Data Storage and Data Migration

Reto Kromer • AV Preservation by reto.ch

Open-Source Tools and Resources for Audio-Visual Archives
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Summary

- data storage
- data migration

Magnetic Tape

- in use since the 1950s by IT
- cartridges are always on polyester base (old open reels can be on triacetate base)

Packaging

- open reel
- cassette
- cartridge

Recording

- linear or diagonally
- analogue or digital

LTO

- Linear Tape-Open
- answer from the IT industry to the bank and insurance sector
- in 2000 LTO-1
- currently LTO-9
- currently the LTO Consortium consists in: Hewlett Packard Enterprise, IBM and Quantum

LTO-8

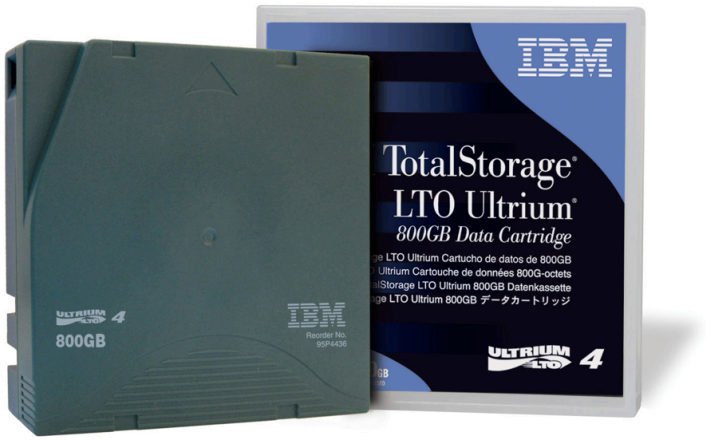
- only one-generation backward reading capabilities
- format M8 = LTO-7 cartridges formatted as LTO-8
- M8 can be used on LTO-8 drives only

LTO-9

- LTO-9 drives manufactured by IBM only
- LTO-9 cartridges manufactured by Fujifilm and Sony Group only
- only one-generation backward reading capabilities
- only 50% capacity increase
- backward reading capabilities for regular LTO-8 (L8), but not M8

LTO-10

- Will there be two-generation backward reading capabilities?
- Is LTFS strong enough?
- Release possibly end of 2024, probably beginning of 2025.



Formatting

TAR

- from LTO-1 to LTO-4 only possibility
- still possible possible today

LTFS

- possible (and recommended) since LTO-5

TAR

- standard TAR
  - ➔ bloc size
  - ➔ number of archives per cartridge
  - ➔ archives needing more than one cartridge
- TAR with a proprietary data encoding (e.g. BRU, Retrospect)

LTFS

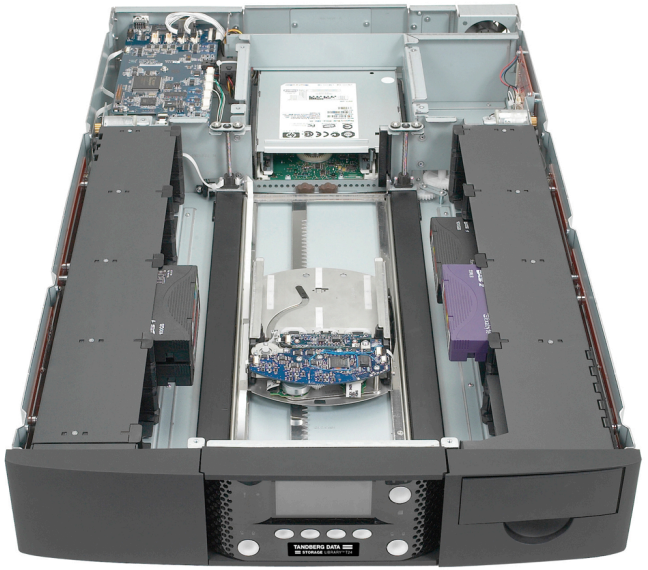
- different versions
- almost one implementation per vendor, but...

  ... "ltfs" and "mkltfs" common commands
- lossless compression (default) or uncompressed data
- unencrypted (default) or encrypted data

Drive

- internal or external unit
- library





Storage of the Tapes

- in a tape library
- on a shelf
- in a fire-proved cabinet

Software

- proprietary or open source
- graphical user interface (GUI) and/or command-line interface (CLI)

Plan the Next Migration

- file naming
- barcodes
- checksums
- write the full index to the cartridge
- technical metadata
- code to retrieve the files

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