

Søren Madsen
Part of my descriptive guides collection, Version 1.0

Simple Backup

Microsoft Batch based backup

Simple Backup

Table of contents

1.1 Disclaimer.....	3
1.2 Basic requirements.....	3
1.3 Limitations and shortcomings.....	3
1.4 Structure.....	4
1.5 Installation tips.....	7
1.6 File validation.....	8
1.6.1 7zip archive integrity validation.....	8
1.6.2 Checksum validation using certutil.....	8
1.6.3 Svnadmin status - VarCheckWorkingCopyChanges.....	9
1.7 Fundamental features.....	10
1.7.1 Backup synchronization to external storage.....	10
1.7.2 Parametervalidation.....	10
1.7.3 Automatic shutdown.....	10
1.7.4 Preventing windows from powering down the system.....	10
1.7.5 Automatic version numbering.....	11
1.8 Troubleshooting.....	11
1.8.1 Windows 8.1 / Windows 10 and BOM file encoding.....	11
1.9 Function and settings description.....	11
1.9.1 Function and settings description SimpleBackup\Version .info.....	12
1.9.2 Function and settings description SimpleBackup\Settings.ini.....	12
1.9.3 Function and settings description SimpleBackup\Configuration\BackupSettings.ini.....	14
1.10 Configured example of an ini-file.....	19

Intro

This document describes the Microsoft Batch based script Simple Backup.

1.1 Disclaimer

The script has only been sporadically tested on:

- Microsoft Windows 10 version 20H2 64Bit installation (Regional settings: Danish).
- Microsoft Windows 10 version 20H2 64Bit installation (Regional settings: Danish).

Older versions of the script was also possible to run on a Windows 8 setup, but I had to manually remove the BOM characters using Notepad++ to be able to run the script in unicode mode.

In other words it has NOT been tested on a full blown Continuous Integration server with 100% code coverage. The script should not be considered production ready software and it was developed for my personal setup on my own PC. Some of the files contain functions that are untested and only stored not to forget the implementation idea. However the functions that are actually used in the backup process have been tested rather extensively by manual execution of the script during my own backups.

Feel free to use this script/software at your own risk.

1.2 Basic requirements

The script should be able to archive individual folders and not just entire partitions.

The script should be able to calculate checksums for the files created and store these in a folder with the archive file/files.

The script should be able to log to a file, enabling the user to read the program feedback and store this file in a folder with the archive file/files.

The script should support subversion versioning tools to ease the backup of svn repositories as an included backup functionality in the standard backup performed by the script.

The code should be generalized and wrapped in easy to use functions.

1.3 Limitations and shortcomings

Generally speaking the naming convention of files and folders could be improved a bit. The code base has been developed using an adhoc approach leaving some process improvements to be desired :-). That is a luxury one has when coding own projects for fun, but a better analysis and development process would minimize a lot of "rushed code errors" and thereby minimize the time spent debugging the code afterwards.

The function Backup.cmd->evaluation is error prone. Because of the way SETLOCAL encapsulates variable values in a locked local scope it has been problematic to pass

Simple Backup

the environment variable `ERRORLEVEL` to another function when `DELAYEDEXPANSION` is on. That results in an evaluation function that sometimes work as expected (without `delayedexpansion` enabled) and other times fail to report the `ERRORLEVEL` value. Microsoft Batch does not seem to be developed for this kind of programming style and returning and parsing values to and from functions have been difficult to achieve.

This is caused by the fact that `SETLOCAL` makes a "copy" of all environment variables before changing scope and executing the script code that is localized. When the localized code is done executing and the scope is changed back to global scope by issuing the `ENDLOCAL` command all the environment variable values are changed back to their "state" from before the `SETLOCAL` command was issued. That problematizes returning and parsing values between functions.

This generally means that encapsulation in this project is minimized and some functions are rather large. It would have been nice to be able to break the bigger functions down to smaller more functions and thereby generalizing more of the code. This minimizes maintenance by only having a single implementation of each functional requirement.

The project does not handle thread synchronization problems. So running multiple scripts at the same time is out of the scope of this implementation.

1.4 Structure

The script consists of several `cmd` files, and `ini`-files. I tried to "mimic" the function-calling syntax in regular general-purpose procedural programming languages to avoid repetitive code and to wrap general functionality into usable functions. The primary benefit of this is single point of failure in functions instead of sequential coding, which would generate a code base with a lot of repeating code patterns resulting in changes that require a lot of code editing.

The structure of the script:

```
|-- .\SimpleBackup
    |-- Version.info
    |-- Backup.cmd
    |-- fileSystem.cmd
    |-- logging.cmd
    |-- Multiple_Backups.cmd
    |-- ParameterValidation.cmd
    |-- SvnRepoFunctions.cmd
    |-- utility_functions.cmd
    |-- Settings.ini
    |-- .\Documentation
        |-- HowTo_Description.pdf
```

Simple Backup

```
|-- .\Simple_Deployment
    |-- PrepareForCommit.bat
|-- .\Simple_Installer
    |-- Make_sfx_with_gui.txt
    |-- MakeInstaller.bat
    |-- MakeGithubInstaller.bat
    |-- SimpleBackupFiles.txt

|-- .\FullBackup
    |-- BackupFolders.cmd
    |-- Backup.txt
    |-- BackupSettings.ini
|-- .\AnotherBackupConfigurationFolder
    |-- BackupFolders.cmd
    |-- Backup.txt
    |-- BackupSettings.ini
```

Script base folder: SimpleBackup

This folder is the root folder of the entire script.

File: Version.info

This file contains the version info retrieved from the Subversion based version control system I use. It contains the following entries:

varMayorVersion - Year

varMinorVersion - Month

varRevisionNumber – Revision number from Subversion.

VarReleaseVersion – The version number used in the script.

VarLastChangedAuthor – Author name of the person who committed the revision to Subversion.

The final version number is of the form: Year.Month Revision 'Number'

Example: 2021.05 Revision 752

File: backup.cmd

This file contains the main backup script and performs all the essential functions. This includes precondition checks, the function requested, user feedback and errorhandling.

File: fileSystems.cmd

Simple Backup

This file handles file system operations. Move folder, copy folder, URL-validation, path cleanup functions, file deletion, creation etc. Not everything is implemented since functions were implemented as I needed them during development.

File: logging.cmd

This file handles logging. It wraps the echo command and it supports echoing to graphicaluser interface and to file.

File: Multiple_Backups.cmd

This file makes it possible to utilize more the one application function. Each backup configuration can only handle a single application function, which is defined in the associated ini-file (BackupSettings.ini). By combining more backup configurations in this file more application functions can be performed.

One of my use cases is:

A backup of my Raspberry Pi Os operating systems installation including svn commit of the image checksum file.

Then a full export of my svn repositories and a full backup of my important folders. Using this file makes that procedure possible with a single mouse click.

File: ParameterValidation.cmd

This file initiates variable lists and has the functions that perform the Ini-file parameter validation.

File: SvnRepoFunctions.cmd

This file handles all the subversion functionality. Svn update, svn status, svn add, svn commit, svn dump file export. To make this functionality work Subversion command-line tools must be installed on the system.

File: utility_functions.cmd

This file is sort of a toolbox file with no predetermined function purpose. All functions that do not fit in either of the other files are regarded as being general purpose utility functions.

File: Settings.ini

This file sets up the general script parameters. Paths to executables, code page definition to support specific cmd.exe regional setups. Default setup is utf-8.

Folder: Documentation

This folder contains the documentation describing the project.

File: Howto_Description.pdf

This file is this file :-). Documentation.

Folder: FullBackup (Configuration folder)

This folder is an example of a backup configuration. It will backup the folders defined in Backup.txt

File: Backup.txt

This file defines which files and folders will be backed up. All sub folders and files in a given folder will be backed up.

File: BackupFolders.cmd

This file reads the ini-files to setup internal variables used by backup.cmd. Furthermore it is used to perform post backup procedures if the user requires it. An example of this is my implementation of 'svn committing' the checksum file of my raspberry pi image backup.

File: BackupSettings.ini

This file defines the actual backup application function used in a backup configuration and various optional settings. Examples: Password, archive split file functionality, enable/disable file logging etc.

Folder: Simple_Deployment

This folder is meant to keep all files for release and deployment handling.

File: PrepareForCommit.bat

This file retrieves the version and author information from Subversion and saves it in a file called Version.info.

Folder: Simple_Installer

File: Make_sfx_with_gui.txt

This file describes how to manually make a simple installer file using 7zip utilities.

File: MakeInstaller.bat

This file is a bat-file that automates the installer generation.

File: SimpleBackupFiles.txt

This file is used by MakeInstaller.bat to point to the directory of SimpleBackup. This is the folder that is the content in the generated installer file.

1.5 Installation tips

The script requires the following software to work:

- Microsoft Windows

 - Tested on:

 - Windows 10 Home version 2004 (Regional settings: Danish).

 - Windows 10 Home version 20H2 (Regional settings: Danish).

 - (Old versions only) Windows 8.1 64Bit installation (Regional settings: Danish).

- An archive program – Default is 7zip.

Simple Backup

Changing to another archive program will probably require some script updates.

- Subversion command line tools: svn.exe and svnadmin.exe.
Tested using both Visual SVN Server and tortoisessvn. The subversion command line tools provided by these software packages should be equivalent to each other.
- Checksum calculations are done using certutil.
7zip also provides the ability to calculate checksum if an alternative is wanted.
- Copy, move and sync functions are done using robocopy.exe
- shutdown.exe

If all the software is available on the system you will have to:

1. Copying the SimpleBackup files to the PC to a folder the user has sufficient access to.
2. Configure the .\SimpleBackup\Settings.ini
FullBackup example:
3. Configure the file .\SimpleBackup\FullBackup\BackupSettings.ini
4. Configure the file .\SimpleBackup\FullBackup\Backup.txt to define which folders to backup.
5. Run the file .\SimpleBackup\FullBackup\BackupFolders.cmd

1.6 File validation

This project supports 3 types of file validation.

1.6.1 7zip archive integrity validation

This is the validation method used by application function varAppFunctionIntegrityCheck. It is used to validate the validity and integrity of the archive file parsed to 7zip. It tests if the file "works" or if it is corrupted. If it tests OK the file will be able to be opened and extracted correctly. If it is corrupted there is no guaranty that the file is usable. This test does NOT ensure that the archive file/files are unchanged.

This functionality is also available as an option (varIntegrityTest). It is supported in the Appfunctions:

- varAppFunctionBackupFiles
- varAppFunctionUpdateArchive
- varAppFunctionExtractFilestoFolder
- varAppFunctionExtractFilesWithFullFilePath

1.6.2 Checksum validation using certutil

This is the validation method used by application function varAppFunctionValidateChecksum. It is used to test if the archive file has changed since creation by compar-

Simple Backup

ing a newly calculated checksum to the checksum stored in the checksum file when the archive file was created.

If the 2 checksums are equal the file remains intact and unchanged.

If the 2 checksum are not equal the file has changed since it was created. This can be due to corruption or just plain editing by opening the file in the archive manager program and adding/deleting or changing files.

SimpleBackup supports the following checksum algorithms using certutil v10.0.19041.1 on Microsoft Windows 10 20H2: (MD2 | MD4 | MD5 | SHA1 | SHA256 | SHA384 | SHA512).

The default value is set to SHA512. Choosing a lower bit length increases the probability of a checksum collision. A checksum collision is a scenario in which the chosen checksum algorithm generates the same checksum value for 2 different files. Choosing SHA512 ensures the lowest probability for a checksum collision. Choosing MD2 however increases the probability of a checksum collision when compared to the other higher bit length algorithms.

This functionality is also available as an option (varChecksumValidation). It is supported in the Appfunctions:

- varAppFunctionBackupFiles
- varAppFunctionUpdateArchive
- varAppFunctionExtractFilestoFolder
- varAppFunctionExtractFilesWithFullFilePath

1.6.3 Svnadmin status - VarCheckWorkingCopyChanges

The third and last technique used to check things is using the fact that the project files are stored in a svn repository. By using svnadmin status command it is possible to obtain a high degree of certainty that the project files are in a consistent state and will perform the functionality as expected. This does not validate the generated backup files but checks the executable script files themselves. The function CheckWorkingCopyForChanges in the file svnRepoFunctions.cmd is the implementation of this functionality and it supports quite a bit of flexibility through the parameters the user can provide it. Further details can be found in CheckWorkingCopyForChanges in the file svnRepoFunctions.cmd.

In my setup all the cmd files found in the root folder of SimpleBackup may not have changes in them compared to the file version found in the svn repository.

However I have accepted changes to the file Multiple_Jobs.cmd when comparing it to the svn repository version to make it easier to enable/disable the Raspberry Pi image backup configuration without having to do a svn commit each time I enable or disable the mentioned backup configuration.

1.7 Fundamental features

1.7.1 Backup synchronization to external storage

As of svn revision 603 the project has a new feature, that synchronizes the backup folder to another folder or an external usb storage device.

This feature is available as an AppFunction that only performs the synchronization of a source and a destination folder or as an ini-file option that is activated during execution of the Appfunction `varAppFunctionBackupFiles`.

1.7.2 Parametervalidation

As of svn revision 617 (Used to be called `ParameterVerification` in older versions, but has been renamed to `ParameterValidation`) the project has a new feature. The script will now perform `parametervalidation` of all the parameters in `Version.info`, `Settings.ini` and `BackupSettings.ini`. All variables are counted and validated. Any unvalidated parameters are identified and the script will not continue to perform an AppFunction if a parameter has not been validated ok. The most important validation functionality is:

- Detecting unvalidated parameters.
- String pattern validation using by using regular expression pattern validation.
- Numeric type validation using by using regular expression pattern validation.
- Numeric value range validation.

1.7.3 Automatic shutdown

Added in svn revision 636 is a new feature that enables automatic shutdown/restart of a device. Using this feature eases making backup jobs with a high time duration because the user do not have to go back and switch off the unit. The unit can switch itself off when the task is done. The user is warned and have 2 minutes to save any work. It is possible to set up a shutdown function with or without `/f`, which force closes running applications on shutdown. It is possible to configure how the system will power down by configuring `varShutdownDeviceWhenDone` in `Settings.ini`.

1.7.4 Preventing windows from powering down the system

Using the variable `varTemporarilyDisablePowerDown` in `Settings.ini` it is possible to prevent windows from powering down the system. This will ensure that a lengthy backup function is not interrupted by system power down preventing it from finishing correctly. The Sleep and hibernation are disabled when an application function performs it's preparation routines and the Sleep and hibernation functions are re-enabled as the last operation performed by an application function on successful execution.

1.7.5 Automatic version numbering

Simplebackup uses a file called Version.info to store version info. Do not delete this file or version info will be lost and a generalized message will be display in the console output as the current SimpleBackup version. It is generated during release-deployment by `.\SimpleBackup\Simple_Deployment\PrepareForCommit.bat`.

1.8 Troubleshooting

1.8.1 Windows 8.1 / Windows 10 and BOM file encoding

Testing on Windows 8.1 64bit. On windows 8.1 the utf-8 files did not work as expected when using codepage 65001. Following the installation tips and the setup guide in this document resulted in files being opened and closed by notepad.exe in Windows 8.1 64bit. When saving a textfile in notepad.exe a BOM was added to the beginning of the SimpleBackup files. The BOM are 3 invisible characters at the beginning of the file. They are added each and every time the files are saved in notepad.exe. These characters had to be removed again to make SimpleBackup run on cmd.exe in Windows 8.1 64bit. To remove them I used notepad++ and changed the file encoding to UTF-8 without BOM.

1. Open the file in notepad++.
2. Choose encoding in the topmenu.
3. Choose convert to utf-8.
4. Save the file.
5. Repeat the steps for all SimpleBackup script and ini-files.

1.9 Function and settings description

This chapter describes all the entries in the configuration ini-file BackupSettings.ini which is the main user entry point to the script. Settings.ini from the base folder should be self explanatory.

All the entries in the ini-file must be defined or the script will exit with an error message. No spaces are allowed in the variable name and the equal operator must be directly aligned without spaces between the variable name and the value.

The paths do however support spaces in folder names!

The example below works in most cases.

`C:\folder with spaces\folder1`

If Svn functions are called with a path like the above example problems might occur. If a space occurs in a folder name before the root folder of the svn repository, the svn.exe and svnadmin.exe will fail and the script will exit. Please use symbolic linking to solve this (mklink.exe). If a space occurs in a folder name INSIDE the svn repository working copy it works fine and svn.exe and svnadmin.exe will handle it without problems.

The variables are defined in the format

Simple Backup

variableName=Value

1.9.1 Function and settings description SimpleBackup\Version .info

varMayorVersion

The current year.

varMinorVersion

The current month.

varRevisionNumber

The svn revision of the current release. Simplebackup is developed in a subversion based version control system before manually being pushed to github.com.

varReleaseVersion

The release information displayed in the Console output and the in the logfile.

varLastChangedAuthor

Name of the developer who committed the revision to the svn server and probably also the person who uploaded the release to github.com.

1.9.2 Function and settings description SimpleBackup\Settings.ini

varFileNameLength

varFolderLength

varPathLength

These variables sets up length limitation settings. These length limitations are added to avoid or minimize code injection. These values MUST be read as the first values in utility_functions :readBackupSettingsFile. The value in varPathLength is based on a classic windows limit.

varTemporarilyDisablePowerDown

The varTemporarilyDisablePowerDown option will disable sleep/hibernation when starting the script and re-enable sleep/hibernation when the chosen Appfunction finishes.

NO: Disabled (Default value)

SleepOff Disable Sleep

HibernationOff Disable Sleep

SleepAndHibernationOff Disable Sleep

varSleepTimeout

varSleepTimeoutBattery:

Timeout in minutes. 0 minutes = turned off.

varHibernationTimeout

varHibernationTimeoutBattery:

Simple Backup

Timeout in minutes. 0 minutes = turned off.

varShutdownDeviceWhenDone

This options will shutdown the device with a default timeout of 120 seconds. The user will receive a warning message. The following modes are supported:

NO: Disabled (Default value)

PowerOff: Standard poweroff with no timeout.

PowerOff_F: Standard poweroff with no timeout. Force_close running applications.

Hibernate: Puts the local computer into hibernation, if hibernation is enabled. You can use /h only with /f.

Restart: Restarts the computer after shutdown.

Restart_F: Restarts the computer after shutdown. Force_close running applications.

Hybrid: Shuts down the device and prepares it for fast startup. This option must be used with the /s option.

Hybrid_F: Shuts down the device and prepares it for fast startup. This option must be used with the /s option. Force_close running applications.

Subversion: Options, paths and settings

varSvnPath

varSvnadminPath

These variables define the paths to the programs used for subversion functions.

Robocopy specific settings

varOutputFormat

This option lets the user configure how robocopy writes to stdout

Archive program

varArchiveProgram

This variable defines the path to the program used for archiving files.

The script is using 7zip but could use another archive program that supports Micorosoft windows commandprompt. To make it work some of the function do require re-implementation.

Language/Regional settings

varCodePage

Simple Backup

this variable sets the code page to support a specific charset. Changing this might require saving the script files in the correct format/charset. Default is: 65001 = unicode (utf-8).

Debugging options

varEnableDebugLoggingOutput

Enable/Disable the OUTPUT_DEBUG option in the logging functions. (YES | NO).

It enables a debug printout in ..\utility_functions readSettingsFile. It is meant to make debugging easier. In time it might change the way logging.cmd append functions work.

#####

1.9.3 Function and settings description SimpleBackup\Configuration\BackupSettings.ini

General settings

varBackupLocation

File system path: The backup destination on the user file system.

varFileList

File system path: Path to the file defining the folders to be backed up.

Application functions

varAppFunctionBackupFiles

Application function: This option enables Folder backup. This enables the backup function which backs up the folders from Backup.txt. (YES | NO)

varAppFunctionIntegrityCheck

Application function: This option enables Integrity test. It tests an existing archive file for archive file integrity. (YES | NO)

varAppFunctionUpdateArchive

Application function: This option enables the archive update function. It updates an existing archive file with the folders from Backup.txt. (YES | NO)

varAppFunctionExtractFilestoFolder

Application function: This option enables the extract to folder function. It extracts an existing archive file to a destination folder WITHOUT preserving folder structure. (YES | NO)

varAppFunctionExtractFilesWithFullFilePath

Application function: This option enables the extract to folder with full path function. It extracts an existing archive file to a destination folder and preserves the original folder structure. (YES | NO)

varAppFunctionValidateChecksum

Application function: this option enables the function that validates the SHA512 checksum/checksums stored in a file in the backup destination directory. This works for both single

Simple Backup

file archives and split file archives.

varAppFunctionSyncBackupFolder=NO

Application function: this option enables the function that will synchronize the backup-folder. Possible values: (YES_PURGE_DST | YES | NO)

YES_PURGE_DST: This option will clean up files in the destination folder that aren't also located in the source folder.

YES: This option will sync files from source to destination without cleaning/purging. No files will be deleted in the destination folder.

NO: Option disabled.

Existing archive - Integrity test, update, extraction

varExistingArchivePath

File system path: Path to the backup folder that contains the archive to use. This is required by all function except varAppFunctionBackupFiles.

varExistingArchiveFileName=2020-11-09_10-34-backup.zip

File system path: Name of the archive file to use. This is required by all function except varAppFunctionBackupFiles.

VarExistingChecksumFile

File system path: Name of the SHA512 checksum file to use. This is required by the function varAppFunctionValidateChecksum.

varExtractionLocation

File system path: Target location for the extracted files and folders. Value can be either DEFAULT_LOCATION or a path to a file system destination. DEFAULT_LOCATION == varExistingArchivePath\ExtractedArchiveContent

Advanced settings

varPassword

Application option: Enable the password function of the archive program. (YES | NO)

varSecretPassword

Application option: Password, If a password is defined in this option the script will automatically add this to the archive if varPassword=YES. That way there is no need to input a password when the script is running. The password is visible in clear text in the ini-file though. Default value: NO

varSplitArchiveFile

Application option: This option enables archive split file functionality. It will split the archive into chunks. (YES | NO)

varEnableFileLogging

Application option: This option enables or disables file logging. (YES | NO).

The script generates a backup log and a svn dump file export log in either of the relevant destination folders.

Simple Backup

`varGenerateSfxArchive`

Application option: This option generates a self-extracting archive sfx archive. (YES | NO).

`varMoveFolders=NO`

`varMoveFoldersBack=NO`

Application options: These options enable or disable the inbuilt move-folder functionality. If certain folders should not be part of the backup archive but resides inside the file system that is going to be backed up this functionality can temporarily move those folders and move them back after backup has finished. Currently only 2 folders can be defined and if more folders are required the script requires modification.

`varSrcPathFolder01=D:\test\Source\TestFolder\`

`varSrcPathFolder02=D:\test\Source\TestFolder2\`

`varDstPathFolder01=D:\test\Destination\TestFolder\`

`varDstPathFolder02=D:\test\Destination\TestFolder2\`

File system paths: Source and destination paths to the folders that should be moved.

To add more folders: Update backup.cmd->:MoveMultipleFolders and :MoveMultiple-FoldersBack. Possibly also the relevant backup.cmd→PreconditionalCheck function.

`varOverWriteFiles`

Application option: This option is used by the extract files application function. It defines what to do when file collisions occur.

Values: OVERWRITE_EXISTING_FILES, SKIP__EXISTING_FILES,
AUTO_RENAME_EXTRACTING_FILE, AUTO_RENAME_EXISTING_FILE

`# varUpdateMode=DEFAULT_FUNCTIONALITY`

Application option: # UNTESTED: 7zip supports update flags that define how 7zip handles file updates in varying scenarios.

Values: DEFAULT_FUNCTIONALITY (Same as using no flags), <https://sevenzip.osdn.jp/chm/cmdline/switches/update.htm>

If a none default value is used the value in the ini-file is directly copied to the 7z.exe statement. No intermediate parsing. This has not been tested successfully but 7zip supports it. So if the user wants to experiment the ground work has been made.

`varZipUtcMode`

Application option: Enable UTC mode for zip archives in backup and update mode. This is highly recommended if using UTC based file systems like NTFS and the file is being sent to another time zone. (YES | NO).

`varIntegrityTest`

Application option: Enable integrity-test. (YES | NO)

This is not the same as the application function `varAppFunctionIntegrityCheck`. Instead this option performs an integrity check if enabled during another Appfunction.

It is supported in the Appfunctions:

- `varAppFunctionBackupFiles`
- `varAppFunctionUpdateArchive`
- `varAppFunctionExtractFilestoFolder`
- `varAppFunctionExtractFilesWithFullFilePath`

Simple Backup

VarChecksumValidation

Enable checksum validation. (YES | NO)

This is not the same as the application function `varAppFunctionValidateChecksum`. Instead this option performs a checksum validation if enabled during another Appfunction.

It is supported in the Appfunctions:

- `varAppFunctionBackupFiles`
- `varAppFunctionUpdateArchive`
- `varAppFunctionExtractFilestoFolder`
- `varAppFunctionExtractFilesWithFullFilePath`

varChecksumBitlength

Application option: SHA checksum bitlength

Choose which checksum algorithm to use when generating archive file checksum values.

Default value is SHA512. Choosing a lower bit length increases the probability of a checksum collision (different files having the same checksum value), but it decreases the checksum generation time.

VarBackupSynchronization

Application option: Include backup synchronization to external storage.

Possible values: (YES_PURGE_DST | YES | NO)

YES_PURGE_DST: This option will clean up files in the destination folder that aren't also located in the source folder.

YES: This option will sync files from source to destination without cleaning/purging. No files will be deleted in the destination folder.

NO: Option disabled.

It is supported in the Appfunctions:

- `varAppFunctionBackupFiles`
- `varAppFunctionUpdateArchive`

varDeleteOldBackupFolders

Application option: Possible values: (YES | NO)

This options deletes all backup subFolders (The folders with a date name) found in the path defined in `varBackupLocation`. It will only delete the folder if a backup-file, a checksum-file and logfile with the same "date-pattern" is found in the folder. The current backupfolder with the new backup is of course not be deleted.

Subversion: Options, paths and settings

This script can handle subversion repositories. The script is hard-coded to handle 2 repositories and svn checkouts. Other user requirements will demand script update.

varCheckWorkingCopyChanges

Application option: This function is used to validate the svn state of the working copy before performing critical functions like calculating checksums etc. (YES | NO)

varSimpleBackupCheckoutPath

File system path: Path to the svn working copy of SimpleBackup

Simple Backup

varExportSvn

Application option: Repository export: Export svn repository. (YES | NO)

varRepositoryLocation=C:\tmp\repository

File system path: Repository export: Svn repository base folder location

varRepositoryDumpLocation

File system path: Repository dump location: Where to store the repository dump files

varSvnRepo1

File system path: This is the name of the repository to export. This folder name is appended to varRepositoryLocation in the script.

Repository export: Repository export: Svn repository 2:

varSvnRepo2

File system path: This is the name of the repository to export. This folder name is appended to varRepositoryLocation in the script.

Robocopy specific settings

The DCOPY and COPY flags determine how and what robocopy.exe moves/copies/syncs to the destination.

/DCOPY sets up the flags for directory management, /COPY sets up the flags for file management.. Default is: /DCOPY:DA, /COPY:DA

The supported chars are: DATSOU: Data, Attributes, Time stamps, NTFS security ACL list, Owner information, Auditing information.

varSyncFolder_DCOPY_FLAGS

varSyncFolder_COPY_FLAGS

Directory and file copy flags for the function ..\fileSystem :synchronizeFolder

varMoveFolder_DCOPY_FLAGS

varMoveFolder_COPY_FLAGS

Directory and file copy flags for the function ..\fileSystem :copyFolder

varCopyFolder_DCOPY_FLAGS

varCopyFolder_COPY_FLAGS

Directory and file copy flags for the function ..\fileSystem :moveFolder

7zip specific settings

varFormat

Application option: Backup format. This variable enables the usage of multiple format. Currently zip and 7z is the only supported formats

varCompressionLvl

Application option: Compressionslvl 0 (copy mode), 1 (fast), 3, 5 (Normal), 7, 9 (Ultra).

Copy mode: -mx0

varThreadAffinity

Application option: Number of used threads (-mmtN). 10 threads: -mmt10

Simple Backup

varSolidMode

Application option: Solid Mode. This is a 7zip specific option. Default value is -ms=on. Solid archives cannot be updated. (YES | NO)

varSplitVolumesize

Application option: VolumeSize, Chosen size options for this script: 1MB, 2MB, 5MB, 10MB, 100MB, 1GB, 2GB, 5GB, 10GB, 100GB. 1MB = -v1m, 2MB = -v2m, 5MB = -v5m, 10MB = -v10m, 100MB = -v100m, 1GB = -v1g, 2GB = -v2g, 5GB = -v5g, 10GB = -v10g, 100GB = -v100g

1.10 Configured example of an ini-file

#All variables must be initialized or the script will not work. All varItem=VALUE must be set.

General settings

Target location for the backup

varBackupLocation=E:\Backup\FullBackup

Target location for the backup-sync folder.

varSyncFolderLocation=E:\Backup\FullBackup

List file

varFileList=Backup.txt

Application functions

Backup files into archive-file. (YES | NO)

varAppFunctionBackupFiles=YES

Test archive integrity. (YES | NO)

varAppFunctionIntegrityCheck=NO

Backup files into archive-file. (YES | NO)

varAppFunctionUpdateArchive=NO

Backup files into archive-file. (YES | NO)

varAppFunctionExtractFilestoFolder=NO

Backup files into archive-file. (YES | NO)

varAppFunctionExtractFilesWithFullFilePath=NO

Validate the SHA512 checksum/checksums for an existing archive/Split file archive. (YES | NO)

varAppFunctionValidateChecksum=NO

Simple Backup

```
# Synchronize backup-folders. (YES_PURGE_DST | YES | NO)
# YES_PURGE_DST: This option will clean up files in the destination folder that aren't also located in the
source folder.
# YES:      This option will sync files from source to destination without cleaning/purging. No files will be
deleted in the destination folder.
# NO:      Option disabled.
varAppFunctionSyncBackupFolder=NO

##### Existing archive - Integrity test, update, extraction #
# Path to folder that contains the archive to use.
varExistingArchivePath=E:\Backup\FullBackup\2020-01-01_10-10

# Name of the file.
varExistingArchiveFileName=2020-01-01_10-10-backup.7z

# Name of the file.
varExistingChecksumFile=2020-01-01_10-10-Checksum-SHA512.txt

# Target location for the extracted files and folders. DEFAULT_LOCATION == varExistingArchivePath\Ex-
tractedArchiveContent
# Value can be either DEFAULT_LOCATION or a path to a file-system destination.
varExtractionLocation=C:\test\Extract

##### Advanced settings #
# Set password (YES | NO)
varPassword=YES

# That way there is no need to input a password when the script is running. The password is visible in clear
text in this file though.
# Default value: NO
varSecretPassword=MyPassWord

# Create volumes, split archive into chunks (YES | NO) - 7Zip documentation: -v{Size}[b|k|m|g] : Create vol-
umes
varSplitArchiveFile=NO

# Enable logging. (YES | NO)
varEnableFileLogging=YES
```

Simple Backup

Generate a self-extracting archive - sfx archive. (YES | NO)

varGenerateSfxArchive=NO

Settings for moving folders before backup and moving them back afterwards.

To add more folders: Update backup.cmd->:MoveMultipleFolders and :MoveMultipleFoldersBack. Possibly also backup.cmd->PreconditionalChecks

varMoveFolders=NO

varMoveFoldersBack=NO

varSrcPathFolder01=D:\test\Source\TestFolder\

varSrcPathFolder02=D:\test\Source\TestFolder2\

varDstPathFolder01=D:\test\Destination\TestFolder\

varDstPathFolder02=D:\test\Destination\TestFolder2\

Overwrite existing files. This is used by extract functions.

Values: OVERWRITE_EXISTING_FILES, SKIP__EXISTING_FILES,
AUTO_RENAME_EXTRACTING_FILE, AUTO_RENAME_EXISTING_FILE

varOverWriteFiles=SKIP__EXISTING_FILES

UNTESTED: 7zip supports update flags that define how 7zip handles file updates in varying scenarios.

Values: DEFAULT_FUNCTIONALITY (Same as using no flags), <https://sevenzip.osdn.jp/chm/cmdline/switches/update.htm>

If a none default value is used the value in the ini-file is directly copied to the 7z.exe statement. No intermediate parsing.

varUpdateMode=DEFAULT_FUNCTIONALITY

Enable UTC mode for zip archives in backup and update mode. This is highly recommended if using UTC based file systems like NTFS

and the file is being sent to another time zone. (YES | NO)

varZipUtcMode=NO

Enable integrity-test. (YES | NO)

varIntegrityTest=NO

Enable checksum validation.

varChecksumValidation=NO

SHA checksum bitlength

Values supported by certutil v10.0.19041.1 on Microsoft Windows 10 20H2: (MD2 | MD4 | MD5 | SHA1 |

Simple Backup

SHA256 | SHA384 | SHA512)

Default value is SHA512. Choosing a lower bitlength increases the probability of a checksum collision (different files having the same checksum value),

but it decreases the checksum generation time.

varChecksumBitlength=SHA512

Include backup synchronization to external storage during backup. (YES_PURGE_DST | YES | NO)

YES_PURGE_DST: This option will clean up files in the destination folder that aren't also located in the source folder.

YES: This option will sync files from source to destination without cleaning/purging. No files will be deleted in the destination folder.

NO: Option disabled.

varBackupSynchronization=YES_PURGE_DST

Delete old backup folders. (YES | NO)

varDeleteOldBackupFolders=NO

Subversion: Options, paths and settings

This script can handle subversion repositories. Use the options and settings in this section to configure this functionality.

The script is hard-coded to handle 2 repositories and svn checkouts. Other user requirements will demand script update.

This function is used to validate the svn state of the working copy before performing critical functions like calculating checksums etc.

varCheckWorkingCopyChanges=YES

Path to the svn working copy of SimpleBackup

varSimpleBackupCheckoutPath=C:\workingcopyPath

Repository export: Export svn repository (YES | NO)

varExportSvn=YES

Repository export: Svn repository location

varRepositoryLocation=D:\Repositories

Repository dump location: Where to store the repository dump files

varRepositoryDumpLocation=D:\SVN_DUMP

Simple Backup

Repository export: Svn repository 1:

varSvnRepo1=repoName1

Repository export: Repository export: Svn repository 2:

varSvnRepo2=repoName2

Robocopy specific settings

varSyncFolder_DCOPY_FLAGS=DA

varSyncFolder_COPY_FLAGS=DA

varMoveFolder_DCOPY_FLAGS=DA

varMoveFolder_COPY_FLAGS=DA

varCopyFolder_DCOPY_FLAGS=DA

varCopyFolder_COPY_FLAGS=DA

7zip specific settings

varFormat=zip

varFormat=7z

Compressionslvl 0 (copy mode), 1 (fast), 3, 5 (Normal), 7, 9 (Ultra)

varCompressionLvl=-mx5

Number of used threads (-mmtN)

varThreadAffinity=-mmt10

Solid Mode. This is a 7zip specific option. Default value is -ms=on.

Solid archives cannot be updated. (YES | NO)

varSolidMode=NO

VolumeSize, Chosen size options for this script: 1MB, 2MB, 5MB, 10MB, 100MB, 1GB, 2GB, 5GB, 10GB, 100GB

1MB = -v1m, 2MB = -v2m, 5MB = -v5m, 10MB = -v10m, 100MB = -v100m, 1GB = -v1g, 2GB = -v2g, 5GB = -v5g, 10GB = -v10g, 100GB = -v100g

varSplitVolumesize=-v5g