

Fuji envisions 400TB tape drive

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Fujifilm announced a technological breakthrough that will allow it to construct a massive 400 terabyte tape cartridge by the end of the decade.

Tape drives currently top out at about 12 terabytes of storage.

The Blocks and Files web site reported that Fujifilm says it can achieve the newer, greater capacities by switching from the standard Barium Ferrite (BaFe) tape coatings to Strontium Ferrite (SrFe).

BaFe coatings have for generations become smaller and smaller, allowing for greater storage capacities. But researchers say they have now reached a point where particles have become too small to be read reliably.

Progress in storage tape capacity follows roughly the same principle as Moore's Law, which accurately predicted for decades that the number of transistors on a chip will double every one-and-a-half to two years. Likewise, tape storage capacities roughly double every two-and-a-half years.

Each tape drive generation uses a successive nomenclature; the first was LTO-1 and the current one is LTO-8. LTO stands for Linear Tape-Open, an open standard format developed by IBM in the 1990s to ensure compatibility among competing tape storage manufacturers.

Under LTO-1, the first generation of tapes used metal particle (MP) coatings and had a capacity of 100 gigabytes. The first tapes to apply BaFe, LTO-6, reached a 2.5 TB capacity and the first generation to use SrFe coatings, LTO-10, will achieve a 48 TB capacity. LTO-10 tapes should be commercially available by 2022.

Anticipated milestones before production of the 400TB cartridge are a 96 TB model in 2025, a 192 TB model in 2027 and 384 TB model in 2030.

Strontium atoms are smaller than Barium atoms, so SrFe coatings containing [smaller particles](#) will permit greater storage capacities on the same amount of tape.

Although there is little general consumer demand for older tape storage devices these days, the technology remains highly useful for corporate entities requiring storage of tremendous volumes of data. Professionals requiring huge storage capacities, such as photographers and videographers, also turn to tape drives for storage needs. Data saved on tape takes much more time to retrieve than data stored on hard drives, but tape cartridges are more economical and their storage capacities far exceed those of traditional drives.

The first BaFe tapes went into production in 2012. Blocks and Files analyzed the progress of [tape](#) drive capacities over subsequent years and predicted that a new element will be required to replace BaFe after the 400 TB capacity tapes goes into production by 2030.

Fujifilm is one of only two companies still making [storage](#) tapes. The other is Sony.

Fujifilm's high capacity tapes will pack 224 gigabits per square inch to attain 400 TB capacity. In 2017, Sony, in collaboration with IBM Research, created a prototype 201 Gbit-per-square-inch drive that they said could achieve a 330 TB [capacity](#). They estimated the first units could be available by 2026.

Fujifilm, founded in 1934, also known simply as Fuji, is a leading manufacturer of film, biologics, optical devices, photocopiers, cameras and lenses.

More information: blocksandfiles.com/2020/06/29/...pe-cartridge-future/

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