

The background of the entire page is a composite image. The top half shows a satellite in space, with its solar panel arrays visible as a grid of gold-colored lines. Below the satellite, the Earth's surface is visible, showing a mix of land and water. The bottom half of the image is a solid green color, which also serves as the background for the text.

THERE'S A NEW SPACE RACE. HPE STORAGE TAPE HAS THE RIGHT STUFF.

As the data universe expands, HPE Storage Tape LTO technology can help you manage and control Big Data.



Introduction

All of the bugs and practicalities of access, scale, manufacturing, and supply chain have been worked out for the tape industry and it's [now] really about advancing the technology. I see some solutions for the problems in the next 5-10 years, whereas pore sequencing for DNA or [similar technical challenges] have a huge number of issues to make it a practical solution.¹

Jim Bain. Professor, Electrical and Computer Engineering Associate Director, Data Storage Systems Center Carnegie Mellon University

¹ "INSIC Global Trends, Applications and Use Cases for Tape Adoption Report 2024", INSIC 2024



According to a report by Further Research², we live in an age of minimal data deletion, one where business information needs to be kept indefinitely.

This is the mega trend behind the new data “space race”. Traditional applications and new workloads powered by AI and Machine Learning are creating astonishing amounts of information that organizations are either reluctant to erase or prevented from so doing by compliance requirements.

Two key statistics illustrate this phenomenon:

By 2030, Further Research estimates that new data storage capacity shipments will reach 11.3 ZB, a Compound Annual Growth Rate (CAGR) of 30% between 2023 and 2030.

And at the same point, Further Research also predict the installed base of Enterprise data could be 35.8 ZB, compared to only 6.4 ZB in 2023. As much as 70% of this new data universe will be classified as cold or frozen in nature. Effectively, this means a doubling every 3.5 years.

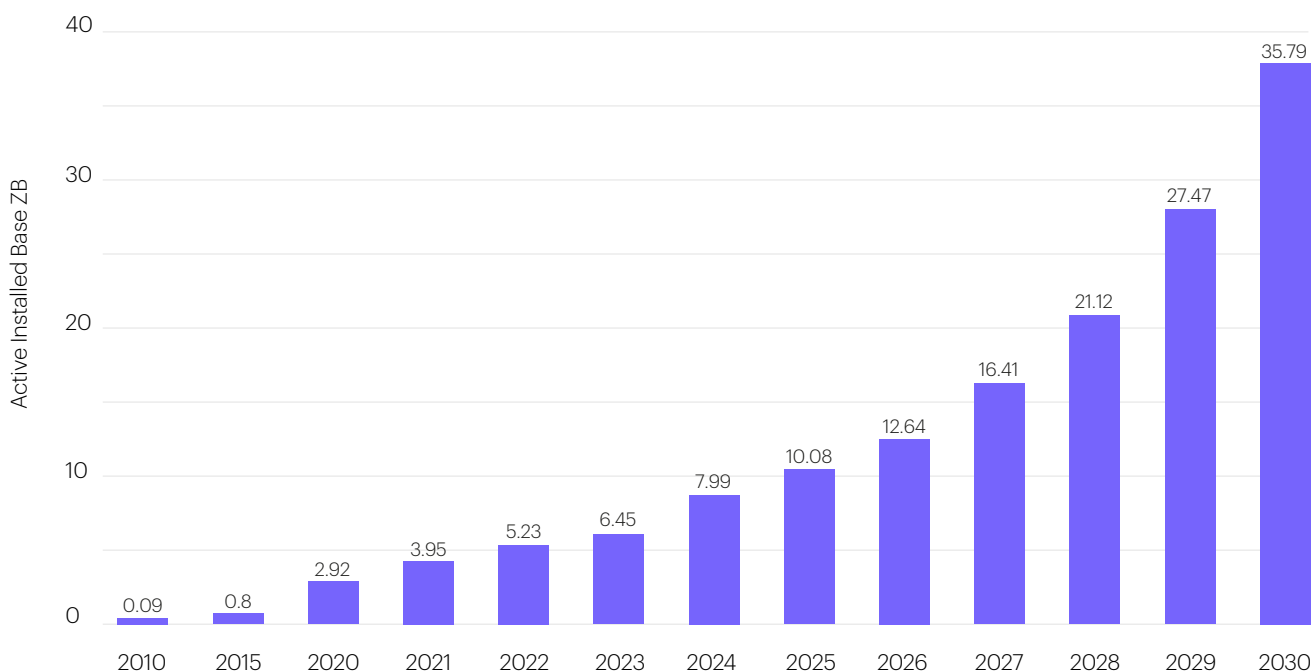


Figure 1. Enterprise Active Installed Base of Digital Data (PB)

71%

of businesses reported significant improvements in data retrieval times when active archives were deployed.

The need to create and maintain huge data archives is putting pressure on storage media densities, IT budgets and data center resources like never before.

And arguably, business success in the future will be dependent on how well organizations manage and exploit these almost immeasurable data assets.

² “Storage Management in an Age of Minimal Data Deletion”, Further Research, 2023



HPE Storage Tape is the perfect deep space solution

HPE's storage portfolio helps you radically simplify data management with the industry's most comprehensive solutions to store, manage, and protect data across your hybrid cloud.

But above the clouds, as business data ages and cools, lies deep space. It's here that HPE Storage Tape can help you preserve and protect the more distant reaches of your data universe.

This is what HPE means when it talks about a new "space race" in storage.

Distant stars can shine brightly with HPE Storage Tape

The majority of this cold and frozen data is rarely accessed but it needs to be retained, secure from the threat of ransomware, due to compliance requirements and business strategy. Using expensive primary or secondary storage is illogical so what's the alternative?

The answer is active archiving with HPE Storage Tape as the foundation.

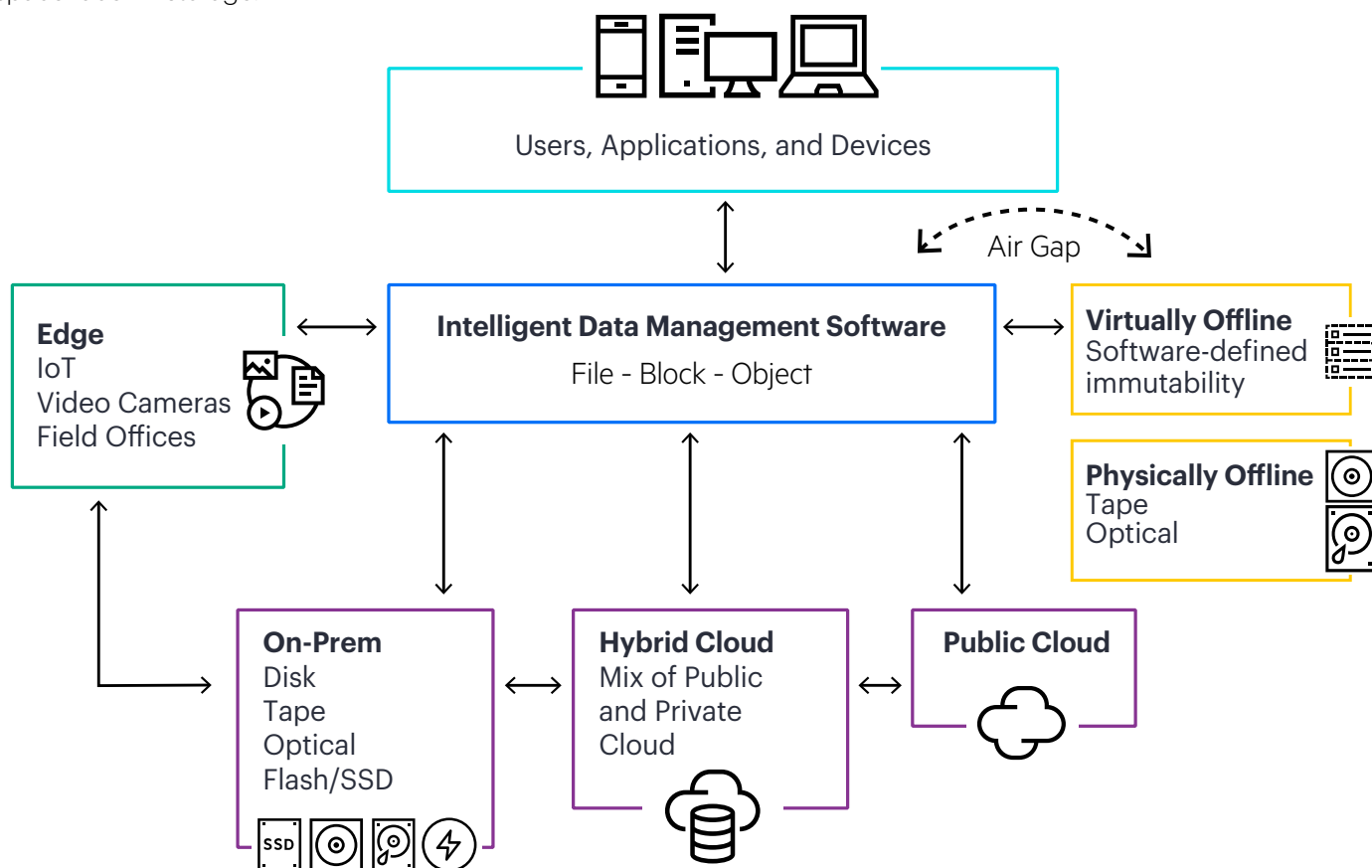


Figure 2. Active archiving in the hybrid cloud



Benefits of Active Archiving

An HPE Storage Tape system, in conjunction with ISV active archiving software, can be integrated in a tiered data management, where data is passed seamlessly between mission critical, secondary storage or archive tiers and across on-prem systems and the cloud. In a survey by Enterprise Strategy Group, 71% of businesses reported significant improvements in data retrieval times when active archives were deployed.³

With a number of ISV's offering native object-to-tape gateways for data stored in S3 and other clouds, vast unstructured datasets generated by new workflows like AI and Machine Learning, can be kept in deep archives but easily recovered to support business operations and compliance when needed. And it's clear that long term storage is a strategic priority, intersecting with more high profile areas of IT in a profound manner. In the same ESG study, 88% of respondents said long-term storage was critical to the success of their AI/ML initiatives.

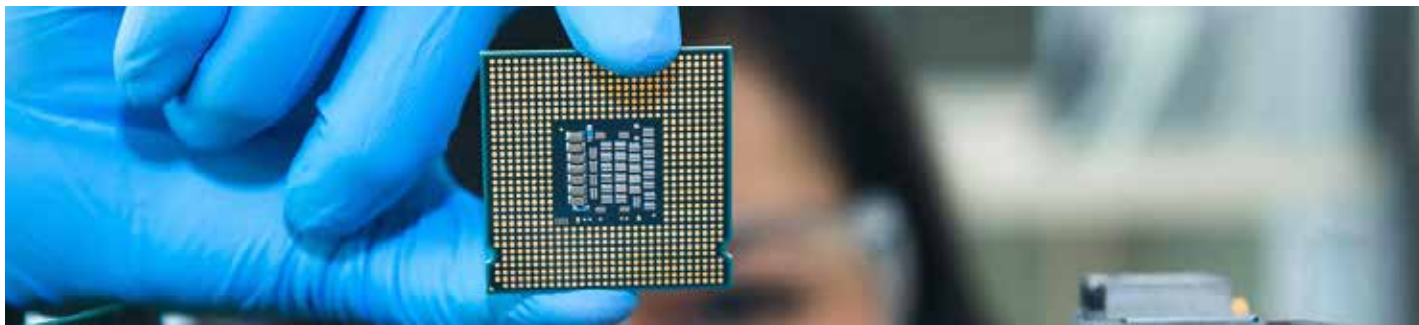
Choosing the right solution for long term storage has never been more important.

HPE GreenLake for Tape Libraries

One of the traditional barriers has been the perceived upfront cost of tape compared to the apparent ease and flexibility of the public cloud. HPE GreenLake Flex Solutions for Tape Libraries creates a new paradigm for tape customers.

- Consumption-based pricing: customers only pay for what they use and avoid paying for over provisioned solutions.
- They can monitor capacity and performance precisely to allow for more timely upgrades.
- Instead of a big initial capital outlay, customers can spread the cost over a longer period.

³ "Active Archives in the Age of AI/ML", Enterprise Strategy Group by Tech Target, March 2024



Four reasons why you can win the space race with HPE Storage Tape.

The value of modern tape solutions is founded upon four strategic benefits.

Scalability

84%

of respondents said they needed more scalable (and energy efficient storage) to retain larger data sets for longer time periods.

Further Research predicts that by 2030, the installed base of Enterprise data will reach a staggering 35.8 ZB, the overwhelming majority of which will be cold or frozen data. While hard disk (HDD) areal density growth has slowed dramatically, constraining the size of HDDs, the 14 generation LTO roadmap is projecting tape media capacities of 1.4 PB per cartridge. This makes HPE Storage LTO tape technology the ideal, ultra-dense, cold data storage platform of the future.

That matters because in the ESG study quoted above, 84% of respondents said they needed more scalable (and energy efficient storage) to retain larger data sets for longer time periods.

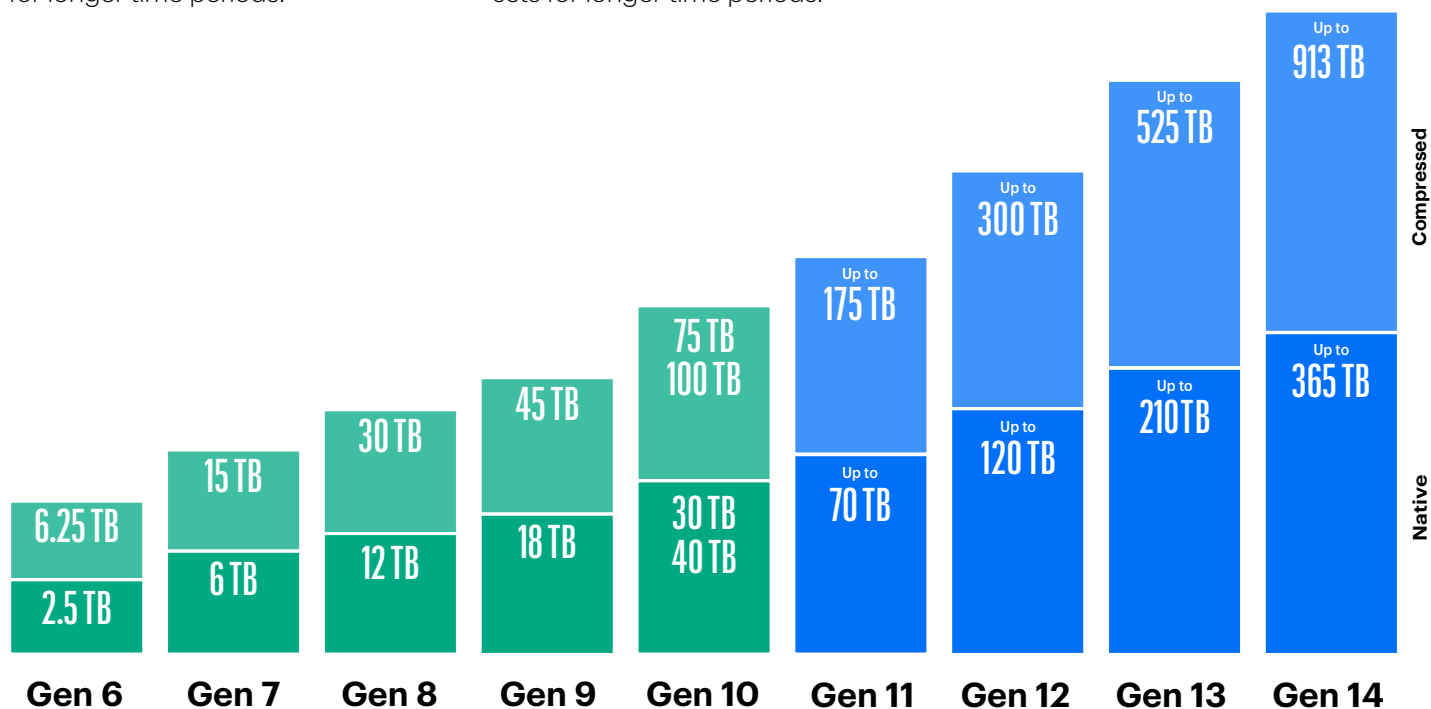


Figure 3. LTO Roadmap⁴

⁴ Source: LTO Program, lto.org



Security



A recent study by backup software vendor, Veeam⁵, found that in 93% of ransomware incidents, criminals target connected backup repositories, resulting in more than one-third (39%) of these backups being completely lost.

HPE Storage Tape technology can make your backup and restore processes ultra-secure by allowing you to keep copies of your business data completely offline and disconnected from all network activity.

As such, HPE Storage Tape is the final part of the 3-2-1-1 best practice rule which proposes you maintain three copies of your data, on at least two different media types, with one stored off-site and one stored offline behind a true airgap.

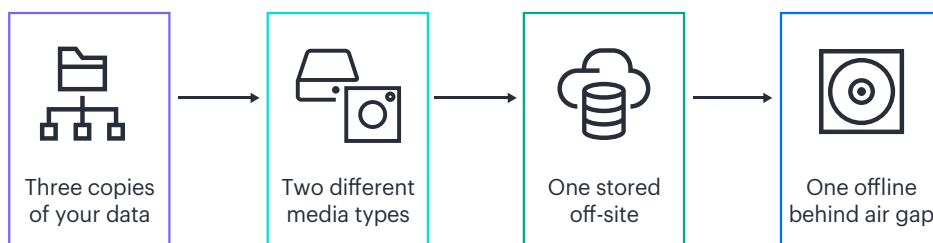


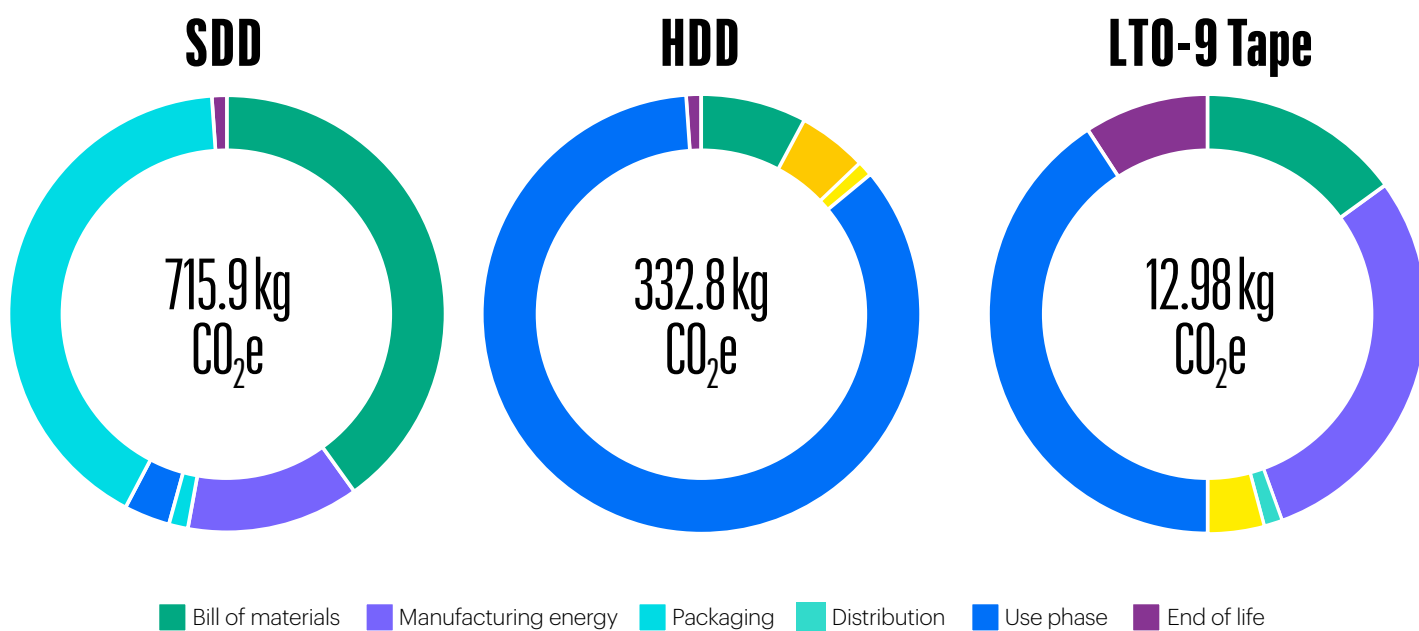
Figure 4. The 3-2-1-1 Rule

⁵ Source: "Veeam Ransomware Trends Survey", Veeam, 2023



Sustainability

The cold data oceans of the future will have more in common with the Antarctic than with the warmer seas of the Tropics. But the extraordinary rise of a vast, largely inert information store presents a number of challenges relating to sustainability that tape technology uniquely addresses. Although each organization will need to analyze its own IT workloads to determine the most sustainable solution, by deploying HPE Storage Tape, businesses and institutions might be able to reduce the CO₂ emissions associated with archiving cold data and thereby support broader sustainability goals⁶.



8-year life cycle, Seagate 15.7 TB, Seagate 16 TB HDD, LTO-9 tape media⁷

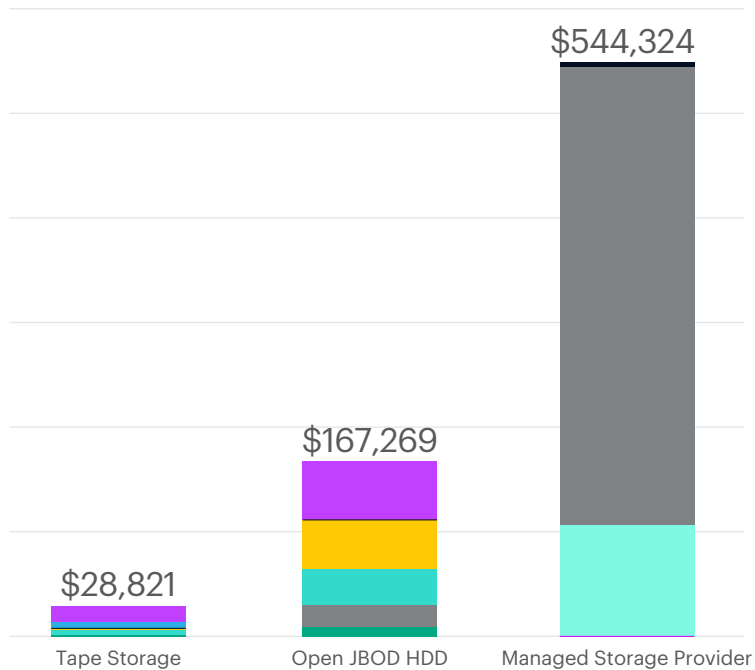
Figure 5. Carbon Impact and Breakdown by Component

⁶ "Data Economics: LTO-9 Technology Optimizing Data Value", Solutions North Consulting, 2023

⁷ "Improving Information Technology Sustainability with Modern Tape Storage", Brad John's Consulting 2022



Total 10 year cost of ownership



	Tape Storage	Open JBOD HDD	Managed Storage Provider
Operations cost	\$1,038	\$1,025	\$3,750
Data retrieval charges	0	0	\$432,832
Storage costs	0	0	\$107,687
Command charges	0	0	\$55
Hardware	\$14,030	\$52,681	0
Total operational energy	\$1,442	\$47,254	0
Cost of maintenance	\$5,000	\$34,243	0
Cost of floor space	0	\$24,000	0
Sustainability charges	\$792	\$8,066	0
Media	\$6,519	0	0
Data transmission costs	0	0	0
Software	0	0	0
10-year total	\$28,821	\$167,269	\$544,324

Figure 6. 10 Year Total Cost of Ownership Comparison

Savings

Using LTO technology for long term data storage can dramatically lower the cost of storing and managing data over timeframes spanning decades in comparison to all-disk or all-cloud solutions⁸. With extremely low cost per TB, high storage density to maximize data center resources and vast and flexible scalability, tape is better suited to the colossal data storage demands of the looming “zettabyte era”.

LTO-Savings

\$139,488 vs. HDD

\$516,503 vs. Cloud

⁸ “Data Economics: LTO-9 Technology Optimizing Data Value”, Solutions North Consulting, 2023

Use Cases for HPE Storage Tape

The use of HPE Storage Tape spans various industries, offering secure and cost-effective solutions tailored to their unique needs⁹.



HPE Storage MSL6480 Tape Library

A leading oncology research institute running multi-tumor clinical trials-and advancing areas such as immunotherapy and personalized medicine-needed to replace its primary and secondary storage to keep pace with rapidly growing data from genomics, imaging, and clinical studies. The new platform needed to meet requirements for the next 3-5 years while eliminating single points of failure and reducing data-loss risk through stronger replication, archiving, and backup. The customer chose **HPE Storage MSL6480** alongside HPE Alletra and HPE MSA storage arrays and storage servers to provide a huge low-cost archive capability while at the same time, reducing cost and strengthening overall cyber resilience.



HPE Storage MSL2024 Tape Library

A long-established industrial solutions provider serving sectors such as automotive, aerospace, and general manufacturing needed to deploy a second, fully independent data center. Because any extended outage could translate into multimillion-unit financial losses, recovery assurance and minimized downtime were paramount. For this reason, the customer chose a **HPE Storage MSL2024 tape library** alongside HPE Zerto to offer offline and off-site data protection and strengthen ransomware resilience. Web-based administration suits multi-site operations where the secondary data center may be managed from afar.



HPE Storage MSL3040 Tape Library

A large academic acute-care hospital-recognized for excellence in patient care, education, and research-undertook a major refresh of its data-storage environment. As a long-standing user of enterprise storage platforms, the organization replaced a substantial portion of its primary storage arrays and modernized its backup infrastructure to enhance performance, resilience, and scalability. It chose an **HPE Storage MSL3040 tape library with LTO-8** alongside HPE Alletra to provide low cost long term archival storage and increase cyber resiliency through the deployment of an airgap for secure offline data protection.

⁹ "INSIC Global Trends, Applications and Use Cases for Tape Adoption Report 2024", INSIC 2024



Conclusion

The ability of HPE Storage Tape technology to continuously innovate, while providing compelling TCO advantages and a unique barrier against cybersecurity threats, make it more essential today than it has ever been.



This is witnessed by the fact that in 2024, industry LTO tape media capacity shipments reached a new record level of 176.5¹⁰. Clearly, the demand for tape storage is higher than it has ever been.

And with the growing urgency of climate action, tape's ability to store petabytes of infrequently accessed data with minimal environmental impact should increase its popularity still further.

But as businesses embark upon a new "space race", HPE believes the natural solution to some of these strategic long term data storage challenges will be to expand your archival capabilities with HPE Storage Tape LTO Ultrium tape solutions.

When it comes to helping you manage vast cold data archives, HPE Storage Tape has the right stuff!

¹⁰ Source: LTO Media Shipment Capacity Report, LTO Program July 2025



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