# Introducing Dell EMC PowerStore

Dell EMC PowerStore Vorstellung

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# Data era putting pressure on IT

Balancing needs of Data and Operations

Data

**Infrastructure**

*Divergent Investments to Meet Both Needs*

Operations

# Focused innovation to date

**Data**

2000

2020

Purpose Built Arrays

Focus on data services

Data Protection

Data Efficiency

Data Diversity

Data Value





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# Data era requires new approach

2000 2020

**Data**

Data Protection Data Efficiency

Data Diversity Data Value

**Infrastructure**

**New architecture required**

and

**Operations**

Automation Intelligence

Simplicity Agility

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# Innovation to meet increasing pressure

2000

2020

**Data**

**Infrastructure**

**Operations**

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**PowerStore**

designed for the data era


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Dell Technologies introduces

# PowerStore

Data-centric

Intelligent

Adaptable


## Designed for the data era

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# PowerStore

**Data-centric** | Intelligent | Adaptable

**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

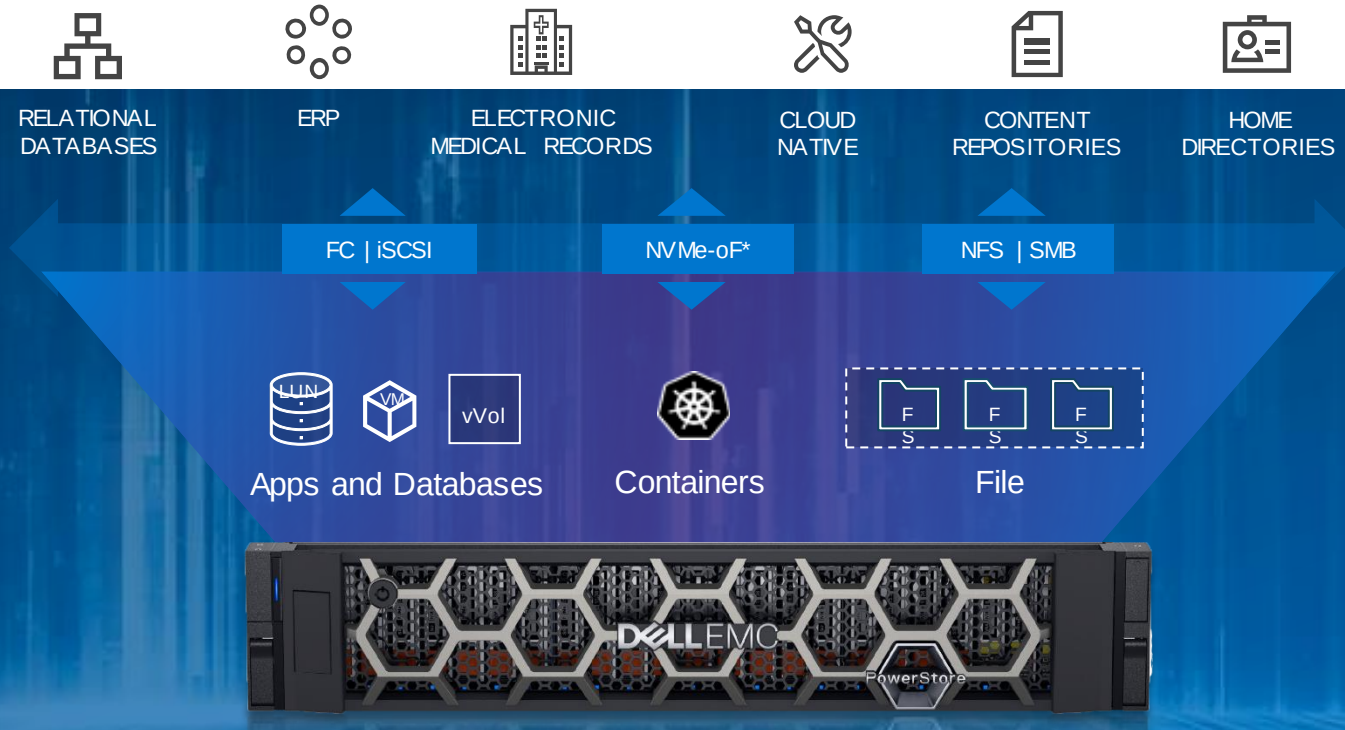
Always-on inline data reduction

## Ultimate workload flexibility

*NVMe-oF coming in a future release

# Any workload

## Traditional and modern workloads




*NVMe-oF coming in a future release

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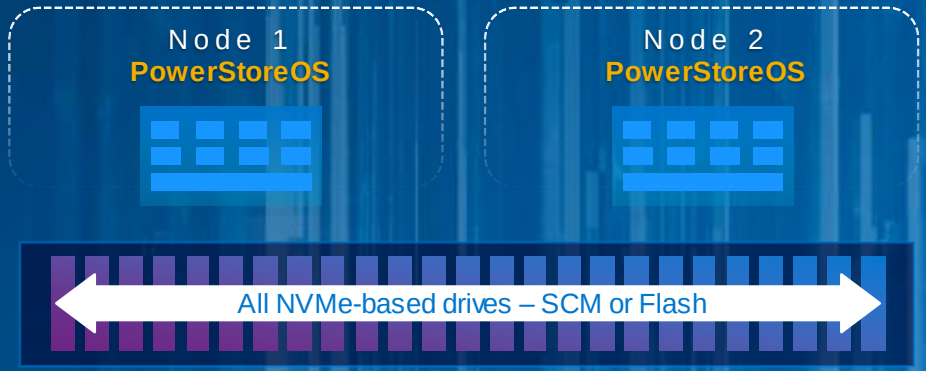
# Optimized for performance




**PowerStore**

Active-Active HA | End-to-end NVMe | Flash or SCM

Designed for 99.9999% reliability

**7x** faster

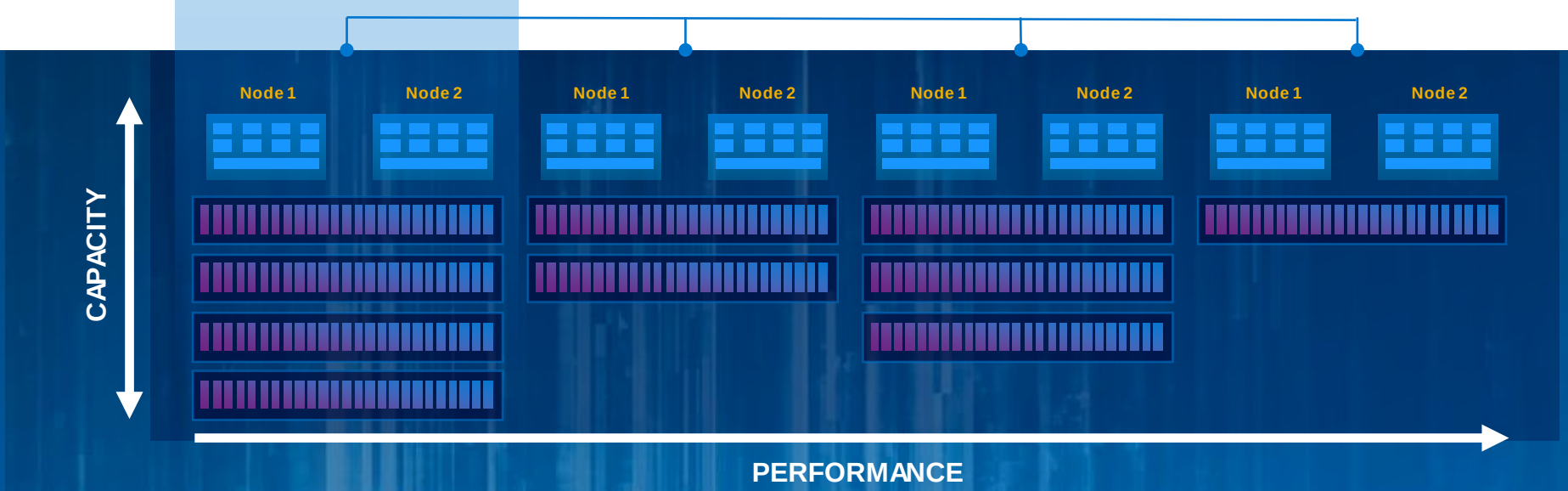
**3x** lower latency

Based on internal testing versus Unity XT

# Scale-up and scale-out

**SCALE-UP**
*with expansion enclosures*
**Up to 2.8 PBe per appliance***

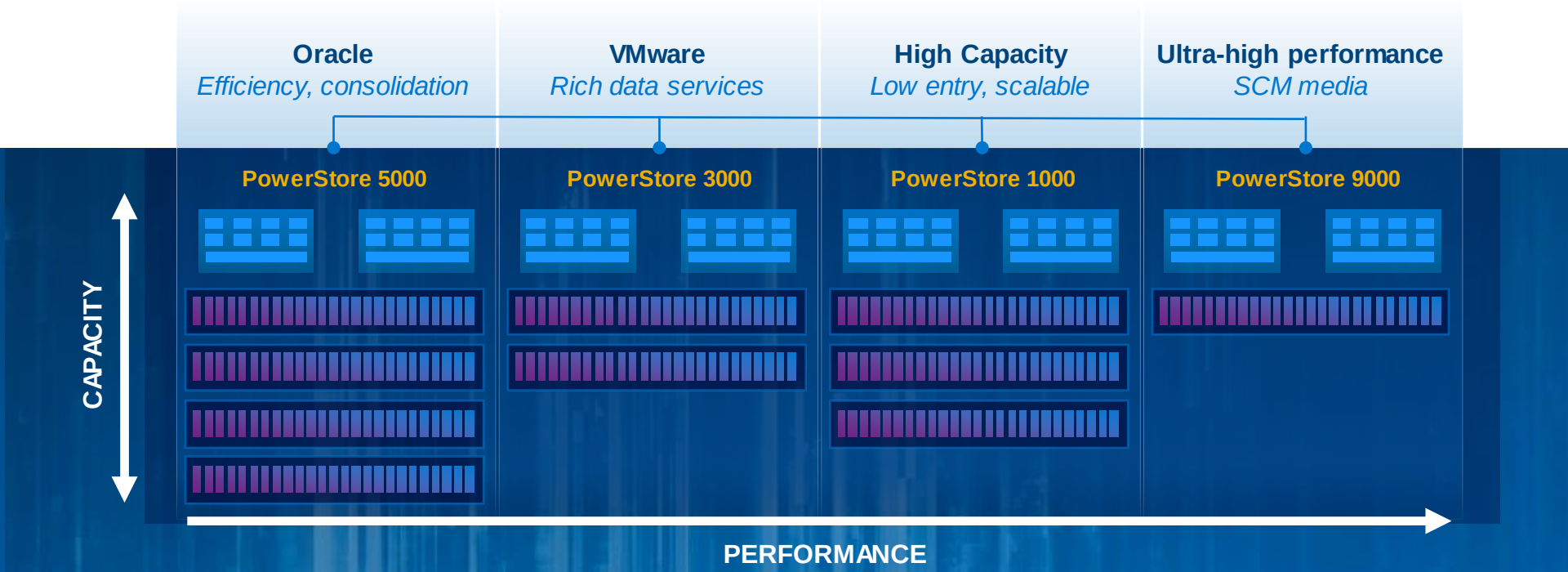
**SCALE-OUT**
*to 8 active-active nodes*
**Up to 11.3 PBe per cluster***




**Independently** scale compute and storage

*Effective capacity assumes 4:1 DRR

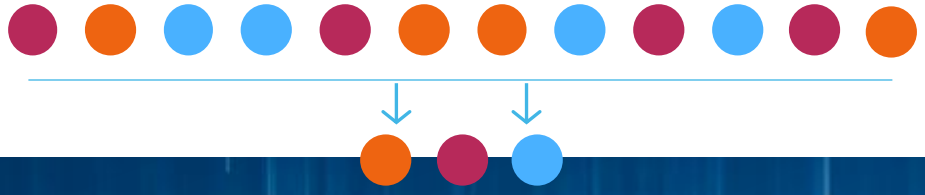
# Scale-up and scale-out




Performance and application **segregation**

# Metro Replication for Continuous Availability

# Always-on inline data reduction



Intelligent dedupe
+ compression


**FUTURE-PROOF**

**4:1**

data reduction
**GUARANTEED**

Up to 20:1

Consistent storage efficiency **without compromise**

# Enterprise storage in a midrange package

## Non-disruptive

- Active-Active data path
- Data / Application migrations
- Capacity expansions
- HW and SW upgrades

## Resilient

- Redundant components
- Dual-ported NVMe drives
- Fast rebuilds
- Cluster high availability

## Protected

- Dynamic RAID
- Native replication
- Local protection
- Dell EMC Data Protection

Designed for **99.9999% availability**

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# PowerStore

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Intelligent

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**Designed for the data era**

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# PowerStore

Data-centric | **Intelligent** | Adaptable

## **Programmable** Infrastructure

Streamlines development and automates workflows

## **Autonomous** Appliance

Built-in automation and ML optimizes system resources

## **Proactive** Health Analytics

Smart monitoring to reduce risk and predict future needs

**Autonomous, consistent operations**




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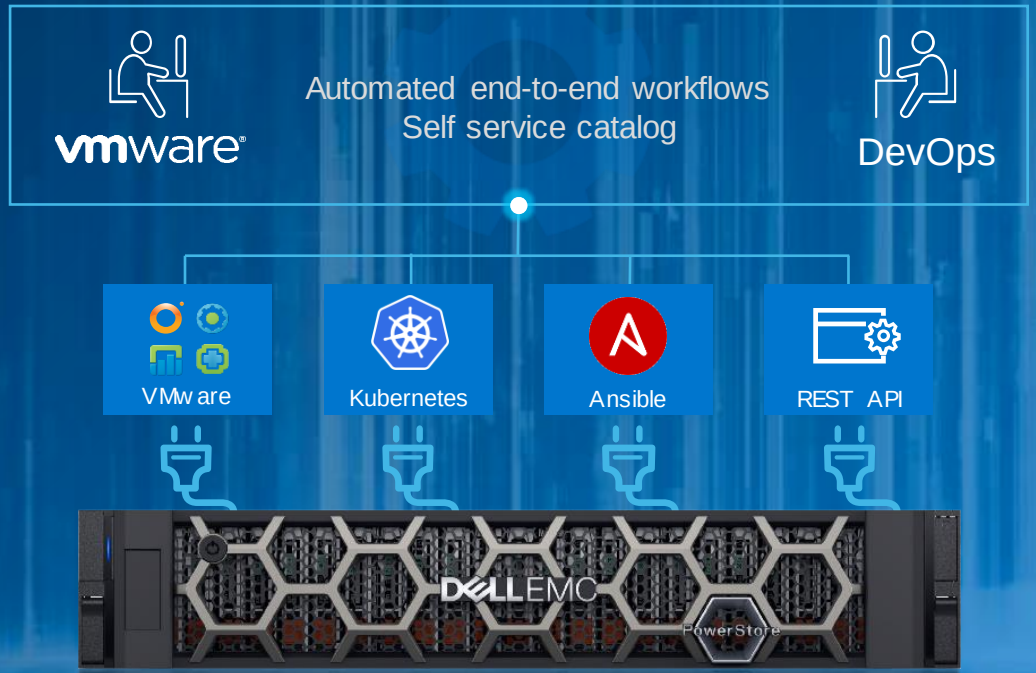
# Programmable infrastructure

## Enabling automation and DevOps




*Assumes multiple teams and manual approval process

Automate storage provisioning processes

Deploy new resources in **seconds** vs days*

Eliminate manual steps to reduce risk

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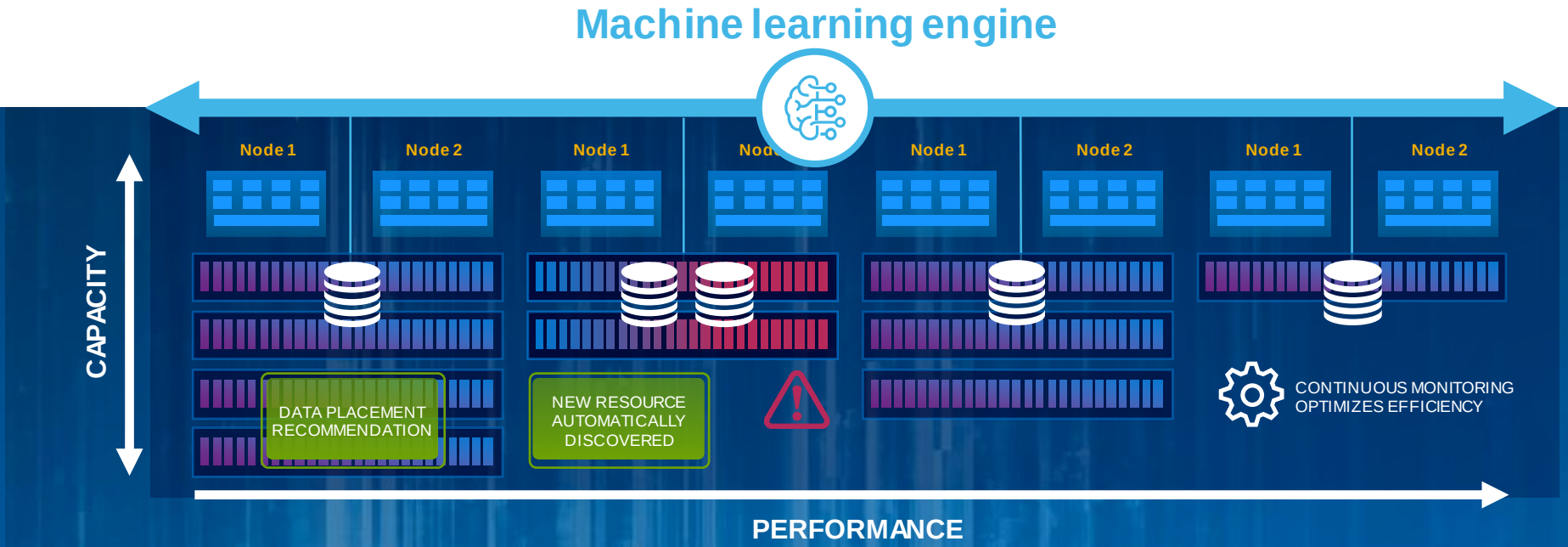
# Autonomous appliance




**99%** less staff time to rebalance volumes

# Intelligent Infrastructure Insights with CloudIQ

Proactive monitoring and predictive analytics across the full infrastructure portfolio

## REDUCE RISK

Identify and issues and expedite trouble-shooting

## PLAN AHEAD

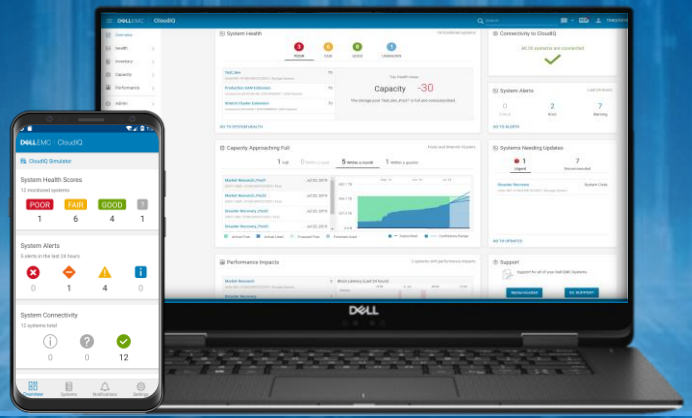
Anticipate business needs and avoid outages

## IMPROVE PRODUCTIVITY

Single pane of glass view of data center

**10x**

**faster to predict capacity approaching/almost full**



**16x**

**faster to identify HA problems**

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# PowerStore

Data-centric

Intelligent

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**Designed for the data era**

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# PowerStore

Data-centric | Intelligent | **Adaptable**

## Flexible **Architecture**

Enables speed and application mobility

## Flexible **Deployment**

Modernize the core, edge, and cloud without disruption

## Flexible **Consumption**

Choice, predictability, and investment protection

**Continuously modern and highly adaptable**

# Container-based architecture



***NEW!***
**PowerStoreOS**

**Next-generation Dell EMC storage stack**

Modular design for faster innovation

Consistent services across platforms

Enables future deployment models

# Standard deployment

PowerStore T models


Flexible **Architecture**

Modular design for faster innovation

Consistent services across platforms

Enables future deployment models

# Hypervisor deployment

## PowerStore X models


Flexible **Architecture**

Onboard VMware hypervisor

Allows storage OS abstraction




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# Introducing AppsON

## PowerStore X models


Flexible **Architecture**

Run applications directly on the appliance

- Infrastructure apps
- Data-intensive, demanding workloads




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# Ultimate deployment flexibility


## VxBlock System 1000

### Converged Infrastructure

*Featuring Dell EMC storage and data protection*

*VMware integration for cloud operations*

## PowerStore

### Storage Appliance

*Utilize existing servers and network*


## PowerStore

### Software-defined Storage

*Deploy on standard servers*


*Coming in a Future Release*

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## Adaptable Architecture

- Never migrate again
- Scale up and out
- Continuous innovation

## Anytime Upgrades

NEW

- Flexible options
- Anytime in contract
- No renewal required

CONTINUOUSLY MODERN WITHOUT LIMITS


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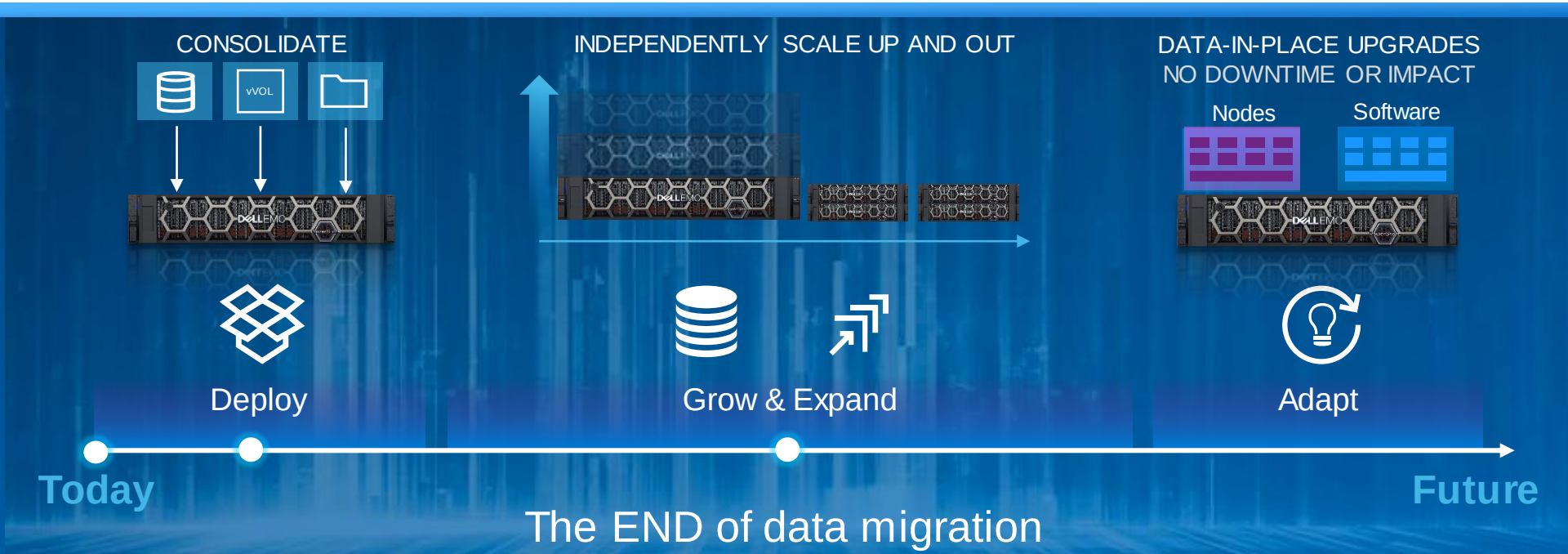
# Adaptable architecture

Continuously modern without limits



# Introducing Anytime Upgrade

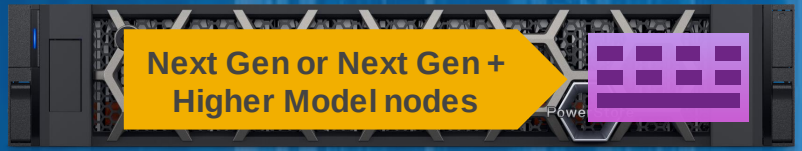
Industry's most flexible prepaid controller upgrade program

**FUTURE-PROOF**
Continuously modern

**DATA-IN-PLACE UPGRADE**
Replace nodes in existing appliance

**OR**

**SCALE-OUT**
Discount credit on 2nd appliance




Multiple upgrade options | Anytime in contract | No renewal required

# Anytime Upgrade Economic Benefits

Direct cost savings, plus flexibility & investment protection

**Up to 54% savings**[1]


compared to post-sale purchase

\+

- **NO** new purchase order
- **LOWER** admin costs
- **EXTENDS** useful life
- **LONGER** depreciation

*Respond to unforeseen change*

**Enroll at point of sale**

**Redeem anytime in contract**[2]

**Next Gen or Next Gen + Higher Model upgrade**

**Scale-out credit**

**Renewal decision** *(after upgrade)*

1 – Example savings estimated based on PowerStore 7000 model and AU Standard option. Actual savings will vary based on PowerStore model and upgrade option selected.

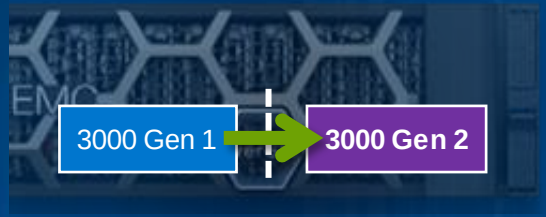
2 – Eligible for upgrade 180 days after invoice. No need to wait up to 3 years!

# Anytime Upgrade Program Options

Two offers keep you continuously modern, on your own terms

## Standard

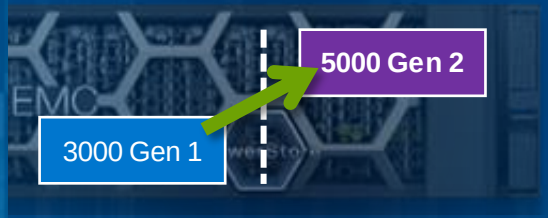
Upgrade nodes




**Next Gen upgrade**

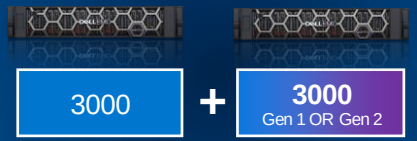
## Select: Total Flexibility and Choice

Upgrade nodes




**Next Gen + Higher Model**

…or add a new appliance



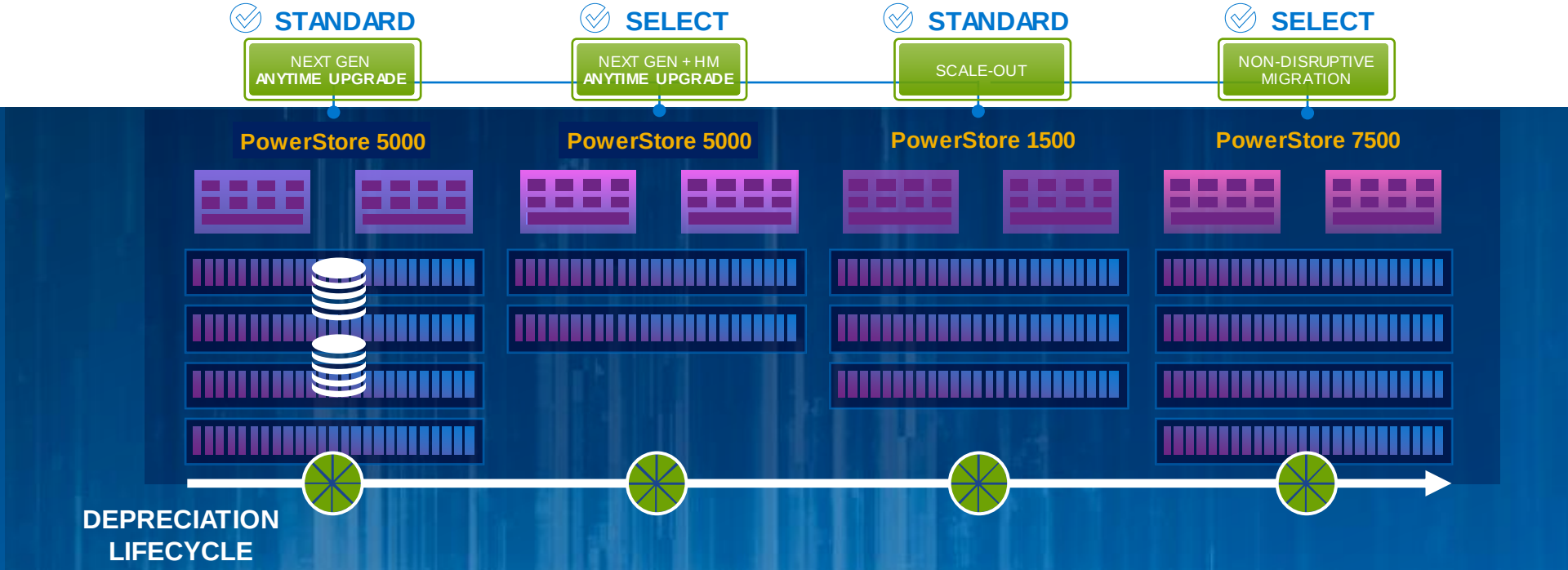

**or Scale-out**

Note the above PowerStore model scenarios are examples only. Anytime Upgrades are available for all models. See T&Cs for details.

Upgrade eligibility begins 180 days after invoice. Anytime Upgrade Program availability may vary by country and segment. For details, contact your sales representative.

# Extending useful life

Power of adaptable scale-out architecture and Anytime Upgrade program




Continuously modernize without **disruption**

# Seamless migration

XTREMIO | UNITY | SC SERIES | VNX SERIES | PS SERIES





**Native tools included**

**Cross-platform solutions**


Migrate from existing platforms in less than **10 clicks***

*- Based on Dell analysis of minimum effort required

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# FUTURE-PROOF




- 4:1 Data Reduction Guarantee
- Three-year Satisfaction Guarantee
- Anytime Upgrades
- Flexible Payment Solutions

# Wide-ranging **consumption** models

Flexible pay-per-use solutions**


## Pay As You Grow

Align payments with technology deployment plans and growth schedules

## Flex On Demand

Meter usage and pay only for what you consume with elastic capacity that scales up and down

## Data Center Utility

Establish a pay per use environment across your entire IT infrastructure

** Payment solutions provided by Dell Financial Services L.L.C. (DFS) or its affiliate or designee, subject to availability and may vary in certain countries. Where available, offers may be changed without notice.

# PowerStore

## Designed for the data era


### Data-centric

- **Any** Workload
- **Performance** Optimized
- **Efficiency** Without Compromise

### Intelligent

- **Programmable** Infrastructure
- **Autonomous** Appliance
- **Proactive** Health Analytics

### Adaptable

- Flexible **Architecture**
- Flexible **Deployment**
- Flexible **Consumption**

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# Product Details

# PowerStore Family


| | PowerStore 1000 | PowerStore 3000 | PowerStore 5000 | PowerStore 7000 | PowerStore 9000 |
|---|---|---|---|---|---|
| **CPU** (Appliance) | **32 Cores/1.8GHz** | **48 Cores/2.1GHz** | **64 Cores/2.1GHz** | **80 Cores/2.4GHz** | **112 Cores/2.1GHz** |
| **Memory** (Appliance) | **384GB** | **768GB** | **1152GB** | **1536GB** | **2560GB** |
| **Capacity** (Cluster) | 11.52TB – 3.59PB Raw<br>28.57TB – 11.36 PB Effective | | | | |
| **Max Drives** (Cluster) | 384 | | | | |
| **Drives** | NVMe SCM, NVMe Flash, SAS Flash | | | | |
| **Embedded** | 25/10/1 GbE or 10/1 GbE BaseT | | | | |
| **IO Modules** | IO Modules: 32/16/8 Gb FC, 25/10 GbE, 10/1 GbE BaseT | | | | |

# PowerStore


Full NVMe

## 2U 2-Node appliance

- Dual Socket Intel Xeon CPUs
  - 2x8C > 2x28C per node
  - 192GB > 1280GB RAM per node
- 25x NVMe slots
  - NVRAM Caching
- Redundant HW components
- Scale up w/expansion enclosures

## Drive Support

| 3DTLC | SCM |
|---|---|
| 1.92TB | 375GB |
| 3.84TB | 750GB |
| 7.68TB | |
| 15.36TB | |




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# PowerStore

MANAGEMENT
AND SERVICE PORTS
(1+1 PER NODE)

4-PORT MEZZ CARD
25GbE/10GbE IP OPTICAL OR 10/1GBaseT
(1 PER NODE)

NODE B

NODE A

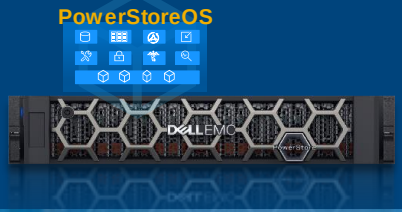

2U

OPTIONAL
IO MODULES
(2 PER SP)

32/16/8Gb FC (4-PORT)
25/10GbE IP OPT (4-PORT)
10/1GbT IP (4-PORT)

DRIVE
EXPANSION
PORTS
(2 PER NODE)

# Deployment modes provide flexibility and choice

| | Operating environment | Models | Data types | Scale out |
|---|---|---|---|---|
| **Hypervisor Deployment**   | **Storage + local apps (AppsON)**<br>• PowerStoreOS runs as a VM on **on-board ESX hypervisor**<br>• Run VMs/apps **on internal ESX nodes** | **1000X**<br>**3000X**<br>**5000X**<br>**7000X**<br>**9000X** | VMs/apps running on internal ESX nodes<br><br>***AND***<br>External SAN, vVols | Single appliance in first release, clustering in follow-up release |
| **Standard Deployment**   | **Storage only**<br>• PowerStoreOS deployed on **bare metal**<br>• Applications run on **external servers** | **1000T**<br>**3000T**<br>**5000T**<br>**7000T**<br>**9000T** |  Unified config (standard)<br>SAN, NAS, vVols<br><br>  Block optimized config (optional)<br>SAN, vVols | Cluster up to 4 appliances *(NAS on master appliance only)*<br><br>Cluster up to 4 appliances |

**PowerStore storage services and capacity are identical across X and T model categories**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