Driving Datacenter Change

Storage Opportunities in the Cloud

Mike Cordano

President, HGST, a Western Digital company

September 13, 2012

Western Digital

SAFE HARBOR
Forward Looking Statements

These presentations contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including statements concerning growth opportunities in the storage industry, including growth in units shipped, areal density and content stored, our expected financial results, our business model and financial goals and our capital allocation strategy. These forward-looking statements are based on management's current expectations and are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied in the forward-looking statements, including the impact of continued uncertainty and volatility in global economic conditions; supply and demand conditions in the hard drive industry; uncertainties concerning the availability and cost of commodity materials and specialized product components; actions by competitors; unexpected advances in competing technologies; uncertainties related to the development and introduction of products based on new technologies and expansion into new data storage markets; business conditions and growth in the various hard drive markets; pricing trends and fluctuations in average selling prices; and compliance with regulatory conditions imposed on us by the Chinese Ministry of Commerce. More information about the other risks and uncertainties that could affect our business are listed in our filings with the Securities and Exchange Commission (the "SEC") and available on the SEC's website at www.sec.gov, including our Annual Report on Form 10-K filed with the SEC on August 17, 2012, to which your attention is directed.

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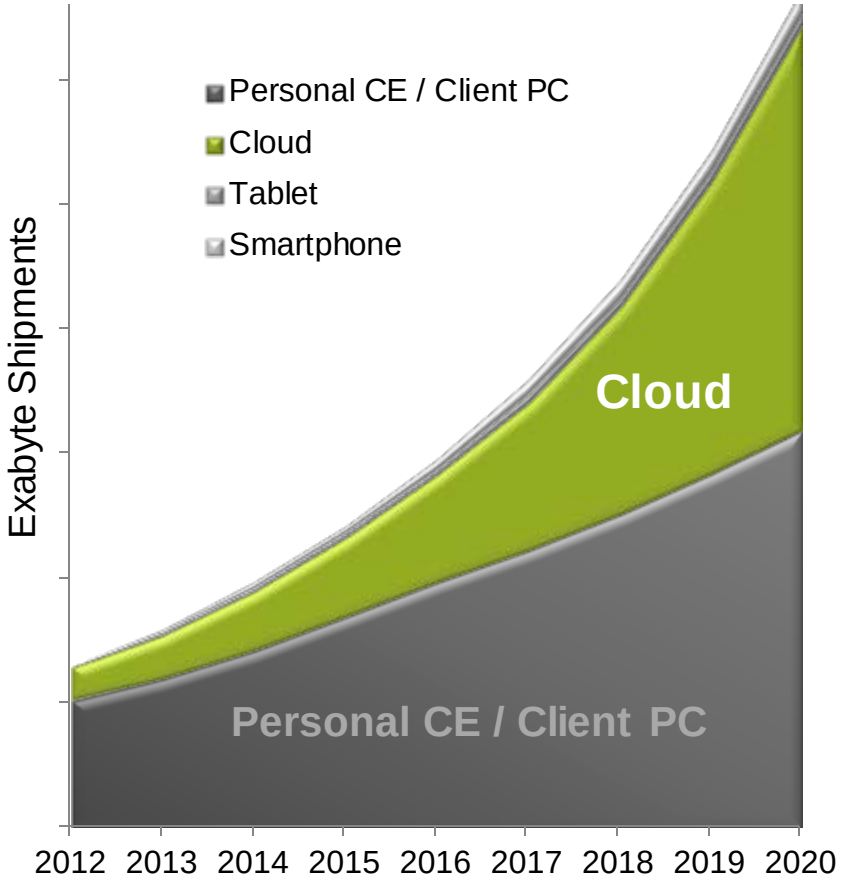
Sizing the Cloud Opportunity

Exabyte Forecast by Application



Source: Western Digital analysis

Source: Domo.com

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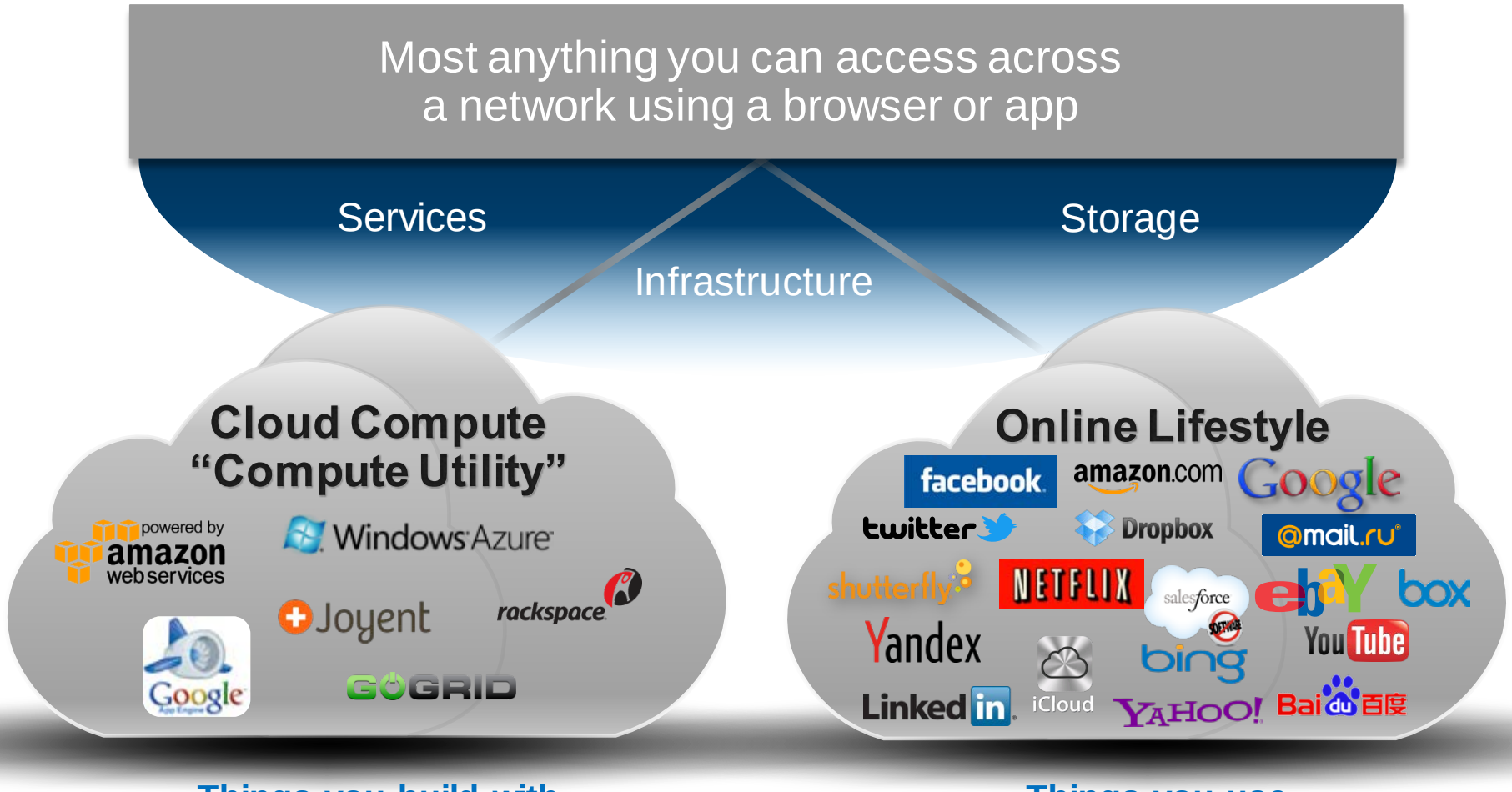
OUR POSITION

How We See the Cloud



Things you build with

Things you use

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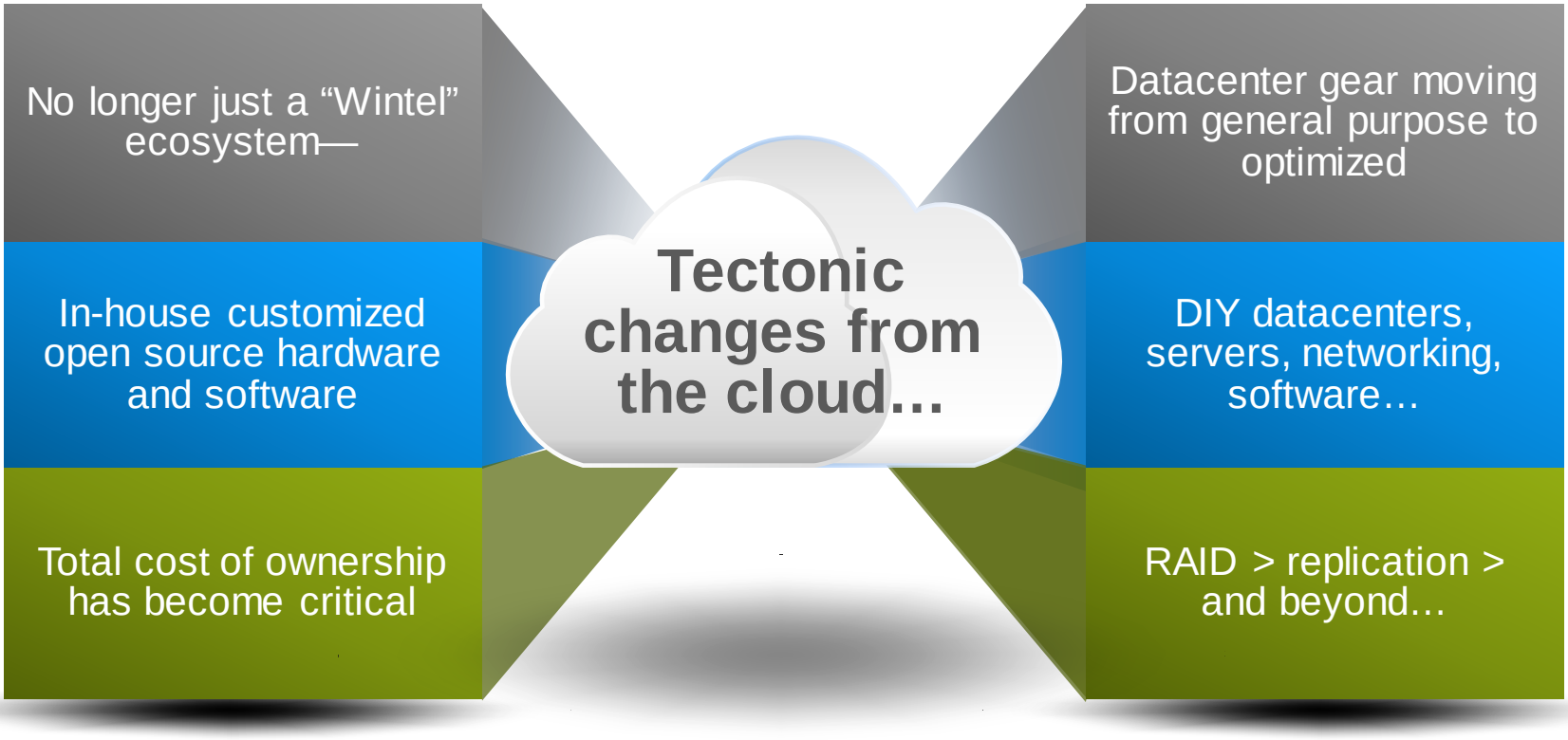
CHANGE = OPPORTUNITY

Cloud Infrastructure Trends



…Demands Agility.
Drives Differentiation, Value and Opportunity…

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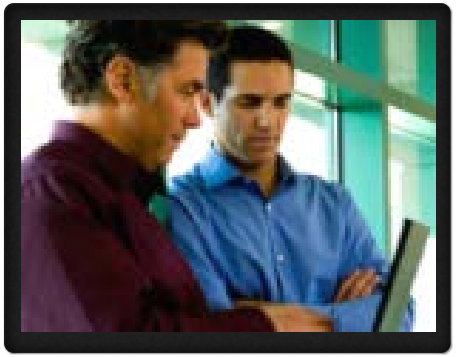
Cloud Pain Points

Cloud Datacenter Pain Points

- Device reliability
- Power consumption and cooling costs
- Equipment acquisition costs
- Bandwidth in the datacenter
- Security
- Server and storage density vs. floor space costs
- Need bulk storage solutions for content, backup, disaster recovery



Cloud User Pain Points

- Slow upload speeds
- Security and privacy
- Data and application portability
- Vendor permanence
- Lack of control
- Latency and performance

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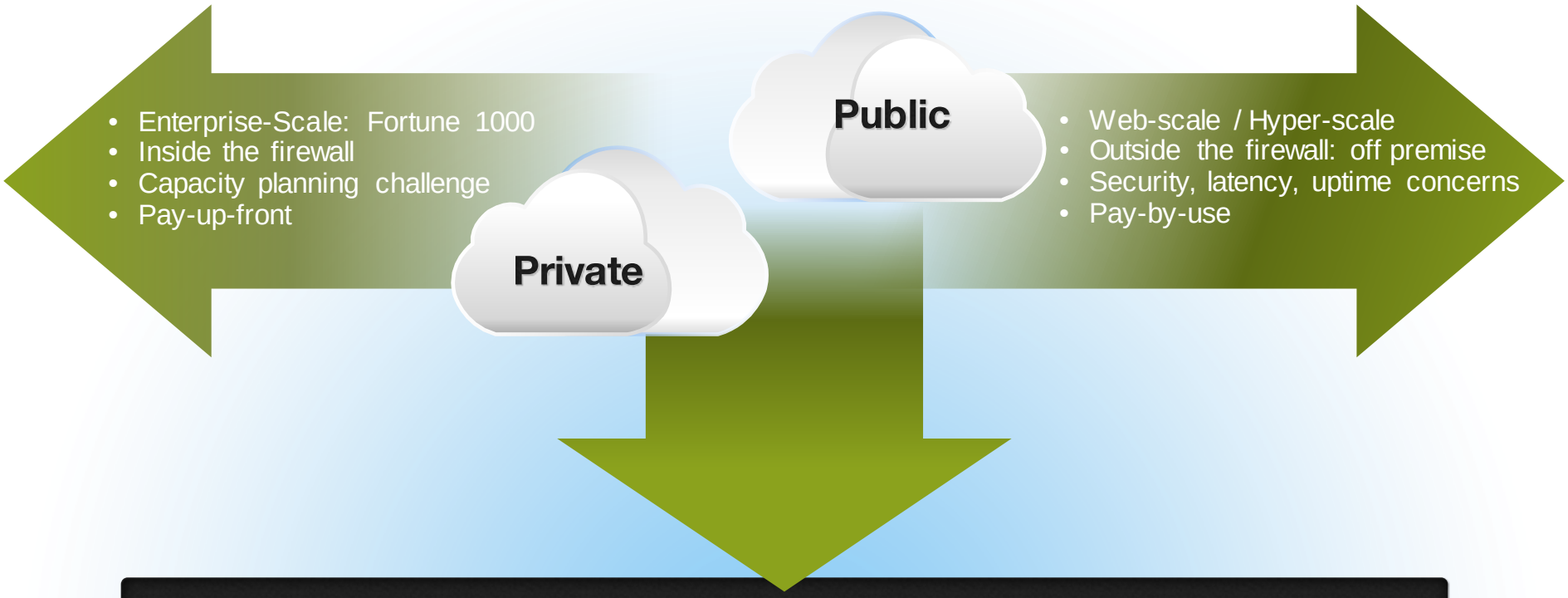
MIXED MODEL
Best of Both Worlds



Hybrid Use Model

- "Users put what they want where they want" to balance costs and concerns
- Storage growth opportunity → Data replication across facilities, geographies and clouds

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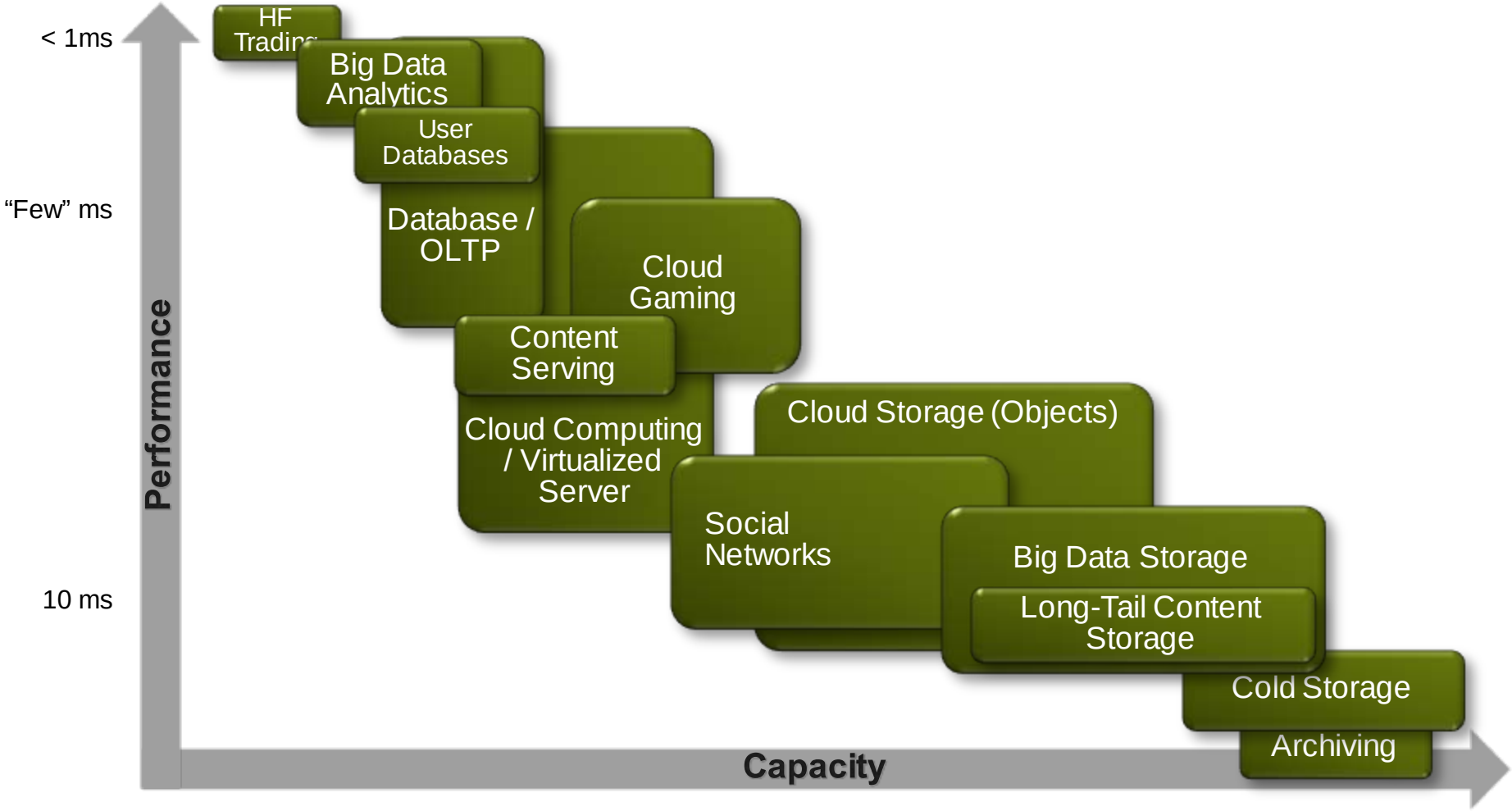
THE NEW TIERING

Applications and Storage



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THE NEW TIERING

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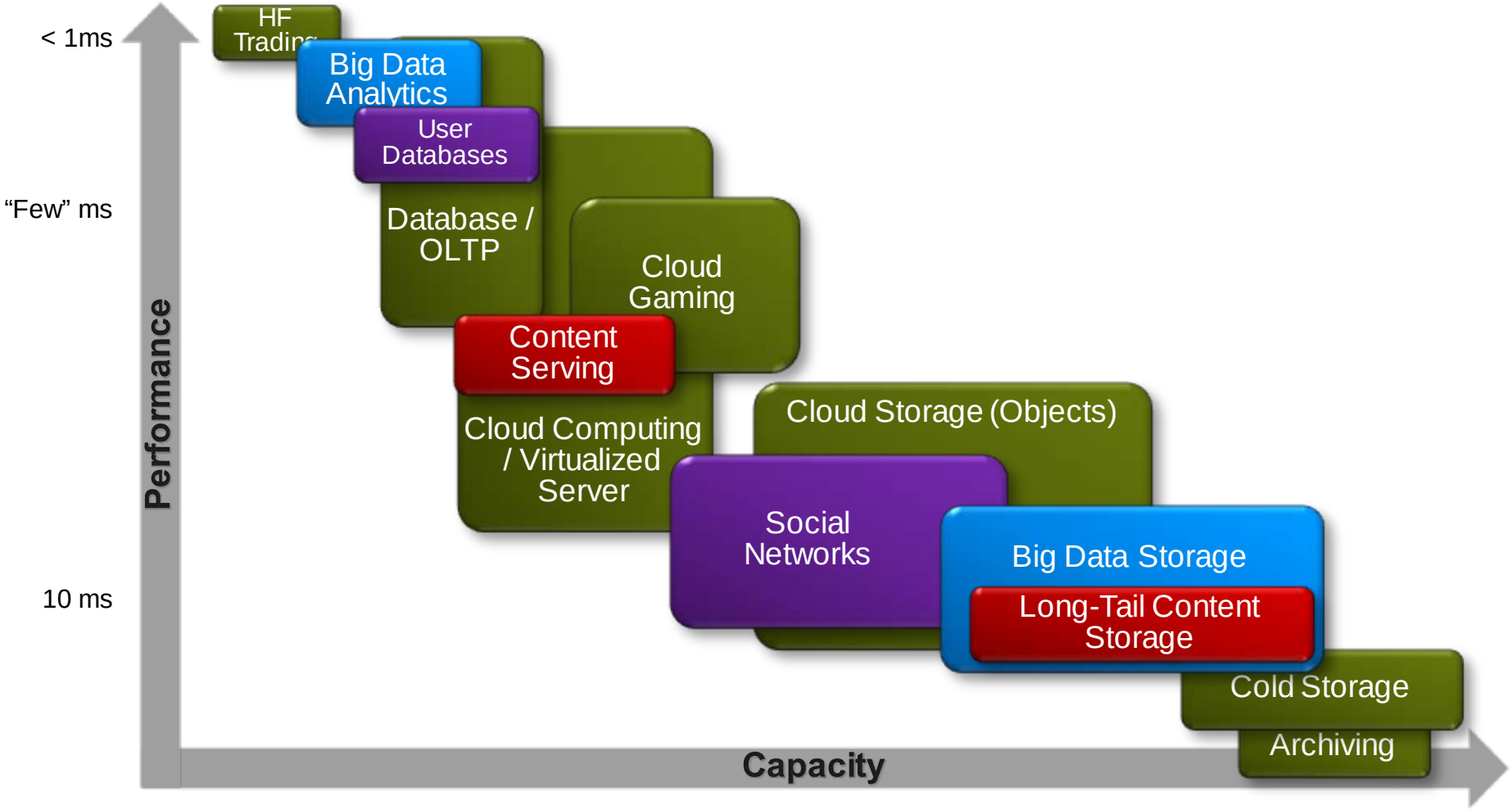

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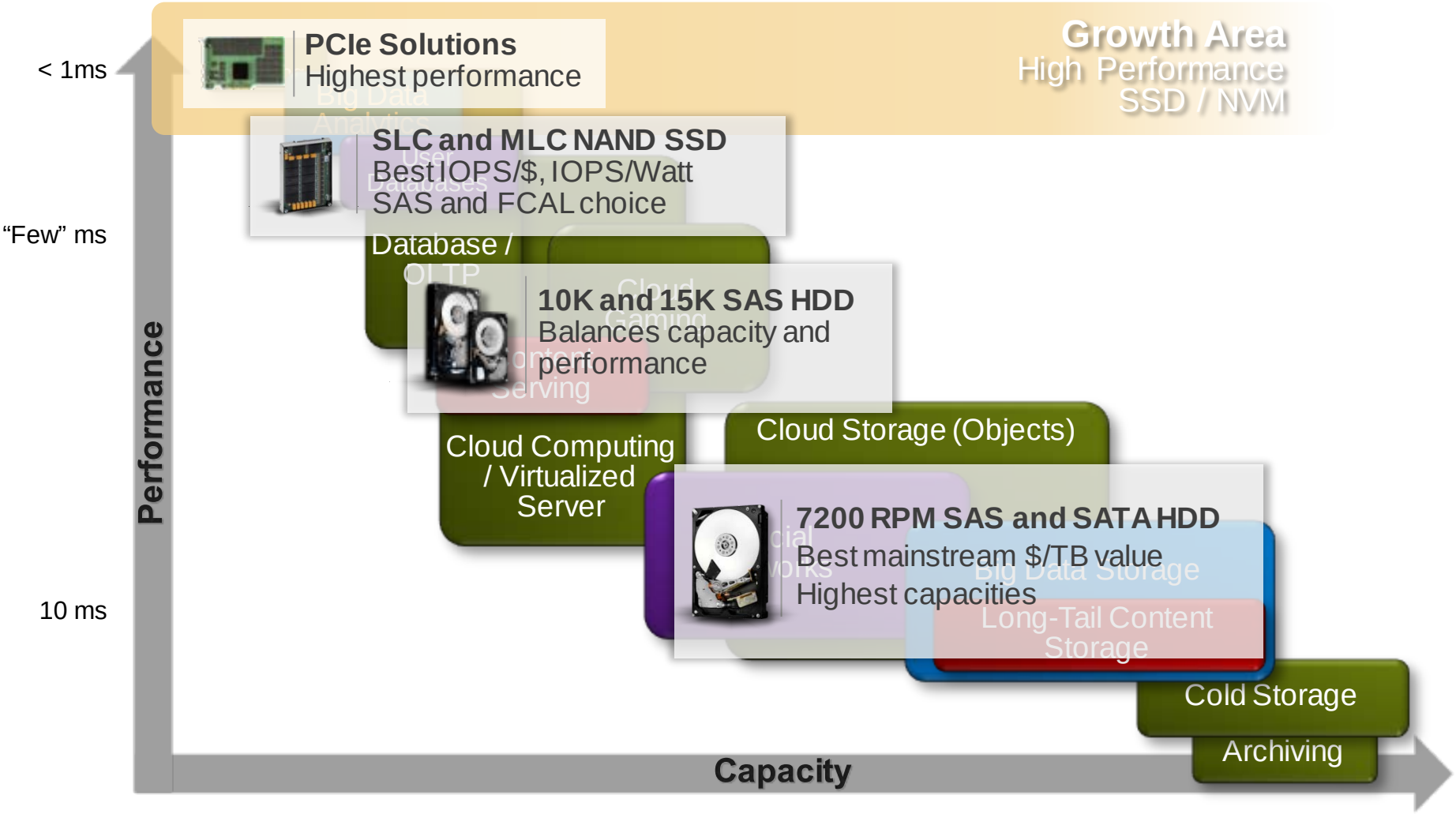

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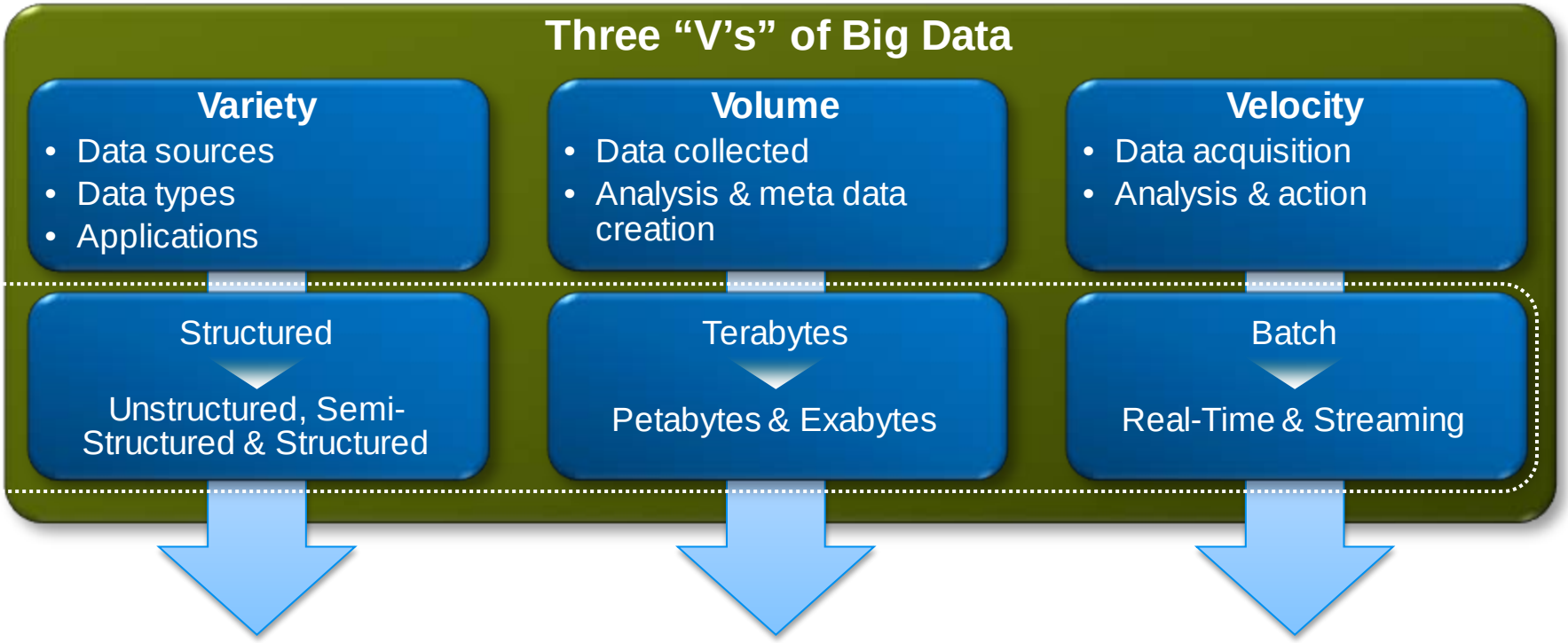
PROOF POINT

Big Data's "3 V's" Drive Storage Tiering



Creating Opportunities

- Fast SSDs for analytics
- High-capacity HDDs for data volume and access time
- Hardware and software optimization
- New architectures

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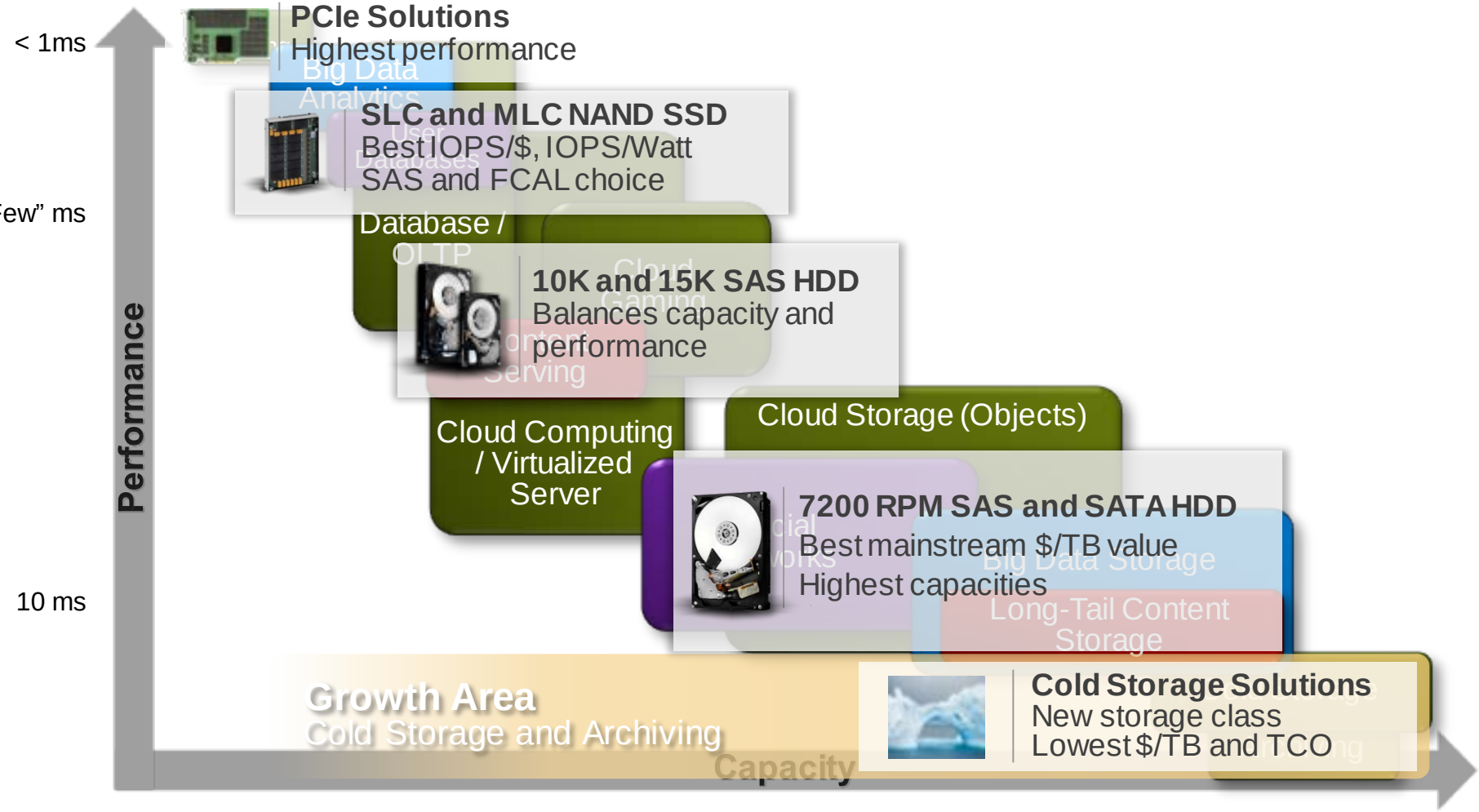
THE NEW TIERING

Applications and Storage



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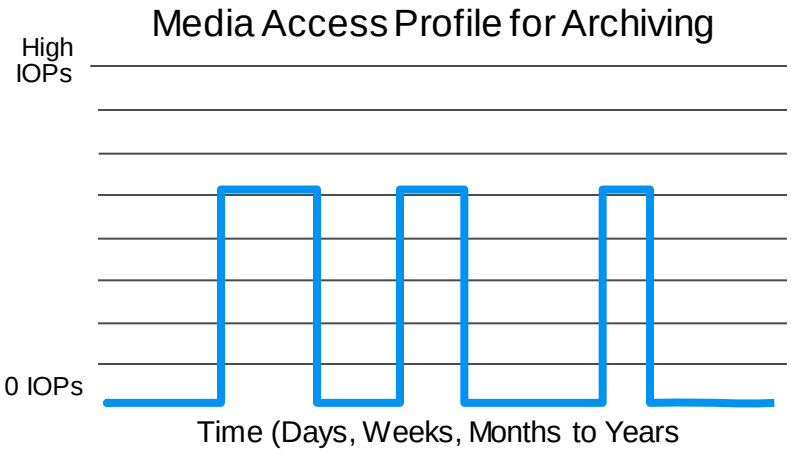
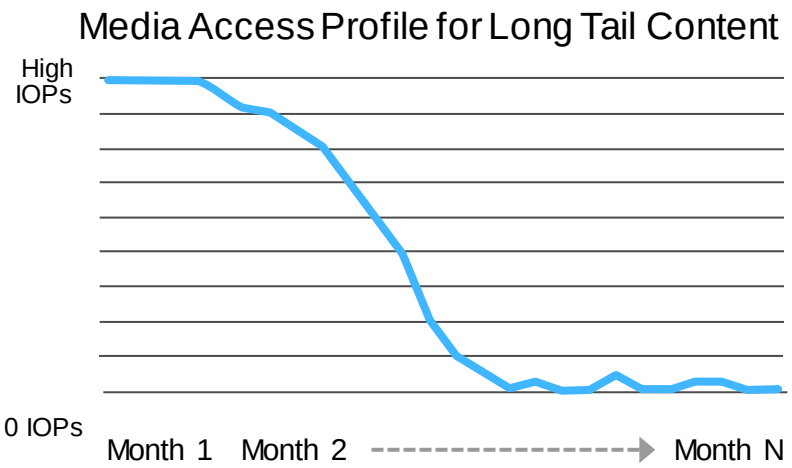
Cold Storage Use Cases



"Cold Storage"

- Targets archive, backup, temporary snapshots
- Write once, read never or seldom
- Active or powered-on infrequently
- Relaxed performance
- Requirements: Lowest $/GB, reduced power, high spin-up/spin-down cycles



"Cooling Storage"

- **Content and social media characterized by high media access when content is fresh, then lower accesses as content ages**
- **HDDs never be completely idle—someone could always be about to access content**
- **Requirements: Reduce especially power, reasonable performance, lowest $/GB**

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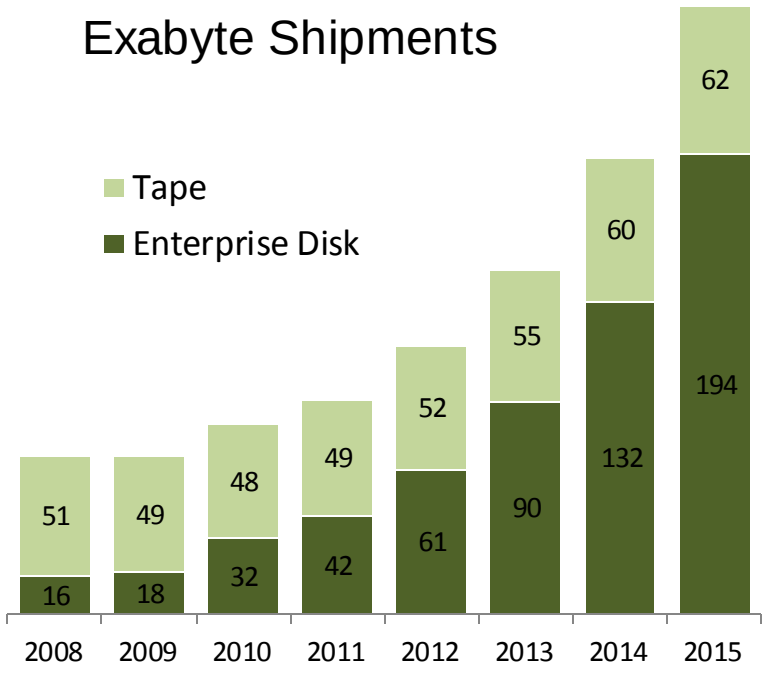
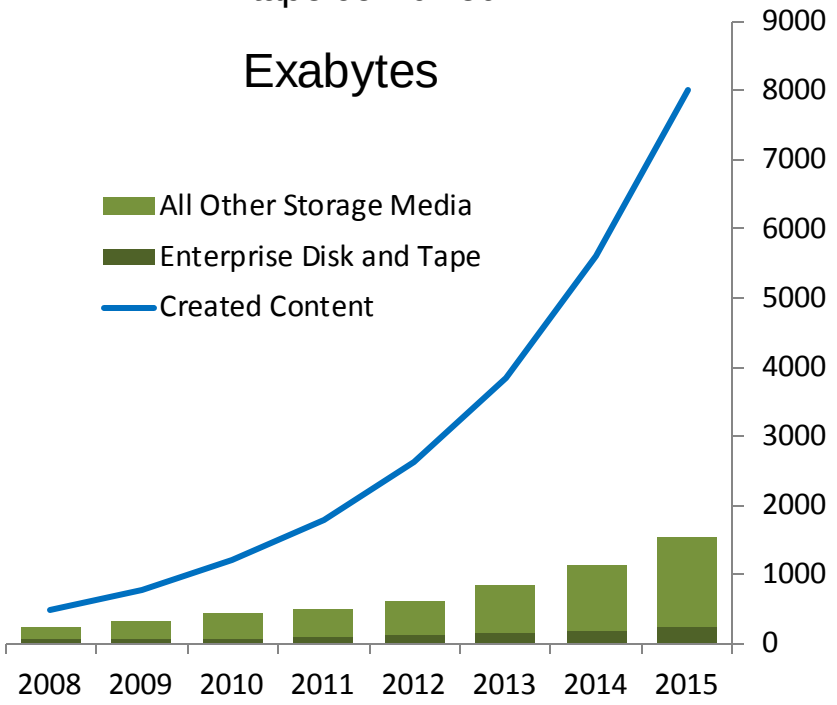
Tape Replacement

"Unstored" Data

With dramatically lower $/GB yet much faster access times, cold storage drives could capture "Exabyte share" from tape



Over 4x+ more content is created than is stored on digital media. Capturing only 5% of the "unstored data" equals all of the Exabytes shipped on enterprise disk and tape combined



Source: IDC and Western Digital analysis

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PROOF POINT

HDD Cold Storage, Not Tape

Redefines Backup and Archiving

Changes Cost and Value Equations

Replaces Tape

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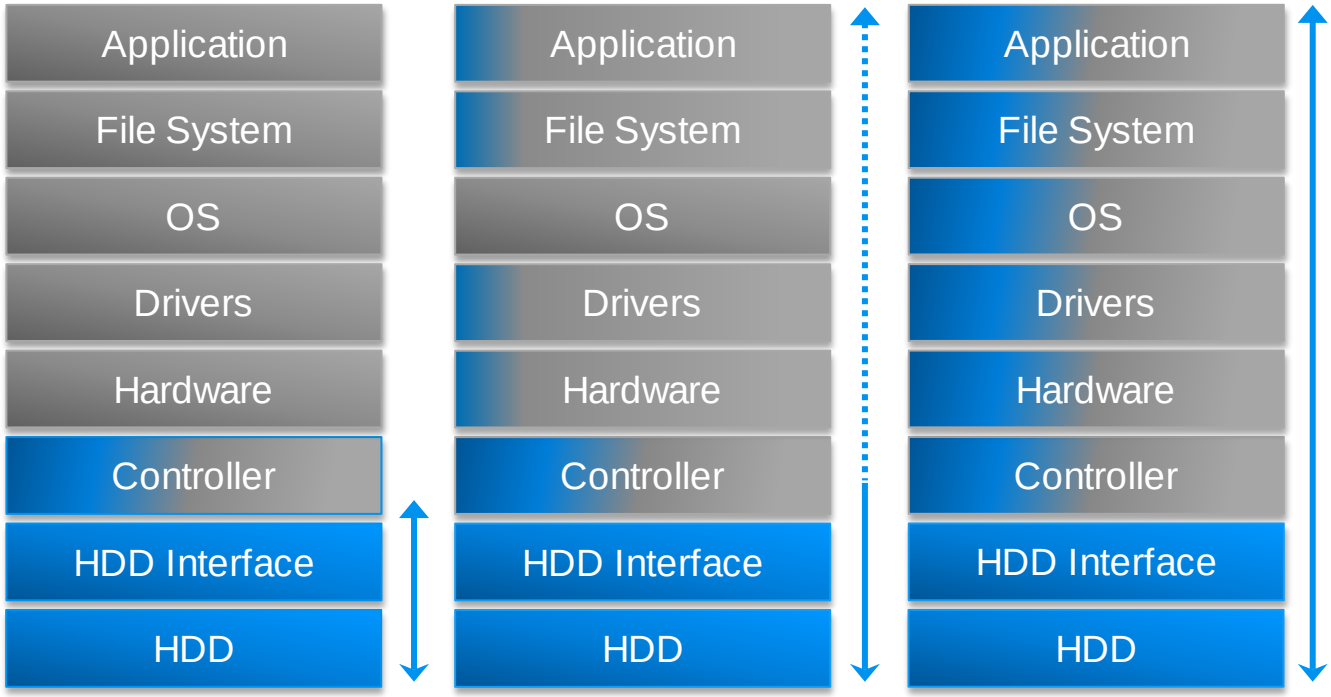
EVOLVING INFLUENCE

Becoming a Trusted Advisor



- Research, consultation and collaboration: Helping solve customer system architecture challenges through pain-point identification and analysis
- Taking an active role in defining the next phase of storage architecture evolution
- Moving up the stack creates value and differentiation

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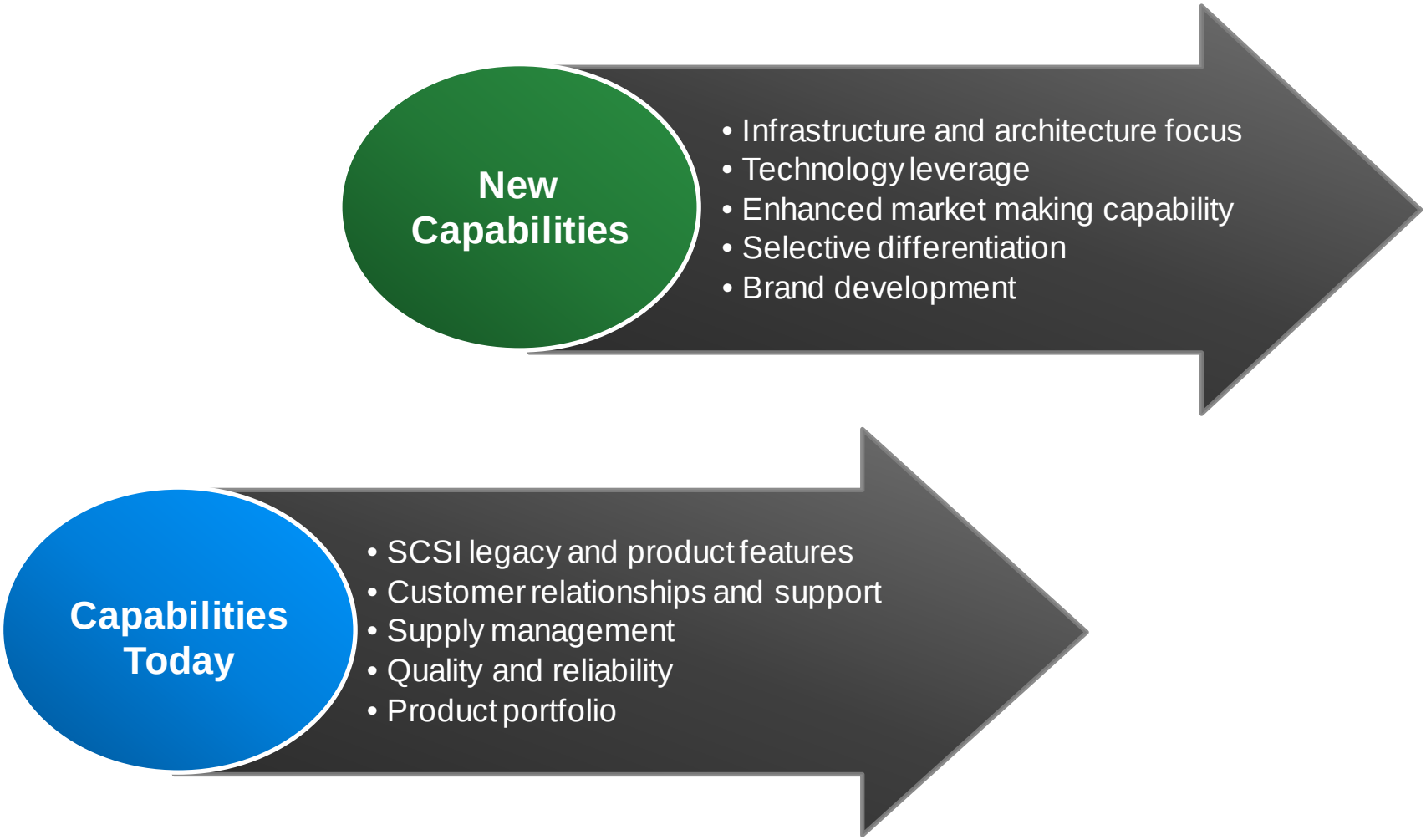
CUSTOMER RELATIONSHIPS

Evolving Capabilities



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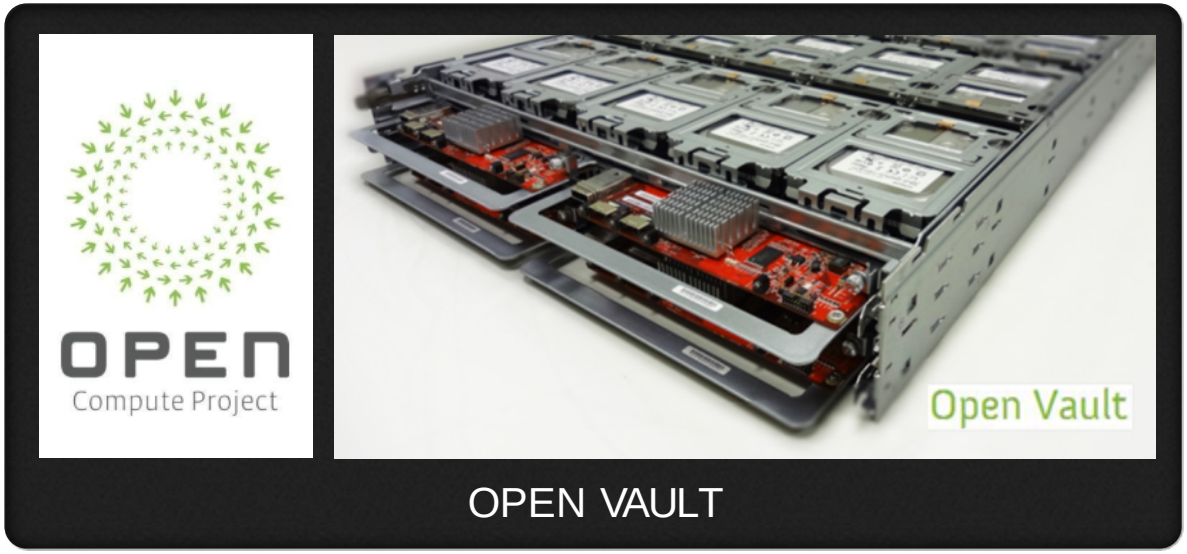
OPEN COMPUTE
Driving Innovation with Our Customers



The next evolution in open source: ***Hardware***

- System value continues to move to software
- Creates new opportunities for Western Digital

Open Compute Projects

Server	Storage	Datacenter
Designing vanity free, low cost compute nodes	Designing low cost building block storage	Designing energy efficient datacenters

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PRODUCT INNOVATIONS

Solving Datacenter TCO Challenges

Average Monthly Datacenter Spending (%)

Industry's Highest Reliability

- Higher reliability = less down-time and intervention

1st purpose-built cloud HDD platform

- Ground-up 5-disk design with high design margin redefines cloud storage

1st 12 Gb SAS SSD

- Market leader in SAS SSD
- Boosting performance while balancing cost

1st Sealed Drive

- New platform an enabler for the next decade, solving multiple datacenter challenges

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EVOLUTION, VARIETY AND COMPLEXITY

Storage Central to Evolving Ecosystem

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Thank you

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