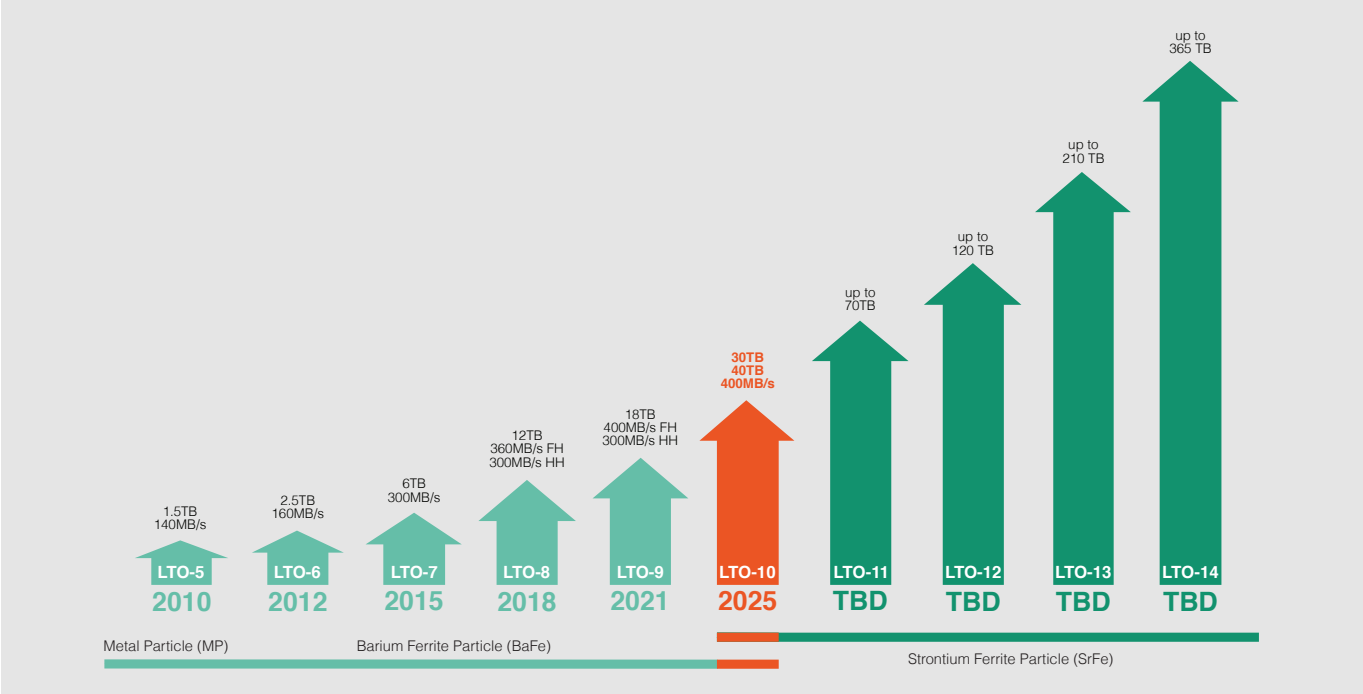
FUJIFILM
Value from Innovation

Guiding You Into the Future of Data Preservation with LTO Tape

In the era of exploding data volumes – driven by AI, IoT, scientific breakthroughs, and ever-higher resolution imaging – organisations find themselves at a turning point. Data is not only multiplying; the requirement to store, protect, and access it securely for decades is becoming non-negotiable, and regulatory mandates are raising the stakes. Amidst these challenges, LTO tape technology continues to emerge, year after year, as the quiet, steadfast backbone of long-term data preservation.



LTO Tape Technology Roadmap

The LTO roadmap extends far beyond what most end users might imagine. From the early 2000s, when Linear Tape-Open (LTO) technology first transformed the landscape of backup and archival storage, LTO has advanced through ten generations – each improving in capacity and increasing performance. Where LTO-9 recently offered 18TB native per cartridge, LTO-10 offers two options with either 30TB or 40TB of native capacity (75TB/100TB compressed), giving businesses more room to breathe and dramatically reducing the physical space needed for their archives.

What's most reassuring for IT leaders, compliance professionals, and data operators is the open-ended future of LTO tape. The roadmap projects capacity growth far into the 2030s with a predicted 365TB per cartridge on the horizon.

This trajectory is powered not by promises, but by tangible proof

In 2020, Fujifilm and IBM reached a record 580TB on a single cartridge, highlighting the significant impact of advanced magnetic materials like Strontium Ferrite (SrFe). This milestone is more than just a headline – it's proof that tape is positioned not just to keep up, but to leap ahead as your data grows exponentially. SrFe, and its integration with Barium Ferrite (BaFe) in fine hybrid magnetic particles, underpins a new era of density, stability, and longevity.

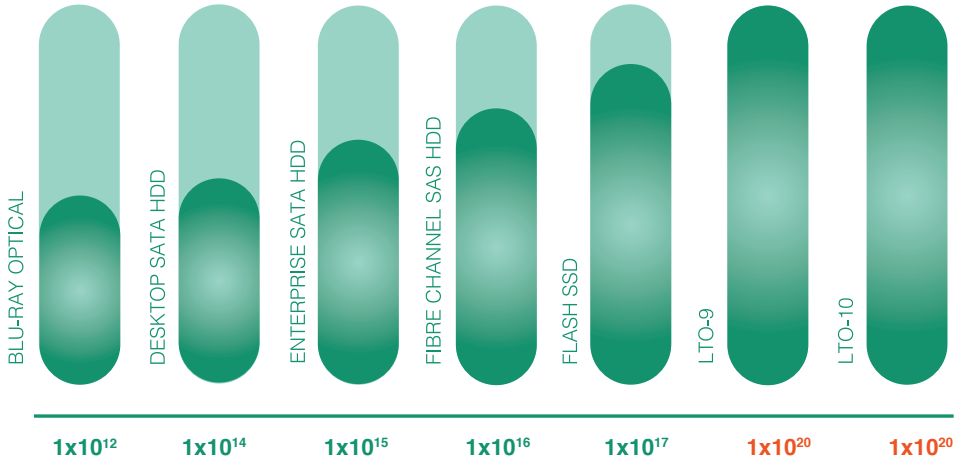
The continuous evolution of tape is made possible by innovations in core materials Fujifilm's decision to shift to SrFe, in LTO-10 combined with Barium Ferrite to create fine hybrid magnetic particles, is the most significant leap in decades. These breakthroughs unlock higher storage densities on a single tape, dramatically extend the lifespan of your drives, and ensure that your most critical information stays preserved and accessible – even under demanding environmental conditions.

Ways to increase the capacity per tape

This steady progression isn't just impressive – it's foundational. As data retention periods stretch to 10, 20, or 30 years and archives swell with research, imaging, replication data, and more, users need a platform that can ensure their information's safety and accessibility, regardless of how much the world changes.

Tape media is uniquely engineered for safety and endurance

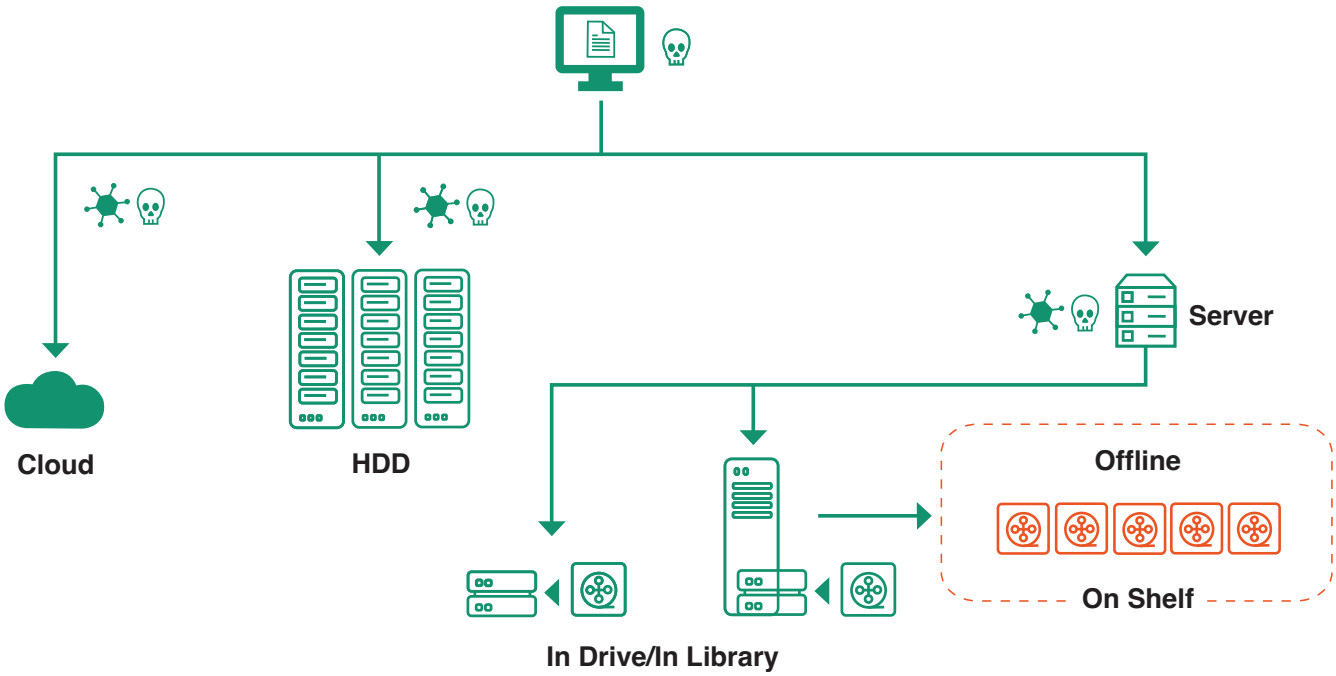
An LTO cartridge today offers a data integrity that is 100,000 times greater than top enterprise hard disks – translating to decades of faithful data preservation. Users can archive vital information without fear of loss, degradation, or format obsolescence.



Write/read **100,000 times** more data on an LTO-10 tape than on a SATA hard disk before risking a write/read error.

Ease of use has also gotten a major boost. The latest LTO-10 formats introduce a groundbreaking tilted head design and enhanced servo systems that eliminate the need to pre-initialise cartridges before use like with LTO-9, streamlining deployment and reducing downtime. For busy IT teams, this means less time preparing media and more time focusing on data-driven outcomes.

Security, too, takes centre stage. LTO-10 comes with multi-layered hardware encryption, WORM (Write Once, Read Many) functionality, ensuring that tape remains an anchor point for both regulatory compliance and cyber resilience. For many organisations, the "air-gap" provided by offline tape storage is the single most reliable defence against ransomware and modern attacks – a protective assurance that complements primary storage and cloud platforms.



The "air-gap" provided by offline tape storage is the single most reliable defence against ransomware and modern attacks

As data volumes skyrocket – industry analysts forecast enterprise storage to grow from 6 zettabytes in 2025 to 35 zettabytes by 2030[1] – it's natural to be concerned about how today's investments will serve businesses tomorrow. The LTO roadmap delivers confidence: plans extend through to LTO-14 with a projected 365TB per cartridge. Thanks to low areal density compared to disk or SSD, tape has the engineered "headroom" to keep scaling at historic rates, unaffected by the capacity ceilings that limit alternative technologies.

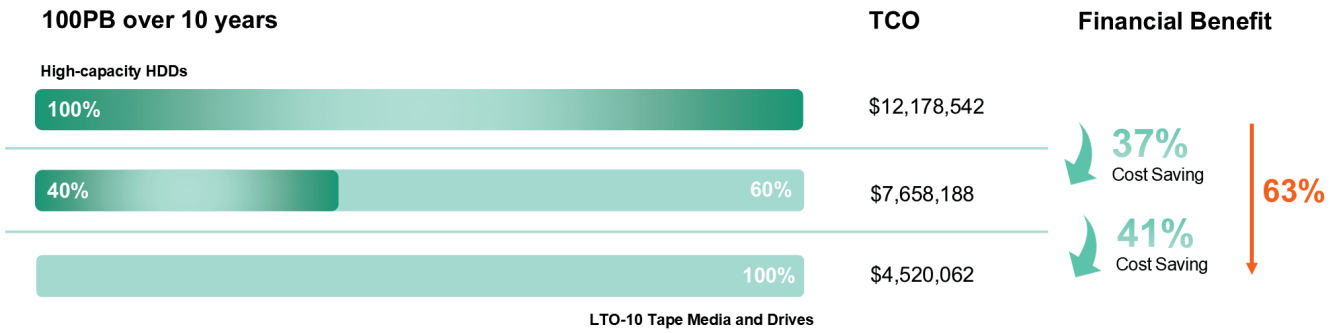
1 Furthur Market Research, Storage Management in an Age of Minimal Data Deletion, May 2023

Furthermore, tape is green. Superior energy efficiency and minimal electronic waste make LTO a sustainable choice, helping organisations meet environmental goals while managing growth. Tape's low energy consumption during storage – unlike disk or cloud which require constant power for spinning drives and cooling – delivers ongoing cost savings and contributes to eco-friendly IT practices.

LTO Roadmap: More than a Promise

Looking forward, the LTO roadmap is more than a promise; it is a proven track record of continuous advancement. Each technological leap – bigger capacities, faster speeds, greater security – has been realised in working systems, not just theoretical claims. The 580TB record set in 2020 with Strontium Ferrite signals that future generations of LTO are not merely incremental – they're transformational, made possible by material science and engineering innovation at the heart of the format.

This means certainty for the end user: this technology is here to stay and is evolving at pace with the world's data demands. LTO's open format keeps your choices flexible and future-proof; you can integrate tape with disk, SSD, or cloud, forming a "best of breed" storage architecture that balances speed, accessibility, and cost over the long term. If your organisation is upgrading from an older LTO generation, the migration path is well established – tools, documentation, and technical support ensure your archives move smoothly to the newest generation, protecting your investment and eliminating risk of data loss or obsolescence.



Estimated ten-year TCO for keeping 100 PB (Brad Johns Consulting L.L.C, 2025)

Plus, day-to-day ease of use is at the core of the latest advances. With the no-initialisation feature, your IT teams can focus on strategic work, while archiving becomes an invisible, reliable part of your operations. This matters not just for large enterprises, but for any organisation required to meet lengthy retention policies and respond swiftly to audit requests.

In this narrative of technological progress, tape security and reliability remain constants. With error rates 100,000 times greater than disk, archive life exceeding thirty years, and robust protection against cyber threats, tape is a solution designed for peace of mind. Its offline nature creates a true air-gap – a safeguard that is rapidly becoming essential against ransomware and sophisticated attacks.

Tape technology is more than ready for the future – you can trust it to safeguard decades of information, to support new business models, and to remain a cost-effective anchor in your growing data universe. As the demands of Big Data and regulatory requirements accelerate, the certainty and innovation woven into every LTO cartridge stand ready to protect, preserve, and empower your organisation.

The future of tape is secure. The roadmap is clear. It's time for tape.

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