

# Tape: The Clear Winner for Cold Storage

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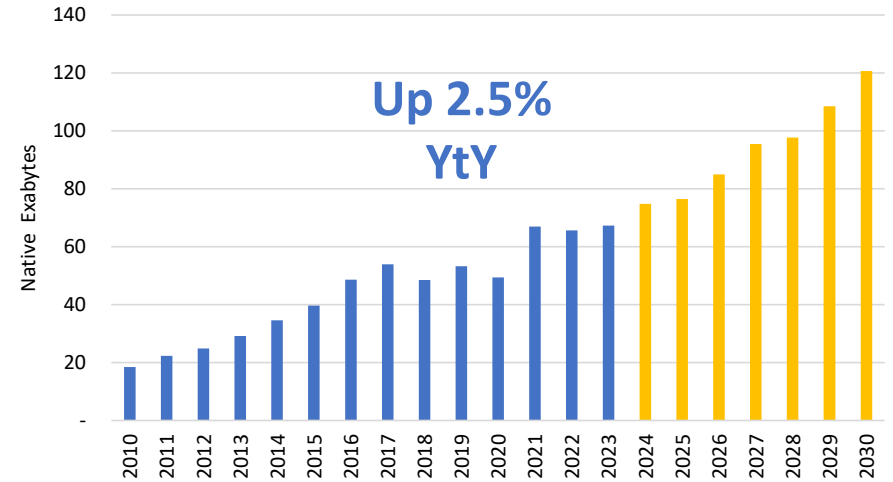


# Tape Market Outlook

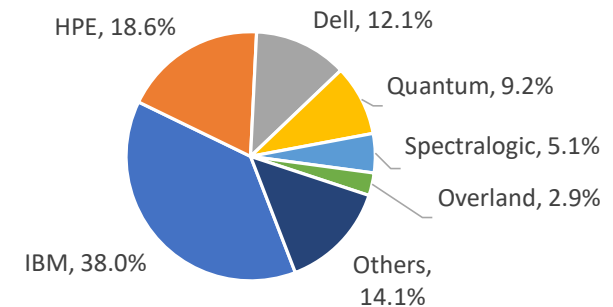
- Normalized revenue growth since 2019
- Healthy ecosystem participation
- Newer tape generations are dominating capacity shipments
- New tape shipments captured 18% of 2023 deep archive data\*
- IBM leads drive and library market share



Total Tape Media Capacity Shipped By Year



Branded Tape Revenue Share

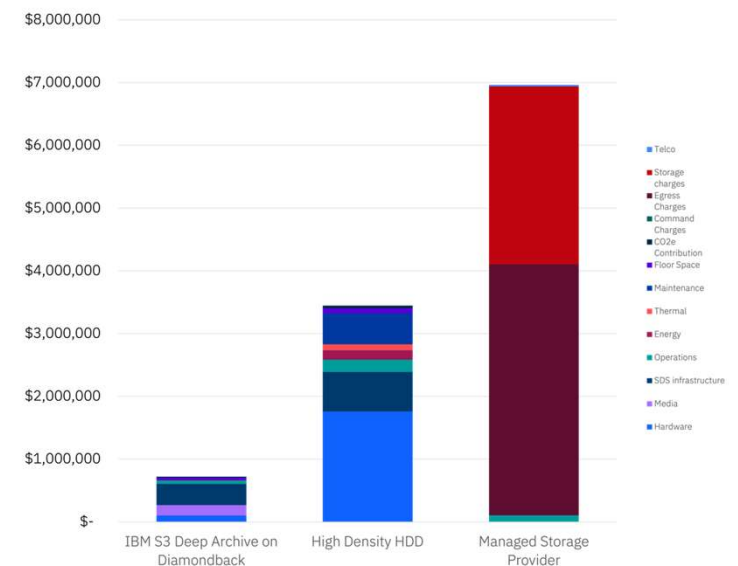


# Tape Market Dynamics

- Highly Disparate customer requirements
  - Traditional users are not capacity bound with tape
  - Very large users are looking for larger single unit capacity
- Modern use cases are driving tape adoption
  - Archiving
  - Second/third copy data
  - Airgap resiliency
- Tape continues to lead in total cost of ownership comparisons



Total Cost of Ownership



- 27PB
- 10-year Retention
- 5% monthly data recall
- AWS S3 Glacier Deep Archive
  - Bulk recall
  - 10% discount
- 16TB HDD
- 5-year HDD refresh cycle

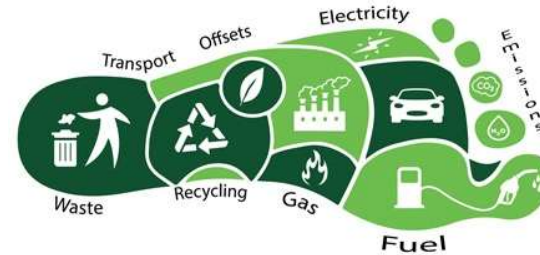
# Why is tape exciting again?

## Cost Savings



@ hyperscale HDD Cost 3.7x Tape\*

## Sustainability



27PB Tape Archive has 96% Lower CO2e than HDD

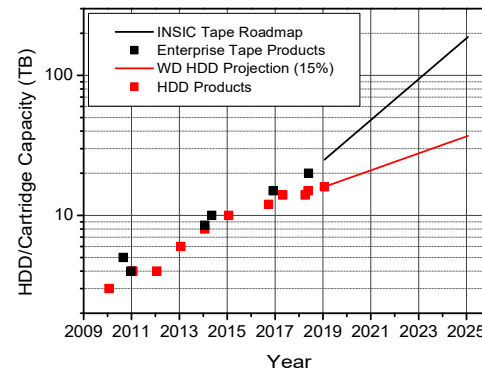
## Security



Airgap, Encryption  
Quantum Safe

(\*Reference: M.S. Azure 2016)

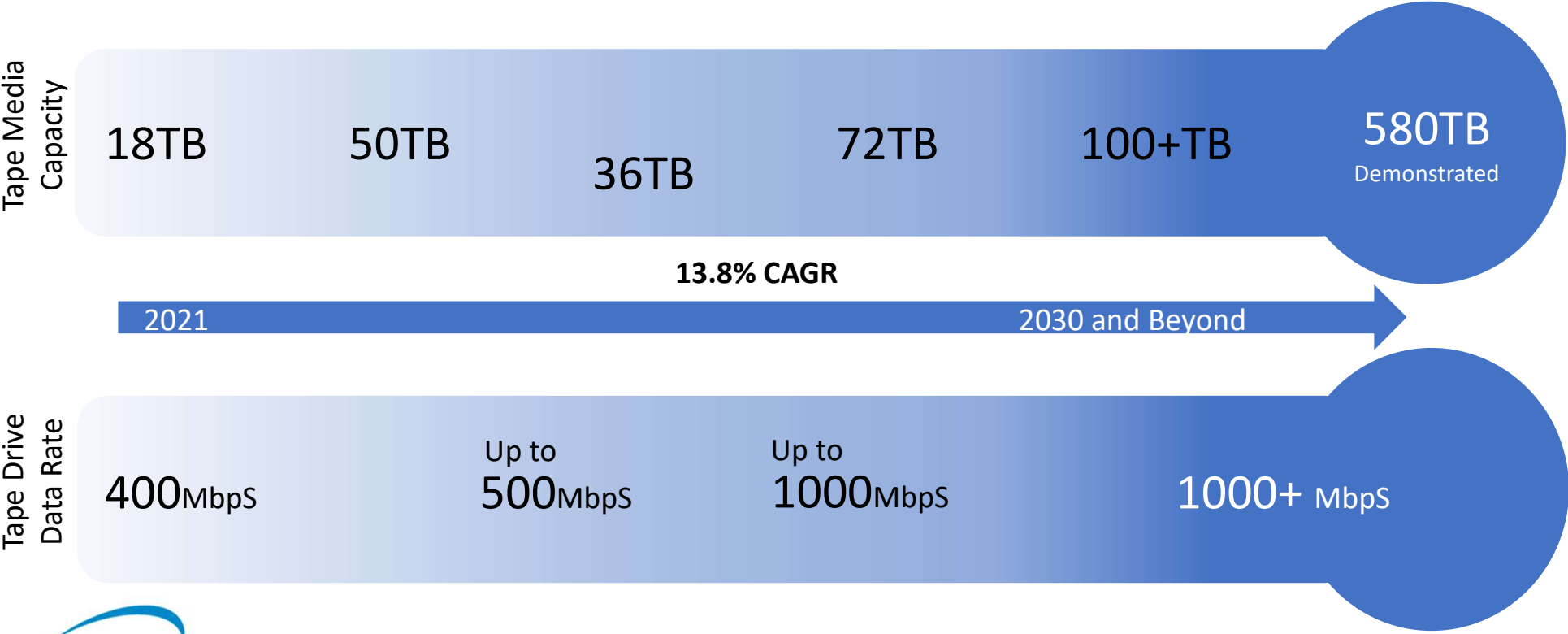
## Scaling



INSIC Tape Capacity Scaling  
40% CAGR to 2029

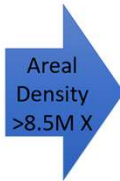
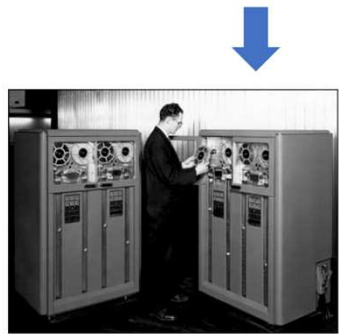


# Tape Technology Outlook

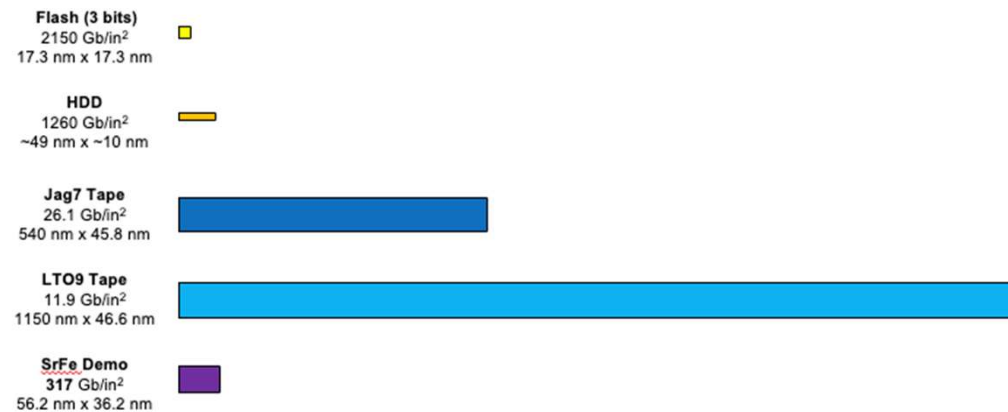


# Tape Challenges - Scaling

Product Year	IBM 726 1952	LTO9 2021	TS1160 2018	Demo 2017 Sputtered Tape	Demo 2020 SrFe Tape
Capacity	2.3 MB	18 TB	<b>20 TB</b>	330 TBytes	580 TBytes
Areal Density	1400 bit/in <sup>2</sup>	11.9 Gbit/in <sup>2</sup>	<b>11.7 Gbit/in<sup>2</sup></b>	201 Gbit/in <sup>2</sup>	317 Gbit/in <sup>2</sup>
Linear Density	100 bit/in	545 kbit/in	<b>555 kbit/in</b>	818 kbit/in	702 kbit/in
Track Density	14 tracks/in	21.9 ktracks/in	<b>21.3 ktracks/in</b>	246 ktracks/in	452 ktracks/in



## Storage bit cells and extensibility



The most opportunity for future scaling is tape track density

# Tape Challenges – Ease of Use

## Challenges to tape adoption

- Difficult to deploy
- Tape software, processes and skills
- Minimal Unstructured data integration

A low-cost, on-premises cloud providing secure and durable storage for data archiving and online backup.

Easy to Deploy

Simple Administration

Simplified Ecosystem

Standard Interface

Data Durability



**BACK  
TO  
THE FUTURE™**



- S3 Glacier compliant interface
- Install-and-go deployment
- Up to 27PB
- Up to 16.1 TB per hour
- No Tape specific Skills
- 100% savings on recall and egress fees

Thank You

