Dell Technologies
Mission Critical Infrastructure

Focus: PowerStore

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Dell Technologies

- Dell Technologies' Advantage
- Modern Data Center
  - Initiatives
  - Disruptions & Opportunities
- Dell Technologies' Block / Unified Storage Portfolio
  - Disaggregated Data Center
  - PowerStore
  - PowerMax
- Dell Technologies' Data Protection
- Questions & Answers

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Dell Technologies Advantage

One-stop-shop AND best-of-breed

Modern Workplace

- World's smallest,[1] thinnest, most powerful commercial AI PCs[2]
- World's #1 monitors[3]
- Most manageable and secure commercial PCs[4]
- Leading in use of sustainable materials

Modern Data Center & Multicloud

- #1 servers [5]
- #1 external storage [6]
- #1 storage software [7]
- #1 Purpose-Built Backup Appliances [8]

Artificial Intelligence

- The world's broadest AI solutions [9]
- Open ecosystem that continues to grow with proven, validated solutions
- World's best management consulting firms – Forbes 2024

Security / Resilience

Industries most secure supply chain

Sustainability

An industry leader in sustainable materials and packaging

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Advance priority initiatives by modernizing the data center

EDGE | **CORE** | **CLOUD**

Dell Infrastructure Solutions

&

Multi-Cloud Portfolio

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Problems facing IT departments

- Performance & Capacity:
  - Individual applications that may require extremely high performance or high capacity, and sometimes both
  - Hosts becoming laden with virtual machines, each VM may become increasingly storage-I/O bound
- Storage Consolidation:
  - Data center consolidation is often the primary goal when selecting a storage platform
    - The secondary issue becomes scaling, and pace of change, causing performance and capacity issues
- Reliability:

  Data loss is just as critical to the medium-sized data center as it is to the large enterprise, maybe even more so

  Medium sized IT departments are the most dependent on their storage systems

  Serviceability:
  - Similar to reliability, serviceability can again be more important in the mission critical data center
  - Smaller IT support staff require more “self-service” capabilities within the storage array
- Security:
  - Security has become one of the most important considerations in the mission critical data center

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IT is facing disruption & opportunity everywhere

AI explosion

81%

report that AI and generative AI will significantly transform their industry.[1]

Data growth & usage

21%

compound annual growth rate (CAGR) of data over five years to reach **221,000+** exabytes by 2026.[2]

Multicloud strategy

91%

face challenges building a multicloud strategy to support innovation.[1]

Rising energy consumption

200%

increased data center power consumption by 2030.[3]

Evolving threat landscape

83%

have been impacted by a security attack in the past 12 months.[1]

1. *Innovation Catalysts, Dell Technologies, February 2024*
2. *IDC WW Global DataSphere and Global StorageSphere Structured and Unstructured Data Forecast, 2022-2026*
3. *McKinsey & Company, Investing in the rising data center economy, January 2023 (US-based analysis)*

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Dell Technologies – Multi Cloud Portfolio

BLOCK / UNIFIED

PowerMax

PowerStore

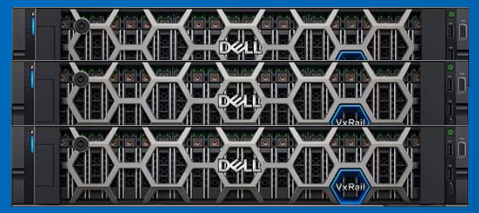
BLOCK

PowerVault

HYPER-CONVERGED

PowerFlex

Azure Stack



VxRail 8.0

Nutanix

Data Protection Solutions

CLOUD OBJECT FILE SERVER

PowerEdge

PowerScale

ECS

Dell Technologies Cloud
(PowerFlex, PowerScale & DPS)
(Dell's HCI Technologies)

Unstructured

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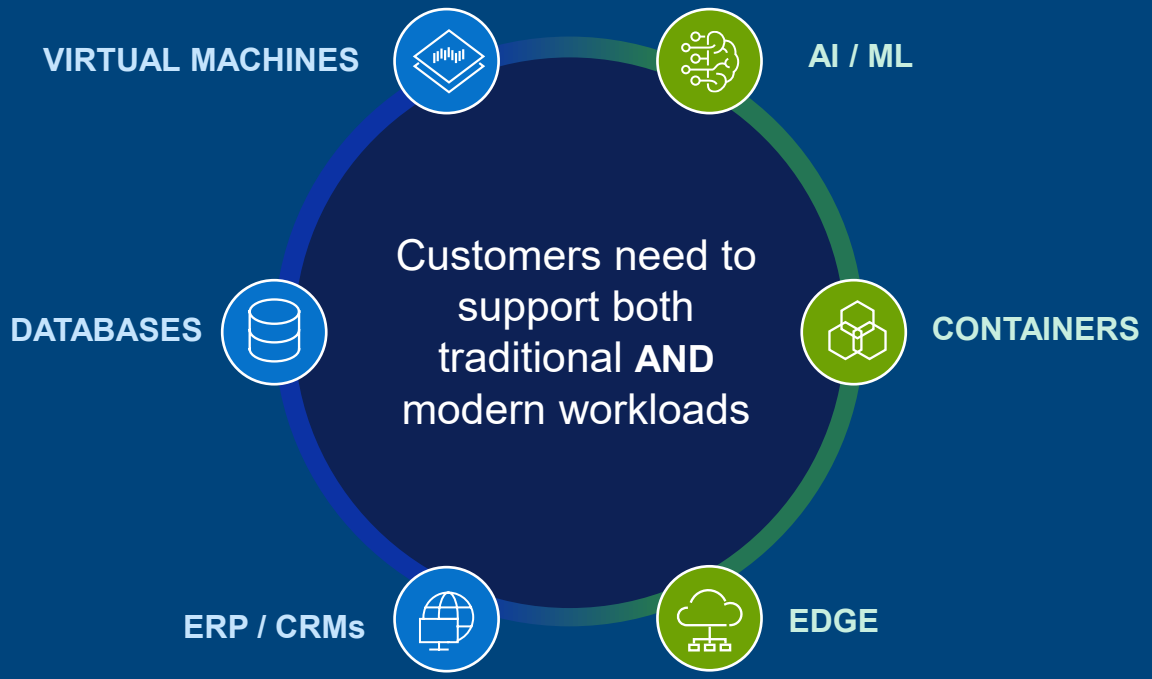
Customer workload mix is evolving at a rapid pace

Evolving workload mix…

TRADITIONAL and MODERN



… leading to evolving mission needs

- Avoid vendor lock-in
- Support for VM, Containers, and Bare Metal
- Efficient resource utilization
- Consistent, shared data layer
- Independent resource scaling to dynamically match needs of each workload

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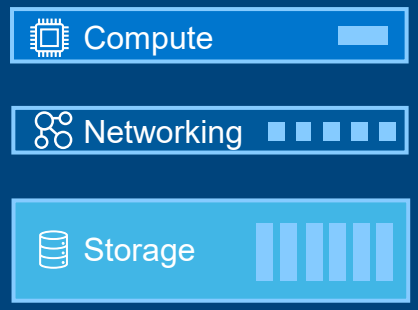
Evolving workload mix requires disaggregated infrastructure

3-Tier
Open, but complex

Often multi-vendor

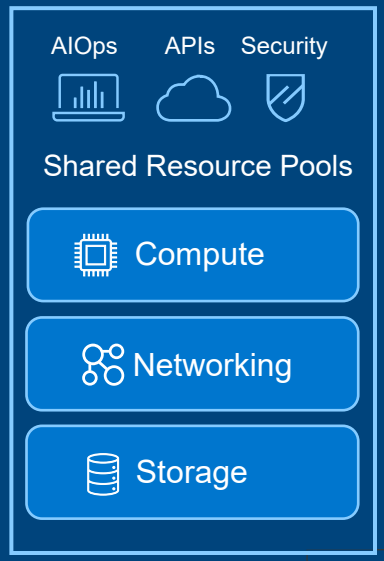


Hyperconverged
Simple, but closed

Locked into one vendor

Disaggregated
Open, simple, and flexible

Interoperable ecosystem with consistent management and operations



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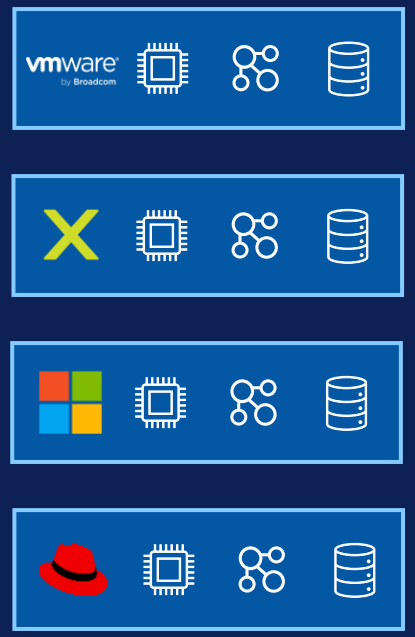
HCI may **NOT** be optimal for evolving customer needs

Hyperconverged

Interlocked Hypervisor,
Compute, Networking & Storage



- × Locked into a single ecosystem
- × Not optimal for AI
- × More servers required to scale
- × Higher SW licensing costs
- × More network ports required
- × Low storage utilization
- × Higher storage $/GB
- × Lower storage availability
- × Creates more silos

< 20%
Average **CPU** Utilization*

< 35%
Average RAM Utilization*

< 45%
Average Storage Utilization*

*based on 9,095 HCI Clusters dialing home to Dell

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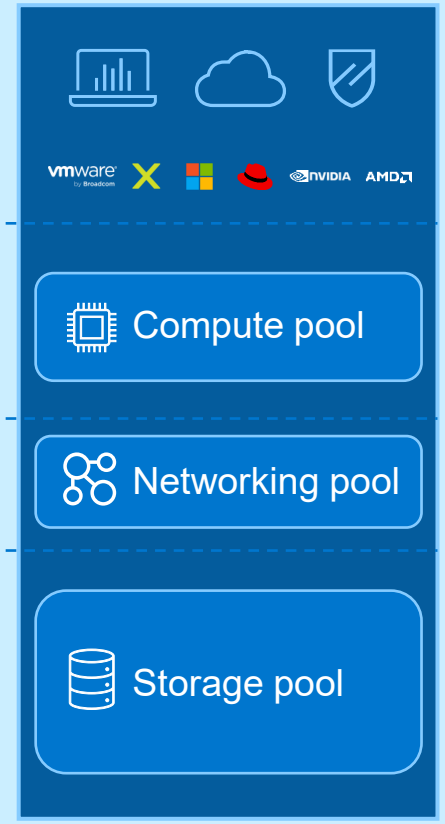
Disaggregated infrastructure is the **right choice** for customers

Disaggregated

Open, Simple and Flexible
Compute, Networking and Storage



- ✓ No vendor lock-in
- ✓ Fewer servers required
- ✓ Lower SW licensing costs
- ✓ Fewer network ports
- ✓ Higher utilization
- ✓ Lower $/GB with 5:1 DRR
- ✓ Better storage availability, easier patching and LCM
- ✓ Reduces siloed stacks

Up to **32%** Lower cost than hyperconverged infrastructure[1]

[1]Dell internal analysis – calculations based on comparisons between vSAN Ready Nodes (HCI) and PowerEdge + PowerStore

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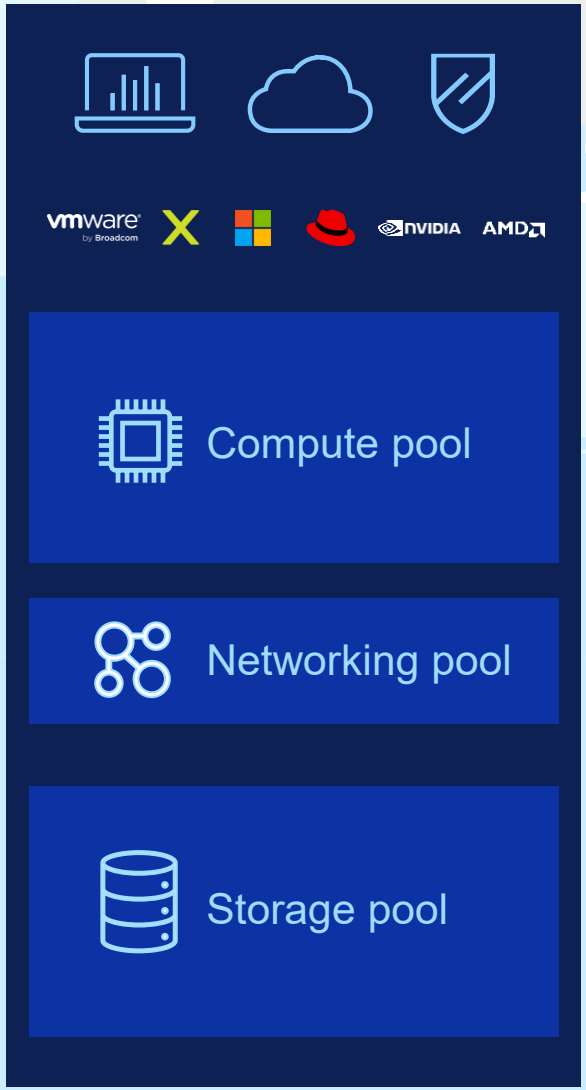
Benefits of disaggregated infrastructure

Open and Flexible Compute, Networking and Storage

- ✓ Open ecosystem
- ✓ Fewer servers required
- ✓ Lower SW licensing costs

- ✓ Fewer network ports

- ✓ Higher utilization
- ✓ Easier patching and LCM
- ✓ Lower $/GB
- ✓ Better storage availability
- ✓ Reduces siloed stacks



powered by
PowerEdge servers

powered by
PowerSwitch networking

powered by
PowerStore storage

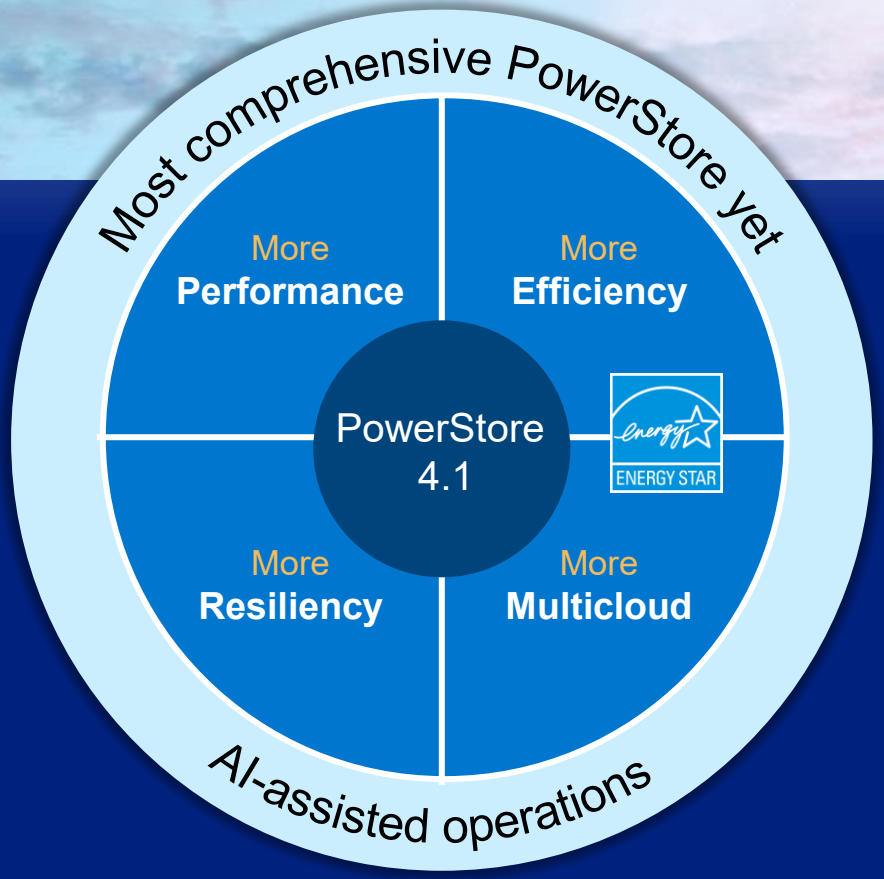
Introducing

PowerStore Prime

The smart choice for all-flash storage

PowerStore Prime

Product / technology advantages



- Power ANY innovation
- Stretch your IT budget
- Activate your MULTICLOUD future

PowerStore gives your customer everything they need to succeed

More Performance

Headroom for current and future needs

30% software-based performance boost[1]

66% hardware-based boost
(Gen 2 higher model DIP upgrades)

2X more volumes / hosts[3]

8X more VLANs[4]

More Efficiency

Accomplish more with every investment

Industry's most flexible QLC offering[5]

20% improved data reduction[7]
28% more TBe/watt

QoS, capacity accounting, universal import, more…

More Resiliency

Protect any workload with ZERO data loss

Metro Volume for Windows, Linux, VMware
(Zero RTO/RPO + Witness)

Native synchronous replication for file/block

Up 3x more snapshots[8]

More Multicloud

Now backup, restore and migrate to cloud

Migrate live data between PowerStore and **APEX Block Storage** for Public Cloud

Storage Direct backup/recovery to **APEX Protection Storage**

APEX AIOps – now with GenAI advantage

+ New Future-Proof advantages

5:1 DRR Guarantee

APEX subscriptions

Lifecycle Extension with ProSupport

1 – Based on internal analysis comparing PowerStore 5200 peak IOPS with PowerStore OS 3.6 vs. PowerStoreOS 4.0, running 70/30 read/write mix, 128k block size over FC. Actual results will vary.
2 – Based on internal analysis comparing PowerStore 3200 vs. PowerStore 5200 running PowerStoreOS 4.0 peak IOPs running 70/30 read/write mix, 8k block size over FC. Actual results will vary.
3 – Maximum supported hosts volumes for PowerStore models 1200 through 9200 with PowerStoreOS 3.6 vs. PowerStore OS 4.0.
4 – Maximum supported vLANs for PowerStore models with PowerStoreOS 4.0 vs. PowerStoreOS 3.6.
5 – Disclosure TBD
6 – Based on in ternal testing comparing PowerStore 3200Q vs PowerStore 3200T for 8k 70/30 workloads.
7 – Based on internal analysis comparing data reduction with PowerStoreOS 3.5 vs. PowerStoreOS 4.0 with variable block compression, Actual results will vary.
8 – Maximum supported block snapshots for PowerStore model 9200 with PowerStoreOS 3.6 vs. PowerStore OS 4.0.

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Future-proof and optimize your customer's investment

5:1 DRR Guarantee

Industry's best data reduction guarantee

- Highest guaranteed DRR without preassessment
- No program fees
- Longest coverage term
- Transparent remediation

APEX Subscriptions

Subscribe to PowerStore with greater convenience

- Pay for only what you use each month
- Tailor capabilities to meet needs on your schedule
- On-prem and off-site managed services options

Plus…

Existing Future-Proof offers

Lower risk, improve ROI

- **3-year Satisfaction**
- **All-inclusive Software**
- **Never-worry Data Migration**
- **Tech Refresh & Recycle**
- More…

Lifecycle Extension with ProSupport

Simplest way to stay continuously modern

- New comprehensive ProSupport offer combines
  - ✓ World-class support
  - ✓ Technology upgrades
  - ✓ Capacity trade-ins
  - ✓ Modernization consultations
  - ✓ Other membership benefits

Successor to Anytime Upgrades

Simplify IT operations

So your customer can focus on mission outcomes

PowerStore

Data-centric

Intelligent

Adaptable

Designed for the Data Era

Any Workload
Physical and virtual Apps and DBs, Containers and File

Performance Optimized
Scale up and scale out with end-to-end NVMe*

Efficiency Without Compromise
Always-on inline data reduction

Programmable Infrastructure
Streamlines development and automates workflows

Autonomous Appliance
Built-in automation and ML optimizes system resources

Flexible **Architecture**
Enables speed and application mobility

Flexible **Deployment**
Modernize the core, edge, and cloud without disruption

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PowerStore – Any workload

Traditional and modern workloads

RELATIONAL DATABASES

ERP

ELECTRONIC MEDICAL RECORDS

CLOUD NATIVE

CONTENT REPOSITORIES

HOME DIRECTORIES

FC | iSCSI

NVMe-oF*

NFS | SMB

LUN

VM

vVol

Apps and Databases

Containers

FS

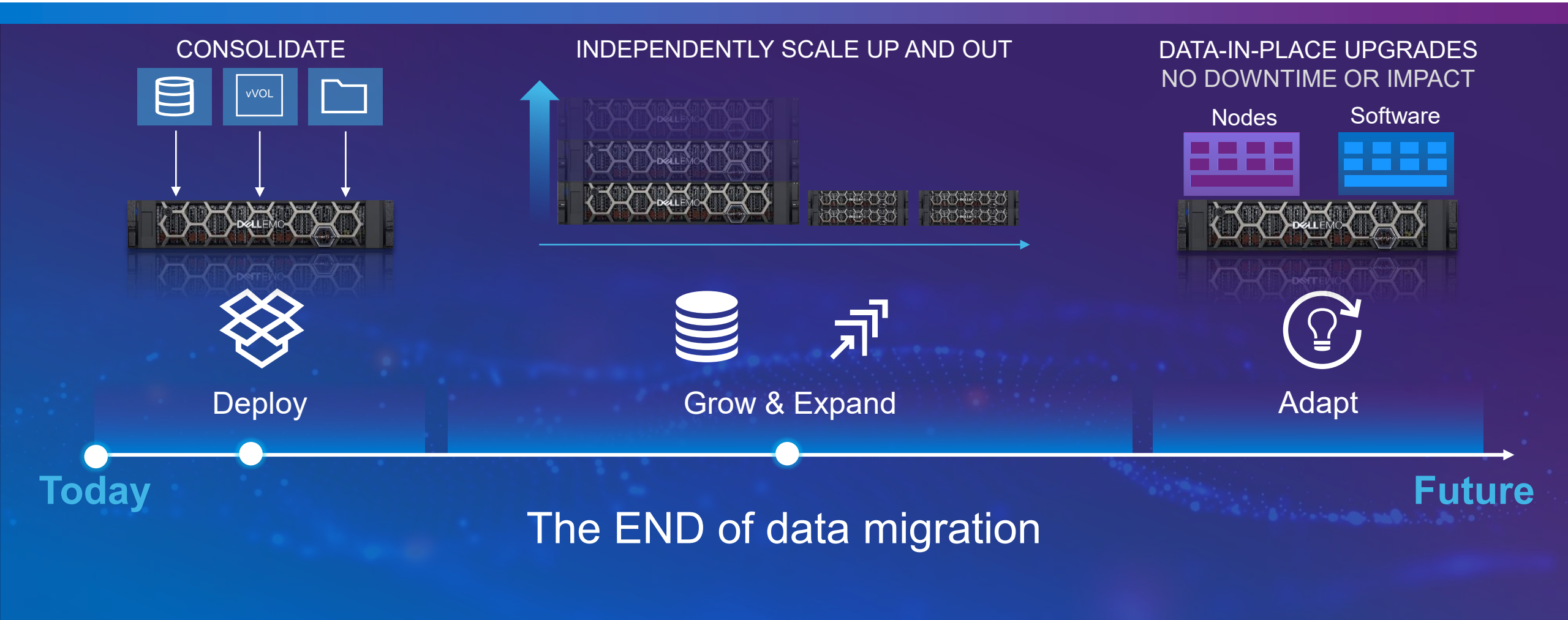
FS

FS

File

PowerStore – Adaptable architecture

Continuously modern without limits



PowerStore

EDGE

CORE

CLOUD

Edge applications

Intelligent Data Replication

Data-intensive applications

Block @ Equinix

PowerStore

Streaming data

PowerStore

Small footprint, easy to deploy

Optimized for data retention and flexibility

Data can be replicated to core data center

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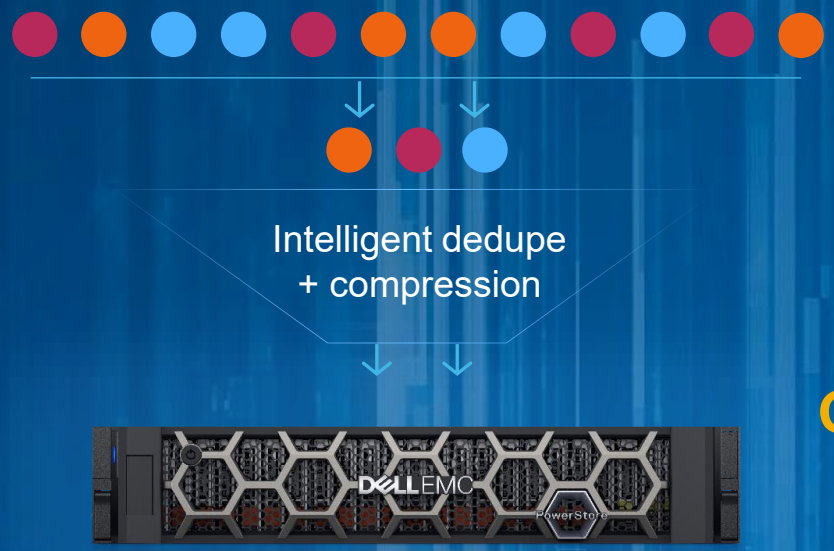
Intelligent data reduction

Enhanced services work proactively on your behalf



5:1

data reduction
GUARANTEED
(no assessment required)

Always on | HW-assisted

Storage efficiency **without compromise**

Optimizes capacity *and* performance automatically

Up to 20% more IOPS during peak bursts

- ✓ No impact on data reduction ratios
- ✓ Fully automated – zero management effort required
- ✓ Larger **dynamic** dedupe cache results in higher DRR across nodes in the appliance

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Storage: One Coin, Two Sides

PowerStore Solution

- Infrastructure Modernization
- High Performance Computing
- Mission Critical Infrastructure
- Containers & Cloud Native
- Virtual Desktop (VDI)

PowerScale Solution

- IOT Data
- AI
- Computer Vision
- Digital Twin
- Cyber Security / Data Governance

Opportunity Growth

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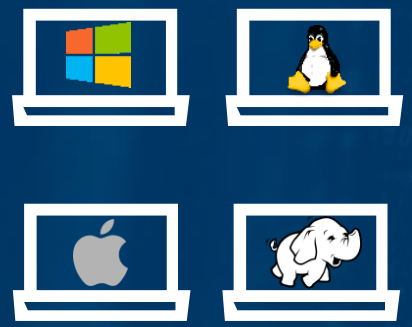
PowerScale: Users, Data, Clients

- Creating the ultimate unstructured data storage system

Any client



Access to all data at the same time

Any data

Any user

Artificial Intelligence

Empower users to get what they need

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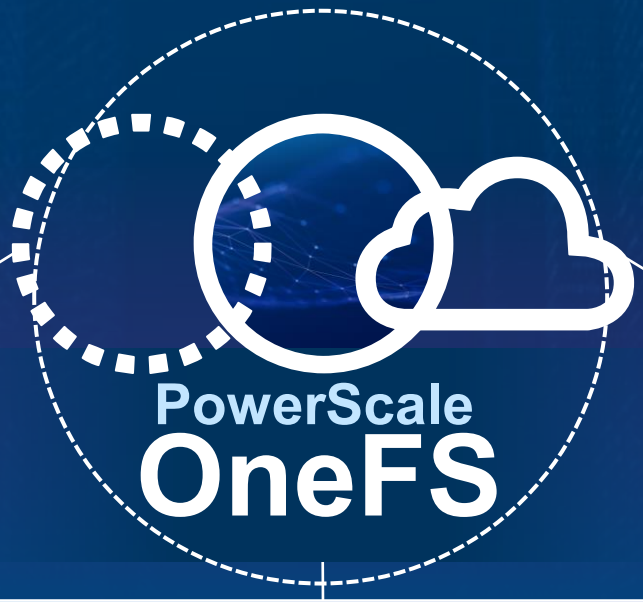
PowerScale: Anywhere

- Uniting the Core, the Cloud and the Edge



EDGE

Streaming data, real-time analytics

IoT, Surveillance, AI/ML workloads

CORE

Growth industries; GPU-powered

Healthcare, education, government, media

CLOUD

Extending file services in cloud

Cloud development, archives & DR

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Dell Technologies Data Protection Solutions

Comprehensive portfolio built to protect proven & modern workloads

Data Center Backup

Backup Targets

Integrated Appliances

Direct Cloud Backup

In Cloud Protection

In-Cloud
Protect Cloud Born Workloads

SaaS Apps
O365, G-Suite, Salesforce, Slack

Protect any cloud-born workload

Disaster-Recovery

Cloud DR
Replicate VMs to the Cloud

On-Prem
Replicate to DR Site

DRaaS
On-Prem/Cloud DRaaS Offering

Ability to recover from disasters

Cloud Archive

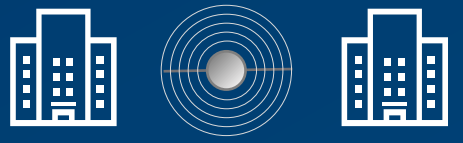
ECS Tier
Long-Term Retention

Cloud Tier
Long-Term Retention

Tier rarely accessed data to free space

Cyber-Recovery

Air-Gap
Recover From Cyber-Attacks



Ability to recover from cyber-attacks

CLOUDS: VMC, aws, Microsoft Azure, Google Cloud

PLATFORMS: vSphere 7, kubernetes, Tanzu, VCF, OpenShift, Rancher, AKS, GKE, EKS

APPS: RDS, cassandra, MySQL, ORACLE, mongoDB, SQL Server

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Dell Infrastructure Solutions Group: The Modern Data Center

Accelerate innovation with intelligent & efficient systems

Power any workload across the edge, data center & public cloud

Deliver comprehensive data protection everywhere

AIOps — Virtualization — NativeEdge — Dell Cloud

Kubernetes distributions

RED HAT OPENSHIFT · VMware Tanzu · Amazon EKS · SUSE RANCHER · Azure Kubernetes Service (AKS) · Anthos

Cloud platforms

aws · Azure · Google Cloud · vmware

Silicon partners

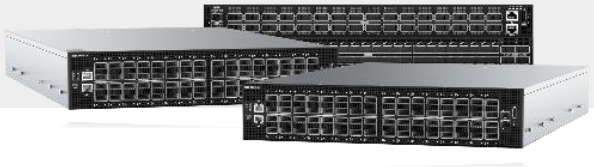
intel · NVIDIA · Qualcomm · AMD

Colocation partners

rackspace technology · EQUINIX · DIGITAL REALTY · switch · DATABANK · FLEXENTIAL · CyrusOne

Storage & Data Protection

Server



Networking

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Cloud Smart Discovery

Using data to make intelligent decisions about your cloud strategy

- IO distribution
- Memory provisioning
- xCPU provisioning
- VM IO bandwidth
- Compare cost – private cloud vs. public cloud

Move from multicloud by default to multicloud by design

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Recipe for Success / Call to Action

Architect every deal with DELL Technologies

- Leverage the Dell Technologies Advantage
- Better together

!!! Dell Technologies Storage systems !!!

The tools, IT requires, to

Service all customer workloads

Partner Benefits

- Increased partner/customer involvement
  - Mindshare
    - Compute, Storage & BCDR discussions
    - Policy education and discussions
    - Business discussions
  - Trusted Advisor
- Larger Deals with Higher Gross Profit
  - No “money left on the table”
- Protected Customer (less / no competition)

- Take advantage of the FREE Assessments
- Pull in Dell’s Sales teams. We are here to assist you

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