FAST LTA

We secure Petabytes.

SVHT - Silent Cube Volume Types

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FAST LTA

Technical instructions

Technische Anleitung

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Step 1 — General Terms

ⓘ Here are some terms used in the manual

- **WORM** is a special type of data storage. **W**rite **O**nce **R**ead **M**any means that once data has been written, it can no longer be changed, but can be read at will.

- **Reteniton Time** is the time, a file is protected from deletion or modification by the Worm File System. If the retention time has expired, the file can be deleted or changed.

- **Archive** - Data in an archive do not change. As a rule, archives only grow, as no deletion of data takes place.

- **Backup** - In a backup, the data is rewritten at cyclical intervals. The amount of data changes only slightly

- **Volumes** - A volume is a reservation of storage space. In the volume, the type of worm memory, the retention time and other mechanisms can be set.
    - In general, it makes sense to create a separate volume for each application on the Silent Cube.

- **Share** - A volume is the basis for a share. The data written to the share is archived according to the settings of the volume. The data of an external system can be transferred to the Silent Cube system via a share.

Step 2 — System structure and archiving scheme
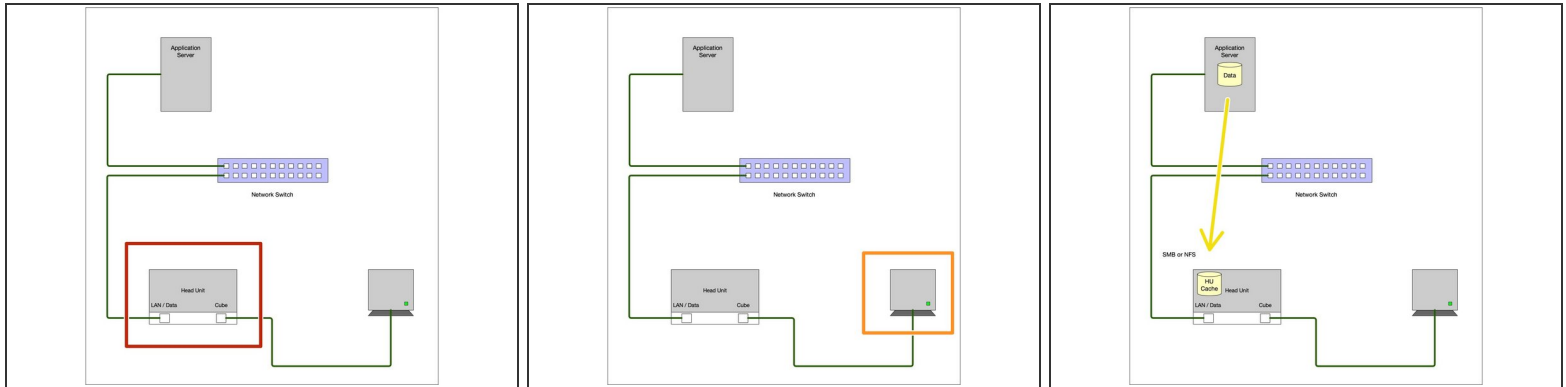
⚠ Silent Cube systems are pure archive systems and not suitable for backup. The systems use a hardware worm controller to store the data permanently and securely.

- In general, Silent Cube systems are always structured in two stages. There is always a head unit, which is the bridge to the customer network.

- In addition, there are a number of Silent Cube storage units in which the data is archived.

- During archiving, the application writes to a share in the cache area of the head unit via SMB or NFS.

Step 3 — System structure and archiving scheme
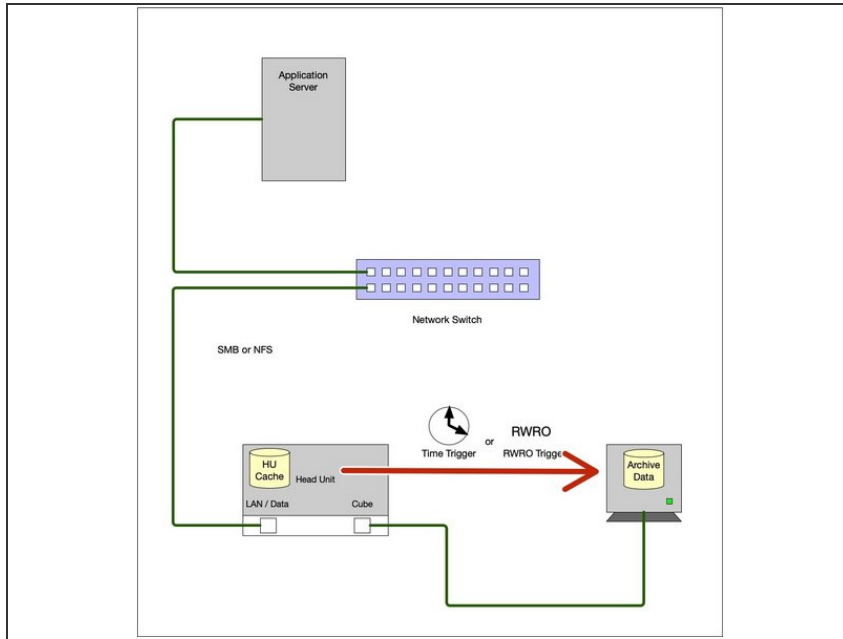
- This share is assigned to a volume that has certain archiving properties. When certain events occur, e.g. when the minimum age is reached, the data is archived from the head unit to the silent cube storage units.

- (i) Once archived, data can only be deleted once it has reached the retention time.

- (i) A volume can only be deleted when all data in the volume has been deleted.

Step 4 — General settings for all volume types.
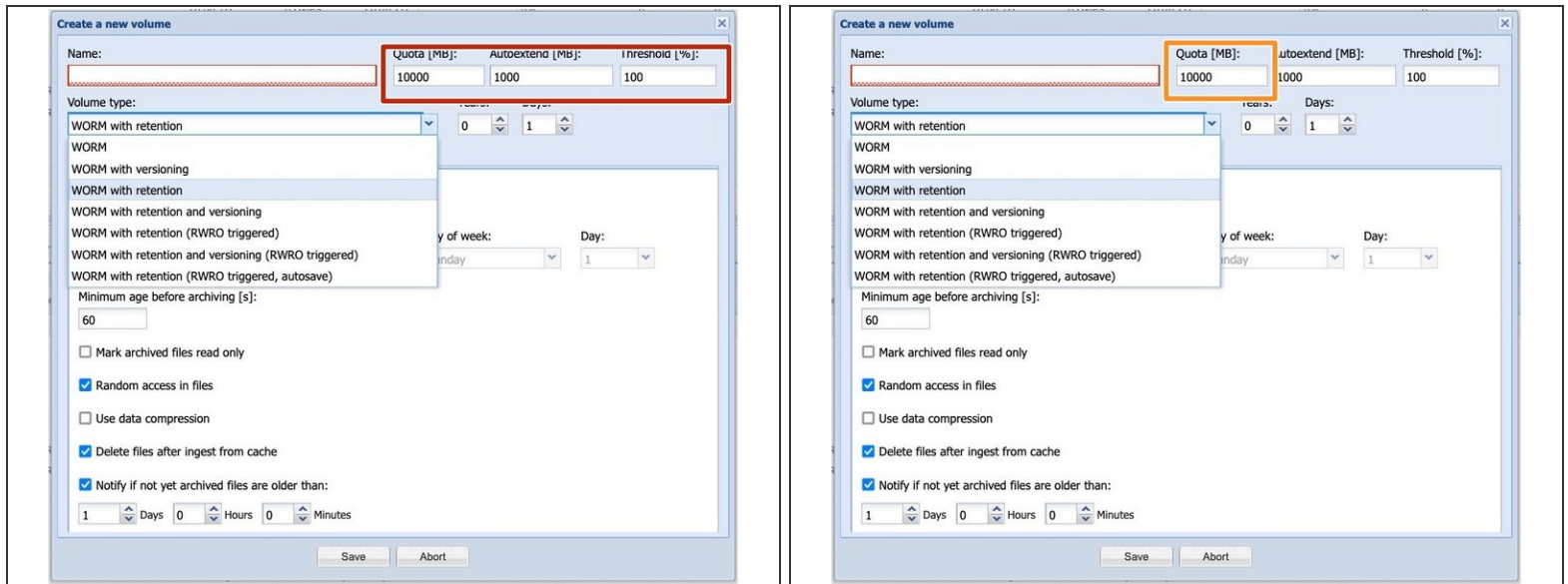
- The volume sizes can be managed in the same way for all volume types. There are 3 setting options for this

- Quota is the size of the volume in MB. No memory is reserved here, but an entry is made in the Silent Cube database as to how large the volume may be.

  - This value can be made larger or smaller at any time, during operation without disturbance, but not smaller than the amount of data contained.

⚠ If the quota is reached and no other settings have been made, the unit sends a warning message and stops archiving. The data then remain in the cache.

Step 5 — General settings for all volume types.
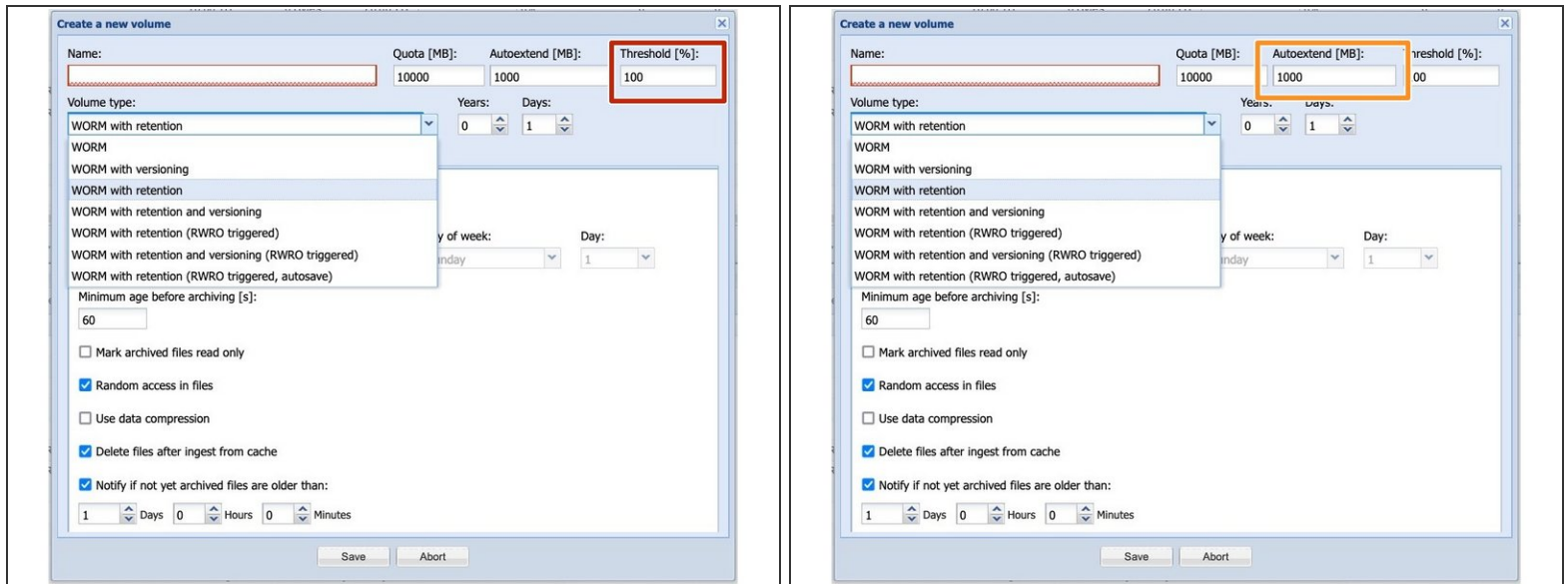
ⓘ The system offers the possibility to expand the volumes automatically. This is also a great advantage when expanding the system with more storage units. The volume then continues to grow without further action.

- With Treshold, you can set the level at which the volume is expanded.
  - We recommend 95 - 98%, depending on the volume size. This way, the volume is automatically expanded before it really fills up. Applications that check the free space, before writing simply continue to run.

- With Autoextend you set the size to be expanded. Here it makes sense to set about 10% of the volume size.

ⓘ When the volume is expanded, the system sends an information message.

Step 6 — Silent Cube Volume Types
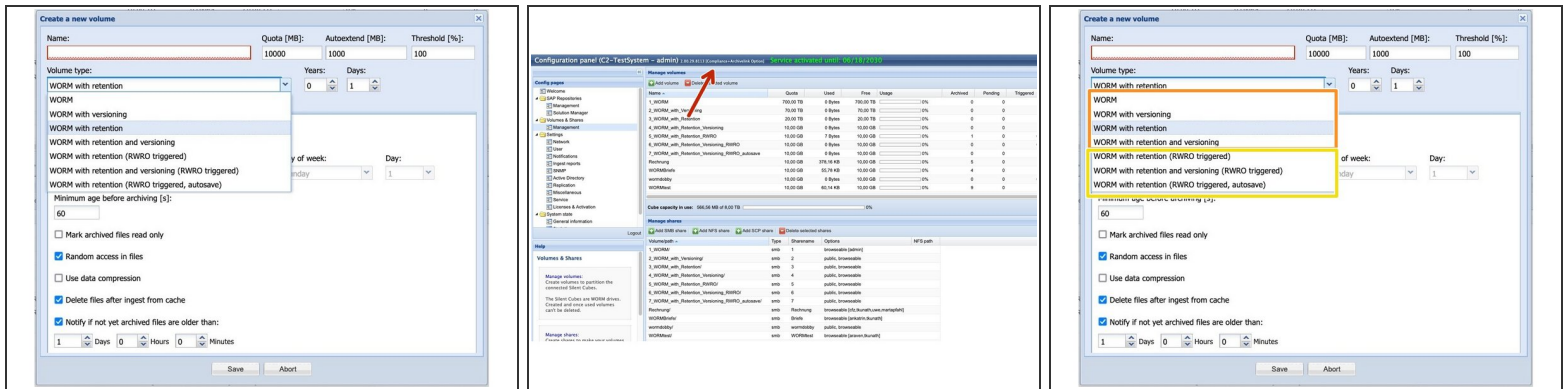
ⓘ Depending on the desired connection, the Silent Cube offers several volume types.

● To be able to use all volume types, a **Compliance Option** is mandatory. Otherwise, only the "Worm" type can be used.

ⓘ Basically there are 2 different volume types

● Time-controlled volume types with Min Age

● RWRO controlled volume types

Step 7 — Time-controlled volume types with Min Age
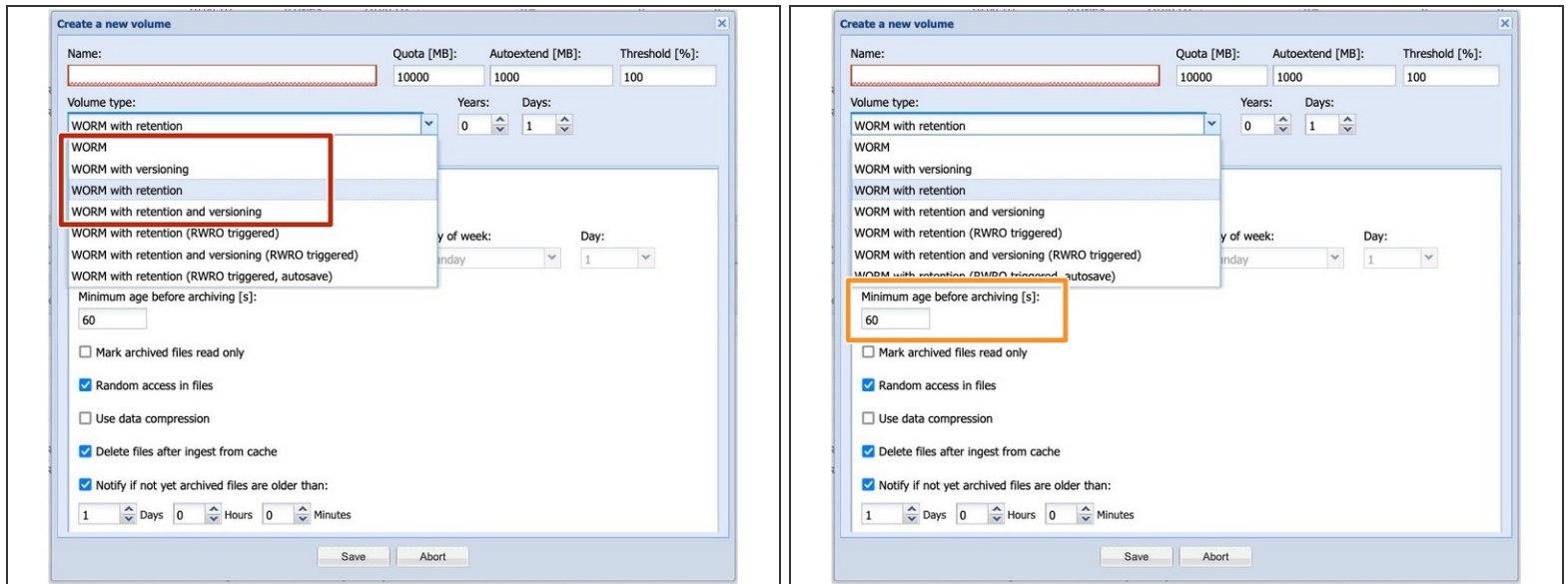
- Archiving in the Silent Cube systems is done by transferring the data from the data source to a share in the head unit.

- The data is cached in this share. Archiving is then started depending on the volume type and the settings of this type.

- With the time-controlled volume types, the data in the cache of the head unit is transferred from the head unit to the silent cube storage units after an adjustable time (min-age).

⚠ There are a few things to consider when setting the Min Age:

- As long as the Min-Age has not expired, the data is only in the Head Unit cache. This means that the data is not yet archived in a revisionary way and can still be deleted or changed.

- The min age should not be set for too long, otherwise the head unit cache may be written to full if the data flow is high.

- The min age should not be set too short, as some applications still change attributes of the files stored in the cache.

ⓘ We recommend a Min Age duration of 60 seconds. Depending on the software provider, up to one hour can be set here. Larger values are usually not useful.

Step 8 — Worm

- The volume type Worm is always available in the system, even if no Complinace is installed.

- With the Worm type, the data is stored forever. There are no retention times.

⚠ If for legal reasons an expiry time must be observed for the data, e.g. for personnel data, the Worm volume type is not suitable.

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Step 9 — Worm with versioning

- In the case of worm with versioning, the data stored in the archive can be changed.

  - Here the older version of the file is stored invisibly by the system in the file system. (Versioning)

  - Only the current, changed version is visible. If necessary, however, previous versions can be brought up.

- Retention times cannot be set for worms with versioning.

Step 10 — Worm with retention
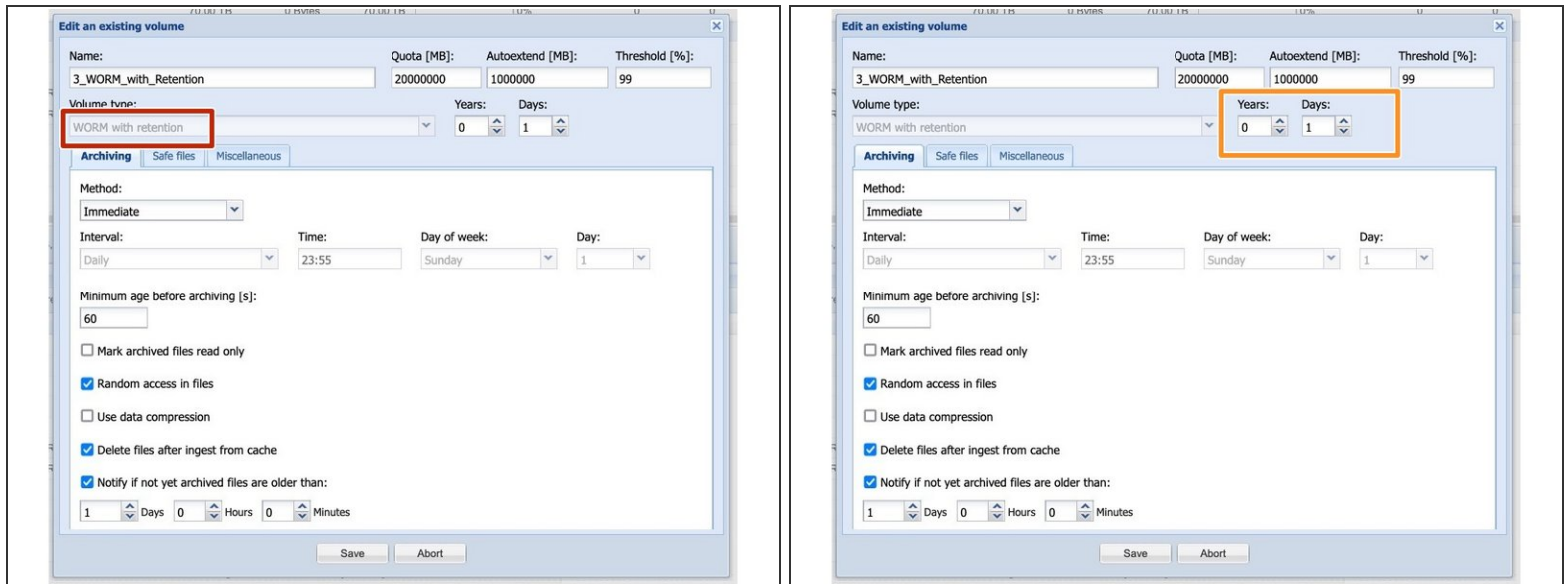
- With the Worm with Retention, the stored data can be given an expiry date (retention time).
    - After this time, the data can be changed or deleted.

ⓘ The LAST ACCESS DATE of the file is used as the time stamp. If a file is stored here in the system and a retention time of 10 years is set. The LAST ACCESS DATE of the file is set to the current date + 10 years.

⚠ If files are deleted after the expiry date of the retention period, no space is released on the system here! This is due to the linear Worm File System.

ⓘ According to DSGVO, deleting the link is enough.
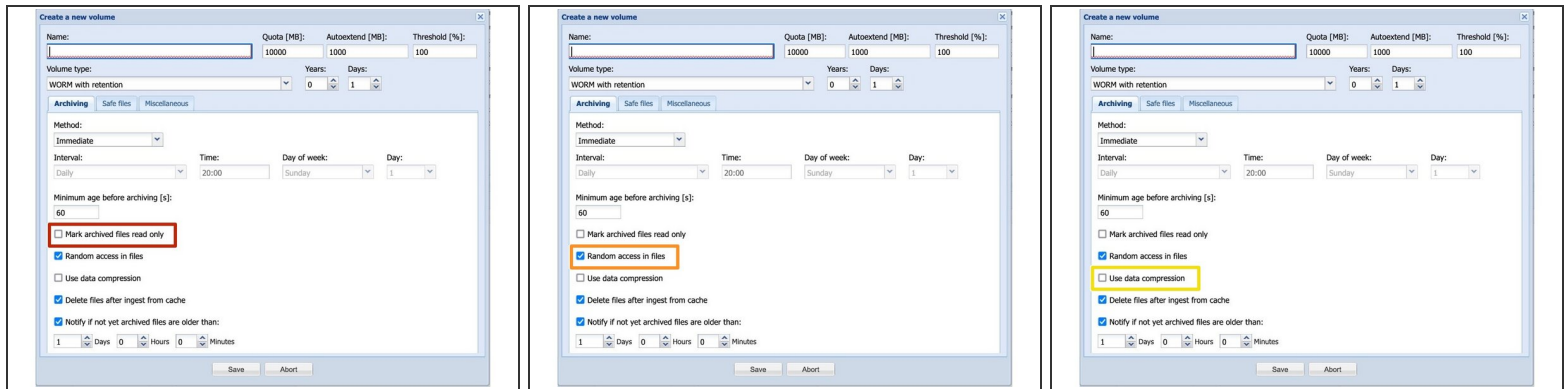
Step 11 — Worm with retention and versioning

- This type of worm is a hybrid of the previous two.

- Here the file can be versioned and a retention time can be set.

Step 12 — Additional settings with time-controlled volumes

- ● With the setting "Mark archived files read only" you can ensure that all archived files are set as RO. This can be used, for example, as a receipt for archiving.

- ● Random access in files ensures that, for example, in the case of large file containers, only the required part of the file is transferred back from the cube to the head unit, which increases the reading speed.

- ● Use data compression enables a loss-free compression of the data. It must be in mind, that many archive data are already available in a compressed format and a compressed file is no longer the original file, so that there is sometimes a need for argumentation.

Step 13 — Additional settings with time-controlled volumes

- This function cleans the head unit cache after the file has been archived. If this function is switched off, the head unit starts to delete all archived files from the cache when the cache is 50% full.

- Normally, all files should be archived in a short time with the adjustable rules. If for some reason files remain in the cache, you can have a message sent with "Notify if not yet archived files are older than:" if files are still lying unprocessed in the cache after the set time.

Step 14 — RWRO controlled volume types

- With RWRO triggered volume types, the file is not archived via a time mechanism but via an active mechanism of the storing system.

⚠ The storing system must set the file attribute Read Only for files to be archived.

- This is the trigger for the Silent Cube System to archive the file.

⚠ If the files are not set to RO for the RWRO file types, the data remain in the cache and are not archived!

Step 15 — Worm with retention (RWRO triggered)

- With the Worm with Retention RWRO triggered, a retention time can be assigned to the stored data. After this date has expired, the data can be deleted.

(i) As with all RWRO volumes, the data is archived by setting the RO attribute to the file.

Step 16 — WORM with retention and versioning (RWRO triggered)

- Here the file can be versioned and a retention time can be set.

Step 17 — WORM with retention (RWRO triggered, autosave)

- This volume is specifically for connecting the **OpenText SAP interface** and should not be used for any other purpose.

Step 18 — Additional settings with RWRO-controlled volumes

- Random access in files ensures that, for example, in the case of large file containers, only the required part of the file is transferred back from the cube to the head unit, which increases the reading speed.

- Use data compression switches on loss-free compression of the data. It must be borne in mind that many archive data are already available in a compressed format and a compressed file is no longer the original file, so that there is sometimes a need for argumentation.

- This function cleans the head unit cache after the file has been archived. If this function is switched off, the head unit starts to delete all archived files from the cache when the cache is 50% full.

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Step 19 — Additional settings with RWRO-controlled volumes

- Normally, all files should be archived in a short time with the adjustable rules. If for some reason files remain in the cache, you can have a message sent with "Notify if not yet archived files are older than:" if files are still lying unprocessed in the cache after the set time.

- The function "Notify if not yet triggered files are older than:" informs you if files have not been set to RO by the application software for a long time and therefore remain in the cache.

Step 20 — Safe Files
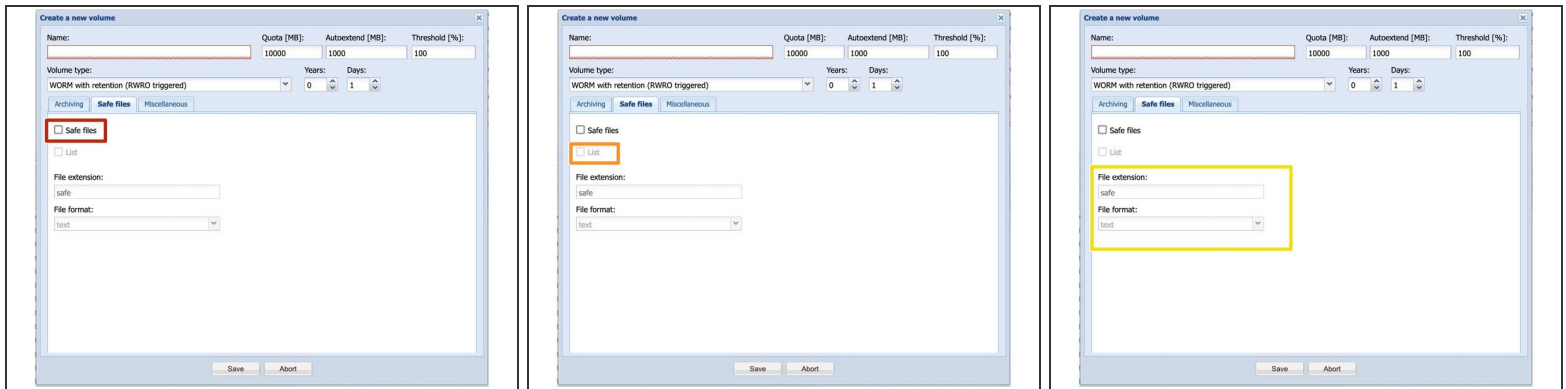
ⓘ A safe-file contains information describing the status of a file which was copied to the network share or mount point of the Silent Cubes Head Unit.

ⓘ A ".safe-file" is a virtual file that has the same path as the "real" file, with a file extension appended. The default extension is '.safe', but can be changed on a per-volume basis using the "Safe Files" tab under "Management".

● To use the Safe File function, the Safe files checkbox must be activated.

⚠ It should be clarified with the software provider whether the Safe File function is really needed, as the Safe Files can lead to problems with some providers who do not use them.

● The safe files can be created invisibly in the file system. If you activate the List box, they are also displayed in the file system.

● In the next fields you can select the desired extension of the file, e.g. .safe, and whether the file is output in text or xml format.

Step 21 — Safe Files

In "txt"-format a ".safe-file" can look like:

```
hash=4216475b55472f890aff212079ffa303b6f1cfb33e5fa5802882aa37968f78a4…
lookupkey=64c26d29cf7ffce5333957539d8bbb04c7d2a556dad5ed967f3eb6dfea6…
size=17210
stored=1
safe=1
ciphercode=0
compressioncode=12289
online=1
ingest_epoche=1250155996
ingest_iso8601=2009-08-13T11:33:16+0200
creation_epoche=1250095987
creation_iso8601=2009-08-12T18:53:07+0200
```

ⓘ The safe file contains, among other things, the SHA512 hash of the archived file, the file size and some other data relevant for archiving.

Step 22 — Miscellaneous
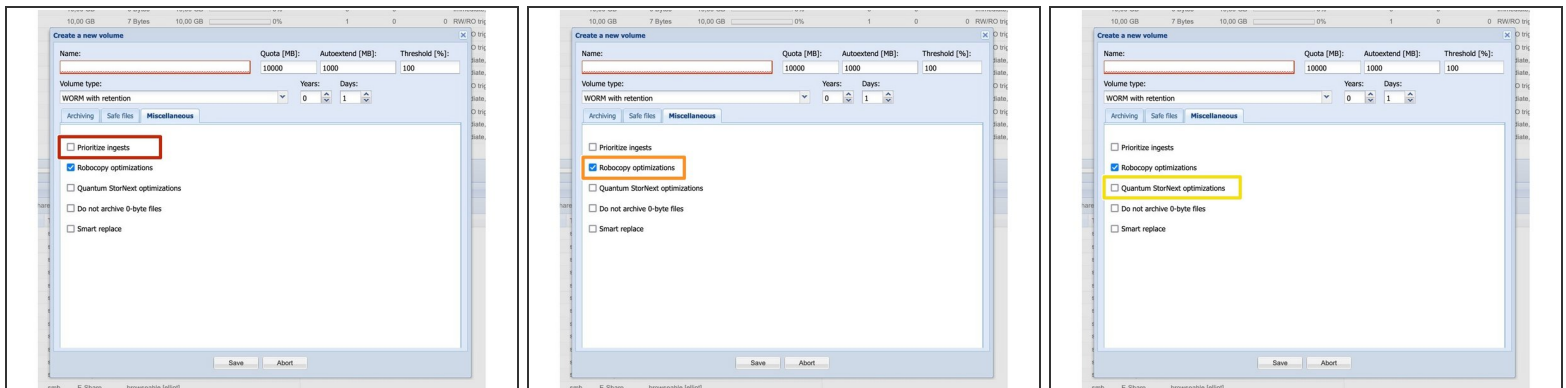
- Prioritize ingests - Here you can set the archiving prioritization for the volume high. This volume will then be archived before the other volumes. This can only be done for 1 volume of the system !

- Robocopy changes the file date during the copy process to 01.01.1980. If the copy process of the file is finished Robocopy changes the date back to the original date. If this function is activated, no files with the date 01.01.1980 are archived, since we assume then from a copy error of Robocopy.

- Quantum StorNext optimizations - Special connection adjustment for archiving with Quantum StorNext.

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Step 23 — Miscellaneous
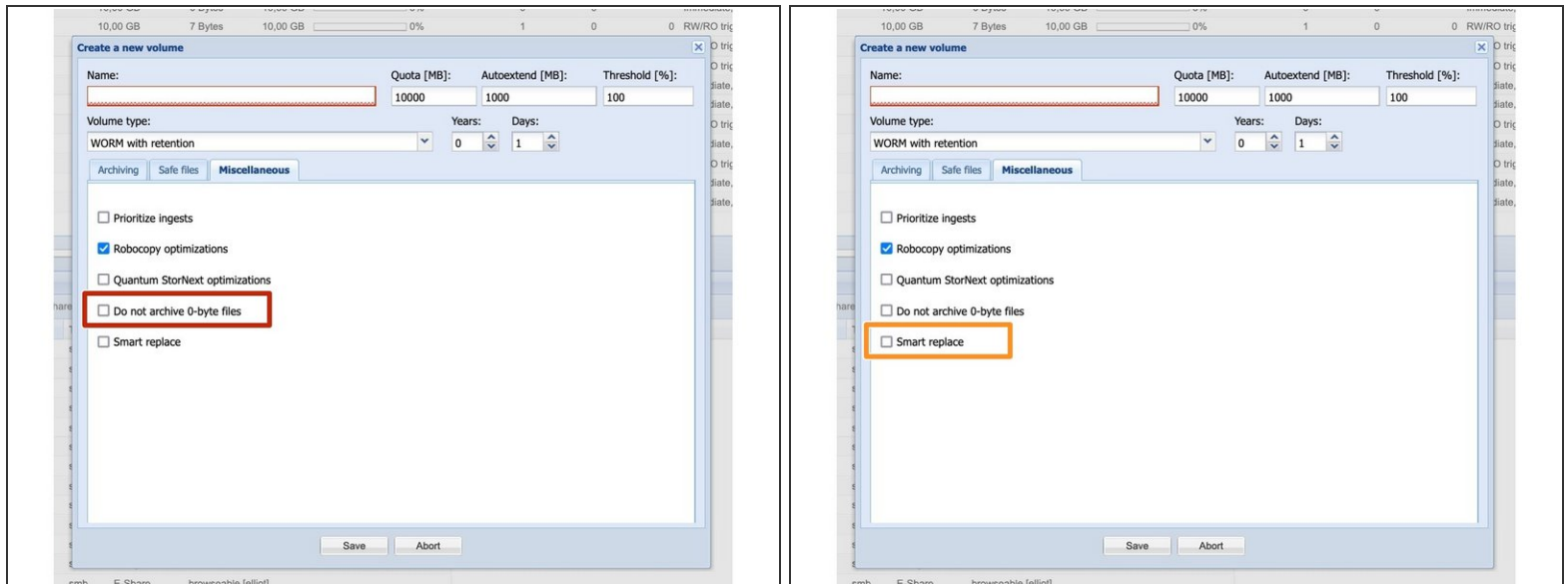
- Files with a file size of 0 Byte are not archived.

- Smart Replace does not delete the data, but makes them invisible in the file system - deleted. The files are renamed to deleted<filename><version number>. This can be used to correct data e.g. in case of an incorrect archiving.

Step 24 — Miscellaneous - additional RWRO Volume Features
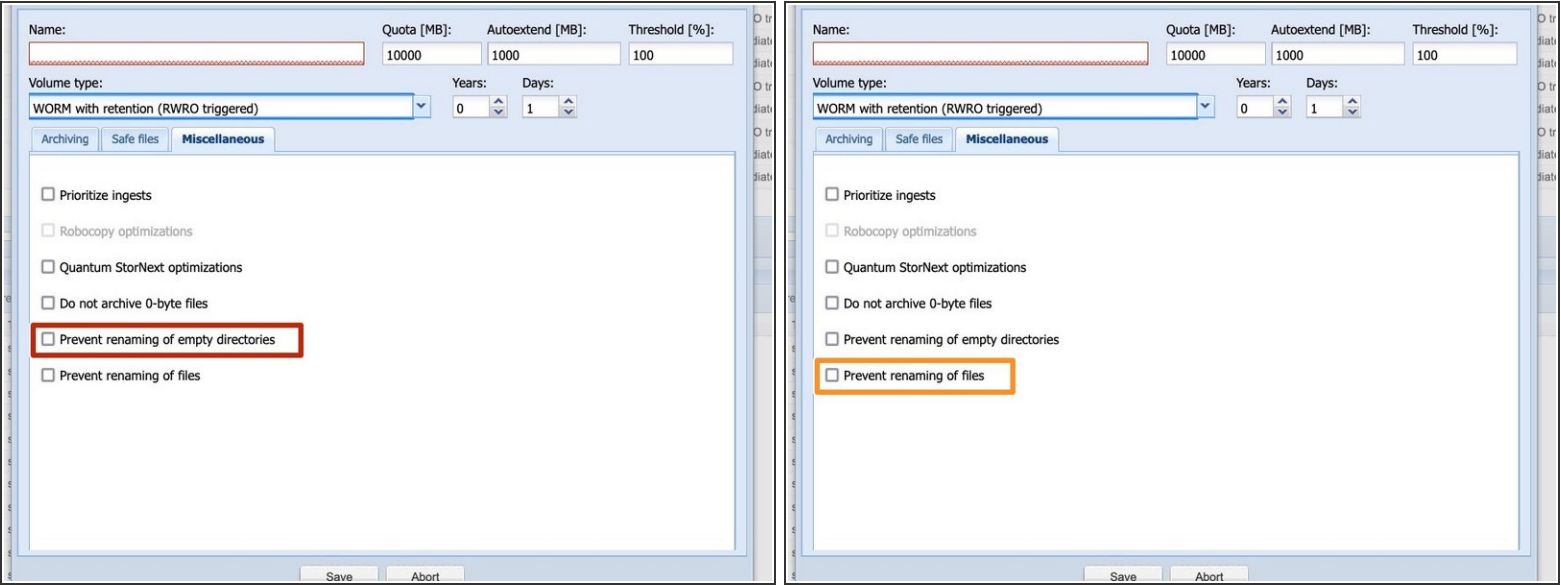
- Prevent renaming of empty directories

- Prevent renaming of files