

Technical User Manual

Server Edition for Linux – Version 5.0

September 2009
Version 1.1



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1 Introduction

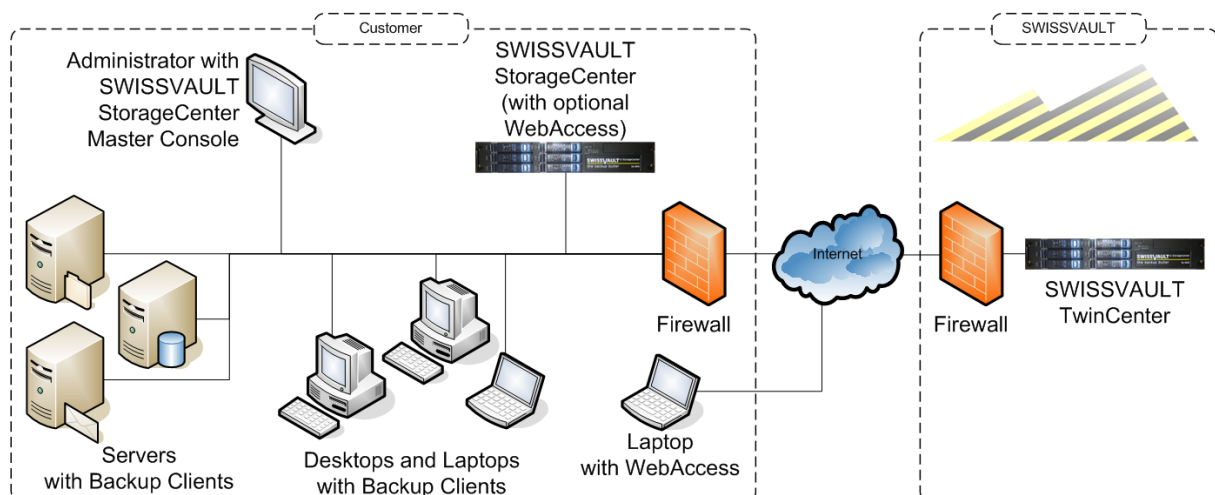
Congratulations on choosing SWISSVAULT Critical Data Storage. We believe you will find SWISSVAULT to be the most secure, scalable and efficient solution in addressing the business risk associated with the protection of critical data in a distributed environment. If you experience any difficulty during the installation of SWISSVAULT, please contact your software provider.

SWISSVAULT Server Edition (SE) is a remote storage solution that utilizes client/server architecture to securely replicate data from the client device to a central data server. Data is compressed to minimize bandwidth utilization and transferred using a secure SSL connection to the server. The data is stored in an encrypted format, using an encryption key known only to you.

SWISSVAULT minimizes risk, maximizes productivity and allows businesses to regain control of their most valuable asset – their data.

1.1 Overview

SWISSVAULT Server Edition manages the backup and retrieval of files and/or folders on your server. Selected files are backed up to the StorageCenter that is installed on a remote server. This is shown in the following diagram:



Your Backup Client connects to a group on the StorageCenter during the installation. The Group Administrator oversees all group members, using the Backup Monitor. The StorageCenter administrator uses the StorageCenter Console to manage the entire StorageCenter, including all the different groups.

1.2 System Requirements

Operating System

- Red Hat v6 - v9
- Fedora

Processor & Memory

Required: Pentium III processor with 256MB memory above operating requirements

Recommended: Processor and memory requirements increase with the amount of data protected by Server Edition:

Amount of data Protected	Recommended Processor	Recommended Memory
Less than 100GB	Pentium III 500MHz	512MB
200GB	P4 entry level	512MB
500GB	P4 2.0GHz	1GB
1TB	Dual Xeon 3GHz	2GB

Disk Space

- Required: 50 MB plus space for local cache.
- Recommended: Amount of free space equal to the backup account limit if Binary Patching is enabled. The space requirement for Delta Blocking is considerably less. Please refer to the Patching section in Chapter Three for more information.

File Server: The local cache can be as large as the total size of all files selected for backup. A file selection of 10 GB needs up to 10 GB free space for the cache.

Database: Space is needed for the data dump, which can be as large as the database, as well space for the cache, which is compressed version of the database. Assuming 1:2 compression on a 10GB database you are recommended to have 15GB (10GB for the dump and 5GB for the cache) free space available.

Virtual Memory Recommendations

- Double the amount of RAM, with a minimum of 512MB (Total for all disk volumes)

Minimum Video Settings

- 800 x 600 Resolution, 256 colours

Other Hardware

- Network interface card or a virtual network adapter card
- CD-ROM drive or Internet access to download and install the software

Server Edition is also available for the following operating systems:

- Microsoft Windows Server 2000 and 2003
- MAC OS X

2 Installation

This chapter describes how to install the SWISSVAULT Server Edition Client on the Red Hat Linux platform. Server Edition supports **Red Hat Linux v6 – v9** and **Fedora Project**. Please note that you have to be logged in as **root** to configure the necessary settings.

The Backup Client requires working space for the cache and temporary disk space for creating patches. **Note: Make sure that the drive where you install the Backup Client has enough free hard drive space for the cache and temporary files.**

2.1.1 Java Runtime Environment (JRE)

You have to install the JRE before you will be able to run the Backup Client. Get the JRE from the Sun website (java.sun.com) for your system. **JRE 1.5** are the supported environments for SWISSVAULT. Please make sure that the Java executable is in your PATH environment variable.

2.1.2 Installing the Server Edition Backup Client

Ensure you are logged in as root. Two file versions are available; one for the i386 platform and one for any other platform where the JRE is installed. Copy the supplied SWISSVAULT-SE-LINUX-*<version>*.rpm file to a local directory.

Execute the command **rpm -i SWISSVAULT-SE-LINUX-*<version>*.rpm** to install the Server Edition backup client. During the installation process, the installer will verify that Java is installed and the necessary scripts will automatically be modified with the Java install location. The Server Edition daemon will also be installed and started.

To restart or stop the daemon uses the command **/etc/init.d/a5backup** with **start** or **stop** from a terminal window.

Run the command **a5backup-gui** to open the Backup Client interface. The **Setup Wizard** will automatically open.

You can also start the Command Line interface by executing **a5backup-cli**. A list of the available CLI commands will be displayed.

Upgrading to a newer version: SE backup clients can automatically be upgraded during the backup process if it is enabled in the StorageCenter. To manually upgrade SE to a newer version, use the **rpm -u <filename>.rpm** command. If there are any conflicts reported in the plug-ins folder during the upgrade procedure, uninstall the reported plug-in by using the **rpm -u** command in the plug-ins folder, e.g. **rpm -u a5backup-plugin-report**. **Note that all plug-in settings will have to be reconfigured after the upgrade.**

2.1.3 Uninstall Instruction

To uninstall the Server Edition Backup Client you must remove all settings as specified in the setup script, mentioned in the previous section. There are five commands that must be initiated. Please ensure that you have root access when uninstalling the Backup Client. If the GUI is open, close it and run the following commands:

- `rm -f /usr/bin/a5backup`
- `rm -f /usr/bin/a5backup-cli`
- `rm -f /usr/bin/a5backup-gui`
- `rm -f /etc/init.d/a5backupd`

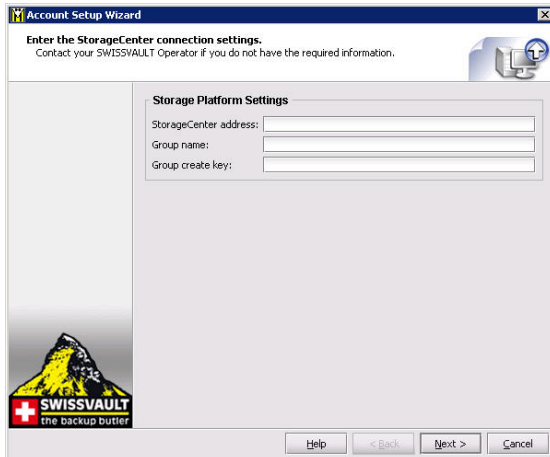
And then

- `rm -R -f /usr/share/a5backup/`

To remove the a5backup install directory.

3 The Setup Wizard

When you open the Backup Client interface for the first time, the Setup Wizard will start automatically. You need to create an account for the Client on the StorageCenter before you can run any backups.



Account Setup Wizard
Enter the StorageCenter connection settings.
Contact your SWISSVAULT Operator if you do not have the required information.

Storage Platform Settings

StorageCenter address:

Group name:

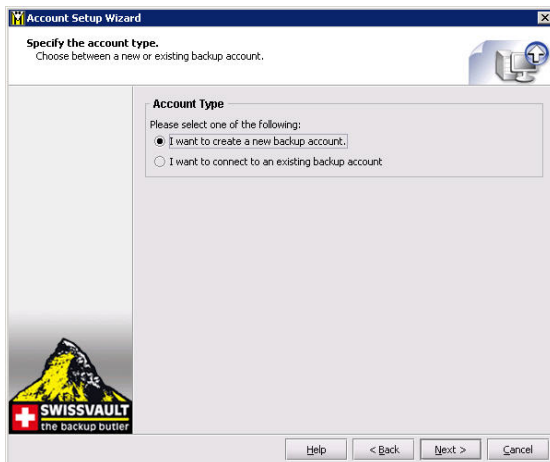
Group create key:

Help < Back Next > Cancel

Step 1 of 8

Supply the correct StorageCenter server and group settings. The StorageCenter address is the IP address or DNS name of the Name-Server that authenticates you before you can backup or restore data. The Group name specifies which group you will join and the Group create key is needed in order for the client to create an account in the specific group. Click **Next**.

Note: Ensure that you enter the correct settings. Contact your backup administrator if you are not sure about the settings.



Account Setup Wizard
Specify the account type.
Choose between a new or existing backup account.

Account Type

Please select one of the following:

I want to create a new backup account.

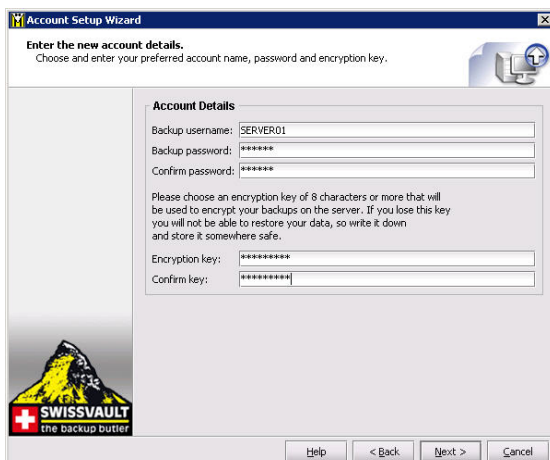
I want to connect to an existing backup account.

Help < Back Next > Cancel

Step 2 of 8

If you are installing the backup software for the first time, select "**I want to create a new backup account**". If you have an existing account that you want to reconnect to, select the "**I want to reconnect to an existing backup account**" option. Click **Next** to continue.

Note: You cannot connect from different servers to the same backup account. Each server must have a separate account.



Account Setup Wizard
Enter the new account details.
Choose and enter your preferred account name, password and encryption key.

Account Details

Backup username:

Backup password:

Confirm password:

Please choose an encryption key of 8 characters or more that will be used to encrypt your backups on the server. If you lose this key you will not be able to restore your data, so write it down and store it somewhere safe.

Encryption key:

Confirm key:

Help < Back Next > Cancel

Step 3 of 8

Choose and enter your backup username, password and encryption key. The backup username and password can consist of any keyboard combination between 4 and 20 characters. The encryption key can be any keyboard combination between 8 and 55 characters. Click **Next**.

Note: Do not forget your encryption key as you will not be able to retrieve your data without this encryption key.



Step 4 of 8

Select the connection type that you want to use to connect to the StorageCenter.

Use the **Configure Proxy** button to specify any Proxy settings needed for communications to the Internet. Click **Next** to continue.

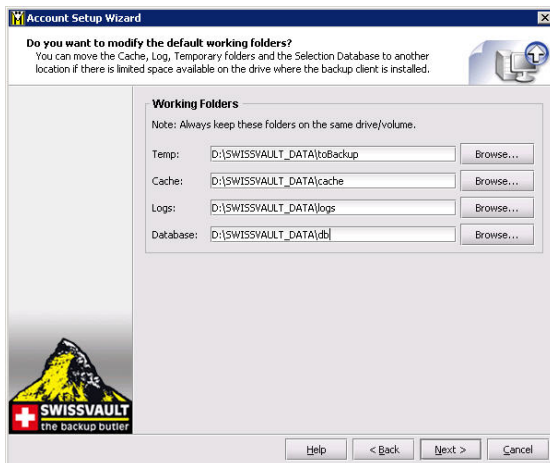
If you select the modem/dialup connection, the next step will prompt you to supply the connection that you want to use.



Step 5 of 8

In this step you can configure the daily and hourly automatic backup schedule. The default backup time is 19h00. It is advised to backup at night when the server is not in use. The server must be powered at the time of scheduled backups, but you do not have to be logged in.

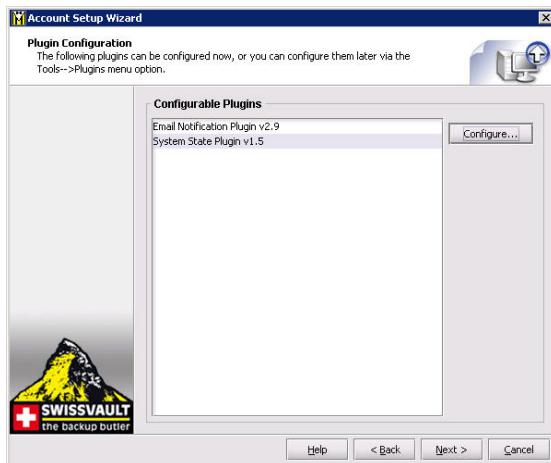
Note: If you do not schedule any backups, you will have to manually backup your data. We strongly recommend that you run automated backups.



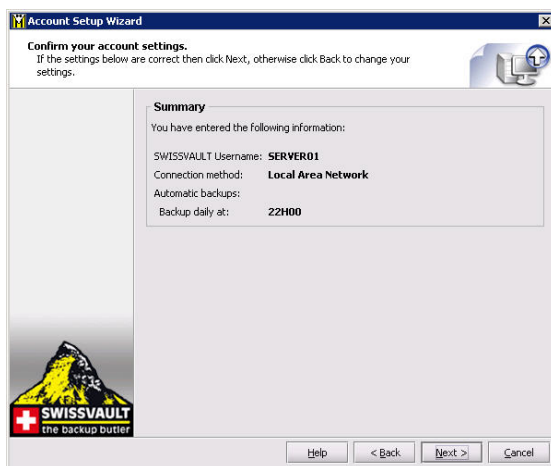
Step 6 of 8

If you have limited space on the drive where the Backup Client is installed, you can move the Cache, Logs, Temporary folders and the selection database to another location.

Note: always keep these folders and the selection database on the same drive/volume.

**Step 7 of 8**

You can select any of the available plug-ins in this step and click on **Configure** to enable and configure the plug-in(s). Alternatively, you can access and configure them later from the Tools menu. Note that these two plug-ins are shipped with the Backup Client. Click **Next** to continue.

**Step 8 of 8**

Confirm that the information you supplied is correct, and click **Next**.

The Backup Client will connect to the StorageCenter and configure your account. A message will be displayed to confirm that your account was created successfully.

Click **OK** to close the message box.

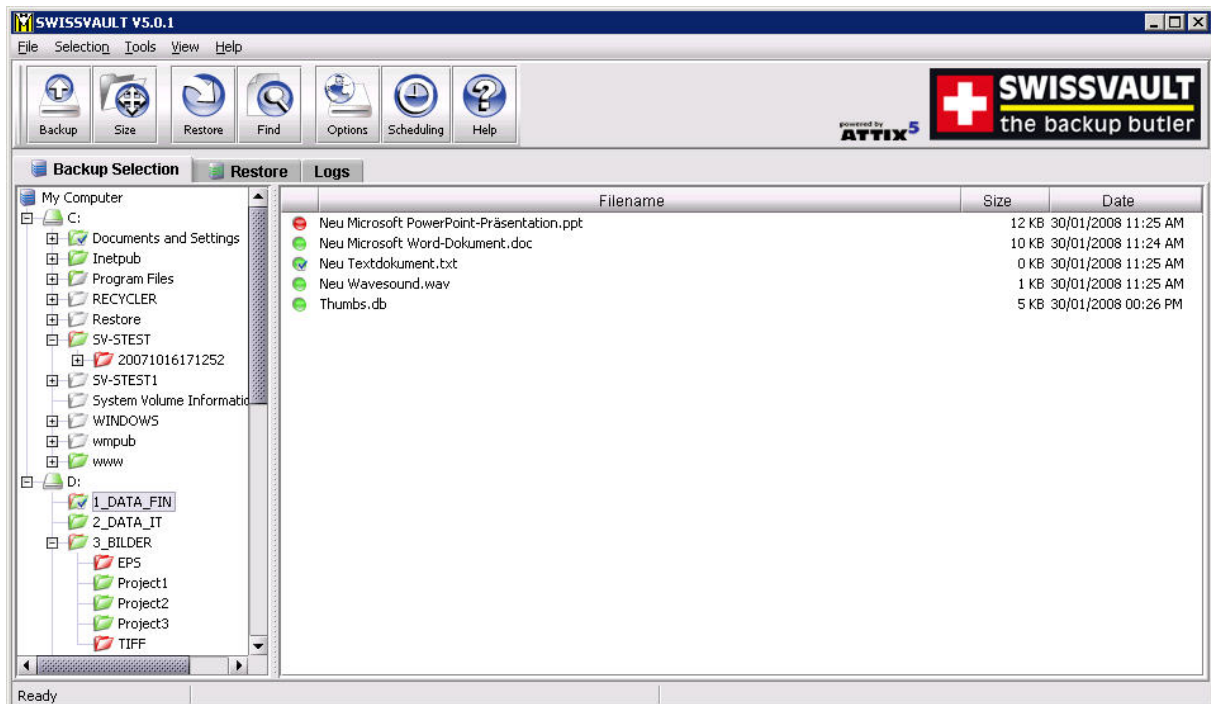
3.1 Server Edition Auto Update

As from v4.1, the Backup Client will automatically receive software upgrades during scheduled backups, should there be an update available on the StorageCenter and if Auto-update is enabled for the particular Group in the StorageCenter Console. Nothing needs to be configured in the Backup Client.

Note that, after an auto-update, you must restart the Backup Client GUI before the new version will be visible. You are advised to keep the GUI closed, when not used.

4 Backup Client

SWISSVAULT Server Edition keeps your most valued data secure. It allows you to select files and initiate backups, and to restore lost or corrupted files. You can also find and restore files from previous backups and schedule automatic backups.






While you are using the Backup Client, you may select **Help** from the **Help** menu, should you require any help. This additional windowpane on the right of the window above, will guide you through the operation of the Backup Client.



4.1 How to Backup




The next sections describe how to select files and folders for backup, how to add filters to folders to automate the file selection of certain file types, and how to backup your files to the StorageCenter.

4.1.1 Selecting Files for Backup

To select files that you would like to backup, click on the  **Backup Selection** tab. The folder structure of your computer is displayed in the left-hand pane. If you click on a folder, its contents will be displayed in the right-hand pane. Subfolders are only shown in the left-hand pane. Once a file or folder is selected for backup any changes, additions or deletions to that file or folder are automatically backed up.

To select an individual file: Browse to the individual file that you would like to backup. In the right-hand pane, right-click on the file and choose **Select** or click in the box next to the file. A selected file is displayed with a  green icon. To deselect a file you can either click on the box again or right-click on the file and **Deselect** it. Folders that have some files selected are displayed with a  green tint.

To select an entire folder: Right-click on the  folder and select **Include Folder**. You can also use the left mouse button to highlight the folder and then **Include** the folder from the **Selection** menu. Included folders are displayed with a  green folder. All files in the included folder and its subfolders are now selected for backup. Any changes made within this folder or its subfolders will automatically be included as well. To deselect a folder, right-click on the folder name and select **Deselect Folder** from the selection list.

To exclude a file or folder: If an entire folder is included but you want to exclude a particular file or subfolder, right-click on the file or folder and select **Exclude**. Excluded items are displayed with  red icons or  red folders. Folders that have been selected but have some files or subfolders excluded are green with a red  tint.

To verify the size of your backup, select **Calculate Size** from the **File** menu or click on the **Size** button in the toolbar. If your backup set is larger than your allocated limit you have to reduce the size of your selection. To remove files, right-click on a file that you want to exclude and click on **Deselect**. Alternatively, you can ask your backup administrator to upgrade your account limit.

Note: The Backup Client compares your backup account size with the size of your backup selection at the beginning of the backup process. The backup process will stop and an error message will be displayed if the selection size is over your account limit.




If you do not want to wait for the next automated backup, you can select **Backup Now** from the **File** menu to manually start the backup process.

4.1.2 Filters







You can use a filter to automate the file selection of particular file types from a specific folder and its subfolders. For example, a ***.doc** filter will include all existing Word documents, as well as any new Word documents that may be added later. To add a filter to a specific folder, right-click on the folder, select **filters** and choose one of the available filters from the list.

A few filters have been provided for you to start with. You can create, modify and delete any of the filters. To modify a filter, select **Filters** from the **Selection** menu and click on **Edit filters**. Select one of the filters and **Add** or **Remove** any of the file types. The **New filter** option allows you to add additional filters. Supply a name that describes the filter and then enter the file type(s).

Example: AutoCAD users may want to only select their drawing files as the rest are generated by AutoCAD and do not need to be backed up. The filter could be called Drawings and the filter type would be *.dwg.

Files that are included by applying a filter are displayed with the green selection icons with a blue checkbox, e.g.  for files, and  for folders. Filtered files or folders cannot be deselected, but you can exclude particular filtered files or folders by right-clicking on the file or folder and then selecting **Exclude**. A filtered folder with exclusions is displayed with a red  tint. More than one filter can be applied to a specific folder. To remove filters from a folder, right-click on the folder, select **Filters** and clear the checkbox next to the specific filter(s) that you want to remove.

4.1.3 Profiled Selections

You may notice another group of icons in the Backup Client. **Fehler! Verweisquelle konnte nicht gefunden werden.** selections, which can be specified by the Backup Administrator, are displayed with the following images:  for file inclusions,  for filtered inclusions and  for excluded files. On folder level, the images are  for included folders,  for filtered folders, and  for excluded folders.

4.1.4 Manual Backups

After you have selected the files and folders for backup, you can manually initiate the backup process by selecting **Backup Now** from the **File** menu or by clicking on the **Backup** button in the toolbar. You may close the Backup Client after you have started the backup process by clicking **Hide**. This will not cancel the backup process and you can at any stage open the Backup Client to view the progress of the backup. Backup log information can be viewed in the **Logs** tab. Backup entries are displayed in blue.

Note: *The backup selection list is automatically saved every 30 seconds. Right-clicking on the SE Runner and selecting Backup Now will not backup any files selected within the last 30 seconds. You have to close the Backup Client or wait a few seconds before these files will be saved.*

4.1.5 Backup Resume

The Backup Client can try to resume a backup, if the previous request failed for whatever reason. If you select **Backup Now** from the **File** menu or you click on the **Backup** button in the toolbar and the previous backup was not successful, the Backup Client will prompt “Do you want to resume the failed backup?” If you select **Yes**, the Backup Client will try to continue from where the process failed during the previous backup. Select **No** to initiate a new backup or **Cancel** to return to the Backup Client. **Note: a new backup will be initiated after the countdown has elapsed.**

4.1.6 Multiple Thread Backup


SWISSVAULT Server Edition supports multiple thread backups. Files will be transferred to the StorageCenter using a second thread as soon as they are compressed or patched while the backup process continues to compress/patch files using the first thread in the background. This improves the total backup speed significantly.


Note: this functionality is enabled by default. To disable this feature please refer to the Additional Settings section later in the user manual.

4.2 How to Restore

The next section describes how to select the files that you want to restore, how to search for specific backed up files, and finally how to restore files from the StorageCenter.

4.2.1 How to restore files and folders

Open the  **Restore** tab. From this tab, you can gain access to your backed up files. Your latest backup is shown in the **Last Backup** folder. If you expand the **Previous Backups** folder, the Backup Client will connect to the StorageCenter and retrieve a list of all previous backup dates.

Select the files and/or folders you want to restore. To select a single file, right-click on the file and click on **Select** or you can click in the box next to the file. To select an entire folder, right-click on the folder and then choose **Select folder**. Selected files are displayed with  green icons. To start the restore process, select **Restore** from the **File** menu or click on the **Restore** button in the toolbar.

Note: Automatic backups are disabled during the restore process

The Backup Client will prompt for a restore location to where the file(s) must be restored. If you select **Original location**, the files will automatically be restored to the same location from where they were backed up.

Note: If you choose this option, the restored files will overwrite any existing files with the same name in that location. You will be warned before the Backup Client overwrites any files.

If you do not want to overwrite the current copy of these files, select the **Folder** option. The default path is C:\Program Files\SWISSVAULT SE\Restore. You can also **Browse** to another folder if you want to restore the files to a different location.

Restore Options:

Recreate directory structure	By default, the folder structure is recreated in the restore folder. If you want all files to be restored to one location, uncheck the Recreate folder structure option. Note: If you are restoring files from different folders with the same filename, you must recreate the folder structure or they will overwrite each other.
Restore empty folders	You can choose whether empty folders must be created if the Recreate directory structure option is enabled.
Overwrite files	Enable this option if you do not want the Backup Client to prompt you before overwriting an existing file.
Use compression (faster over the Internet)	Tick the Use compression option to enable compression. With this setting enabled, the StorageCenter will compress the files before transferring them to the Backup Client. Note: You are advised to always enable this setting if you have a slow connection to the Internet as the files are smaller with this option enabled.
Restore file and folder permissions	Disable this option if you do not want to restore the file and folder permissions; typically used after a complete server failure to restore files before users accounts are re-created.
Restore directly to target location	Enable this option to write the files directly to the specified folder without using a temporary working folder. The restore process is faster with this option, but file level resume is not possible and a complete file will be resent should there be a communications error between the StorageCenter and the Backup Client during the file transfer.

Restore log information can be viewed in the **Logs** tab. Restore entries are displayed in green.

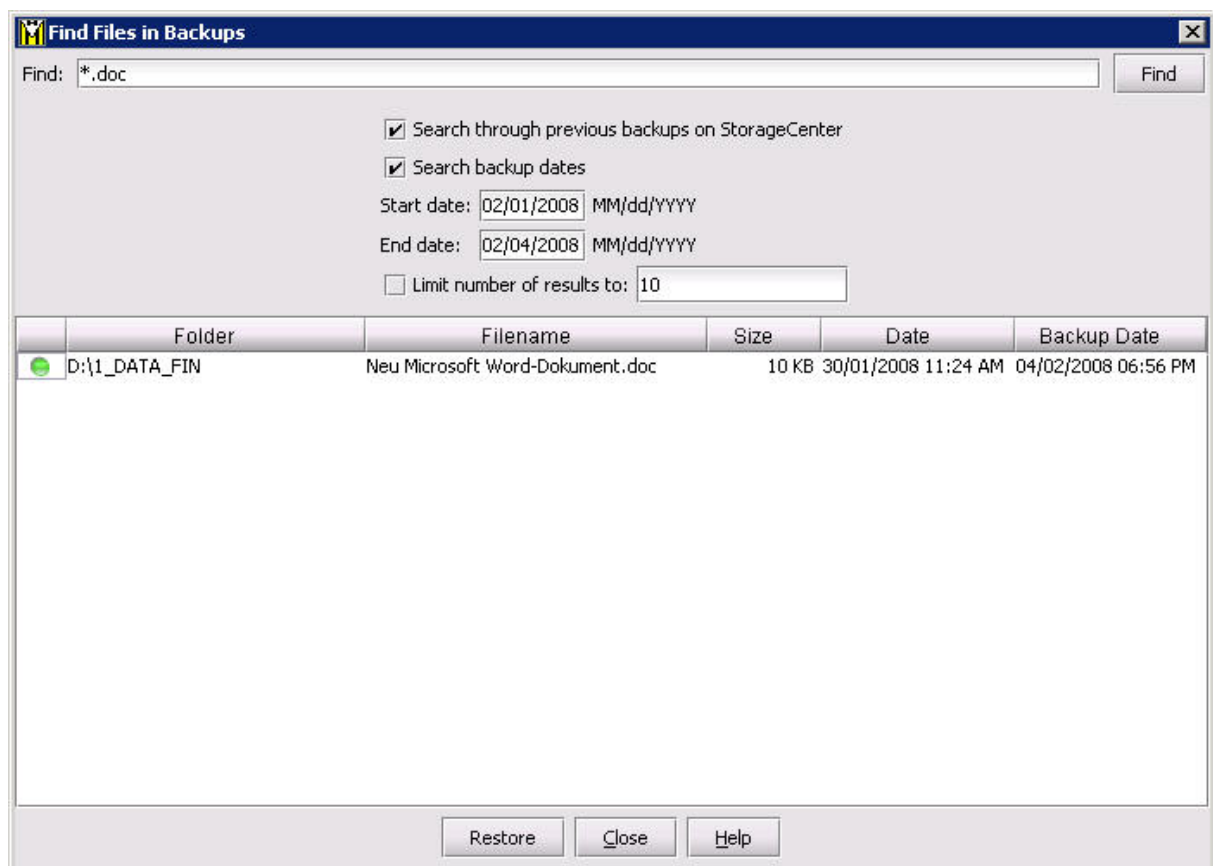
4.2.2 Finding Files

The **Find files in Backups** option enables you to search through your previous backups to find a specific file. You have the option to do a local search from your last backup, or you can connect to the StorageCenter to search through your previous backups.

To search for a file from your latest backup, select **Find files in backups** from the **File** menu or click on the **Find** button in the toolbar. Enter the filename in the textbox and click on **Find**.

Example: If you enter *help* in the textbox, the Backup Client will display a list of all backed up files from your last backup that contain *help* in either the filename or the folder.

Note: You can use the ** and ? wildcards for advanced search queries to find the files that you are looking for.*



To search for files from previous backup sets, enable the **Search through previous backups on server** checkbox.

File dates can also be specified and you can and limit the number of results that must be displayed.
Note: *The Backup Date is used if you enable Search file dates and not the file create or file modified dates.*

To restore the located files, select them individually and then click on the **Restore** button.

4.3 Options and Settings

From this **Tools** menu option you can view and configure the primary Backup Client options and settings. To open this section, select **Options...** from the **Tools** menu. The various options and settings are grouped according to their functions and displayed in different tabs.

***Note:** Please read through this section carefully before you change any of these settings. Incorrect settings could cause serious problems or even stop the Backup Client from backing up your data.*

4.3.1 Account and Security

Account Information

This section displays your backup account information as it is stored in the StorageCenter. You can use the **Retrieve Settings** button to update your account settings from the StorageCenter. This tool is useful to verify that your account limit has been modified after requesting a change from your Backup Administrator, or to update Backup Group Profiling settings.

Account Setup

If you need to change your password or encryption key, select either the **Change Password** or **Change Encryption Key** buttons. Changing your encryption key involves intensive processing on the StorageCenter and may take several minutes. It should therefore not be done unless your encryption key was compromised.

Security Settings

The Security window allows you to select whether the Backup Client should remember the backup account password when running a backup or a restore. There are three options available:

- **Remember password for backup and restore:** The Backup Client remembers the user password when doing a backup or restore. This is the default setting.
- **Prompt for password on restore:** The Backup Client prompts for the user password during the restore process.
- **Prompt for password to open the backup client and to restore:** Use this option to enable access control. The Backup Account password must be supplied before you will be able to open the backup client to change the backup selection or any of the application settings. Backups will continue as normal.

4.3.2 Connections

Connection Settings

In this section, you can change the connection that the Backup Client must use to connect to the StorageCenter. You can choose between a network/permanent or dial-up connection.

The **Dial-up Settings** button is enabled if you select the Dial-up option. Click on this button to select an existing dial-up connection configured on the computer, and supply the username and password for that Internet connection.

Proxy Server

Enable the Use a proxy server for you network or dial-up connection checkbox if you connect to the Internet via a proxy server, and supply the necessary information.

4.3.3 Backup Schedule

The Backup Client can be scheduled to backup your selected files and folders automatically. Note that if you configure the Backup Client to backup at night, the server must be powered, but you do not have to be logged in. The backup schedule can be changed by selecting **Automatic Backups** from the **Tools** menu or by clicking on the **Scheduling** button in the toolbar.

Use the **Daily Automatic Backups** section to configure a once-off daily backup. The **Advanced Schedule** can be used to specify hourly backups. Backup logs can be viewed in the **Logs** tab. Backup entries are marked in blue.

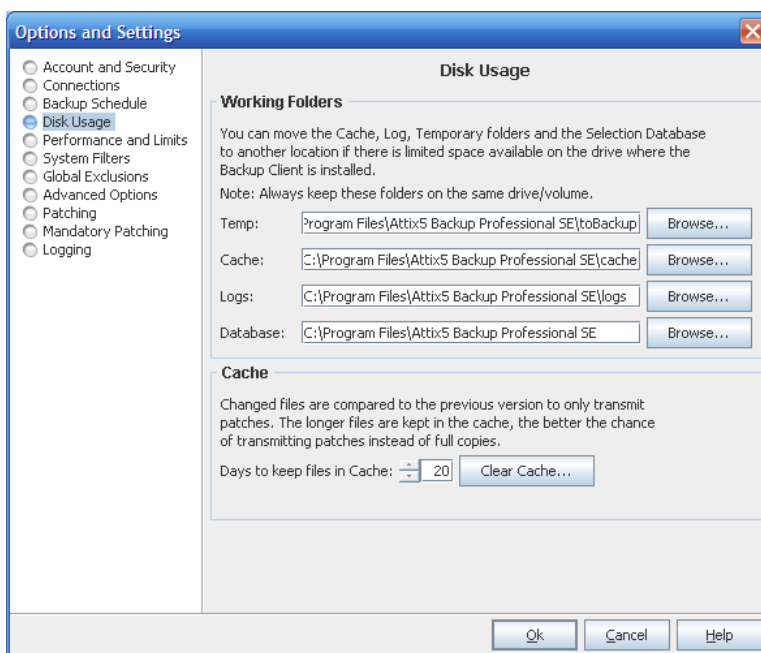
Note: You are advised not to disable automatic backups as you will then have to manually backup your files.

4.3.4 Disk Usage

Working Folders

If you have limited space on the drive where the Backup Client is installed, you can move the Cache, Logs, Temporary folders and the selection database to another drive. The Temp folder is used for temporary workspace when the files are patched, compressed and encrypted, the Logs folder stores all backup and restore logs, and the Cache folder keeps a local, compressed and encrypted, copy of the selected files for a specified amount of days. The selection database compares the latest backup selection with the previous backup to determine the changes.

Note: Always keep these folders and the selection database on the same drive. If you move these folders to a network share, please ensure that the Backup Client has the correct permissions to reconnect to that share.



Cache

When modifications are made to a file, the Backup Client only transmits the changes to that file, as opposed to transmitting the complete file again. This is accomplished by keeping a compressed copy of the file in a local cache and then using a sophisticated patching technique to extract the difference between the file in the cache and the one ready to be backed up.

Files are only kept in the cache for a certain amount of days. Files are added to the Cache folder if the file was modified within the **Days to keep files in Cache** window. Once a file has been flushed from the cache, a full copy must be backed up when any modifications are made to the file. The longer files are kept in the cache, the better the chance of only transmitting patches instead of full copies and thus reducing the amount of data that needs to be transmitted. If you have limited disk space, you may want to consider shortening the time files are kept in the cache.

Note: If you select 0 days, patching is disabled, any files in the Cache folder will be deleted, and complete files are backed up to the server during each backup.

To delete the current cache, use the **Clear Cache...** button. If you delete the cache, full copies of your selected files will be re-sent to the server during the next backup. You may notice that the Backup Client will log the message **Doing monthly cache cleanup** once a month. This maintenance task is to ensure that the cache folder is up to date by deleting any files that fall outside the **Days to keep files in Cache** window.

4.3.5 Performance and Limits

Processor Usage and Disk Access

The Backup Client uses a fair portion of the available processor power to patch, compress and encrypt files while during the backup process. If you use the computer at the same time, you may experience some performance deterioration. You can lessen this effect by lowering the **Processor Usage**.

Disk Access is another setting that you can modify to limit performance deterioration. If this setting is set to high, the Backup Client will continuously use all available disk access to write to the disk, ensuring that the process completes as fast as possible. The process will take longer if you lower this setting but your other applications will still function without any interruptions.

Limits

Outgoing transfer limit - The outgoing transfer bandwidth can be limited (in kBytes/second) in case you need to allocate only a certain amount of bandwidth to the Backup Client.

Backup size restriction - You can limit the total amount of data that may be transferred during each backup. Note: If you enable this option, it may take several backups before all your files are backed up to the StorageCenter. This feature is especially useful if you have a poor Internet connection and you encounter problems with transferring large backups.

Backup cycle - The Backup Client can be configured to cycle the backup process until all selected data has been transferred to the StorageCenter by automatically initiating subsequent backups. This setting can only be enabled if a **backup size restriction** has been specified.

4.3.6 System

System Exclusion Filter

The System Exclusions Filter enables you to specify any file types that you want to exclude from the backup selection list. For example, to exclude all MP3 and AVI files, specify ***.mp3;*.avi** in the text box. Separate entries with a semicolon.



You can also exclude files by enabling the **Do not back up files older than:** checkbox and specifying a date. Note that the Date Exclusions Filter uses the file modify date as reference and not the file create date.



No Compression Filter

Compression is not effective on all file types as some files may already have been compressed or cannot be compressed at all. The Backup Client could spend some time, resources and processing usage to try and compress these files. This filter enables you to specify a list of file extensions, you don't want to compress during the backup process. The list of file types already specified are types which are known for not compressing well.

4.3.7 Global Exclusions

SWISSVAULT enables you to specify File and Folder Exclusions. These files and folders are excluded from the backup selection, no matter where they are located on the available drives or volumes. **Note: these entries are case sensitive; you have to ensure that you specify exact matches.**

To add an exclusion, click on **Add folder** or **Add file**, specify the name and click **OK**. Folders are displayed with  and files with . To modify any of the exclusions, select the entry and click on **Edit**, or double click on the exclusion name. To remove an entry, select the file and click **Remove**.

Click on **Ok** at the bottom of the Exclusions tab to save your changes. Excluded files are displayed with  and folders with  in the Backup Client.

4.3.8 Advanced Options

Options and Retries

The Backup Client can be configured to **Always connect to the StorageCenter** during each backup to update its last backup date stamp, even if there were no changes made to the backup set. With this setting enabled, the StorageCenter will always be up to date with the latest backup date.

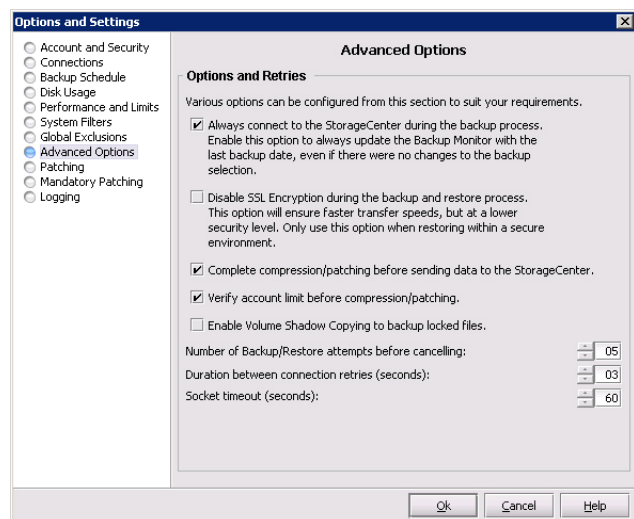
SSL Encryption can be disabled to improve the transfer time during the backup and restore processes. **Note: By disabling SSL encryption, you are lowering the security level when transferring files to and from the StorageCenter. This setting should only be used in a secure environment.**

Complete compression/patching before sending data to the StorageCenter. Enable this option if you do not want to make use of multiple thread backups to speed up the backup process, typically needed when using a dial-up account. With this setting enabled, the Backup Client will compress all new files and patch all modified files before starting to transmit data to the StorageCenter.

Verify account limit before compression/patching. With this setting enabled, the Backup Client verifies the backup account limit on the StorageCenter before starting with the compression and/or patching processes. It is rather useful to flag account limit issues before these processes.

Number of Backup/Restore attempts before cancelling - By default, the Backup Client tries to connect to the StorageCenter four times before cancelling the backup process. If you have a poor connection to the Internet, you may want to consider increasing the number of attempts. The backup will continue from the previous point of failure. It will not resend the entire backup.

Connection Retries - By default, the Backup Client will try to reconnect to the StorageCenter after 60 seconds, should the connection be dropped. This setting enables you to increase/ decrease the duration between the retries.

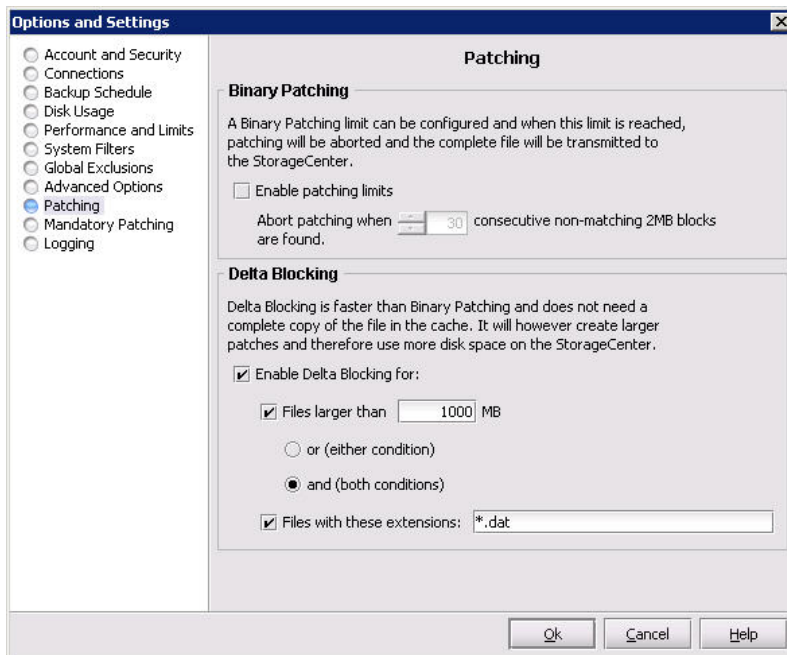


Socket Timeout - The socket timeout is, by default, 60 seconds. If the Backup Client is connected to the StorageCenter and there is no communications between the two, this amount (in seconds) is the duration that the Backup Client will stay connected before dropping the connection.

4.3.9 Patching

Patching is the process by which only the differences in files are extracted to minimize the amount of data that has to be transferred to the StorageCenter. There are two types of patching available, binary patching (the default) and delta blocking.

Binary Patching



Binary patching is the most effective form of patching. It is very CPU intensive but will deliver the smallest patches. The process is only possible if a complete copy of an older version of the file is available in the cache. Furthermore the patch must be applied to the file in the local cache which will require additional processing. Note that old copies are periodically flushed from the cache – refer to the **Disk Usage** section for more information.

Binary Patching is enabled by default and nothing needs to be configured in this tab for normal use.

Enable patching limits: It is possible that a file is modified in such a way that it becomes unfeasible to patch it. An example would be a database that is re-indexed.

In such a case the patching can take extremely long (it may exceed your backup window) and will eventually create a patch that is the same size as the complete file. It is better to abort the patching and rather just compress the new file, and transfer it to the StorageCenter. The patching limit allows you to specify when the backup client will decide to rather abort the patch and send a full copy of the file

To specify patching limits, enable the checkbox next to **Enable patching limits** and specify the amount of consecutive blocks. When this amount is reached, patching will be aborted and the complete file will be compressed and resent to the StorageCenter. **Patching Limits should only be enabled if you have serious patching issues with large files.**

Delta Blocking

An alternative solution to determine the change between two versions of a file is Delta Blocking. **Note: It is vital that you read through this section before enabling this option in your Backup Client.**

The Delta Blocking process is significantly faster than Binary Patching and it does not require a complete copy of a file in the cache to calculate the patch, only a footprint file. The footprint files require very little free disk space, as a single footprint file is only 0,0006% of the original file.

The patches are, however, much bigger than Binary patches so Delta Blocking should only be used if you backup to a local StorageCenter or if you have a very good Internet connection. The StorageCenter also requires additional free hard disk space because of the larger patches.

Delta blocking patches are created by comparing "blocks" of data for any change since the last backup.

Enable the checkbox next to **Enable Delta Blocking**. You can set the Delta Blocking file selection criteria in two ways, either by file size or by file type. Select the applicable condition(s) and supply the necessary information. Both conditions can also be enabled by selecting both conditions and the "and" option. Any recently changed files not matching these criteria will be patched using binary patching.

Note that some database files may not be suitable for binary patching since data is shifted at the beginning of the file. When this happens it will result in a patch as large as the complete file. It is advisable to closely monitor the sizes of the patches when Delta Blocking is enabled and rather disable it if it turns out to be ineffective.

4.3.10 Mandatory Patching

Mandatory files are scanned for changes, regardless of whether it appears that they have changed since the last backup. This is useful in situations where files are held open by an application – internally the file changed, but the change is not reflected in the last modified date on the file system, or in the size of the file itself.

Open File Manager/VSS enables the backup of these files without impacting the running application or corrupting the indicated file.

4.3.11 Logging

The **Logs** tab in the backup client provides detailed information about each backup and restore. This section enables you to modify the structure of these log files. You will notice an additional toolbar button when you open the Logs tab; the Summary button can filter the information to only display the last 14 lines.

Log File Content

You can specify the level of information that must be included in the log files. Choose between:

- Log all messages
- Suppress detail messages
- Only log errors and warnings

Enable the **Include date in log file time stamp** checkbox to add the date to the backup and restore log files.

Automatic Log File Deletion

A log file retention period can be enabled to delete files older than e.g. 30 days by enabling the checkbox and specifying the duration in days.





4.4 Additional Settings

The **Tools** menu provides you with various options and settings that you can modify to enhance and streamline your Backup Client. You can also modify your account settings from this menu.

4.4.1 Add Network Volume

You have the option to add network volumes and include files located in these locations to your backup selection. **Note: You have to ensure that the backup service is started up as a user that has sufficient permissions to browse and access the network shares.**

The Backup Client will only be able to backup files from a network volume after the share has been accessed and authenticated by the server where the Backup Client is installed.

To add a network volume, select **Add Network Volume** from the **Tools** menu. Enter the UNC network path in the space provided. Paths must start with "\\" before they will be accepted, for example \\File-Server\documents. You can also use the **Browse** button to browse to the network path. Network volumes are listed in the left-hand pane after they have been added and displayed with a  network image. If some files are included the image will change to  and if you include the entire share it will change to a  green image. Excluded network volumes are marked with  red network images.

Without the correct permissions the Backup Client may still be able to display the files on the share, but it will not be able to access these files during the backup process. You will see a message **Volume \\File-Server\documents\ is not available for backup** in the log file if the Backup Client cannot access these files.

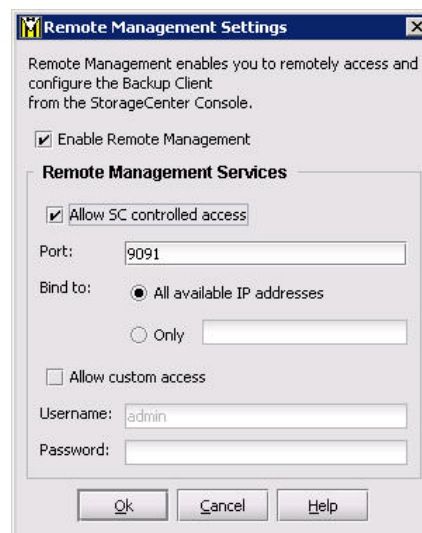
You can remove a network volume from the Backup Client by right-clicking on the entry in the left-hand pane and then selecting **Remove Network Volume**.

4.4.2 Remote Management

Remote Management enables you to remotely access and configure the Backup Client from the StorageCenter Console.

To enable this feature, select **Remote Management** from the **Tools** menu and enable the checkbox next to **Enable Remote Management**. The **Allow SC controlled access** option enables backup administrators with the correct access permissions to use their StorageCenter User Access Management username and password to connect to and administer this Backup Client. If you disable this checkbox, StorageCenter administrators will not have remote access.

Specify the port number (the default port is 9091) that must be used for Remote Management. If the server has multiple IP addresses available, you can specify whether the Remote Service must bind to **All** or **Only** to one IP by specifying the address in the textbox.



Enable the **Allow custom access** option and supply a username and password if you do not want to make use of the above-mentioned StorageCenter Access Accounts. This custom access username and password must be specified in the StorageCenter Console to gain remote access. Click **OK** to save you settings. After the service has been restarted, click on **OK** to close the window.

4.4.3 Health Check

The Backup Client Health Check provides information to pre-emptively highlight possible issues, for example free disk space problems or SE service access rights to files and folders. It can also provide the estimated line speed to the StorageCenter. Five sections are available:

- **Memory** – Memory utilisation statistics from the last backup as well as overall memory usage to date.
- **Data Protected** – Information includes the number of files and directories selected for backup.
- **Disk Usage** – Free space availability for all local drives.
- **Line Speed** – Line Speed estimate to the File-Server by transmitting data for 10 seconds.
- **Service Rights** – Information about the service account name and access rights to the working folders.

You can decide which checks you want to run by enabling/disabling the checkboxes next to the entries. Use the **Show Last Health Check** button to see the last report. You have the option either **Print** or **Export** the Health Check reports.

4.4.4 SnapShot Backup and Restore

SnapShot Backup and Restore enables you to create a backup of your selected files on disk or to a local SnapShot server within your Local Area Network (LAN). This SnapShot data can then be moved to the server running the StorageCenter where the data will be transferred.

The StorageCenter is usually hosted at an off site Data Center and this feature enables the backup administrator to reduce the initial backup window if there is a large amount of data that must be backed up, typically across a slow internet/network connection. A similar procedure can be followed when restoring a large amount of data, for example, during a Disaster Recovery.

SnapShot Backups

Note: Only the backup administrator should configure or change these settings. Two options are available in the Backup Client, **Snapshot to disk** and **Snapshot to Snapshot server**. Using the second option, you must add a Snapshot server to your LAN, initiate the backup, and then connect the Snapshot server to the StorageCenter and transfer the data with the SnapShot Tool. With the Snapshot to disk option, you do not need any additional software; simply create the Snapshot backup on disk and then transfer the data to the StorageCenter using an external drive.

Snapshot to Disk

Open the Backup Client and select the files that must be backed up. Select **Snapshot** from the **Tools** menu, and click on **Backup**. Enable the checkbox next to **The next backup must be a Snapshot backup**. **Send Snapshot to disk** is selected by default. Specify the location where you would like to create the Snapshot backup. Enable the checkbox next to **Update index from StorageCenter before Snapshot** if you want to update the index file before initiating the Snapshot process, typically if there are already previous backups available on the StorageCenter for this particular account.

Initiate a backup by clicking on the **Backup** button in the toolbar or **Backup Now** from the **File** menu. The backup account is automatically disabled after a Snapshot backup to ensure that the data can be moved to the StorageCenter before the next backup is initiated.

Your backup administrator will move the local snapshot folder to the StorageCenter and your account will be enabled again.

Snapshot to a Snapshot server

A few steps are necessary to ensure that everything is in place to backup to the Snapshot server:

- Connect the Snapshot server to the LAN where the Backup Client is located.
- Ping the Snapshot server from the Backup Client computer to establish whether you can communicate with the Snapshot server. Make a note of the IP address/Hostname.

The following settings must be configured in the Backup Client. Create an account for the specific Backup Client but **do not backup any files to the account**.

- In the Backup Client select **Snapshot** from the **Tools** menu and click on **Backup**. In the **Snapshot backup** settings window, supply the Snapshot backup server address as well as the server port. The default port is 8443. Click in the checkbox next to **Do next backup to snapshot backup server** to enable the Backup Client to send the next backup to the Snapshot server and not to the actual StorageCenter. If the Backup Client is configured to connect through a Proxy server, you will be able to check/uncheck the "Use proxy settings for snapshot backup". If this option is checked, the Proxy server will be used for communications to the File-Server. If it is unchecked, the Proxy server will only be used for communications to the Name-Server. Click on **Ok** to accept these settings.
- Select all the files that must be backed up and select **Backup Now** from the **File** menu. These files will be compressed and backed up to the Snapshot server. Note that the user account will be disabled after a snapshot backup. This is to ensure that the user will not initiate another backup before the data has been transferred to the StorageCenter.

SnapShot Restores

After the required folders have been moved to the Snapshot/DR server by the backup administrator, move the Snapshot/DR server to the LAN where the Backup Client is located. Ensure that you can ping the server from another computer on the network. Make a note of the IP address/Hostname. The following settings must be configured in the Backup Client.

- Open the Backup Client. Select **Snapshot** from the **Tools** menu and click on **Recover**. In the **Recovery settings** window, supply the DR server address as well as the server port. Port 8443 is the default port. Click in the checkbox next to **Do restores from recovery server** to enable the Backup Client to restore from the DR server and not to the actual StorageCenter. Click on **Ok** to accept these settings.
- Open the **Restore** tab and select Previous Backups. The Backup Client will connect to the DR box and retrieve a list of all the available backup dates. From here the user will be able to restore large amounts of data. Remember to remove the tick mark in the checkbox after the restore.

4.4.5 Archive References

Archive References enables you to view backups that have been archived to another storage device, e.g. to tape. These files are marked with a greyed-out folder in the Restore tab. You can search through the available archived backups, but they cannot be restored from the Backup Client.

After you have found the files that you want to restore, contact your Backup Administrator and request that the archived backup is moved back to the StorageCenter. Thereafter you will be able to restore the files.

These archives are only available if it has been enabled by the Backup Administrator.

4.4.6 Command Line Backup and Restore

You can use the command line interface to remotely run the Setup Wizard, enable SE Remote Management with an own specified user and to send a wide range of backup and restore commands to any Server Edition backup client in your organisation.

Note that the SE Backup Client is required and must be installed on the computer from where you want to use the command line interface.

Remote Management must be enabled in the Backup Client and a username and password set for any commands to work. Run `a5backup-cli -configure {account|remote}` to run the Setup Wizard or to enable Remote Management in the Backup Client. You can also specify the host address with the `-h` command. See examples below.

Usage: `a5backup -cli -u user -p password {restore|dates|status|backup|cancel}`
`[-h host] [-pt port] [-rd restoredateidx] [-rp restorepath | -original]`
`[-fd filterdate] [-fp filterpath] [-fext filterext]`
`[-compression on|off] [-overwrite]`

Note:

- `-rp <restorepath>` must be an absolute path and the service must have full access rights to the directory.
- When restoring, the default policy is to skip existing files. Specify `-overwrite` to overwrite existing files.

Examples:

To start a backup on the local machine using the default port
`a5backup -cli -u admin -p pass backup`

To see the status of a currently running task in the backup service
`a5backup -cli -u admin -p pass status`

To see a list of available backup dates to restore from
`a5backup -cli -u admin -p pass dates`

To start a restore from the last backup made, extracting files to the default restore temporary directory
`a5backup -cli -u admin -p pass restore`

To restore from a different date, use the dates command to get a date index
`a5backup -cli -u admin -p pass -rd 2 restore`

To cancel the current running task on a remote backup service running on 192.168.20.99
`a5backup -cli -u admin -p pass -h 192.168.20.99 cancel`

4.4.7 Dynamic Profiling

Dynamic Profiling enables your Backup Administrator to propagate certain client side settings from the StorageCenter to your Backup Client. **Note: These settings take priority over any settings specified in the Backup Client.** They include:

- Changing the backup schedule
- Specifying file and folder selections and exclusions
- Adding additional filters to the filter list
- Most **Options and Settings** found in the **Tools** menu

When the Backup Client connects to the StorageCenter, it will receive a list of any Dynamic Profiling settings specified by the Backup Administrator and these changes will be implemented in the Backup Client.

You can manually connect to the StorageCenter by clicking on the **Retrieve Settings** button in the **Account and Security** Options section, to update Dynamic Profiling settings. Profiled settings are greyed out, and cannot be modified from within the Backup Client.

4.4.8 Language

If multiple languages are available, the Backup Client will select and display the default OS language. You have the option to change this setting. From the **View** Menu, go to **Languages** and select one of the available options.

4.4.9 Look & Feel

You have the option to change the look and feel of the Backup Client. From the **View** Menu, go to **Look & Feel** and select one of the available options.

5 Plug-ins

Adding to its features and functionality, SWISSVAULT Server Edition also provides a solution for numerous data stores and applications. These solutions are provided as plug-ins to the Server Edition software.

Plug-ins currently available for Linux:

- E-mail Notification
- Script Plug-in

5.1 Email Notification

The Email Notification plug-in enables you to receive email notification on backup activity. You can configure the plug-in to notify you on a specified email address when a backup has been successful, when it failed or both.

5.1.1 Installing the Email Notification Plug-in

This plug-in is included in the Server Edition installer as of v4.2. If it is not installed you have two options:

RPM file: Copy the supplied `a5backup-plugin-report-<version>.noarch.rpm` file to a local directory and execute the command `rpm -i a5backup-plugin-report-<version>.noarch.rpm` to install the plug-in.

TAR.GZ file: Create a `plugins` folder within the Backup Client install folder and extract the supplied `a5-bp-email-plugin-<version>.tar.gz` file to this folder. After you have extracted the file, open the Backup Client interface.

5.1.2 Configuration and Use



To configure the Report plug-in, open the **Tools** menu, select **Plug-ins** and click on **Email Notification**. Enable the checkbox next to **Use Email notification** to enable the plug-in. Select whether you would like to receive notification for successful and/or failed backups. You can also modify the email subject. Note that the account name is automatically included in the subject, e.g. Backup Completed [User One].

If **Notify me after a successful backup** is enabled, you can choose whether Warnings and/or Errors must be highlighted in the email subject by enabling the checkbox next to **Append the subject line with the following options and message**. An example of the message is displayed below the text box.

Supply the **To** and **From** email addresses, and the **SMTP server** address and authentication settings, if needed.

You can specify whether the backup log must be included in the email. Choose between the **Summary, warnings and errors** or the **Entire log file**, as specified in the **Advance Options** Log level setting.

Click on **Test** to verify that the settings are correct. A message will confirm if the email was sent successfully. Click on **OK** to remove the message and **OK** again to close the Notification settings window.

The Email Notification plug-in is now activated and will start emailing reports during the next backup.

5.2 Script Plug-in

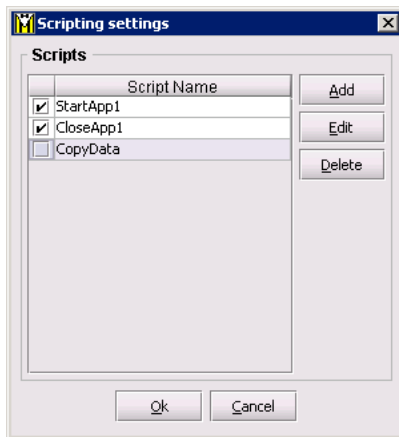
The Script plug-in enables you to execute scripts and batch files during the backup process. This allows you to prepare an application for backup and to create a data dump of a database. You can also stop and start applications or services before, during or after any backup.

5.2.1 Installing the Script Plug-in

RPM file: Copy the supplied `a5backup-plugin-script-<version>.noarch.rpm` file to a local directory and execute the command `rpm -i a5backup-plugin-script-<version>.noarch.rpm` to install the plug-in.

TAR.GZ file: Create a **plugins** folder within the Backup Client install folder and extract the supplied `A5BP-SCRIPT-PLUGIN-<version>.tar.gz` file to this folder. After you have extracted the file, open the Backup Client interface.

5.2.2 Configuration and Use



To add scripts, open the **Tools** menu, select **Plug-ins** and click on **Scripting**. The Scripting settings window allows you to **Add** new and **Edit** or **Delete** existing scripts.

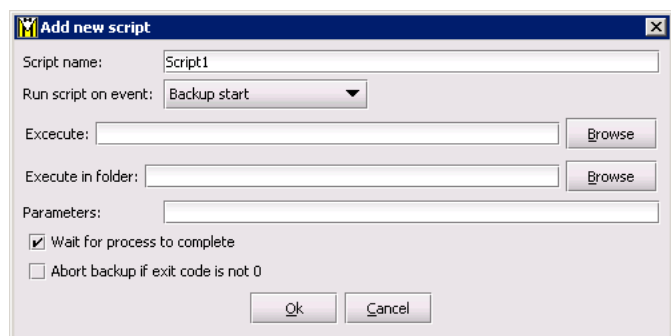
Click on **Add** to create a new script. The image below displays an example. Start by supplying a Script name and specify when this script should run.

You can choose between:

- Backup / Restore start
- Backup data created
- Connection open
- Backup / Restore Transfer start
- Backup / Restore Transfer end
- Connection closed
- Backup / Restore end

Browse to the application or batch file that should be executed. Supply a location where it should be executed as well as any other **Parameters** needed.

Specify whether you want the Backup Client to wait for the process to be completed before continuing with backup process by enabling the checkbox next to **Wait for process to complete**.



Click on **Ok** to save the new script. You can enable/disable scripts by clicking in the checkbox next to the Script Name. After you have configured all your scripts, click **Ok** to close the Scripting settings window.

6 Security

SWISSVAULT SE uses a combination of Blowfish encryption and SSL secure data transmission to ensure the safety of your data.

When the Backup Client has to transfer data to the StorageCenter, it connects using a secure SSL (2048 bit RSA key exchange, 128 bit RC4 stream cipher and SHA-1 integrity checking) connection to transfer the data. Signed SSL certificates and Certificate Revocation Lists (CRLs) are used to verify server integrity.

Data is stored using 448-bit Blowfish encryption to encode the data on the Server. This is considerably greater than the encryption used for Internet banking and online credit card transactions.

Your encryption key is seen as a passphrase by the StorageCenter. A random encryption key is automatically generated when any account is created and this random key (and not the passphrase specified by you) is used to encrypt your files.

The encryption key is protected by the passphrase (your encryption key) and without this passphrase you cannot decode the actual encryption key. When you change the encryption key in the Backup Client, the actual key is decrypted and re-encrypted with the new passphrase.

The data is never touched. All data since the initial backup is encrypted with the same random encryption key even when the passphrase is changed. If you change your encryption key, you do not have to remember the previous encryption keys for future restores – the Backup Client will be able to retrieve the data from the StorageCenter.

Your encryption key is not stored anywhere on the StorageCenter, and is only known to you. If you forget this encryption key, it will render your data unrecoverable.

Blowfish Encryption

Blowfish is an encryption algorithm. It is a symmetric block cipher, which uses a variable-length key from 32 bits to 448 bits. SWISSVAULT uses the maximum strength 448-bit key.

SSL Communication

The Secure Sockets Layer (SSL) is a commonly used protocol for managing the security of data transmission. SWISSVAULT makes use of the SSL protocol (2048 bit RSA key exchange, 128 bit RC4 stream cipher and SHA-1 integrity checking) for secure communication between the Backup Clients and the StorageCenter, including data transmission.

7 SWISSVAULT Support

Please do not hesitate to contact us in case of any questions.

Note: You ideally reach us by email support@swissvault.ch, where we will reply instantly.

SWISSVAULT AG

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