Stratesave Version 7.0

For Windows 2016/2012/10/8/7

White Paper

□ **Stratesave Systems**

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Introduction

This white paper provides the concept of Stratesave backup organization in architecting a backup and recovery strategy for Windows Servers and Workstations. Stratesave backup organization, a key capability, presents an overview of executed backup process, frees the user from the daily brain work of backup management and makes it easy to define the backup plan and run backup and recovery tasks. This innovative concept delivers carefree data security for business demands.

Architecting a Backup and Recovery strategy

Backup is an integral part of your organization's business functions. It is crucial for systems administrators to backup and be able to restore the business' vital data in case of hardware failure, disaster, application failure, user error, etc.

- To start with analyze a overall backup and recovery strategy, one needs to identify all systems (amount of data, speed of system, number and type of networks, type of data, tape drive or library)
- Identify all networks involved
- Locate Backup hardware
- Business requirements of backup systems (frequency of backups, restore requirements, the required retention of the data, security requirements, etc.)

By evaluating all these requirements and being aware of how they affect you, you will be able to better develop a backup and recovery strategy that meets your business needs.

Stratesave's Backup Organization

Backup Organization

Stratesave is a State of the Art backup program for organized everyday backup. Design your backup plan (containing backup descriptions for different periods on different media) once with the comfortable macro editor, then for every day backups, just start the backup with a mouse click (or have it started automatically). You don't have to work out every time, what or where you want to store. This concept simplifies data protection task. Compared with the ordinary backup programs which require the user to think out everyday, which backup have done last time, on which disk/tape, which disk/tape should be taken for the current backup, or if an incremental backup should go with this time etc, Stratesave does all the daily brainwork. It keeps a log of executed backups, and calculates which backup is next (daily, weekly, monthly etc.) Restore program finds the backups all by itself and prompts the user for the right name of the tape/disk, or chooses the correct fixed disk location.

Convenient Restore

- The Restore completely fits with Stratesave's concept of organized backups. Stratesave manages by itself to find the files to be restored on the corresponding backups. Backup lists containing the names of backed up files can be view or printed if required.
- For differential backups, Stratesave finds out by itself, where to restore the selected files/directories. For example after a differential backup, all files are listed for selection, which were present at the time the differential backup was made, even if they are stored in an earlier backup.

- You can choose to restore from an earlier backup, and are also presented with the state of your files at that time, even if some files are stored in an even older backup.
- Optionally you can choose to restore from a specific backup, independent of the backup plan. In this case, only files from that particular backup will be shown/restored.

Designing the backup plan

The organized backup is important especially in a professional field, if regularly backup is desired. Stratesave is optimized for regular backups over a longer period of time. Stratesave organizes the backups with help of a macro (user defined backup plan) and a log (reporting executed backups).
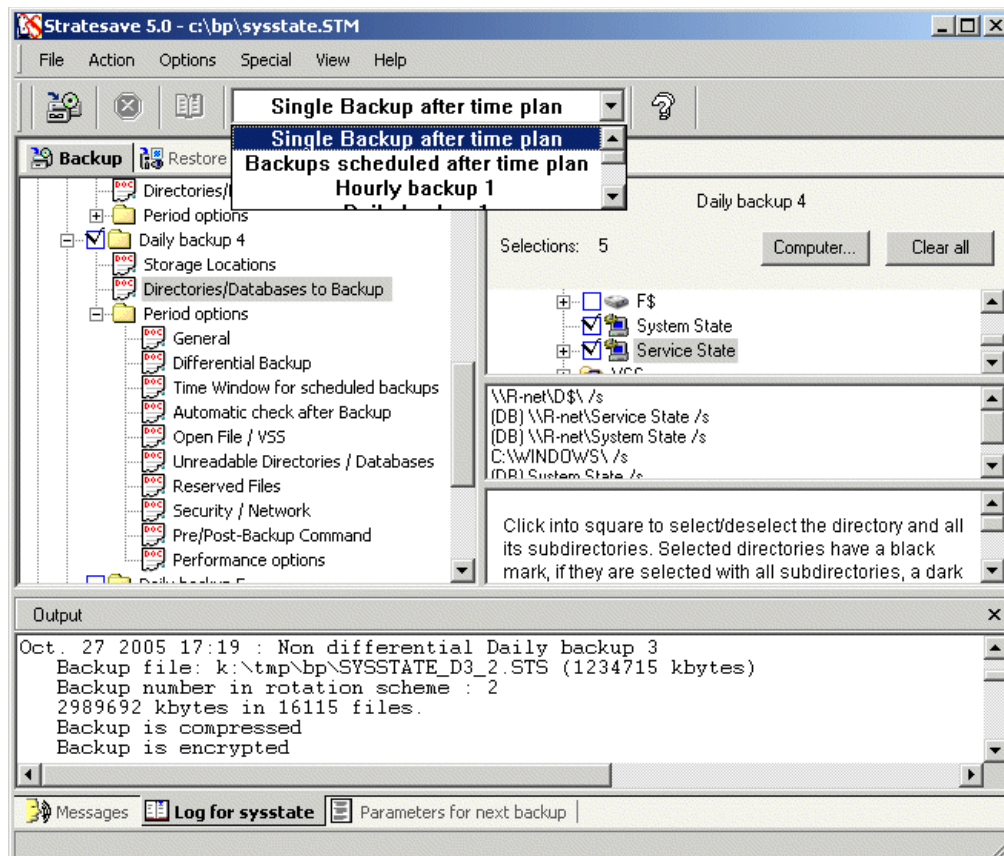
Figure 1. Backup organization through Macro presents an overview of executed backup process. The Backup periods are selectable in Tree view and configurable. For each Period (Daily, Weekly, Monthly Backups etc), Backup Storage can be defined, Directories/databases to backup, as well as backup options like compression, encryption, differential backup, time window for scheduler and more.

The network manager or an advanced PC-user define or modify the backup plan with different backups for different periods (hourly, daily, weekly, monthly, quarterly, semester, yearly) on different medias. It is necessary to define your backup parameters before running the backups by considering the factors for architecting a backup and recovery strategy. Following points are important for a backup plan:

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Frequency of Backups - Backup periods (hourly, daily, weekly, monthly, quarterly, semester, yearly backup)

The best thing to do is to make sure you can classify your data properly and know the amount of data needed to be backed up, and then determine the requirement for backing up frequency. In generally, data that is more dynamic requires more frequent backups and truly static data or static systems should not need very frequent backups. They might be backed up as infrequently as once a week or even once a month.

Stratesave distinguishes backups from their periods (hourly, daily, weekly, monthly backup etc.). Additionally, backups are separated with a rotation scheme of 2-12 backups on different storage locations. The usage of a precise plan allows to calculating the potential risks for extreme situations. For example, when a backup tape gets defective, older backups will be available for restore. Sometimes files are deleted by accident, and this is detected weeks later. A monthly, quarterly, semester or yearly backup can help out here, if these periods are used in the actual backup plan.

The cost of tape media is one of the driving forces behind not backing up too much data. The more periods you define, the more storage space (tapes, disks) you need for your backups. The advantage is that it is more probable to recover previously deleted files and old versions of files. At least one period must be defined. It is advisable to define daily backup for regular backups with one or a few days interval. It is possible to start with one or two periods (e.g. daily and monthly backup), and add other periods later when needed.

The periods SQL Server incremental backup and Exchange Server incremental backup are special periods for purely incremental backup of databases.

Backup media - Retention of backups and Rotation scheme

Backups are stored on tapes, removable disks, including CD/DVD with builtin driver engine, fixed disks and Sftp-Server disk. You can choose different media for different period. For example, store daily backups on fixed disks, which are fast and need no media-handling; store monthly backups on tapes, which can be kept in a fire-proof safe for maximum security, and are also cheaper than fixed disks.

The new backups always overwrite the old ones. Otherwise, storage would quickly be filled, and regular backup impossible. On the other hand it is dangerous to overwrite the latest backup by the new one. If the PC crashes during backup, there is no more backup around: The actual backup was overwritten and the new one is not finished. Therefore there is a rotation of 2-12 backups, until the first backup is overwritten. This way you will always have two copies of the data on tape when doing the next backup. This method allows you to recover from a crash that might occur on the time for the next backup, plus it provides an extra copy in case there is a problem with one of the tapes.

- For backups to fixed disks, minimum rotation can be set to 1. In this case, backups are not overwritten, but the previous backup is deleted, when new backup completes. If your PC crashes during backup, last backup will still be available, even if you set rotation to 1.
- For backups on tapes and removable disks, Stratesave follows the GFS (Grandfather Father Son)-strategy.

With Stratesave, multiple backups can be stored on a single tape or disk, but only for the same period. There will be a set of at least two tapes for every period, to avoid loss of data. The last backup in the rotation plan must be stored on a different tape than the first one. The reason for this restriction is that backups on

tape always overwrite the backup already stored there, and all backups further behind on tape. For backups on fixed disks, the backups of a period can all be made on the same disk. Even backups of several periods or several PCs can go to same disk. For security-reason, it is advisable not to store all backups at the same location. If the critical disk gets defective, all the backups will be lost.

For example, it is decided to store weekly and monthly backups on tape. The rotation is 4 for weekly backups and 12 for monthly backups, as all weekly backups should be kept for one month and all monthly backups for one year. If the backup tape has enough space for 4 full backups, this backup plan requires 2 tapes for weekly backups (at least 2 tapes are required for every period) and 3 tapes for monthly backups (12 backups / 4 backups per tape = 3 tapes). The total number of tapes required will be 2 + 3 = 5.

If there is a lot of backup data, one tape may be not enough for a full backup. Certainly this depends on the storage capacity of the tapes used. Stratesave allows one backup to extend over several tapes or removable disks. In the dialogs where a volume name is required, you can always enter a set with several tape- or disk-names. If a tape or removable disk is filled during backup, backup will continue on the next in set.

Directories and databases to backup

Local directories or remote network directories can be selected for backup, as well as local and remote databases (System State, VSS, Exchange Server, SQL Server, NTFS disk partition images).
The directories can be selected for every period separately. A backup with a longer period automatically includes all directories in a shorter period. For example in a weekly backup, the directories defined for daily backup are also included.
All files in a directory are backed up, also hidden files (files, which are normally not shown in Windows Explorer or with DIR-command from Command Prompt). System swap-files are automatically excluded. The files and directories defined in registry under 'FilesNotToBackup' are also automatically excluded.

Scheduling -Time plan

For automatic start of backups, a time plan is required. Basically, for each period, weekdays must be defined when backup should run, and time window. For higher periods (monthly or longer), also day of the month and months can be specified. This allows you for example to run daily differential backups from Monday to Thursday, weekly backup every Friday at 18:00, except the first Friday of the month, when a monthly backup should be done. The backup program figures out automatically the period to be backed up next, according to the settings.
The time plan of Stratesave can be overruled, if necessary. *For instance, when time plan signals that a weekly backup should be made, a daily backup can be executed anyway.*

Backup type (Full or Differential)

It is much better to always look first at the recovery requirements when designing a backup strategy. For example, if an application can tolerate a long outage without severe business consequences, for example, an incremental backup strategy that minimizes backup time at the expense of restore time may be appropriate. The other item to note is the order in which systems need to be recovered as part of your overall DR plan.

For every backup there is the choice between differential and non-differential backup. Differential backups contain only the files, that have been created or been changed since last backup of higher period. For example, a differential daily backup does not include files that were already saved in a previous weekly backup. This option helps saving backup time and storage space. As an example,

you can make a full backup every month with daily and weekly differential backups. The disadvantage of differential backups is a reduced safety. The weekly backup, on which the daily backup bases, might become defective.

Stratesave supports differential backups for SQL Server, Exchange Server databases.
Purely incremental backups to disk can be scheduled for SQL Server and Exchange Server. These allow very frequent but small backups as often as once per minute, to minimize time Window of potential data loss. In case of fatal computer failure, SQL Server and Exchange Server can be restored to almost actual state. Databases are automatically restored from Full, Differential and Incremental backups in correct order. VSS SQL Server full backups can be combined with with standard differential or incremental backups.

Security of backups - Encrypted backup

Your business might require encrypted backups so that the data on the tapes cannot be recovered without the proper key or password.

Stratesave can store backups encrypted, to improve security. Often backups contain secret data, and the backup tapes can easily be stolen. Encrypted backups make it very hard or impossible for someone to retrieve the data, after he/she got hand on the backups. Stratesave uses public/private-key encryption. The private key, which you define, is required for restore. The backups will be done with a corresponding public key, which can be stored in a file or in registry. If someone gains temporary access to your PC where Stratesave is making backups, he / she can possibly read the public key, which is not enough for the restore.

Please refer our user manual and online help for detailed technical information.

Summary

Stratesave provides a complete backup solution for your Windows Network. It fully backs up local and networked computers, including System State, Active Directory, Certificate Services, SQL Server and Exchange Server databases. Stratesave allows full restoration of your systems. Open File backup and Disaster recovery without reinstalling Windows. The Remote Backup Control feature allows to control the backups when they run as a Service or under the Windows AT-command.

Stratesave's backup organization facilitates developing an ongoing data protection and recovery strategy. Together with its add-on agents and options like Stratesave Network Agent, Image Backup, database agents for SQL Server, Exchange Server, Open File and Disaster Recovery options, Stratesave provides a high performance, reliable and easy to use data protection solution for Windows servers and workstations.

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