Altaro Hyper-V Backup - Reverse Delta™ Space Saving Technology

Source

Backup

First Backup:

The source VHD file is copied to the backup for the first time.

Version 1 → **Version 1**

Second Backup:

On the next backup, the new VHD on the source is scanned and compared to a fingerprint from the previous backup, so any changes are identified.

Version 2

Version 1

The affected areas are first moved out from the previous version to a delta file on the backup, so as to preserve any data unique to the previous version.

Version 2

Version 1 → **Version 1 Delta** (Instructions and data to rebuild Version 1 from Version 2)

The affected areas, or new data is transferred to the backup in order to update the latest full backup to the newest version.

Version 2

Only changed bytes are transferred →

Version 1 transformed to Version 2   **Version 1 Delta**

Third Backup onwards:

The process is repeated on each backup, always keeping the latest version as a full file, and smaller delta files representing data from older versions.

Latest Version   **Version 2 Delta**   **Version 1 Delta**

In this way, the oldest delta file can always be deleted to create more space without affecting the newer versions in any way.

Latest Version   **Version 3 Delta**   **Version 2 Delta**   **Version 1 Delta** ✗

Restores:

Older versions are restored by first restoring the latest VHD, then applying the previous delta over that in order to rebuild the previous version, then applying the delta before that and so on, always going one version further back in time.

NOTE:
A full version of the file is usually left on the backup drive every N versions (5 in this example). In this way, dependency chains are kept short, avoiding lengthy restore procedures. This feature can be disabled if the backup space available is limited, or retention periods are relatively short.