

## Special Study Results

# Tape-based Storage Remains as a Key Element for On-Premises Storage Strategies

Mark Nossokoff and Jaclyn Ludema  
June 2023

## HYPERION RESEARCH OPINION

---

While innovations associated with HDD capacities, SSD performance, latency, bandwidth, and throughput advancements dominate HPC storage-related investments and headlines, tape-based storage solutions remain a critical part of data center storage architectures. Tape continues to be utilized at roughly half of the sites surveyed, with average tape capacity at those sites being approximately 2.5x greater than average disk (both HDD and SSD) capacity across all surveyed sites.

This data is from an annual study which is part of the eighth edition of Hyperion Research's high-performance computing (HPC) end-user-based tracking of the HPC marketplace. It included 181 HPC end-user sites with 3,830 HPC systems.

## STUDY FINDINGS

---

Tape-based storage solutions remain a critical part of data center storage architectures.

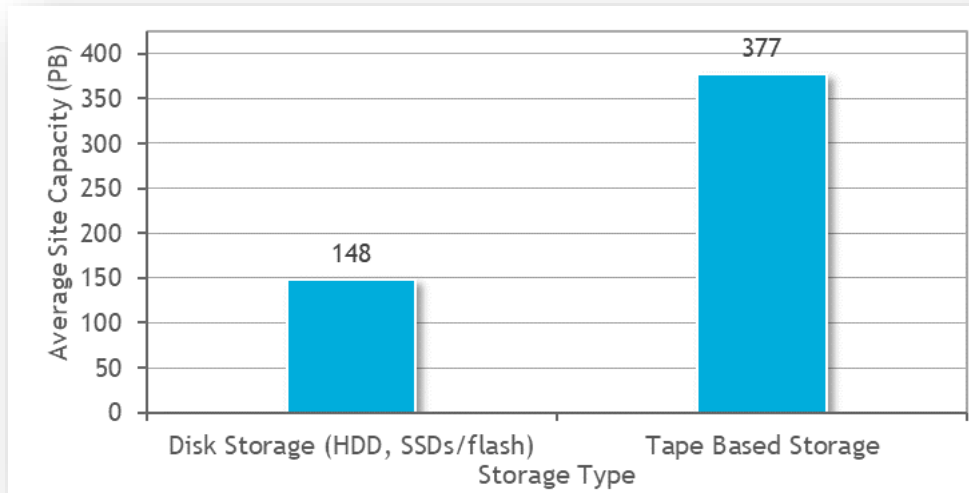
Figure 1 below compares average disk and tape capacities per site. Note that the average tape-based storage capacity includes only those sites that employ tape (96 sites; 53.3%). 85 (46.7%) of the sites surveyed do not employ tape.

The average site tape capacity of those who employ a tape solution is 377 PB.

The average overall capacity for both disk and tape storage increased dramatically from last year, from 74 PB and 97 PB to 148 PB and 377 PB, respectively.

**FIGURE 1**

**Average Total Site Storage Size by Type**



Notes: n=158 (disk), 96 (tape)

Source: Hyperion Research, 2023

While indicating the smallest tape system adoption rate (almost 60% of sites) across the three sectors, industry was the top sector relative to the scale of tape systems, with eight sites each employing more than 1 EB of tape storage capacity (see Table 1, below).

Surveyed sites with usage of more than 1 EB of tape capacity represented a broad range of verticals (e.g., finance, utilities, CSP, EDA). Despite these large-scale deployments, half of the surveyed industry sites indicated employing tape capacities of less than 5 PB per site.

Consistent with past iterations of the study, government sites reflected the highest tape system adoption rate of the three sectors. Over 80% of government sites employ tape-based solutions, compared to two-thirds of industry sites, and just over half of academic sites. Half of the surveyed government sites indicated deployment of over 10 PB of tape capacity per site.

Slightly over 60% of the surveyed academic sites utilized tape storage solutions, with approximately half of these sites employing over 10 PB of tape capacity.

**Table 1**

**Tape Based Storage Size by Sector**

*Q: What is the total size of your TAPE BASED storage?*

	Overall Percent	Industry Percent	Government Percent	Academia Percent
None	37.7%	41.8%	17.6%	37.0%
Less than 50 TB	10.4%	13.2%	11.8%	4.3%
50 TB to less than 100 TB	4.5%	2.2%	11.8%	6.5%
100 TB to less than 250 TB	2.6%	4.4%	-	-
250 TB to less than 500 TB	0.6%	-	-	2.2%
500 TB to less than 750 TB	2.6%	3.3%	-	2.2%
750 TB to less than 1 PB	3.2%	2.2%	5.9%	4.3%
1 PB to less than 2 PB	5.2%	6.6%	-	4.3%
2 PB to less than 5 PB	1.3%	2.2%	-	-
5 PB to less than 10 PB	3.9%	3.3%	-	6.5%
10 PB to less than 50 PB	11.7%	7.7%	17.6%	17.4%
50 PB to less than 100 PB	5.2%	2.2%	17.6%	6.5%
100 PB to less than 1 EB	5.8%	2.2%	17.6%	8.7%
1 EB to less than 2 EB	1.3%	2.2%	-	-
2 EB to less than 5 EB	1.9%	3.3%	-	-
More than 5 EB	1.9%	3.3%	-	-

n = 154; 91; 17; 46

Note: Tape system adoption rates are calculated based on total respondents, including those who do not employ a tape system. Among respondents who reported using tape-based storage, the overall midpoint average for the sample is 377 PB capacity. The median among such respondents is 7.5 PB capacity.

Source: Hyperion Research, 2023

## FUTURE OUTLOOK

---

As capacity capabilities are increasing with HDD- and SSD-based storage solutions and innovations are occurring to decrease \$/GB, tape-based technology is not stagnant. Advancements continue across tape technology roadmaps to improve capacity and performance capabilities.

Pressure is being applied to the tape market in active archive use cases by HDD-based systems and in longer-term archive use cases by cloud-based storage resources. As evidenced by the continued utilization of tape-based solutions and increasing average tape capacities across sites in this survey, tape is expected to remain a part of data center architectures for the foreseeable future.

## About Hyperion Research, LLC

Hyperion Research provides data-driven research, analysis and recommendations for technologies, applications, and markets in high performance computing and emerging technology areas to help organizations worldwide make effective decisions and seize growth opportunities. Research includes market sizing and forecasting, share tracking, segmentation, technology, and related trend analysis, and both user & vendor analysis for multi-user technical server technology used for HPC and HPDA (high performance data analysis). Hyperion Research provides thought leadership and practical guidance for users, vendors, and other members of the HPC community by focusing on key market and technology trends across government, industry, commerce, and academia.

## Headquarters

365 Summit Avenue  
St. Paul, MN 55102  
USA  
612.812.5798

[www.HyperionResearch.com](http://www.HyperionResearch.com) and [www.hpcuserforum.com](http://www.hpcuserforum.com)

---

## Copyright Notice

Copyright 2023 Hyperion Research LLC. Reproduction is forbidden unless authorized. All rights reserved. Visit [www.HyperionResearch.com](http://www.HyperionResearch.com) to learn more. Please contact 612.812.5798 and/or email [info@hyperionres.com](mailto:info@hyperionres.com) for information on reprints, additional copies, web rights, or quoting permission.