Dell EMC PowerStore kompakt – was ist wirklich neu?

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DELL Technologies
TITANIUM PARTNER

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Dell Technologies stellt vor:

PowerStore

Datenzentriert

Intelligent

Anpassbar

Für das Datenzeitalter konzipiert


MANAGING DATA
SECURELY
Hardware Overview

Overview

PowerStore™

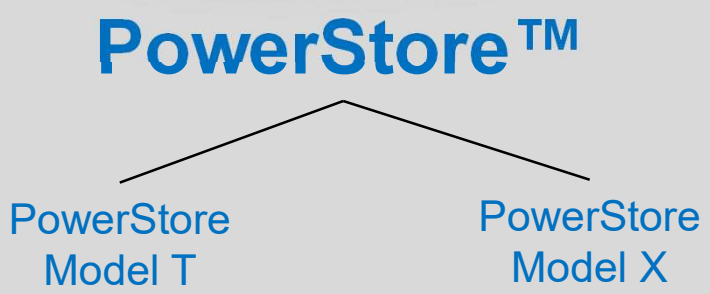
Overall family brand that encompasses all models is called “PowerStore”

“PowerStore T models” refers to SAN/NAS only deployment mode of PowerStore

“PowerStore X models” refers to SAN and built-in ESX hypervisor deployment mode of PowerStore

From marketing perspective, it is acceptable to omit “T” and “X” when referring to a particular system configuration

- i.e. “PowerStore 5000 models have these system limits…”



PowerStore-Produktreihe

	PowerStore 1000	PowerStore 3000	PowerStore 5000	PowerStore 7000	PowerStore 9000
CPU (Appliance)	**32 Cores/1,8 GHz**	**48 Cores/2,1 GHz**	**64 Cores/2,1 GHz**	**80 Cores/2,4 GHz**	**112 Cores/2,1 GHz**
Arbeitsspeicher (Appliance)	**384 GB**	**768 GB**	**1.152 GB**	**1.536 GB**	**2.560 GB**
Kapazität (Cluster)	11,52 TB – 3,59 PB Rohkapazität 28,57 TB–11,36 PB effektive Kapazität				
Maximale Anzahl Festplatten (Cluster)	384				
Laufwerke	NVMe-SCM, NVMe-Flash, SAS-Flash				
Integriert	25/10/1 GbE oder 10/1 GbE BaseT				
I/O-Module	I/O-Module: 32-/16-/8-Gbit-FC, 25/10 GbE, 10/1 GbE BaseT				

PowerStore

2-HE-Appliance mit 2 Nodes

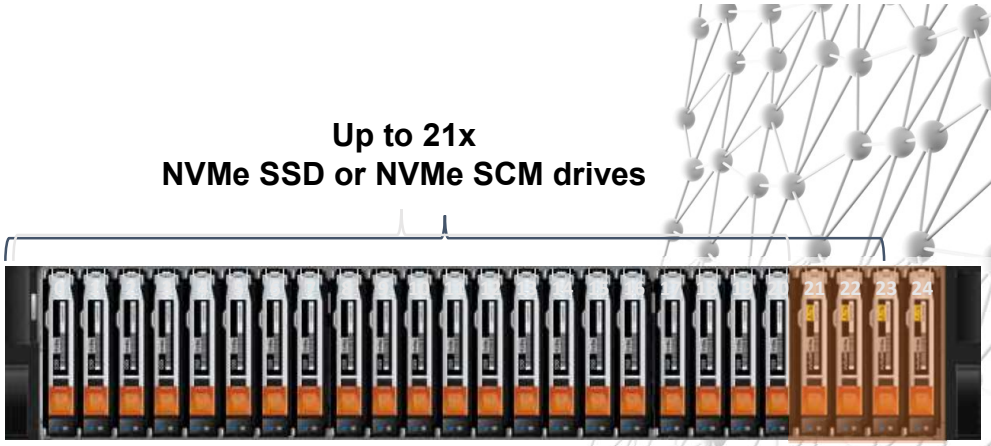
- Intel Xeon CPUs mit 2 Sockeln
  - 2 x 8 C > 2 x 28 C pro Node
  - 192 GB > 1.280 GB RAM pro Node
- 25 NVMe-Steckplätze
  - NVRAM-Caching
- Redundante HW-Komponenten
- Scale-up mit Erweiterungsgehäusen

Laufwerksunterstützung

3DTLC	SCM
1,92 TB	375 GB
3,84 TB	750 GB
7,68 TB	
15,36 TB	

Chassis

Base Enclosure (Front)



25x Drive Slots supports:

- NVMe SSD or
- NVMe SCM

Last 4x slots support:

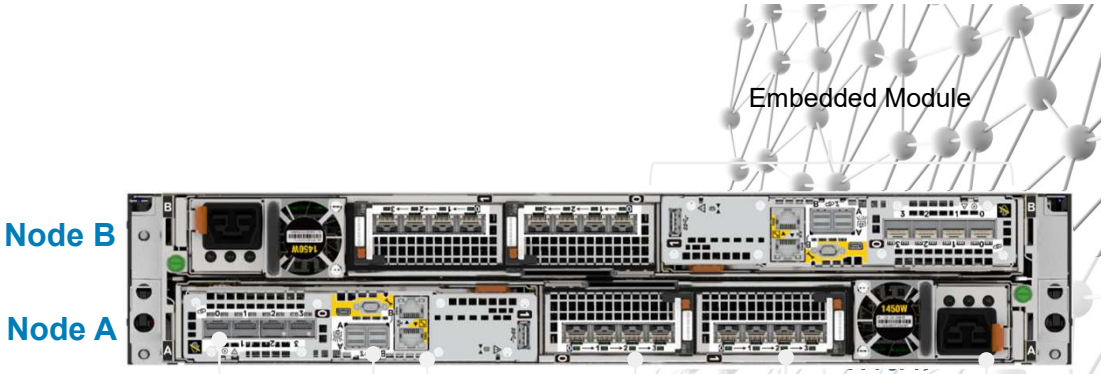
- NVMe NVRAM used for write caching
- Support either 2 or 4 NVRAM drives depending on model
- Four slots will always be reserved for the NVRAM drives even when the model uses 2 NVRAM drives

2U in height (rack units), 31.2" depth, ~92 lbs fully loaded

- Two personnel required to install the system

Chassis

Base Enclosure (Rear View)

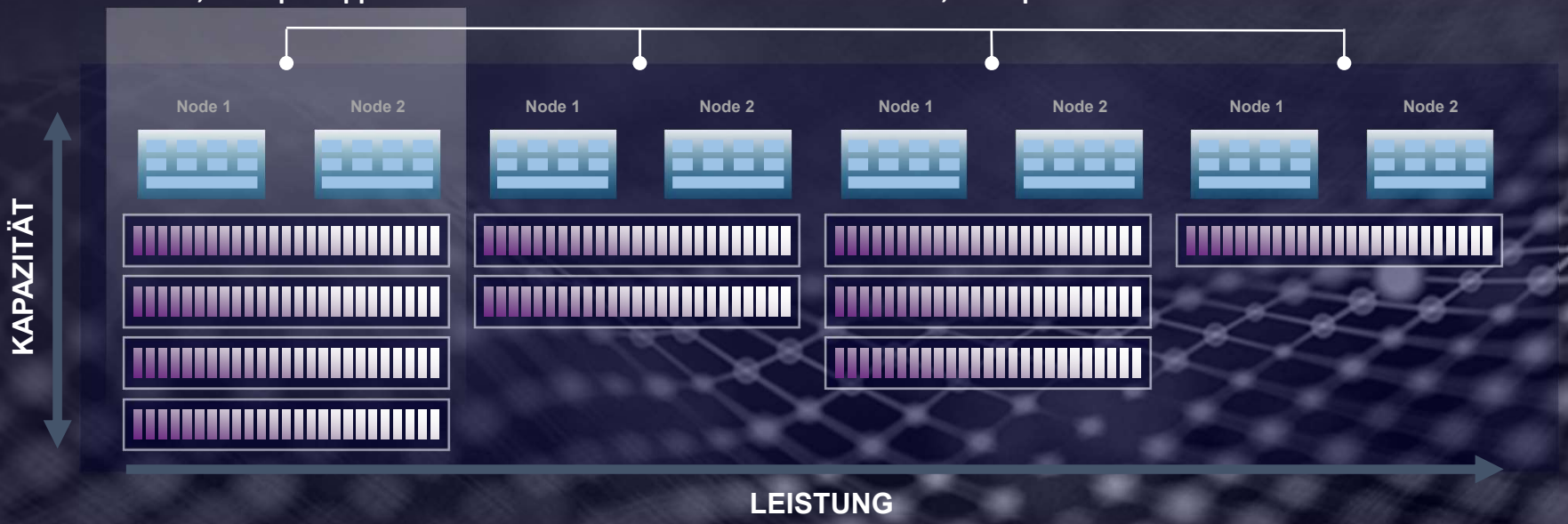


- 2 Nodes in inverted arrangement
- Each Node has Embedded Module
  - 1x 4-Port Card Slot – Mezz 0
  - Embedded 2x1GbE Port (Mgmt/Service)
  - Embedded SAS Expansion Ports (x2)
- Every appliance must contain a 4-Port Mezz 0
  - The 4-Port Card is used for connections such as cluster interconnect and management of the appliance
  - Customers will have 2 types of 4-Port Mezz cards to select from: Optical or Copper
- Each node has 2x I/O Module slots for configuring optional additional frontend ports
- Each node has a power supply unit (PSU) which can power both nodes if needed

Horizontal und vertikal skalierbare Architektur

Vertikale Skalierung
mit Erweiterungsgehäusen
Bis zu 2,8 PBe pro Appliance*

Horizontale Skalierung
auf 8 Aktiv-Aktiv-Nodes
Bis zu 11,3 PBe pro Cluster*

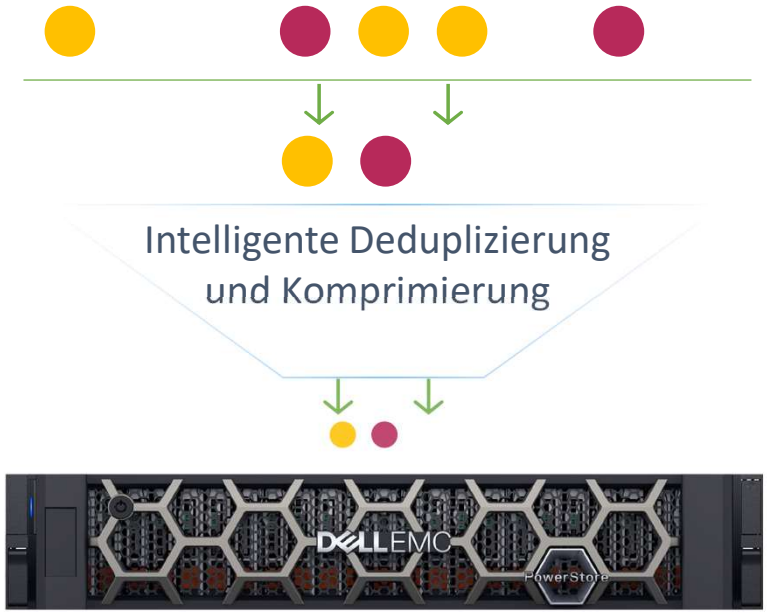


Unabhängige Skalierung von Compute und Speicher

* Bei der effektiven Kapazität wird von einer DDR von 4:1 ausgegangen.

DELL Technologies

Always-on-Inline-Datenreduzierung



FUTURE-PROOF

4:1

Datenreduzierung
versprochen

Bis zu 20:1

Konsistente Speichereffizienz **ohne Kompromisse**

Node

Internal View

2x Intel Xeon processors

24x DDR4 DIMM slots

Lewisburg Compression Chip

- Offloads compression services from CPU

Embedded Module

- One 4-port Mezzanine card with PCIe x16 lanes

2x I/O Modules

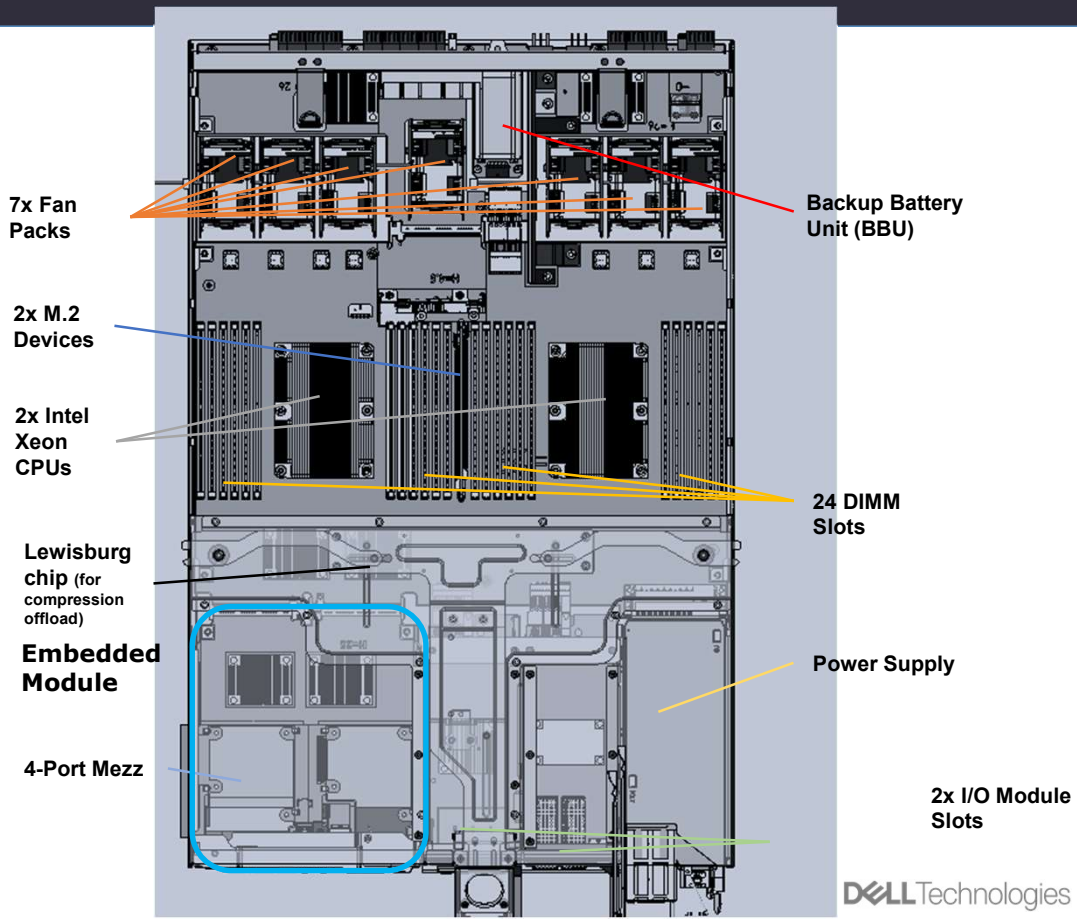
- One x16 (Slot 0) and one x8 (Slot 1) Gen 3 PCIe 3.0 I/O Module Slots

Power Supply

Backup Battery Unit (BBU)

7x Fan Packs

2x M.2 mSATA local drives



Intel C620 aka Lewisburg

Comparison with performance capabilities of previous generations of Intel® QuickAssist Technology is illustrated in Figure 2, where “Lewisburg” indicates the Intel® C620 series chipset.

Note:Cave Creek (8920) and Coleto Creek (8955) are both considered to be the first generation of Intel® QuickAssist Technology.

https://builders.intel.com/docs/networkbuilders/telco-cloud-enablement-for-2nd-generation-intel-xeon-scalable-processors-intel-quickassist-technology.pdf

Node

Internal M.2 Modules

2x local mSATA drives

Primary M.2 is 240 GB

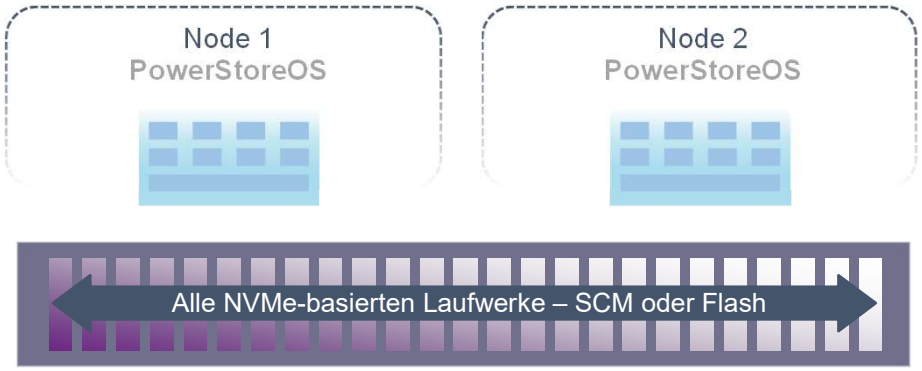
- Contains base OS and software
- Primary boot device
- Log files (data collects and dumps)

Secondary M.2 is 120 GB

- Recovery image

M.2 riser card holds both M.2 drives and is in the middle of the motherboard surrounded by the DIMM slots

Optimiert für Performance



PowerStore

Aktiv-Aktiv-HA | End-to-End-NVMe | Flash oder SCM

Konzipiert für eine Ausfallsicherheit von 99,9999 %

7x schneller

3x niedrigere Latenz

Basierend auf internen Tests im Vergleich zu Unity XT

PowerStore Drive Support

NVMe NVRAM

Every system has either 2 or 4 NVMe NVRAM Write Cache drives depending on model

- Each NVRAM drive is 8GB in size and mirrored
- All writes to the system must be written to the NVRAM drives prior to being acknowledged to the source

There will be a maximum of 4 NVRAM drives depending on model of the system and this is locked

- Customers cannot scale write cache

NVMe NVRAM drives are self-encrypting, but not FIPS certified

PowerStore Drive Support

NVMe SCM

Customers have the option to use NVMe SCM drives in their PowerStore system

If NVMe SCM drives are chosen, a minimum of 6 drives are required per appliance

NVMe SCM drives **CANNOT** be mixed with NVMe SSD or SAS SSD drives

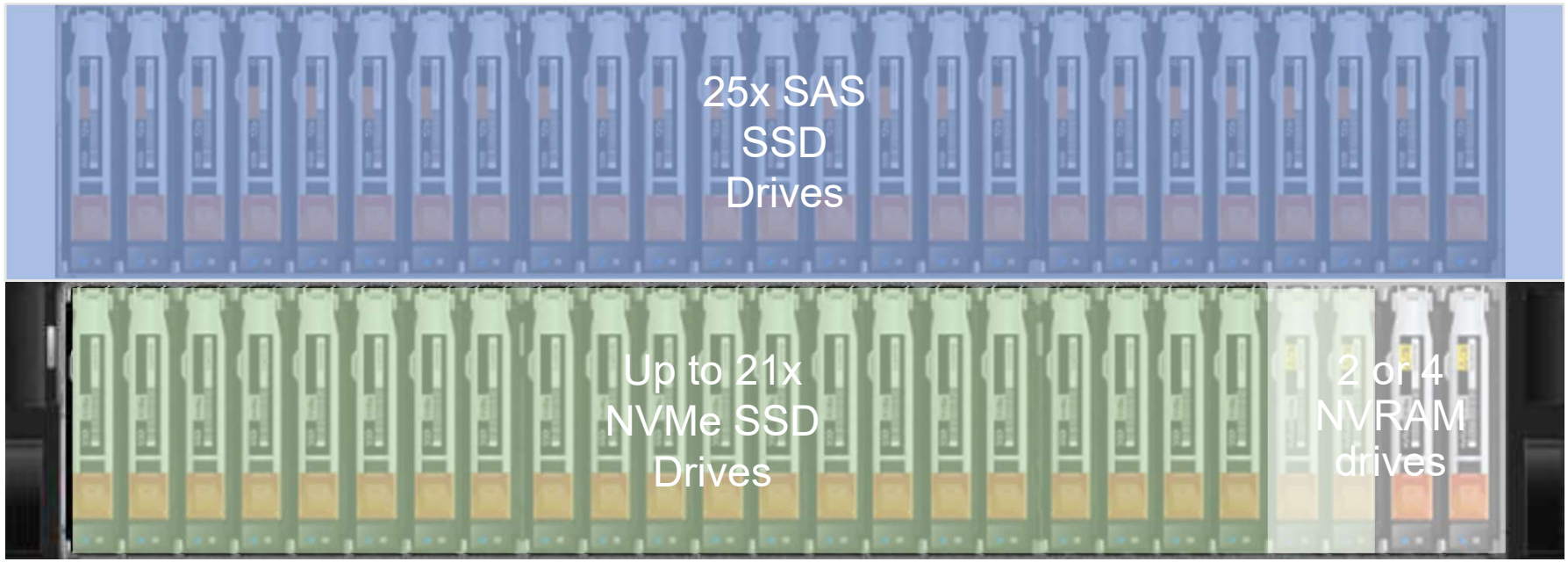
Note: An appliance with NVMe SCM drives in the base enclosure cannot attach any expansion enclosures

PowerStore Drive Support

NVMe SCM – System Configuration

PowerStore Drive Support

NVMe SSD – System configuration (With expansion enclosure)



PowerStore Drive Support

Summary

All 25 drive slots support NVMe drives, SAS SSD drives are not supported in any slot on base enclosure

SAS SSD drives are only supported in attached expansion enclosures

Drive Type	Location	Purpose
NVMe NVRAM	Slots 21-24 in base enclosure	Cache
NVMe SCM	Slots 0-20 in base enclosure	User Data/Meta Data
NVMe SSD	Slots 0-20 in base enclosure	User Data/Meta Data
SAS SSD	Slots 0-24 in expansion enclosure	User Data/Meta Data

PowerStore Drive Support

Storage Type	Usage / Purpose	GB	2.5” Base Enclosure (25 slot)	2.5” Expansion Enclosure (25 slot)
SAS SSD	User Data/Metadata	1,920		✓
	User Data/Metadata	3,840		✓
	User Data/Metadata	7,680		✓
NVMe SSD	User Data/Metadata	1,920	✓	
	User Data/Metadata	3,840	✓	
	User Data/Metadata	7,680	✓	
	User Data/Metadata	15,360	✓	
NVMe SCM	User Data/Metadata	375	✓	
	User Data/Metadata	750	✓	
NVMe NVRAM	Cache	8	✓	

- All drive offerings are encrypted (SEDs)
- All drive offerings are FIPS certified except for NVMe NVRAM drives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PowerStore T Model Overview

Overview

PowerStore T Model

PowerStoreOS installed directly on purpose built hardware

- 2U2N
- All NVMe Base Enclosure
- Dual-socket Intel Xeon architecture

Unified Storage array

- SAN (FC/iSCSI)
- NAS (NFS/SMB/FTP/SFTP)
- vVol (FC/iSCSI)

Active-Active architecture

- Each node has access to the same storage
- Active-optimized/Active-unoptimized front end connectivity

Overview

PowerStore T Storage Configuration

PowerStore T has two user configured deployment modes

Different deployment modes are called **Storage Configuration**

Unified:

- Default storage configuration (factory state)
- Supports SAN, NAS, and vVol
- Resources shared between block and file components

Block Optimized

- Alternate storage configuration (requires reboot)
- Supports SAN and vVol
- Resources dedicated to block components

Storage Configuration is selected at time of Initial Configuration

Changing Storage Configuration requires a factory reset

Currently, multi-appliance clusters support a maximum of one Unified appliance.

Container-basierte Architektur

Flexible Architektur

NEW!
PowerStoreOS

Dell EMC Speicher-Stack der nächsten Generation

Modulares Design für schnellere Innovationen

Konsistente Services auf allen Plattformen

Unterstützung für zukünftige Bereitstellungsmodelle

Standardbereitstellung

Flexible Architektur

Modulares Design für schnellere Innovationen

Konsistente Services auf allen Plattformen

Unterstützung für zukünftige Bereitstellungsmodelle

Networking

Storage Network Scaling

PowerStore T models support 32Gb FC I/O Modules for SAN connectivity

- Traditional block and vVol storage presented to external hosts over FC

iSCSI Storage network can be scaled up to support more iSCSI targets

- Only one storage network is supported
- Cannot scale to additional VLANs or subnets

The following components are available for iSCSI port scaling:

- Ports 2 & 3 of 4-Port Card
- 4-Port I/O Modules

No additional link aggregation can be configured

- System bond cannot be expanded

Workflow:

1. Add additional IPs to the existing storage network (unless unused IPs exist)
2. Map unmapped ports to the additional IPs


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PowerStore X Model Overview

Standardbereitstellung

Flexible Architektur

Modulares Design für schnellere Innovationen

Konsistente Services auf allen Plattformen

Unterstützung für zukünftige Bereitstellungsmodelle

Hypervisor-Bereitstellung

Flexible Architektur

Integrierter VMware-Hypervisor

Abstraktion des Speicher-BS

Wir stellen vor: AppsON

Anwendungsausführung direkt auf der Appliance

- Infrastrukturanwendungen
- Datenintensive, anspruchsvolle Workloads

Microsoft SQL Server
Apache Spark
splunk>
ORACLE
vmware

Overview

ESXi

VMware ESXi 6.7 U2 installed directly onto each node

PowerStore X model appliance contains ESXi Cluster of two ESXi hosts

- 1 ESXi host per node

Requires existing vCenter and license for deployment

- VMware vSphere Enterprise Plus license
- Customer can purchase license or use existing

VMware components are automatically configured

- ESXi Cluster
- vSphere HA
- Distributed Virtual Switch
- Etc.

Customer Virtual Machines will leverage PowerStore storage and data services!

Overview

Controller VM

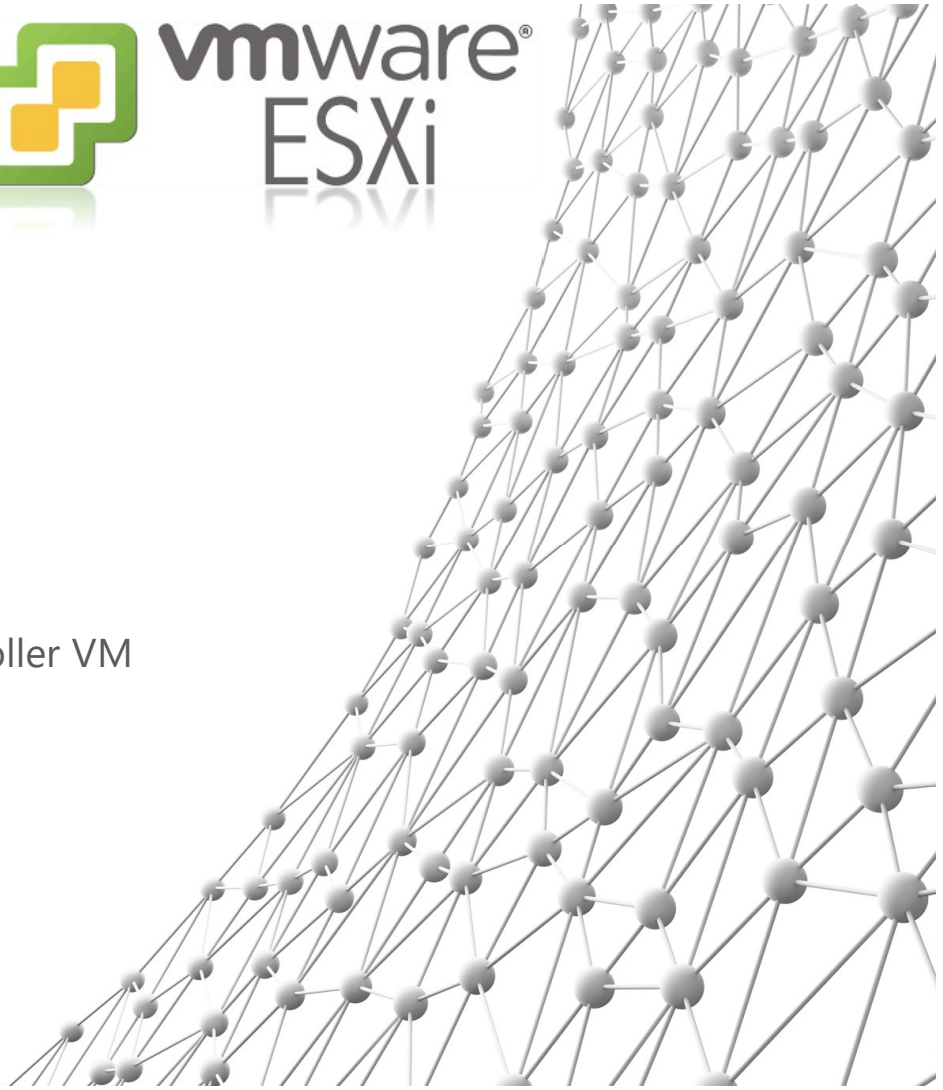
PowerStoreOS runs inside of a Controller VM
- VMware Virtual Machine
- “Virtualized” instance of the PowerStore series OS

One Controller VM fixed per node
- Will never fail-over to other node

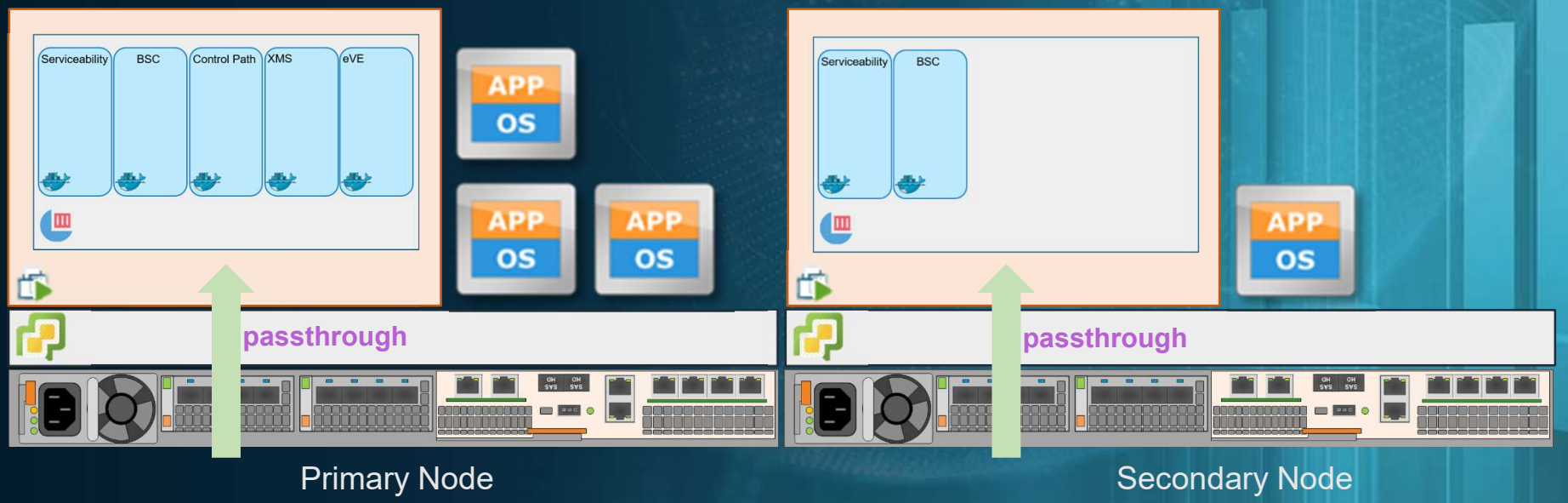
Reserves 50% of node resources
- CPU and Memory

Key platform devices passed through directly to Controller VM
- Removes latency involved with ESXi layer

Stored on M.2 device local to host and node

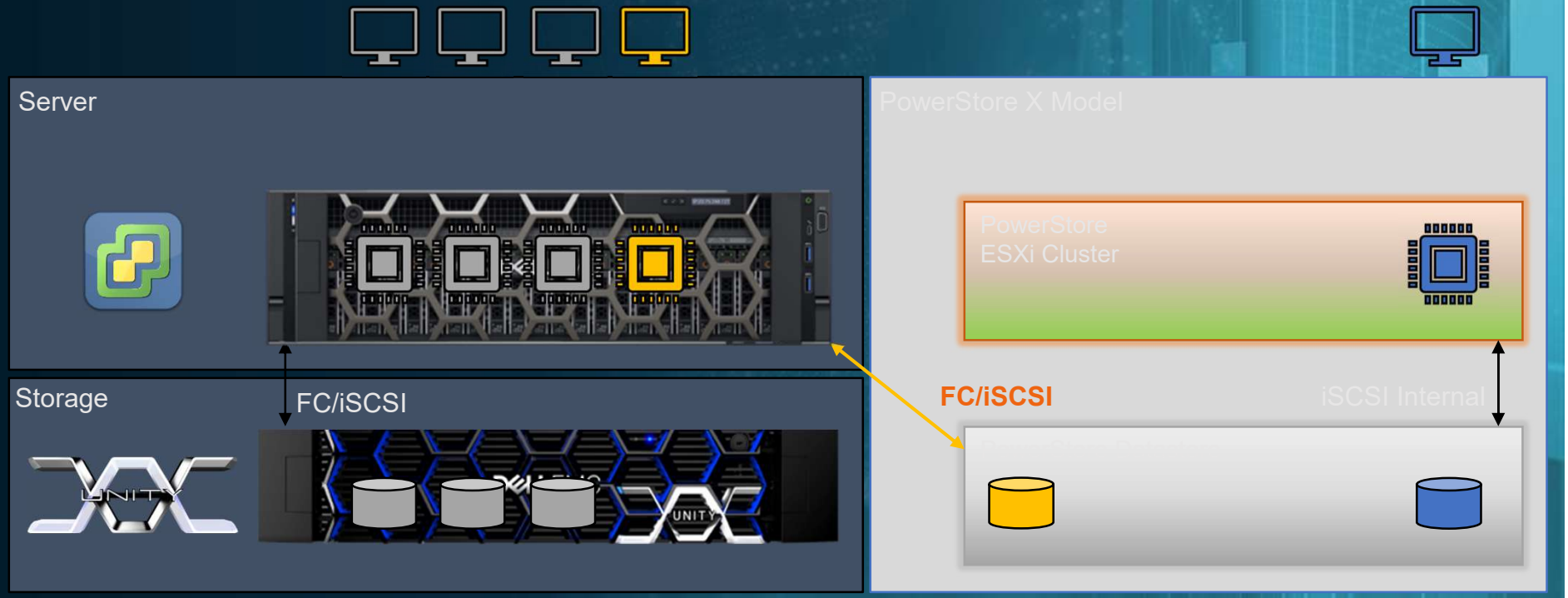


Overview


Serviceability
BSC
Control Path
XMS
eVE
APP
OS
APP
OS
APP
OS
passthrough
Primary Node
Serviceability
BSC
APP
OS
passthrough
Secondary Node

Overview

PowerStore X Model Capability Diagram




MANAGING DATA
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System Limits

System Limits: CPU, Memory, Capacity, & Ports

System Limit	PowerStore T	PowerStore X
CPU Speed, Core Count (per Node)	See System Table	See System Table
System Memory (per Node)	See System Table	See System Table
Max Drive Count per Appliance	100	100
Max NVRAM Cache Cards	4	4
Max 12Gb SAS BE Ports	2	2
Max Front-End Ports (per Node)	12	12

Note: As updates will periodically occur, please reference the support matrix posted on E-Lab for the most up to date limits information.

System Limits: Volume and Volume Groups

System Limit	PowerStore T	PowerStore X
Max Number of Block Volumes/Clones per Appliance	2000	2000
Max Number of Volumes and FS	2600	2000
Max Volume Size	256TB	256TB
Max Volumes per Volume Group	75	75
Max Volume Groups per Appliance	125	125
Max Volume Groups per Cluster	500	500

Note: As updates will periodically occur, please reference the support matrix posted on E-Lab for the most up to date limits information.

System Limits: ESX Related

System Limit	PowerStore T	PowerStore X
Max Number of Storage Containers	50	50
Max VMs per ESXi External Host	1024	1024
Max Number of VMs per Appliance	1120	1120
Max VVol Size	62	62
Max VVols (Bound and Unbound) per Appliance	19000	19000
Max VVols (Bound) per Appliance	7600	7600

Note: As updates will periodically occur, please reference the support matrix posted on E-Lab for the most up to date limits information.

System Limits: Asynchronous Replication

System Limit	PowerStore T	PowerStore X
Max Async Replication Sessions per Appliance	500	500
Max Replicated Volumes	1000	1000
Max Number of Remote Clusters	8	8

Note: As updates will periodically occur, please reference the support matrix posted on E-Lab for the most up to date limits information.


Vielen Dank für Ihre Aufmerksamkeit!
Gerne beantworten wir jetzt Ihre Fragen.

MTI Webinare – die nächsten Termine im Überblick

Informationen und Anmeldung unter https://de.mti.com/webinars/

25.05.2020:	**Huawei** OceanStor Dorado V6 - KI-unterstützter Speicher
02.06.2020: *(Dienstags!)*	**Zadara** Enterprise Data Storage pay-as-you-grow
08.06.2020:	**Tidalscale** Sofware Defined Database Server
15.06.2020:	**Quantum** Was das Darknet mit Ihrem Backup zu tun hat
22.06.2020:	**SEP** Enterprise Backup auch für den Mittelstand

Bleiben Sie gesund! Bis nächste Woche.

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