

Leveraging Tape to Support Primary Flash Storage

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WOW, 70 Years of Tape Technology! Why?



Rapid growth and volume of data



Increasing value of data and cybersecurity risk



Longer retention periods, need for long term, reliable storage



Limited IT/storage budgets, energy/carbon concerns



Better understanding of data profiles (Hot, Warm, Cold)



Ability to automate data movement to the right tier of storage, at the right time and at the right cost!

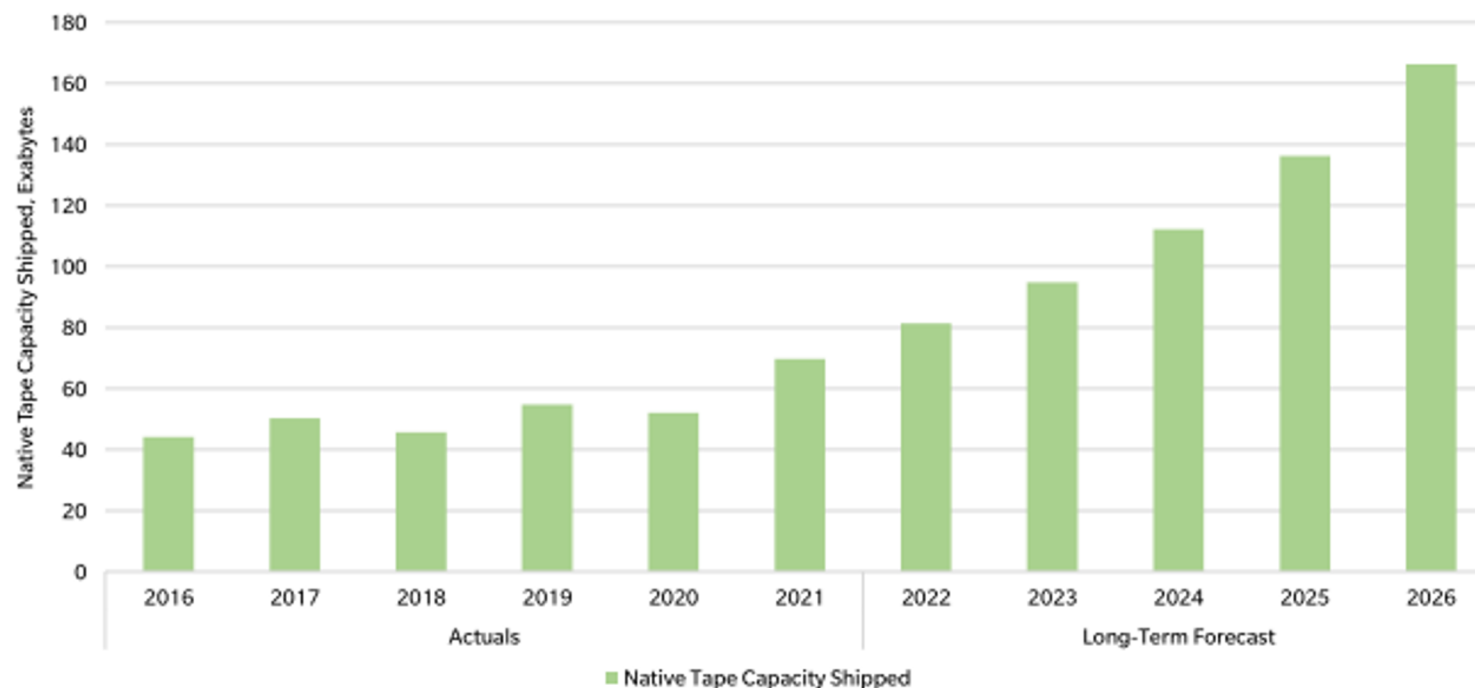


Tape Capacity Shipments Forecast



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Chart 1
Native Tape Capacity and Long-Term Forecast, Exabytes



*2021 – 2026,
CAGR of 19%*

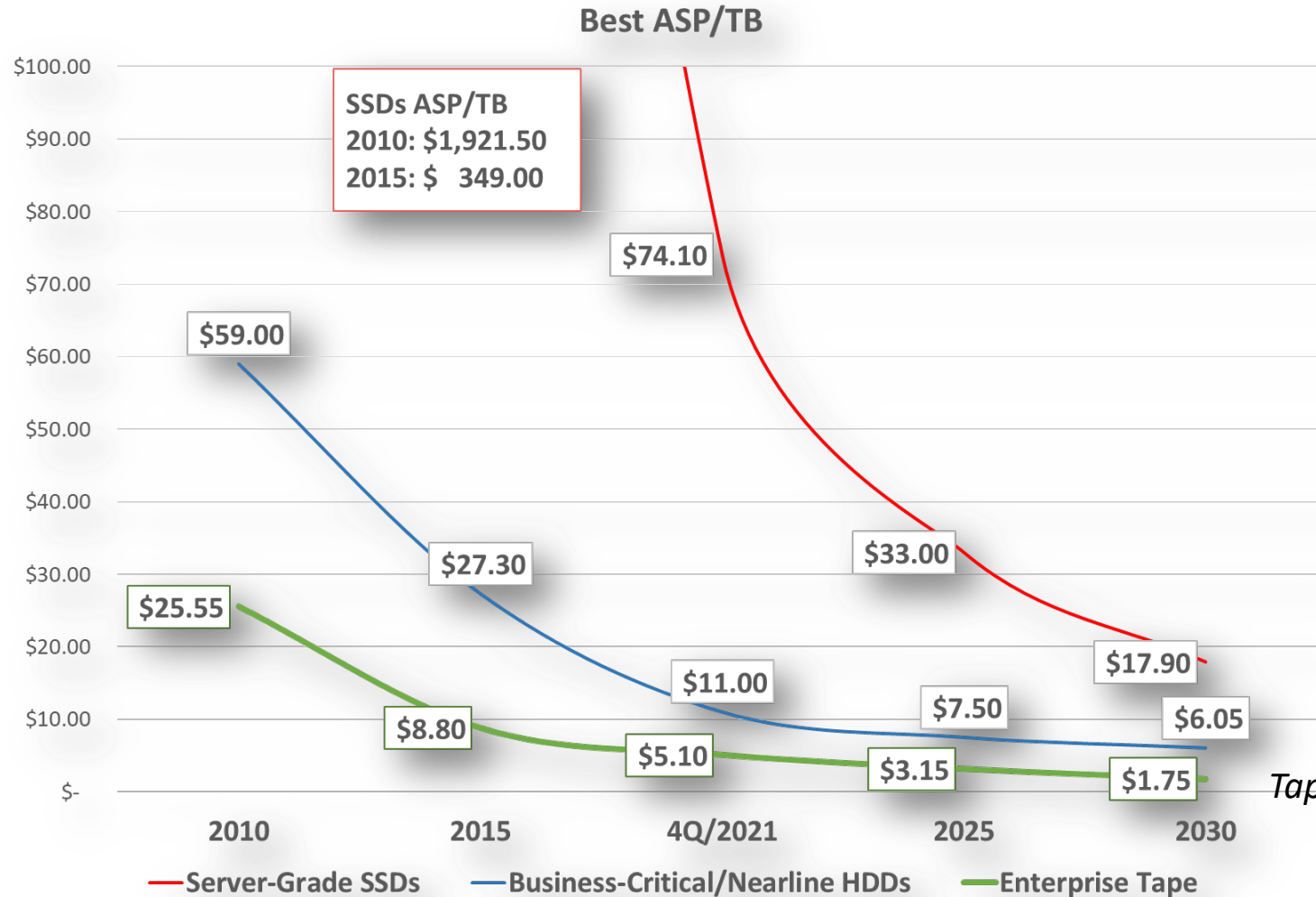
Rev. 063022

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Source: TrendFocus, Tape and Archive Storage Service, CQ1 '22 Quarterly Update, June 30, 2022



Price Relationships: SSD, HDD, Tape

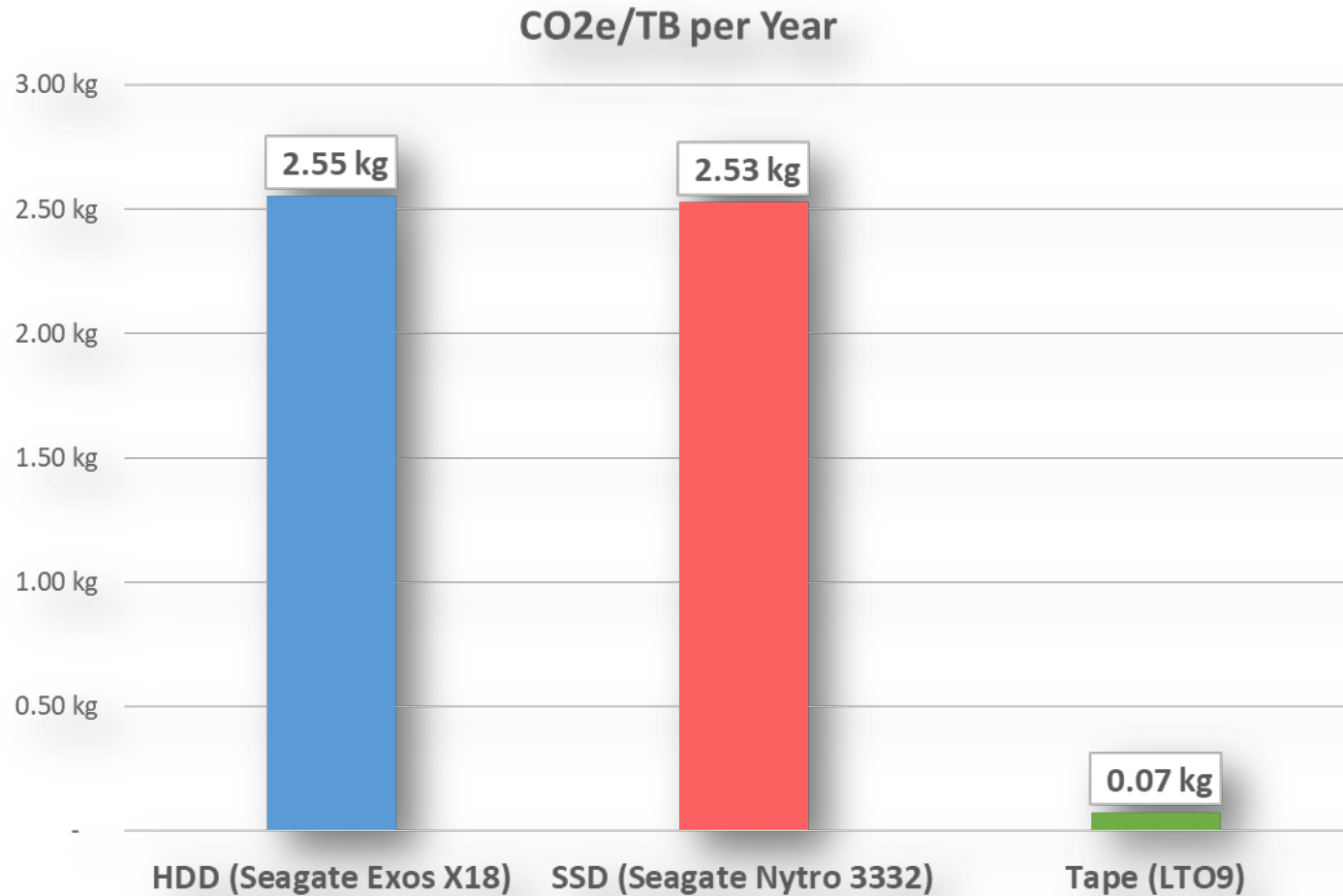


Tape is 71% less than HDD in 2030!

Source: *The Escalating Challenge of Preserving Enterprise Data*, Furthur Market Research, August 2022



CO2e Relationships: HDD, SSD, Tape



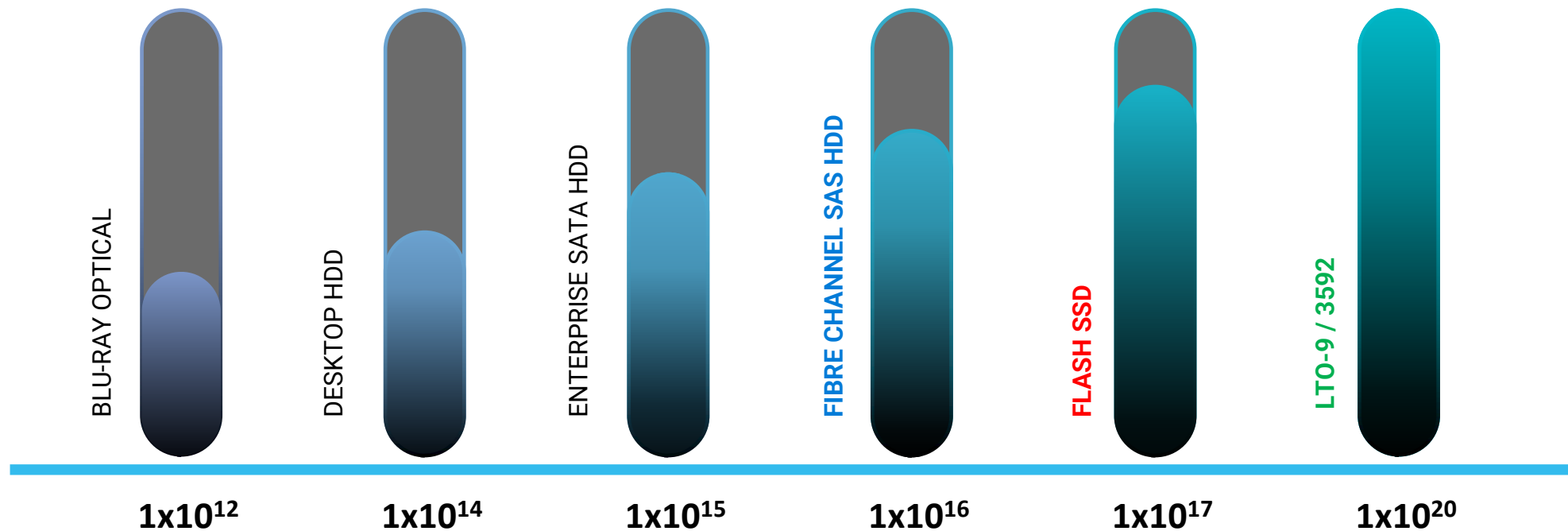
97% Less CO2e

Source: Seagate, Fujifilm (includes tape drive energy)

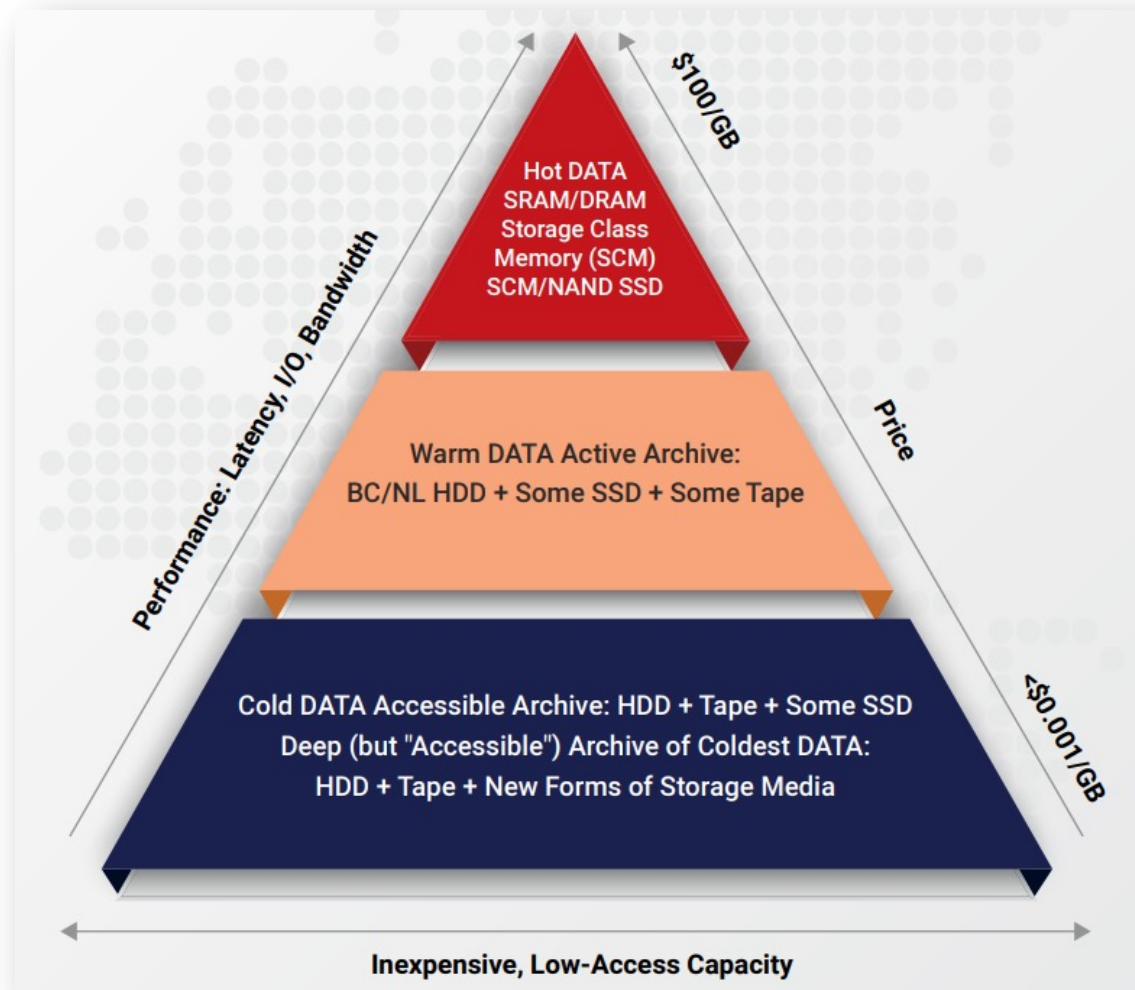


Reliability Relationships: HDD, SSD, Tape

Tape's **bit error rate** is four orders of magnitude better than disk making it the most dependable storage available



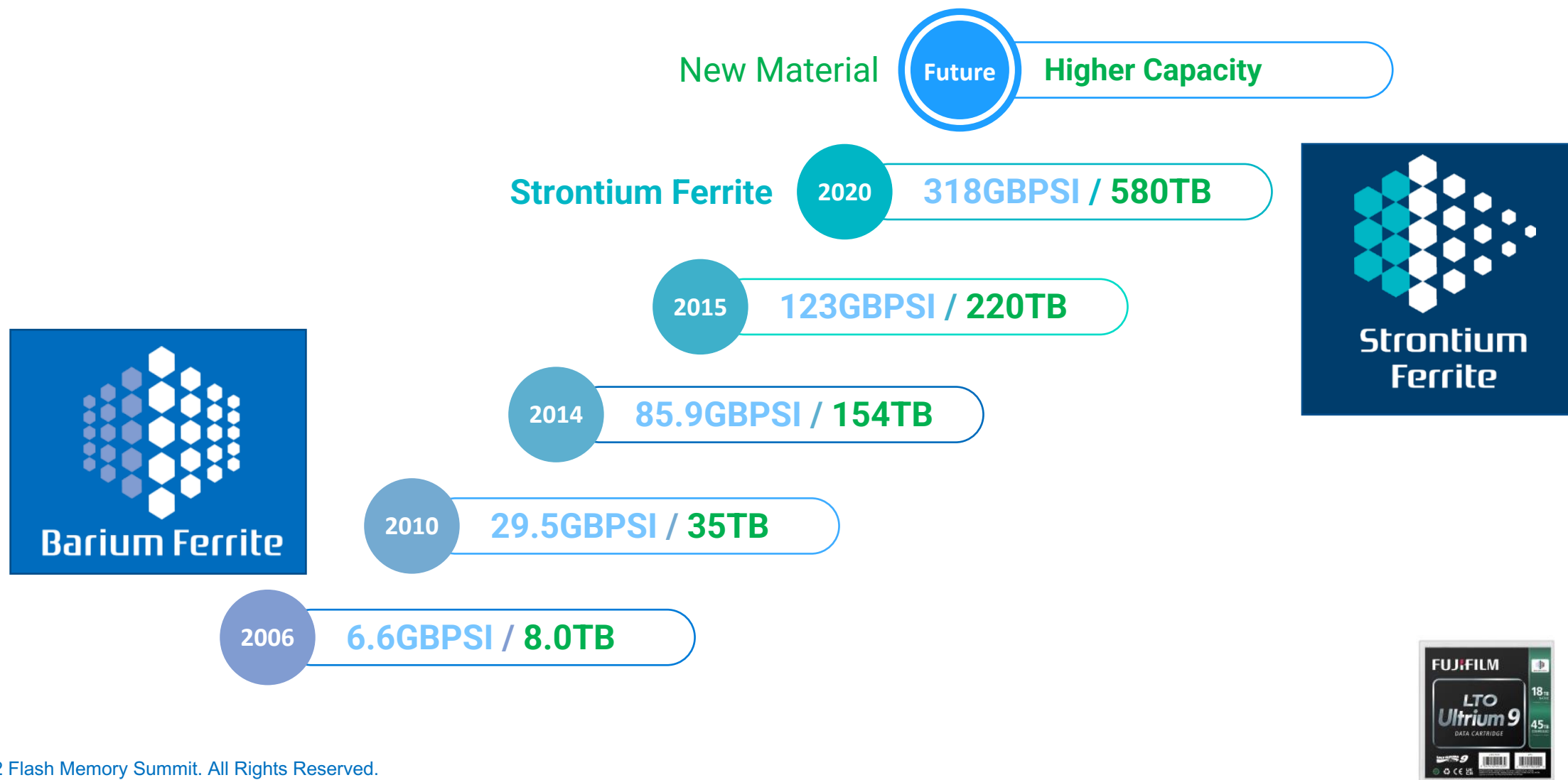
Free up the Top by Moving Cold Data Down!



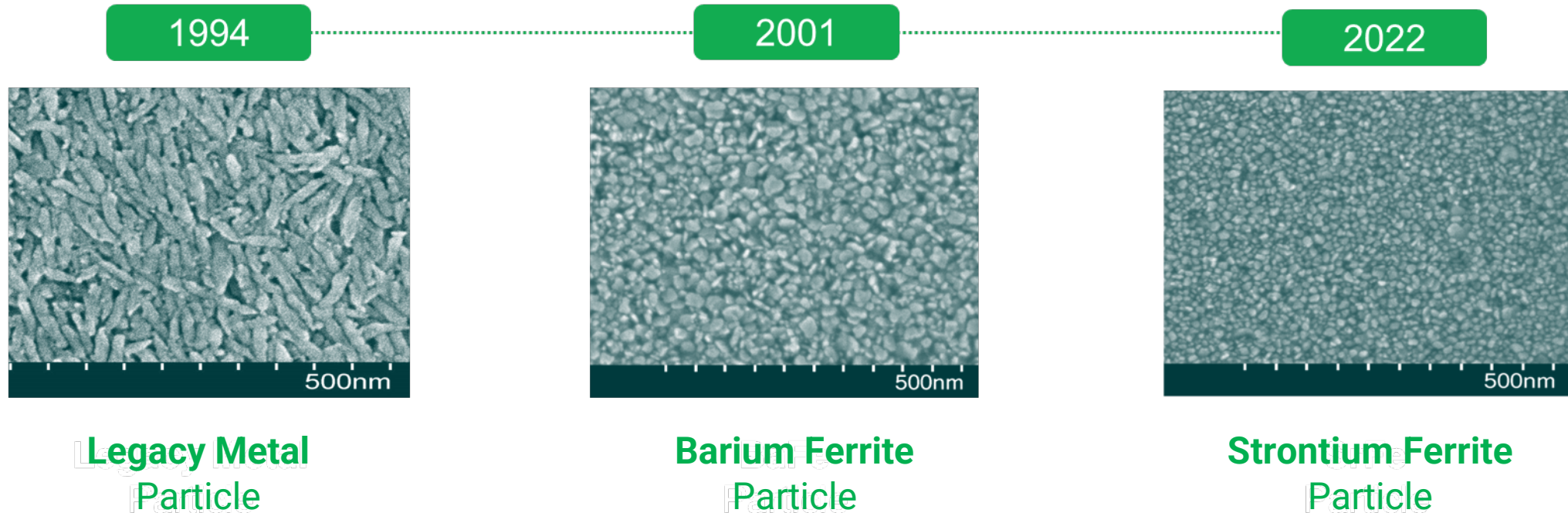
Source: *The Escalating Challenge of Preserving Enterprise Data*, Furthur Market Research, August 2022



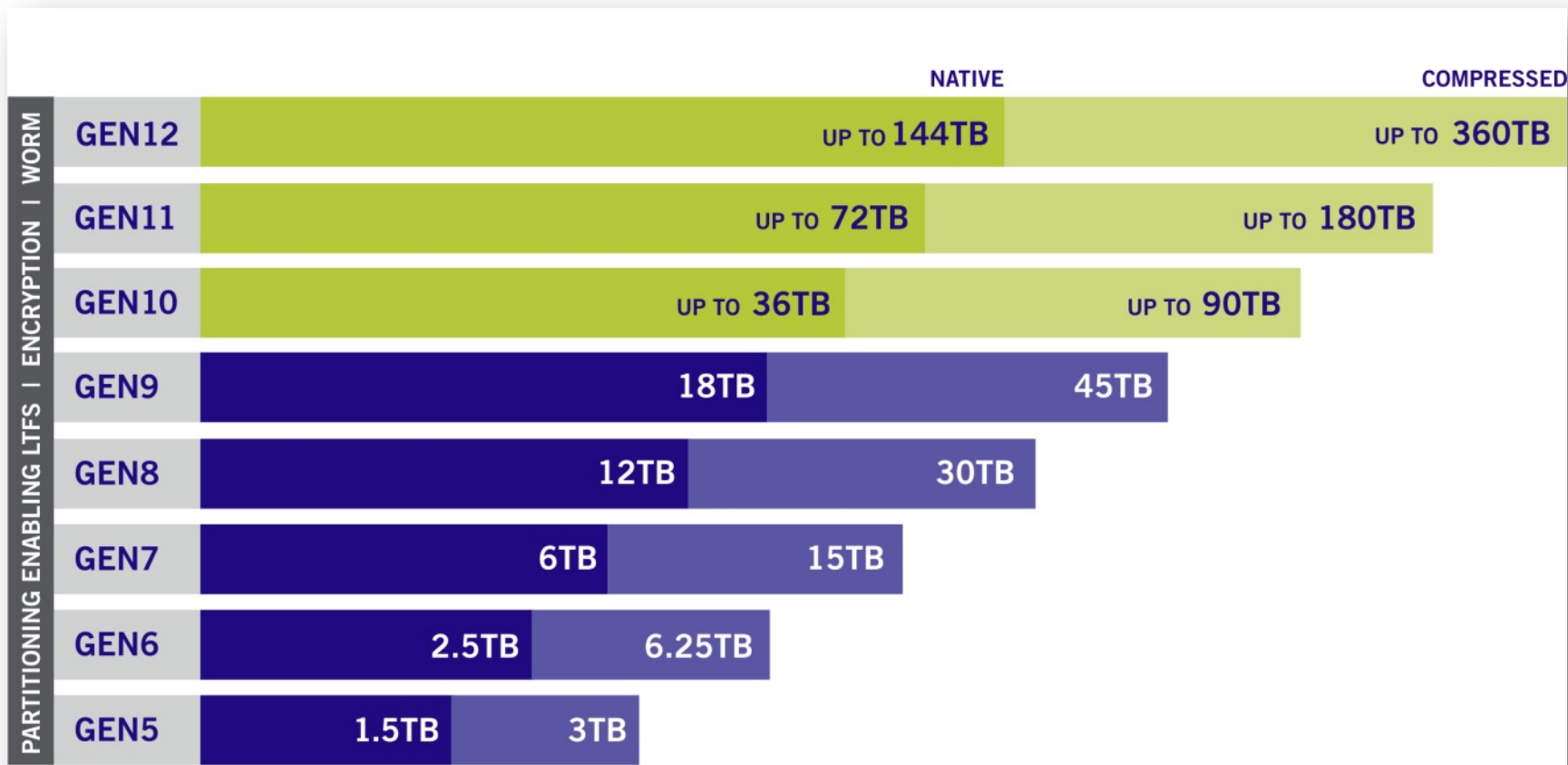
Tape here to stay...IBM/Fujifilm Tech Demos



Metal Particle vs. Barium Ferrite vs. Strontium Ferrite



LTO Ultrium Roadmap



NOTE: Compressed capacity for generation 5 assumes 2:1 compression. Compressed capacities for generations 6-12 assume 2.5:1 compression (achieved with larger compression history buffer).

SOURCE: The LTO Program. The LTO Ultrium roadmap is subject to change without notice and represents goals and objectives only. Linear Tape-Open, LTO, the LTO logo, Ultrium, and the Ultrium logo are registered trademarks of Hewlett Packard Enterprise, International Business Machines Corporation and Quantum Corporation in the US and other countries.



In Conclusion...



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*It's not about flash vs. disk vs. tape,
its about storage optimization.
Getting the right data in the right
place at the right time, and the right
energy profile and cost!*

