

# LIFESPAN OF LTO TAPES

Estimating the lifespan of your LTO tapes is a critical aspect of running a reliable data storage system. Tape lifespan can be measured in number of years or in number of passes, but there are other factors to consider when wanting to maintain the health of LTO tapes.

## LTO TAPE TECHNOLOGY

There are five generations of LTO tape: LTO-1 through LTO-5. While LTO-2 and LTO-3 offer double the capacity and speed of the previous generation, the LTO-4 only increases speed by 50% over LTO-3.

LTO generations	LTO-1	LTO-2	LTO-3	LTO-4	LTO-5
Year Introduced	2000	2002	2005	2007	2010
Capacity	100 GB	200 GB	400 GB	800 GB	1.5 TB
Max. Speed	20 MB/s	40 MB/s	80 MB/s	120 MB/s	140 MB/s

## MEASURING LTO TAPE LIFESPAN IN NUMBER OF YEARS

Tape manufacturers usually quote the lifespan of their LTO tapes at about 30 years. However, LTO tapes are extremely sensitive to storage conditions, so this 30-year life expectancy assumes you are using ideal storage conditions - a constant temperature of about 70 degrees Fahrenheit and 40% relative humidity. Even a slight deviation from these ideal conditions (e.g. 5-degree increase in storage temperature) can result in a substantial decrease in life expectancy. High temperatures, high humidity and exposure to high levels of lights can make LTO tapes deteriorate still more quickly.



## MEASURING LTO TAPE LIFESPAN IN NUMBER OF PASSES

Manufacturers also measure the lifespan of LTO tapes by the number of “passes”, i.e. the number of times tapes can safely pass over the heads before their condition deteriorates. Relying solely on passes can be misleading with tape technologies like LTO, which use a serpentine recording path. For example, LTO-2 and LTO-3 pass the tape over the heads 64 times to read a full cartridge. Therefore a tape rated for 1 million passes (standard for LTO tapes) is actually safe to use for only 15,625 complete reads. Dust trapped in the tape drive can drastically reduce the number of safe uses. This is why it’s essential to unload LTO tapes from the drives when not in use, keeping the shutter closed and preventing dust from getting in.

## TAPE OBSOLESCENCE

Obsolescence is another factor to consider when keeping tapes in use. Introduced in 1999, LTO specifications require an LTO drive to read tapes up to two generations back. Thus a LTO-3 drive can still read LTO-1 tapes, but an LTO-4 drive won’t read anything earlier than LTO-2. Keeping data on tapes that your current drives can’t read puts you at the mercy of legacy drives. If they fail, it may be difficult to hunt down a replacement to restore your data. Replacing older technology tape drives is a sounder and safer solution to keep your business data storage systems up and running without interruption and loss of data.

The ultimate reason for using reliable data storage systems is to keep your business’s critical information safe and accessible at all times. Continuing to use older tape technologies and LTO tapes reaching the end of their lifespan to save a few dollars may end up costing your business a lot more in the long run. Viewing LTO tapes as consumable commodities forces you to budget for tape replacements before any backup/restore issue arises.