td>\Two\Backup-AP2</td>
<td>\Two\Versi-P2</td>
</tr>
</tbody>
</table>

Data are stored in two locations:

- On every department server
- On the central server

For data archiving for every rReplikator a zip-job has been created to zip every night all new and changed data to “D:\Archive-XX”. A copy job has been defined to copy every night all new and changed data to a 2nd server as backup.
16 Troubleshooting

16.1 rReplikator is stopped

Did you try do delete or to rename the directory set as rReplikator source while rReplikator was running? rReplikator will stop if you try to do so and you have to manually exit and restart rReplikator. If rReplikator does not find the source directory at start up time rReplikator will ask you for a new source directory.

rReplikator will show a message when target or history are not available – and disables the rReplikator with that problem. Do you replicate to an attached device like an USB-disk, that is not attached or not attached right? Please enable this rReplikator again or re-start the whole application.

16.2 rReplikator does not start due to settings

It might happen that a changed environment (disks having other drive-letters etc) might prevent rReplikator from starting. To overcome this problem, delete all “Ini”-Files under “C:\Program Files\rReplikator”. After deleting the ini-files rReplikator will start with no rReplikator defined. In case of sever problems rReplikator will suggest this option during startup as well.

16.3 No files are replicated at all

- rReplikator is installable on Win98 and WinME if DotNET is already installed, but rReplikation will not work.
- Did you try to replicate files from a mapped network drive? rReplikator is only able to watch the file system of local drives. Please install rReplikator on the machine where the files to be replicated reside.
- Do you replicate data produced by programs not installed on the machine rReplikator runs on? These data might be of file types not known to rReplikator. Let rReplikator learn these file types via
  “SetUp | types | learn file types”
  or set
  “Setup | Admin | Learn new types “

16.4 Not all files are replicated

You might find out that source and target hold different numbers of files and differ in their size. If source contains more files than target, then presumably not all files haven been replicated.
Please bear in mind that rReplikator does not replicate all files. Per default these files are excluded from replication:
- system files
- hidden files
- temporary files
- files showing a ‘~’ in their name or extension
- all `.tmp` files
- all “thumbs.db” files
- all locked files. These file are checked every minute. If a file is still locked when rReplikator is shut down it will not be replicated.

To find out about the differences in source and target it’s necessary to find out what files were not replicated. Let’s assume “C:\data” as source and “F:\Backup\data” as target. With “Dir” commands in a command window (Start | All Programs | Accessories | Command Prompt) we will write the list of all files to textfiles and compare these two files:
The file lists show two files not replicated. One has a "~" in the name, the other one is a system file. If all files of a certain type are not being replicated, then please check whether this type is registers. If not then add the type to the white list. Or let Replikator learn all file types of source.

Check your blacklist as well. Blacklist items apply to the whole name. A blacklist item “priva” will throw out “aprivateLetter.doc” as well as “improvedStuff.xls”.

Check MaxFileSize – are the files bigger than MaxFileSize?

Last but not least Replikator might have lost change events under massive load. Increase Memory under Admin settings

16.5 My application can’t access data

Replikator copies changed files in the background. If an application tries to access a file while Replikator is still copying the application will see a locked file. Well behaved application will ask the user on how to proceed and the user can tell the application to try it again. If this problem occurs with saving data, try saving data under a different name (or wait until Replikator finished its work).

The Replikator monitor (see page 72) is helpful to see whether Replikator is still working on a file.

16.6 Replikator keeps my system busy

Are you working with huge files that are changed often?

Do not replicate them, because it takes time and resources to copy them. Typically seen with Outlook-files (they have the extension ‘.pst’). These files tend to grow fast and Outlook changes the file for example everytime you receive or send an email.

Solution:
exclude the files via the Black Llist, for example by adding ‘.pst’

Exclude the files via the MaxFileSize parameter. Check the size of your files with the windows explorer and set MaxFileSize below the size of the huge ones you found (MaxFileSize is given in MByte).

16.7 How to exclude a single file from replication?
Exceptions may only be defined for folders. A way to exclude a single file is to add its full name to the blacklist, e.g. “DoNotReplicateThisFile.doc”

16.8 History is growing out of disk space

Set NoOfVersions lower or exclude huge files
Use “Delete versions older than …” to delete versions of files you are no longer working on
Delete orphaned versions in rRestaurator
## 17 Known Bugs

<table>
<thead>
<tr>
<th>Nr</th>
<th>Name</th>
<th>Description</th>
<th>Effect</th>
<th>Work around</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Folder Mover</td>
<td>There are windows libs to be used by software to move directories. These libs do not notify about the files affected by a directory move — Replikator will not see these files as moved. Unfortunately the event “old directory deleted” is notified. Replikator will delete these files (if change type deleted is switched on)</td>
<td>The files of a moved directory will be lost in the target path.</td>
<td>Do not use software driven functionality to move folders. Use windows explorer instead.</td>
</tr>
</tbody>
</table>
18 Disclaimer

- rReplikator is an application and does not run as a service. A user has to log on in order to start rReplikator.
- Some application files like Outlook PST-files are locked in a way that prevent copying these files. rReplikator will show these files as locked but will not be able to replicate them even if the option "try to copy locked files" is set.
- Files are locked for writing during the replication process. Applications might complain about files not being readable.
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