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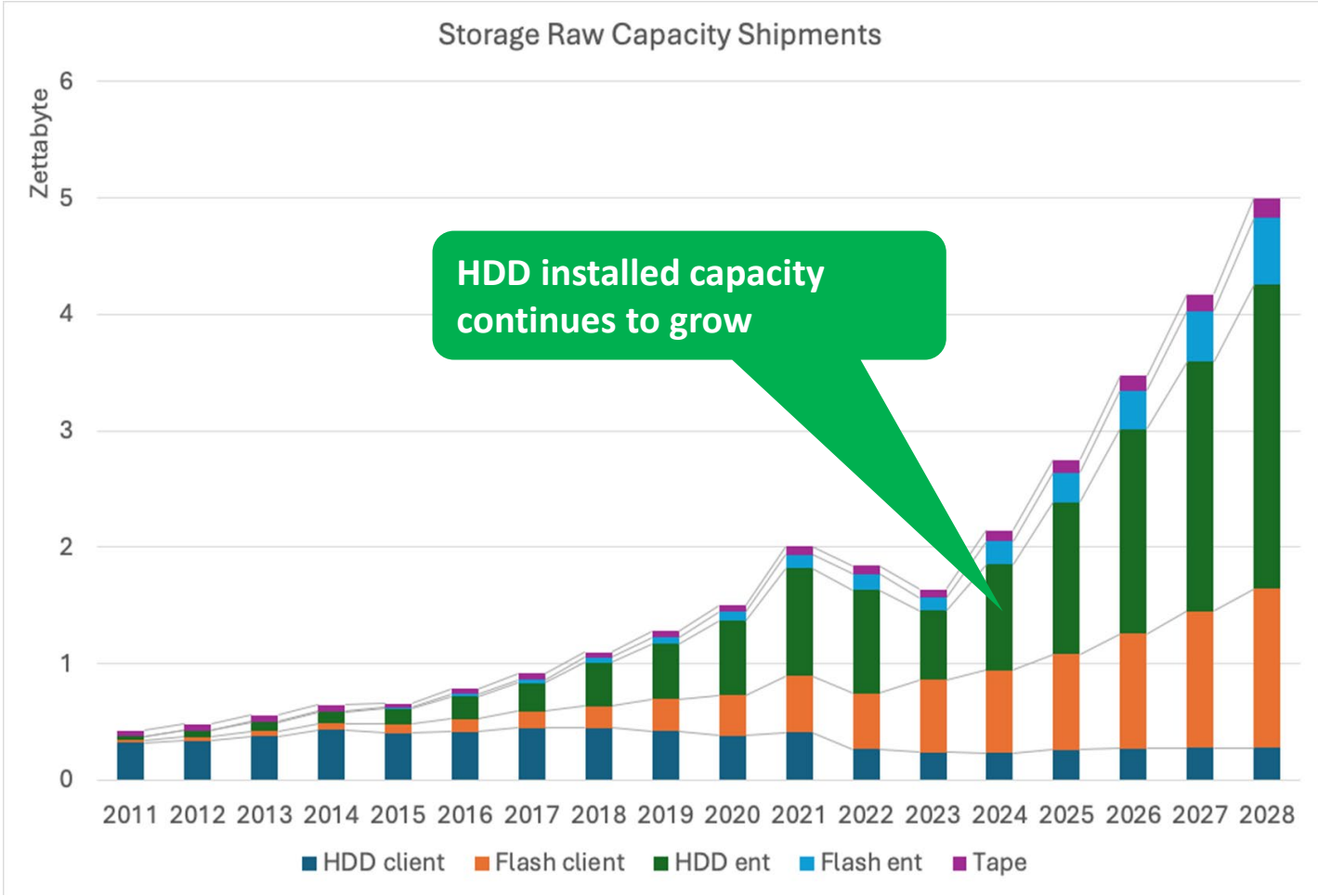
HDDs are here to stay

Dave Landsman, Western Digital

Western Digital.

Insatiable demand for storage

- Medical, scientific, smart cities and vehicles, sports, etc. seeking to save ever larger data sets
- Increasingly expensive to save all this data
- AI/ML increases opportunity cost of not saving data, and increases demand to keep more data active
- Need to store more data in all tiers and data temperatures



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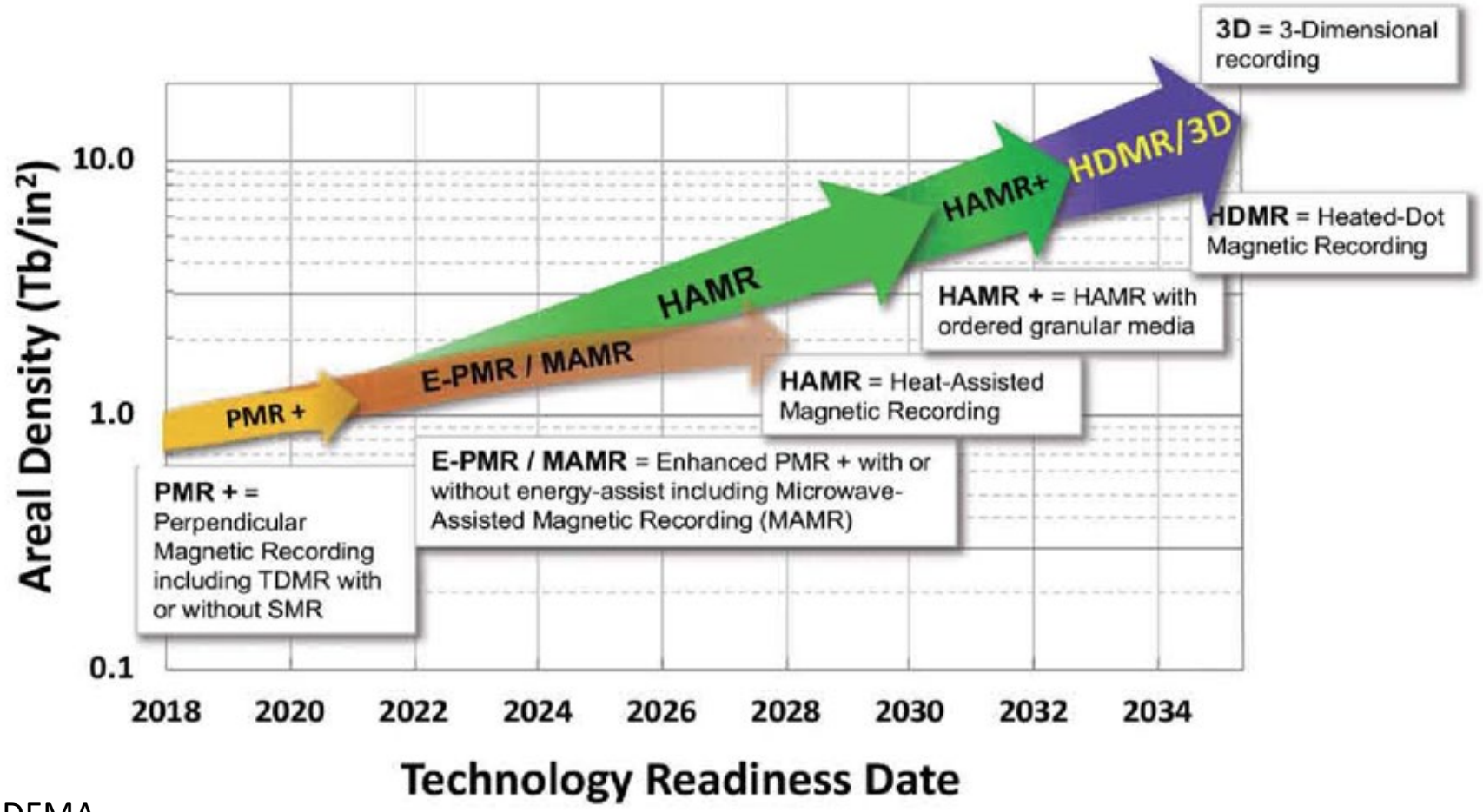
As HDD installed capacity continues to grow, HDD bits continue to shrink



Source: ASRC/IDEMA

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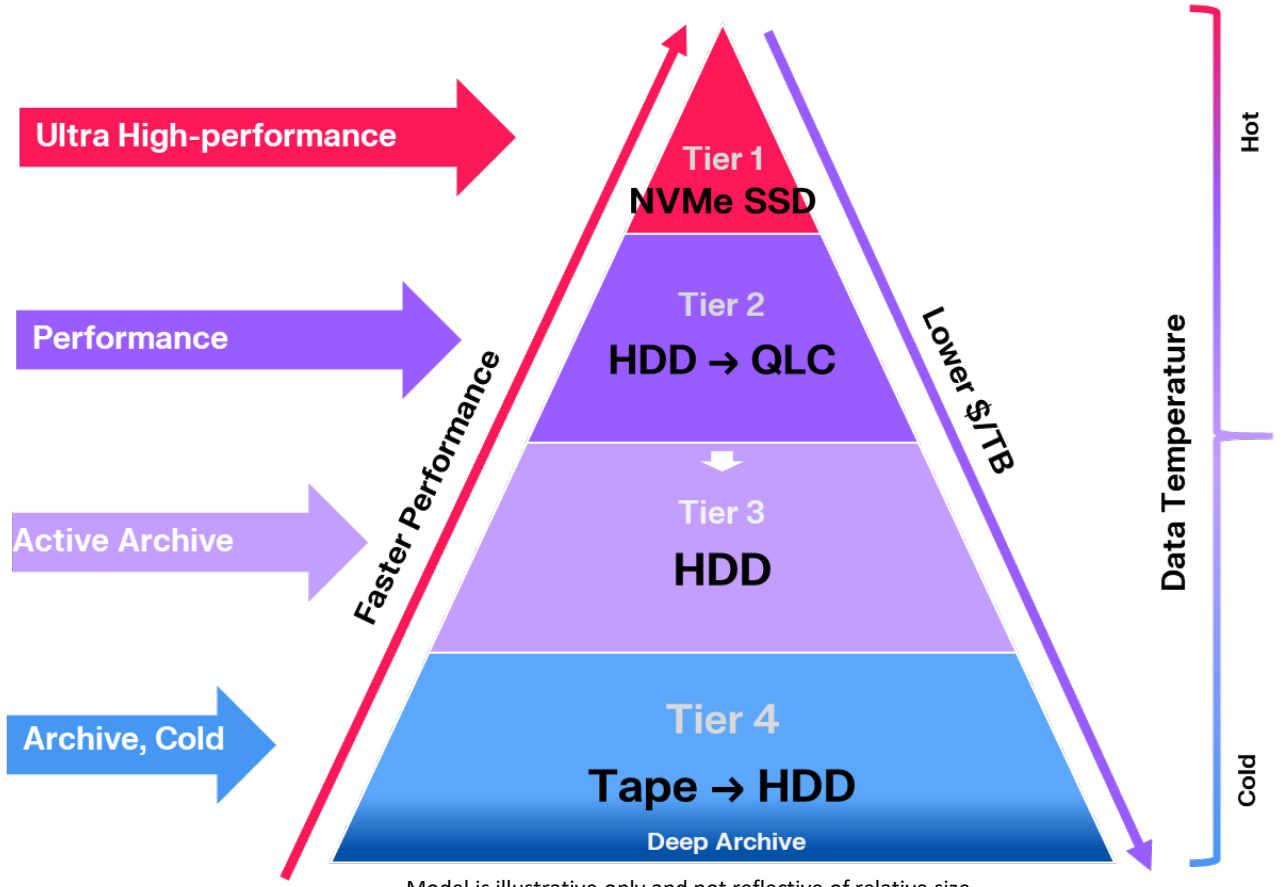
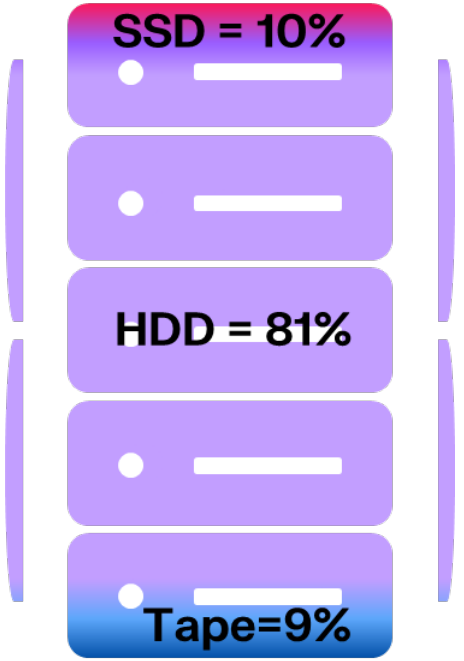
SSD, HDD, and Tape in the Datacenter

Tiered Storage Model



Model is illustrative only and not reflective of relative size

Installed Storage Capacity in the Cloud[1]
HDDs are the workhorse of the datacenter



- Versatile
  - Any mix of r/w
  - Temp independent
- Reliable
  - Routinely exceed specs/warrantee
- Available
  - Huge supply chain
- Low Cost
  - Lower capex ➔ easier inventory mgmt

1. IDC Storage Sphere 2024, 2023 Actuals installed Cloud Storage

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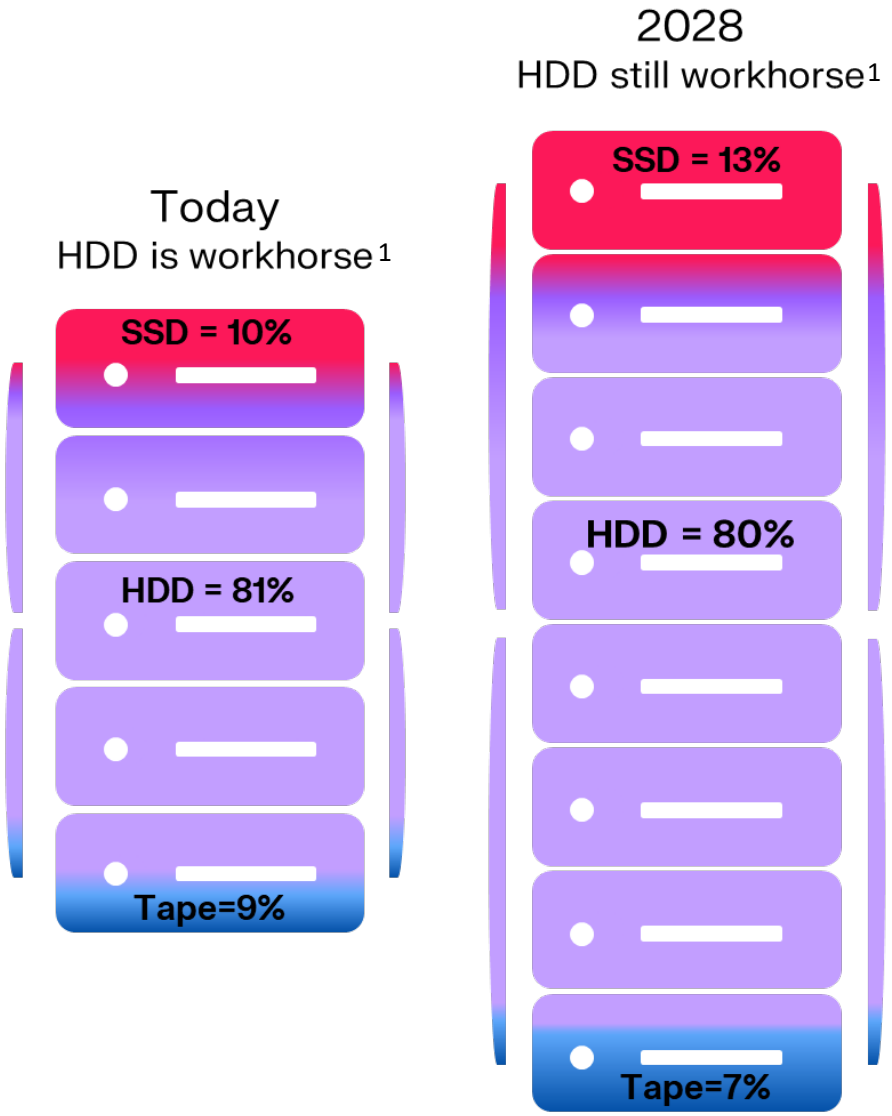
So how will mix evolve?



- Will high bit/cell SSDs replace HDD?
  - Endurance/Retention challenging for “warm” tiers
  - Sustainability is challenging - embedded carbon[2]
  - Can market build enough SSDs at reasonable price?
- Will tape replace HDD?
  - AI/ML requiring more active access
  - Media storage outside data center, in environmentally controlled facilities, less efficient
- And HDD continuing to innovate
  - Areal Density
  - Form Factor

All tiers need different device capabilities. All tiers will thrive.

1. IDC Storage Sphere 2024, 2023 Actuals installed Cloud Storage
2. Tannu S., Nair P., The Dirty Secret of SSD: Embedded Carbon; arXiv:2207.10793v2 [cs.AR]; https://doi.org/10.48550/arXiv.2207.10793 Energy Informatics Review (Volume 3 Issue 3, October 2023)

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Create What's Next