Tape Storage: A Modern Solution for the Digital Age, with a 50+ Year History of Proven Reliability and Economy

Get started
For more than five decades, tape storage continues to help companies, just like yours, economically protect and retain data, ensure compliance, and reduce the risk of cyberattacks.
Tape storage: economical, scalable, secure

It's a data-driven world—how will you keep up with growing demands?

Tape storage is an economic, scalable, and secure way to ride the wave of data rising in your near future

HPE leads the industry in tape storage for data protection and retention

Industry | IT Outsourcing
Centric

Industry | Media and Entertainment
Gazprom-Media Holding

Industry | High-Performance Computing
ASRC Federal InuTeq
It’s a data-driven world—how will you keep up with growing demands?

Data is our most valuable currency in today’s digitalized world. It’s part of everything we do at work and home, when traveling or shopping, getting an education, being entertained, and even managing our health. In fact, data is so ingrained in everyday life that analysts predict the global datasphere will exceed 175 zettabytes by 2025.¹

Think about all the ways data comes into play today: connected, self-driving cars and the enormous amount of locational and operational data required to run them; high-resolution medical images, as many as 20,000 images in a single MRI scan of the human head; the Internet of Things (IoT) enabling smart cities that intelligently manage traffic flow, lighting intensity, and building systems; artificial intelligence (AI) and machine learning, running countless algorithms to predict everything from when to trade a security to what song you want to listen to next.

Some data must be processed in real time. In other cases, the value of data is only realized by analyzing broad trends over time. Actively used, “hot” data, and infrequently accessed, “cold” data, both must be stored, backed up, and protected with appropriate balance of performance, capacity, and economy.

The question is, how will you retain and protect all the data your organization requires to thrive in the digitalized world?

13 ZB installed capacity deployed

7 zettabytes  |  3.1 zettabytes  |  2.2 zettabytes
data stored on all devices²  |  business data²  |  cold data²

¹ IDC/Seagate “The Digitization of the World from Edge to Core” 2018
² IDC/Seagate “Evolution of Data Through 2025,” 2017
Disk storage remains a good choice for actively used data and higher-performance transactional requirements. Large-capacity drives can also serve growing data volumes well. But scaling up disk storage will eventually become quite expensive in terms of capital expense, management, and energy consumption. See what Enterprise Strategy Group (ESG) has to say about that in its economic summary.

Cloud storage is another popular choice. It’s economical, and highly scalable. However, storing and retrieving data from the cloud can also become expensive over time with a number of hidden costs. You can see the real cost of ownership for your data over the long-term by using this simple Total Cost of Ownership (TCO) Calculator.

In addition, the cloud may not be a viable option if you have to deal with data sovereignty restrictions and data privacy requirements such as those for the European Union GDPR. Moreover, cybersecurity has become another important consideration. Both disk storage and cloud storage are networked, and therefore, vulnerable to cyberattacks. Even with the strongest security measures, ransomware and other exploits can find a way through.
Tape storage is an economic, scalable, and secure way to ride the wave of data rising in your near future

When it comes to securely storing large volumes of data without breaking your budget, tape is still the best choice you’ll find. Take a moment and check out this short video on the value of tape storage in today’s digital world. Then consider a few key points:

• Tape remains the lowest-cost storage medium for long-term (cold) data retention at just $0.003 per GB for the life of the cartridge compared to equivalent disk-based solutions that are approximately 6X more costly per TB.¹

• Tape is very efficient. The energy consumption of tape is <2% of hard disk drives for the equivalent amount of storage.²

• Tape can also scale to meet growing data demands in both capacity and throughput for sequential read and write I/O, with new Linear Tape-Open (LTO) generation 8 tape cartridges providing up to 30 TB of compressed capacity (12 TB native).³

• Tape is highly secure. Hardware-based encryption and Write Once Read Many (WORM) functionality meet the toughest industry compliance regulations. And it’s the only storage medium that provides an air gap between cyber criminals and your valuable data, securely stored offline and off-premises.

¹ Assumes 2.5:1 compression ratio for the life of the cartridge. Based on current audit of LTO-7 Type M media pricing (April 2019) at $68.87 per 22.5 TB

² State of the Tape Industry 2017

³ Assumes 2.5:1 compression ratio
Tape storage advantages

| $0.003 per GB | <2% | 30 TB |
| Lowest-cost storage for life<sup>6</sup> | Tape energy consumption vs. equivalent HDDs<sup>7</sup> | Compressed capacity of LTO-8 tape cartridges<sup>8</sup> |

Tape storage offers clear advantages for your long-term, high-capacity storage requirements in this data-driven age. The economic benefits help to reduce TCO significantly and lower energy consumption not only saves money, but it also provides a more sustainable solution to bolster green data center initiatives.

Modern tape storage solutions also complement other storage technologies seamlessly thanks to the Linear Tape File System (LTFS), an open software specification that allows for simple ways to access data on tape. With LTFS, which is available on LTO generations 5, 6, 7, and 8, you can present LTO tape like any other drive, icon, or folder right alongside your primary storage. And because LTFS is open source software, not proprietary, content on tape is easily sharable among both local and remote users regardless of the platform on which they’re working. LTFS opens the door to virtually unlimited possibilities for how you can use tape across your organization.

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<sup>6</sup> Assumes 2.5:1 compression ratio for the life of the cartridge. Based on current audit of LTO-7 Type M media pricing (April 2019) at $68.87 per 22.5 TB

<sup>7</sup> State of the Tape Industry 2017

<sup>8</sup> Assumes 2.5:1 compression ratio
HPE leads the industry in tape storage for data protection and retention

Absolute reliability, unbeatable economics, scalability that's off the charts, and ease of use are the hallmarks of HPE StoreEver tape storage solutions. Only HPE brings you the advanced features of HPE Tape Library Management to make tape manageability easy and simple, and the investment protection of being able to re-use and upgrade older tape drives. Check out all of these leadership advantages HPE tape solutions offer:

More capacity
- HPE LTO-8 Ultrium tape cartridges store double the amount of capacity than that of LTO-7, in the same footprint.

Outstanding performance
- The latest HPE StoreEver tape drives deliver up to 300 MB/s transfer rates.

Easy to use
- HPE tape library management software simplifies provisioning and administration of tape libraries, saving time and reducing hassle.

Modular scalability
- HPE enables you to cost-effectively expand your tape storage environment without ripping and replacing systems or managing multiple libraries.

Investment protection
- HPE StoreEver MSL tape libraries are the only tape libraries in the market that allow you to re-use and upgrade tape drives without purchasing a new library.

Reliability and availability
- HPE provides industry-leading media archival life of 30 years, with built-in protection against connectivity failure.

Supported by the industry's best
- HPE StoreEver tape libraries are supported by all major backup software vendors.

Features and capabilities like these are why HPE continues to lead the industry with a storage medium that is becoming more and more critical as global data volumes expand.

Use cases for tape storage

- **Backup and recovery**
  Reduce costs and lower risks with offline copies to protect against ransomware attacks and natural disasters

- **Compliance archive**
  Keep records safe for internal governance and regulatory mandated data retention, immutability, security, and discovery

- **General archive**
  Offload primary storage and drive down the economics of storing data by moving static and infrequently accessed data to a tiered tape storage solution

- **New areas of growth**
  Protect HPC environments, and support Big Data analytics in areas such as healthcare, genomic research, and communications media

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1. HPE automated storage tiering solutions for HPC environments
Industry | IT Outsourcing

Centric

Centric is unique when compared with traditional IT and administrative service providers. The company combines a profound understanding of IT with many years of experience with industry-specific processes in the public sector, supply chain, and the financial industry. This ability to stand out in a highly competitive marketplace is reflected in Centric’s four main activities: Software Solutions, IT Outsourcing, Business Process Outsourcing, and Staffing Services.

A small-to-medium size company of approximately 4,300 professionals, Centric operates in Belgium, Germany, France, Lithuania, Luxembourg, the Netherlands, Norway, Romania, Sweden, and Switzerland. The IT Outsourcing offered by Centric enable its customers to offload the day-to-day management of IT infrastructure to the capable hands of Centric IT experts. One thing every Centric customer counts on is that their data will be kept safe as it’s retained for long periods of time. For that the company needs a reliable, cost-effective solution, which is why Centric relies on HPE StoreEver MSL6480 Tape Libraries to backup customer data from its HPE 3PAR primary storage using Commvault backup software. This proven solution delivers the economical and scalable storage solutions Centric needs to retain and protect valuable data as long as customers need.

“Disk-based storage media can become very expensive at a large scale, and the management requirements can be daunting. Centric solves this issue by continuing to invest in tape storage solutions from HPE.”

– Martien Korenblom, Technical Consultant, Centric
**Best economics and efficiency for small and medium businesses**

Centric retains more than 2.6 petabytes of customer data—a volume that is rapidly growing. Regardless of how much data, or how long customers need it to be retained, Centric must ensure that data is kept safe and secure. For long-term data retention and protection for its hosted offerings, Centric finds HPE StoreEver tape storage to be the most economical and scalable way to meet customer needs.

HPE StoreEver consistently provides the best economics for retaining large amounts of data indefinitely. For Centric, this includes virtual machines, databases (primarily Oracle and Microsoft® SQL Server), and file servers. The company has expanded the StoreEver environment as data volumes grow, scaling up seamlessly by adding five HPE StoreEver MSL6480 expansion modules without any downtime. This increased the native capacity per location from 400 TB to 1.4 PB.

Managing its expansive tape storage environment is also made easy with Command View for Tape Libraries (CVTL), part of the HPE StoreEver Management Software suite. CVTL provides Centric with a single vantage point for configuring, managing, and monitoring all the StoreEver tape libraries in its environment. It’s a major time-saver, whether partitioning tape cartridges for different customer data or running monthly reports for customers.

In addition, customers are increasingly demanding stronger measures to keep their data safe, and again HPE StoreEver tape storage has the answer for Centric. The combination of hardware-based encryption and the comfort of knowing tapes are kept offline and out of reach of cybercriminals helps everyone sleep better at night.

Learn more in this short video:

**StoreEver Tape for SMB Environments**
Industry | Media and Entertainment

Gazprom-Media Holding

Gazprom-Media Holding is a leading Russian media and entertainment company, specializing in the production, distribution, and promotion of information and entertainment content across all media channels. Based in Moscow, the company owns and operates a wide-ranging portfolio of renowned news and entertainment television brands, radio and print press assets, online resources, as well as film production and advertising companies. Data is at the core of Gazprom-Media’s business—everything from office documents, presentations, and spreadsheets to rich multimedia video, high-resolution images, and audio files. Protecting these assets is a top priority. That’s why the company retains its valuable data on HPE StoreEver MSL6480 Tape Libraries. The reason is simple: it’s efficient, secure, and cost-effective.

“HPE tape systems bring us proven reliability and the most cost-effective solution for long-term data storage.”

– Vladislav Filatov, System Administrator, Gazprom-Media Holding
Secure, reliable storage for valuable intellectual property

Gazprom-Media is an award-winning broadcast, digital content, and telecommunications giant with more than 25 years of success in its history, and virtually unlimited growth opportunities in its future. A truly data-driven enterprise, Gazprom-Media cannot afford data loss or extended downtime due to faulty backup drives or hacked volumes.

The company follows the best practice of performing daily, weekly, monthly, and annual data backups from its HPE 3PAR 8400 primary storage using Veritas Backup Exec. All weekly and longer archives are sent to tape where they are stored indefinitely. In fact, for three technology generations, Gazprom-Media has relied on HPE StoreEver tape solutions. Here’s why: proven reliability, massive scalability, strong security, and the lowest cost-per-gigabyte compared to other storage media.

• The time available to perform backups is limited—it must be completed overnight during off hours. A data transfer rate of 2.5 GB/minute with HPE StoreEver and Veritas Backup Exec ensures Gazprom-Media can protect its valuable assets within the available backup window.

• Scalability is critical. The company has over 300 TB of office data and over 500 TB of media and other rich data, which continues to grow daily. HPE StoreEver provides unmatched scalability to meet Gazprom-Media’s near- and long-term growth projections.

• Every backup contains valuable intellectual property. With hardware-based encryption and off-site storage, HPE StoreEver tapes protect Gazprom-Media’s archived data from corruption and the threat of cybercriminals.

• Cost is always an issue, especially when storing very large volumes of data. The combination of high data compression ratios and low media costs provide Gazprom-Media with an unbeatable business case for tape.

For all these reasons, tape storage is still the smart choice for data retention at Gazprom-Media.
Industry | High-Performance Computing

ASRC Federal InuTeq provides information technology and programmatic support to civil and defense agencies, specifically the operation of the NASA Advanced Supercomputing (NAS) facility. At the center of ASRC’s business is data—lots of it. And retaining that data securely for indefinite periods of time is critical. Space missions depend on it. The NAS facility currently stores 216 petabytes (PB) of redundant data for long-term retention, and that volume grew at a rate of 2.6 PB per month over the last 24 months. To handle that growth, ASRC relies on HPE T950/TFinity tape libraries. Why? Because they provide the best cost per gigabyte and investment protection that can support this data-driven facility for the long term.

“We continue to utilize tape technology for long-term storage due to cost, upgradability, and flexibility. Tape is the least expensive option for an archive system, which requires the regular movement of data into and out of primary storage. The ability to transparently upgrade to newer generations of tape technology allows us to better manage upgrade cycles without impacting our users.”

– Davin S. Chan, Senior Project Manager, ASRC Federal InuTeq
Best value for retaining large volumes of data

ASRC Federal InuTeq has a long history of providing information technology and programmatic support to civil and defense agencies. From data center operations, to developing custom software, to scheduling space launch operations, the company is committed to always keeping its customers’ missions priority one. As the organization responsible for storing the scientific data produced using NASA supercomputers, ASRC has a daunting responsibility to ensure that data is retained securely and reliably for as long as the customer requires, which could be years or even decades.

With hundreds of petabytes of data in the archives today—a volume that’s compounding by 1.2% monthly—an ongoing challenge for ASRC is the rising cost of storage media. That's why the company relies on economical, high-capacity tape storage from HPE for its long-term data retention needs.

The HPE Data Management Framework (HPE DMF) provides a seamless interface for users to access data stored on tape, helping ASRC to optimize data storage utilization across primary storage and archives. Providing this interface to users allows them to treat the archive system as an unlimited file system without having to understand the intricate details, which allows ASRC’s customer to focus on research instead of data management.

In addition, the HPE T950/TFinity tape libraries provide ASRC an easy upgrade path to newer tape technology as it becomes available. Data stored on older-generation LTO media is migrated to new-generation LTO media transparently to users without impacting normal operations. In fact, ASRC has progressively migrated from LTO-4 drives to LTO-5, then LTO-7, and today the latest LTO-8 technology. Periodically migrating data to the next generation of tape technology provides the benefit of data verification as part of the migration process. In the latest migration from LTO-5 to LTO-8, approximately 110 PB of data was read, written, and verified without any significant issues.

For more information on how HPE delivers long-term data protection and retention for high-performance computing environments, click [here](#).
Get the capacity and economy you need to retain and protect growing data for the long term

How will you deal with the expanding datasphere? How is your company setup to manage tougher data sovereignty and privacy requirements? And what if a cyberattack takes down your online storage—do you have another backup that hackers can't access?

Economical, scalable, and secure tape storage is the answer to all these questions, providing an ideal solution for long-term protection and retention of infrequently accessed, yet essential data.

Find out how HPE StoreEver tape libraries and LTO-8 cartridges can address your unique data growth and retention requirements. Visit [hpe.com/storage/storeever](http://hpe.com/storage/storeever).