

Tape: Store safely and spend less



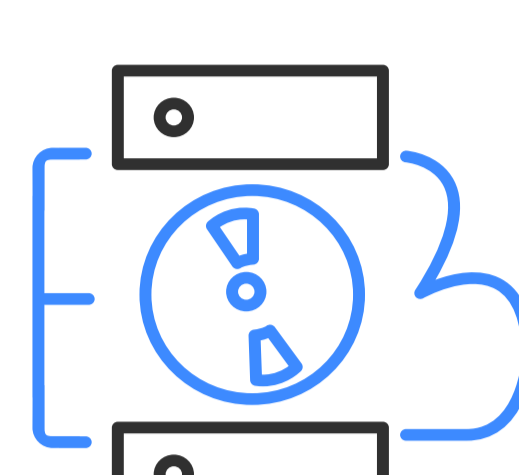
Get the cost-effective capacity, security and scalability to satisfy data storage requirements in the exabyte era

	Entry	Midrange	Enterprise
Tape virtualization			TS7760 VTL Replication Grid Cloud
IBM Spectrum Archive	IBM Spectrum Archive Single Drive Edition	Library Edition	Enterprise Edition
Tape automation	TS2900, TS4300	TS4300 Expandable to 7 modules	TS4500, TS4500 Expandable to 18 frames
Tape drive	LTO 6/7/8, LTO Media		TS1150, TS1155 and TS1160, 3592 Media

Why tape?

Tape offers the best, most cost-effective data storage option for key IT challenges:

- Reduce the costs of mandatory—and expensive—disaster recovery (DR) and backup
- Support explosive data growth and flat IT budgets with low-cost, high-capacity tape

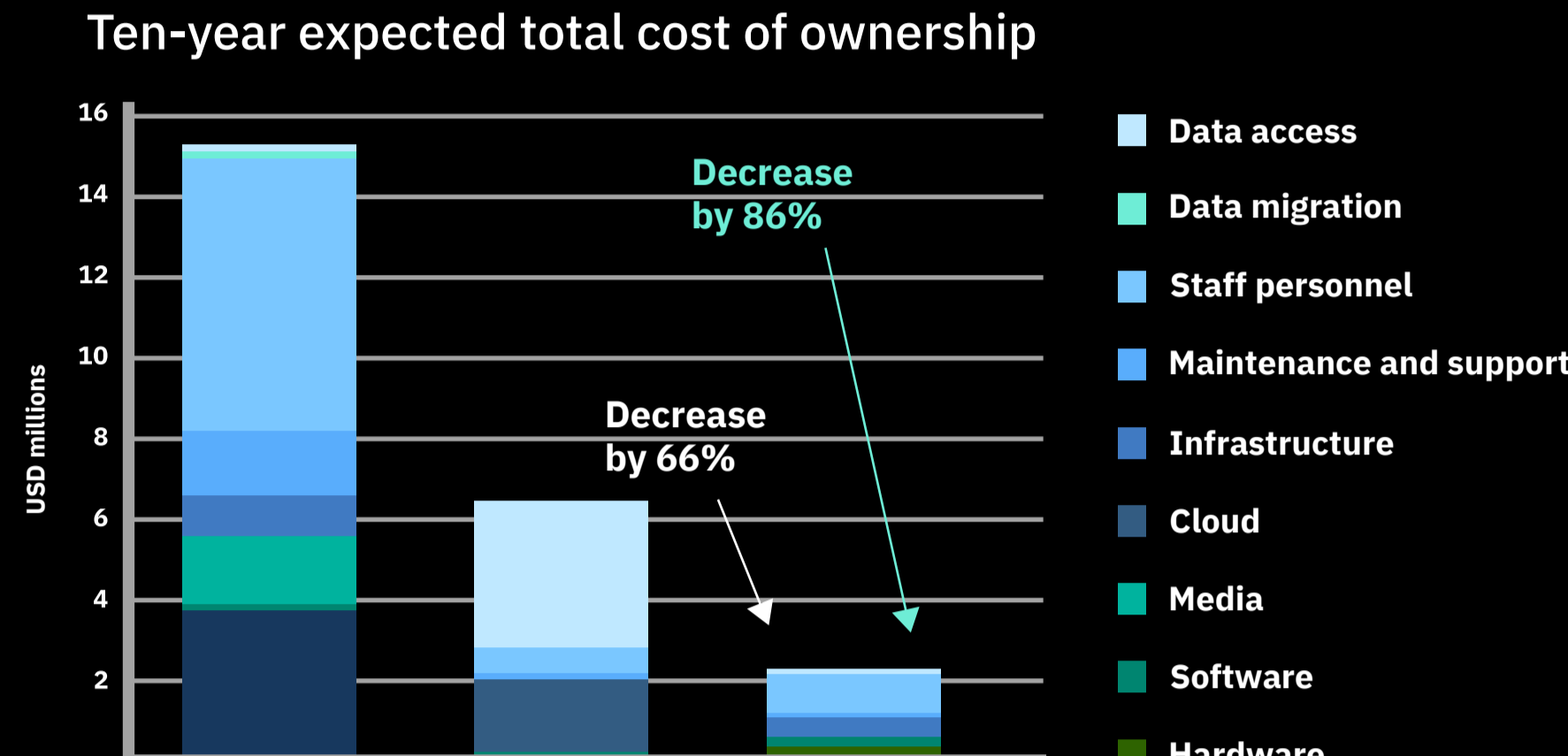


Cost-effective

Budget-friendly with the lowest 10-year storage TCO¹:

- Enable continuous cost reduction over time
- Add tape capacity easily using an opex budget
- Incur zero energy costs for storing data at rest

Ten-year expected total cost of ownership



Source: Quantifying the Economic Benefits of LTO-8 Technology, Enterprise Strategy Group, Economic Validation Summary Report, August 2018.

Secure

Protect data from threats and preserve data for the long term:

- Protect data and thwart cybercrime with the “tape air gap”—created by using a storage medium that is offline when cartridges reside in library racks
- Supplement cloud storage with a low-cost tape archive for added data protection—just as cloud providers do
- Capitalize on multilevel security, featuring encryption for tape drives and files

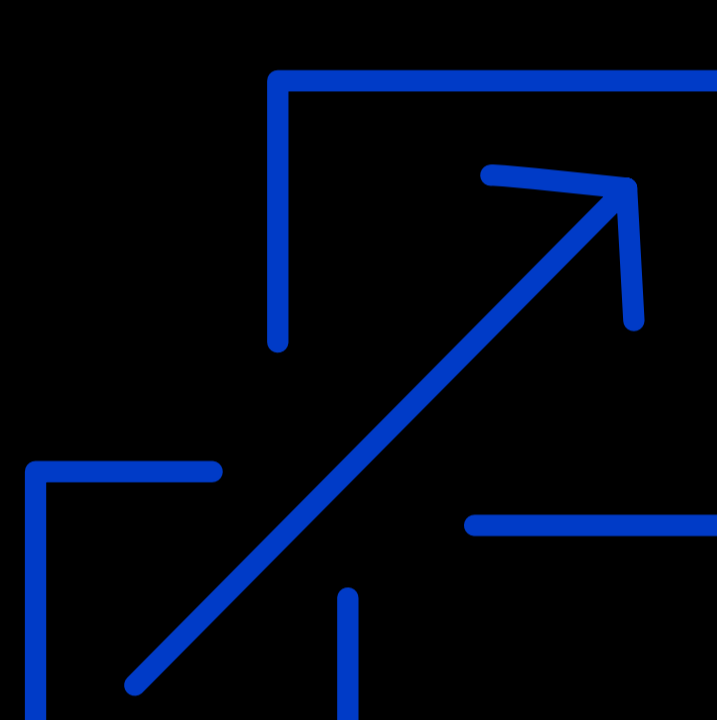


USD148 per lost or stolen record²

Scalable

Deliver hyperscale storage for exabytes of data:

- Take advantage of lowest-cost storage technology
- Scale quickly and easily to meet the high-capacity demands for the exabyte era
- Gain a stable platform requiring few technology refreshes

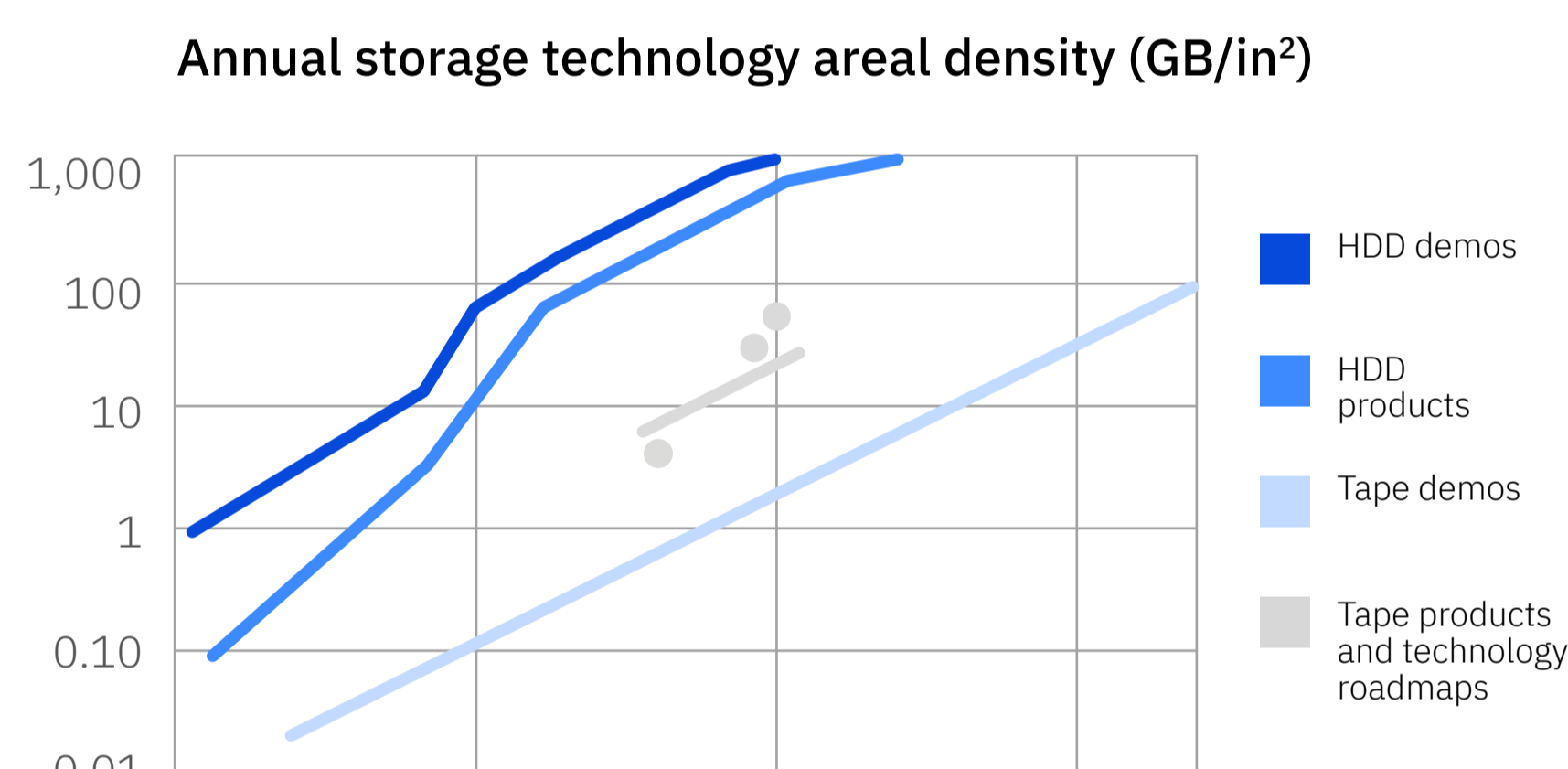


Dependable

Long-lasting linear magnetic tape with high areal density growth (GB/in²)—40% CAGR:

- Use proven and mature technology
- Get 10-to-30-year, long-term retention on a single cartridge
- Anticipate getting 330 TB of uncompressed data
- Benefit from a 10-year warranty

Annual storage technology areal density (GB/in²)

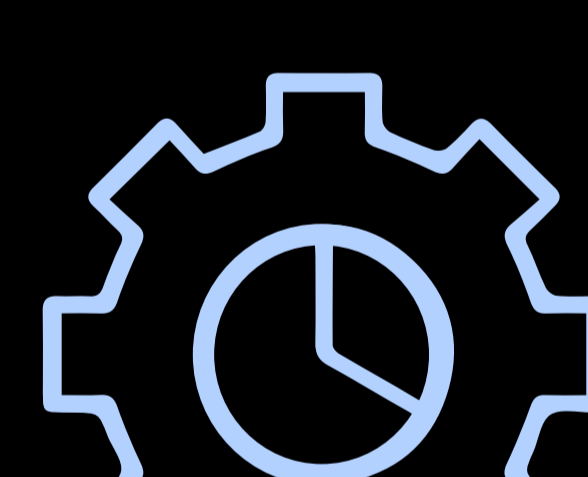


Source: Areal density trends. Chart provided courtesy of the Information Storage Industry Consortium (INSIC), 2016.

Easy to manage

Help simplify archive management and access to data:

- Make tape as easy to use as disk or flash storage with IBM Spectrum Archive, which employs the Linear Tape File System (LTFS) standard for reading, writing and exchanging metadata
- Use drag-and-drop file management with LTFS
- Gain direct, intuitive and graphical access to data stored in IBM tape drives and libraries
- Seamlessly integrate IBM software-defined storage (SDS) products to protect, archive and scale



Green

Significantly reduce energy costs compared to disk storage:

- Consume zero power and generate zero heat while tape is stored
- Use 70 times less energy compared with HDD systems³



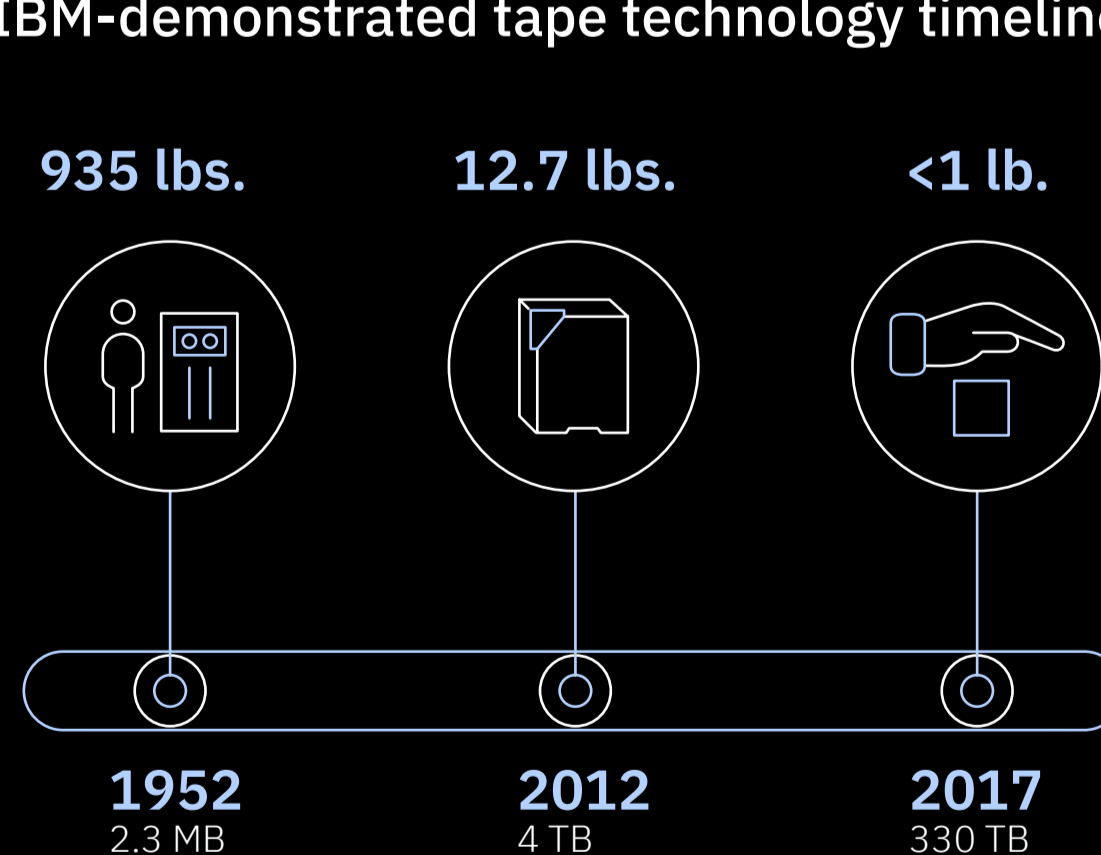
Energy Saving

From invention to innovation

IBM created IT tape storage technology and remains the worldwide market leader:

- IBM invented data tape storage in 1952
- IBM has produced a steady stream of tape technology patents
- IBM set a new record for magnetic tape storage in 2017, demonstrating the potential for achieving 330 TB per cartridge at IBM Research in Zurich, Switzerland

IBM-demonstrated tape technology timeline



Emmy Award winning

IBM and Fox Networks won an Engineering Emmy® Award for Innovation for linear tape file system (LTFS) technology.

- Advanced management of workflows based on open industry standards (SNIA and ISO)
- Tape cartridges and drag-and-drop file movement create functionality akin to a giant USB stick
- Easy portability of files for interactive workflows with self-describing indexing

Ready to learn more?

For more information, contact your IBM Business Partner:

Company Name

Phone | Email

Website

¹ Quantifying the Economic Benefits of LTO-8 Technology, Alex Arcilla, Enterprise Strategy Group, Economic Validation Summary Report, August 2018.

² 2018 Cost of a Data Breach Study: Global Overview, IBM Security, July 2018.

³ Data Storage Technology, Tape and Sustainability, Fred Bonner and Peter Guglielmino, Echleaf and IBM Corporation, September 2017.