DELL Technologies

Spec Sheet

Dell PowerStore

500T model specifications

(DC Power – NEBS* Compliant)

Modern storage made simple

The ground-breaking Dell PowerStore enterprise storage appliance helps you achieve new levels of operational agility with advanced storage technologies and intelligent automation to unlock the power of your data. Accelerate block, file and vVols workloads with a single unified platform that scales both up and out, keeping pace with rapidly changing business requirements. Streamline DevOps with automated workflows and extensive support for containerized apps – and simplify your overall ecosystem with deep integrations that let you provision advanced PowerStore services from your management framework of choice.

Architecture

PowerStore utilizes Intel® Xeon® Scalable processors, plus a flexible all-NVMe design featuring dual-ported Intel® Optane™ SSDs and NVMe-over-fabric networking (both FC and TCP), to deliver end-to-end low latency performance for any workload. Always-on data reduction, intelligent automation, active resource balancing, predictive analytics and non-disruptive software and hardware upgrades keep your storage environment continuously optimized, up-to-date and easy to manage, even as your needs evolve over time.

*DC products comply with NEBS Level 3 and ETSI requirements and are tested to the following standards: GR-63-CORE, GR-1089-CORE & ETSI EN 300 386, EN 300 132-2, EN 300 753, EN 300 019

Per Appliance[1]	
Nodes	Each appliance includes two active/active nodes
Processors	2 Intel Xeon CPUs, 24 cores, 2.2 GHz
Memory	192GB
Max Drives	25
Base Enclosure	2U enclosure with dual active/active nodes and twenty-five (25) 2.5” NVMe drive slots
Power Supplies	PowerStore appliances are powered by 2 redundant power supplies (PS) per enclosure.
Data Resiliency	Dynamic Resiliency Engine (DRE), protects against multiple simultaneous drive failures
Max Mezzanine cards[2]	2
Max IO Modules[3]	4
Max front-end Ports (all types)	24
Max 16/32Gb FC Ports	16
Max 10 Gbase-T/iSCSI Ports per Appliance	16
Max 10/25 GbE/iSCSI Ports per Appliance	24[4]
Max Raw Capacity[5]	303.36 TBe *(76TB, 69TiB raw)*
Max capacity per cluster[5]	1.21 PBe

1 Dell PowerStore Family

1 - Up to 4 appliances may be combined per scale-out cluster
2 - One mezzanine card per node, mirrored
3 - Two IO Modules per node, mirrored.
4 - Four (4) Onboard ports by default
5 - Effective capacity assumes average 4:1 data reduction. Actual results vary, refer to Power Sizer for capacity data in your environment. Maximum capacities are dependent on drive sizes available at time of purchase. Maximum logical capacity supported per appliance is 8 exabytes (EB). Raw value is based on drive vendor raw base capacity. TB is base-10 decimal (1000x1000x1000x1000). TiB is base- 2 binary (1024x1024x1024x1024).

Appliance system limits

Per appliance	
Max Initiators	1,000
Max Block Volumes/Clones (FC/iSCSI)	1,000
Max Block Volumes/Clones (NVMe-oF)	1,000
Max Volumes per Volume Group	75
Max Volume Groups	125
Max Volume Size	256 TB
Max Snapshots (Block)	50,000
Max User File Systems	1500
Max NAS Servers	50
Max File System Size	256 TB
Max vVol Storage Containers	50
Max vVols	5,700
OS Support	See the Dell Simple Support Matrix on delltechnologies.com

Cluster system limits

Features			
Max. Appliances	4	Max. Initiators	2,000
Max. Front End Ports	96	Max. Initiators in an Initiator Group	1,024
Max. iSCSI sessions	2,048	Max Volumes and vVols	32,000
Maximum number of drives & maximum raw capacity of a PowerStore cluster will depend on the appliance level limits mentioned above.			

Connectivity

Connectivity options via Mezzanine cards and IO modules for file, for NFS/SMB connectivity, and block storage for FC and iSCSI host connectivity (see above table for number of modules supported per node).

Connectivity options		
Type	**Description**	**Details**
Mezzanine card / IO Module	Two-Port 10 Gb/s Optical Module (Block)	Two port 10GbE IP/iSCSI module. Uses SFP+ optical connection or active/passive twinax copper connection to Ethernet switch
Mezzanine card / IO Module *	Four-Port 25 Gb/s Optical Module (File & Block)	Four port IP/iSCSI module supporting 25GbE or 10GbE. Uses SFP+ optical connection or twinax copper connection (active/ passive for 10GbE, passive for 25GbE) to Ethernet switch
IO Module	Four-Port 32 Gb/s Fibre Channel Module (Block only)	Four port FC module with choice of 16Gb/s or 32Gb/s connectivity. Uses multimode optical SFP and OM2/OM3/OM4 cabling to connect directly to host HBA or FC switch
IO Module	Four-Port 10GBASE-T Module	Four port 10GBASE-T Ethernet IP/iSCSI module with copper connection to Ethernet switch
IO Module	Four-Port 25 Gb/s Optical Module	Four port IP/iSCSI module supporting 25GbE or 10GbE. Uses SFP+ optical connection or twinax copper connection (active/ passive for 10GbE, passive for 25GbE) to Ethernet switch
* Ports 2 and 3 on the 4-Port Mezzanine card are reserved for backend connectivity		

Back-end (Drive) connectivity

Each node connects to one side of each of two redundant pairs of GbE ports, providing continuous drive access to hosts in the event of a node or port fault.

Supported media			
Drive Type	**Interface**	**Raw base-10 Capacity ***	**Raw base-2 Capacity ****
NVMe TLC SSD	PCIe	1.92 TB	1.7466 TiB
NVMe TLC SSD	PCIe	3.84 TB	3.4931 TiB
* Base-10 vendor raw TB (bytes X (1000 x 1000 x 1000 x 1000) ** Base-2 vendor raw TiB (bytes X (1024 x 1024 x 1024 x 1024)		All drives are 512 bytes/sector. All drives are FIPS 140-2 Level 2 validated TCG SED	

OE protocols and software facilities

Support is provided for a wide variety of protocols and advanced features available via various software suites, plug-ins, drivers and packs.

Protocols and facilities supported		
Access-based Enumeration (ABE) for SMB protocol	Key Management Interoperability Protocol (KMIP) compliant external key manager for D@RE	REST API: Open API that uses HTTP requests to provide management
Address Resolution Protocol (ARP)	Lock Manager (NLM) v1, v2, v3, and v4	RSVD v1 for Microsoft Hyper-V (SMB3)
Block Protocols: iSCSI, Fibre Channel (FCP SCSI-3), NVMe/FC, NVMe/TCP, vVols	Management & Data Ports IPv4 or IPv6	Simple Home Directory access for SMB protocol
DFS Distributed File System (Microsoft) as Standalone Root Server	NAS Servers Multi-protocol for Unix and SMB clients (Microsoft, Apple, Samba)	Simple Mail Transfer Protocol (SMTP)
Direct Host Attach for Fibre Channel	Network Data Management Protocol (NDMP) v1-v4, 3-way	Simple Network Management Protocol v2c & v3 (SNMP) Trap support
Dynamic Access Control (DAC) with claims support	Network Information Service (NIS) Client	Virtual LAN (IEEE 802.1q)
Fail Safe Networking (FSN)	Network Status Monitor (NSM)	VMware Virtual Volumes (vVols) 2.0
Internet Control Message Protocol (ICMP)	Network Time Protocol (NTP) Client	vStorage APIs for Array Integration (VAAI)
Kerberos Authentication	NFS v3/v4 Secure Support	vStorage APIs for Storage Awareness (VASA)
LDAP (Lightweight Directory Access Protocol)	NT LAN Manager (NTLM)	

Security & compliance
US Department of Defense Information Network Approved Products List (DoDIN APL) – in process*
Common Criteria - in process
Data at Rest Encryption (D@RE) in PowerStore utilizes FIPS 140-2 Level 2 validated Self-Encrypting Drives (SEDs) by respective drive vendors for primary storage (NVMe SSD and NVMe SCM SSD). The NVRAM caching device is encrypted and FIPS 140-2 Level 2 validated.
(KMIP) compliant external key manager for D@RE
Multi-factor authentication via RSA SecurID
Immutable and secure snapshots
FIPS 140-2 Level 2 validated
IPv6 USGv6-R1 certification
Native SHA2 certificate
Restriction of Hazardous Substances (RoHS) compliance
TLS 1.2 support by default, TLS 1.1 and older are disabled by default. TLS 1.1 can be optionally enabled.
* As of PowerStoreOS 3.5, PowerStore has been STIG-hardened to meet the security requirements of the US Department of Defense.

Software

All Inclusive Base Software	**Management Software:** • PowerStore Manager • CloudIQ: Cloud-based storage analytics • Thin Provisioning • Dynamic Resiliency Engine (DRE) – Single & Dual parity • Data Reduction: Zero Detect/Deduplication/Compression • Proactive Assist: Configure remote support, online chat, open a service request, etc. • Quality of Service (Block and vVols) **Protocols: PowerStore T Models** • Block • vVols • File **Local Protection:** • SED Based Encryption with self-managed and external key management • Local Point-In-Time Copies (Snapshots and Thin Clones) • Immutable & Secure Snapshots • AppSync Basic • File Level Retention (FLR) • Dell EMC Common Event Enabler; AntiVirus Agent (CEPA) **Remote Protection:** • Native Asynchronous Block Replication • Native Asynchronous vVol Replication • Native Metro Volume Synchronous Block Replication • Native Asynchronous File Replication • Native PowerProtect DD integration - manage local or multicloud backups directly from PowerStore **Migration:** • Native Block migration from Dell EMC Unity, VNX, SC Series, PS Series • Native File Migration from Dell EMC VNX
Interface Protocols	Block: FC, NVMe/FC, iSCSI, NVMe/TCP and VMware Virtual Volumes (vVols) 2.0 File: NFSv3, NFSv4, NFSv4.1; CIFS (SMB 1), SMB 2, SMB 3.0, SMB 3.02, and SMB 3.1.1; FTP and SFTP
Optional Solutions	AppSync Advanced Connectrix SAN Data Protection Suite: Backup, Archive and Collaboration Software Dell EMC RP4VM PowerPath Migration Enabler PowerPath Multipathing PowerStore metro node (block synchronous metro Active/Active, zero RPO/RTO) VPLEX
Note: For more details on software licensing, please contact your sales representative	

Virtualization and container solutions

PowerStore supports a wide variety of protocol and advanced features available via various software suites and packs including but not limited to:

- Dell Virtual Storage Integrator (VSI) for VMware vSphere™: For provisioning, management, and cloning
- OpenStack Cinder Driver: For provisioning and managing block volumes within an OpenStack environment
- VMware Site Recovery Manager (SRM) Integration: Managing failover and failback making disaster recovery rapid and reliable
- Virtualization API Integration: VMware: VAAI and VASA.
- vRO Plugin for PowerStore
- Container Storage Interface (CSI) Plugin for PowerStore
- Ansible Module for PowerStore

Electrical specifications

All power figures shown represent a worst-case product configuration with max normal values operating at a maximum in an ambient temperature environment of 20°C to 25°C.

Power requirements are lower in an ambient temperature environment.

System Enclosure	
	25x2.5” drives, four IO modules
Power	
DC Line Voltage	-39 to -72 VDC
DC Line Current (operating maximum)	28.2 max at -39 VDC 22.9 max at -48 VDC 15.3 max at -72 VDC
Power Consumption (operating maximum)	1100 W
Heat Dissipation (operating maximum)	3.96 x 106 J/hr (3,753 Btu/hr)
Maximum In-rush Current	40 A peak
DC Protection	50 A fuse in each power supply
DC Inlet Type	Positronics PLBH3W3M4B0A1/AA
Ride-through Time	1 ms min at -50 V input
Current Sharing	± 5 percent of full load, between power supplies
	Note: Power consumption values for enclosures are based on fully populated enclosures (power supplies, drives and I/O modules).
Weight and Dimensions	
Weight kgs/lbs	empty 30.38/66.97 full 37.4/82.4
Vertical size	2 NEMA units
Height cm/inches	8.72/3.43
Width cm/inches	44.72/17.61
Depth cm/inches	79.55/31.32

Operating Environment

	Description	Specification
Recommended Range Operation	The limits under which equipment will operate the most reliably while still achieving reasonably energy-efficient data center operation.	18°C to 27°C (64.4°F to 80.6°F) and 15°C (59°F) dew point
Continuous Allowable Range Operation	Data center economization techniques (e.g. free cooling) may be employed to improve overall data center efficiency. These techniques may cause equipment inlet conditions to fall outside the recommended range but still within the continuously allowable range. Equipment may be operated without any hourly limitations in this range.	5°C to 35°C (50°F to 95°F) at 20% to 80% relative humidity with 21°C (69.8°F) maximum dew point (maximum wet bulb temperature). De-rate maximum allowable dry bulb temperature at 1°C per 300m above 950m (1°F per 547 ft above 3117 ft).
Improbable Operation (Excursion Limited)	During certain times of the day or year, equipment inlet conditions may fall outside the continuously allowable range but still within the expanded improbable range. Equipment operation is limited to ≤ 10% of annual operating hours in this range.	35°C to 40°C (with no direct sunlight on the equipment) at -12°C minimum dew point and 8% to 85% relative humidity with 24°C maximum dew point (wet bulb temperature). Outside the continuously allowable range (10°C to 35°C), the system can operate down to 5°C or up to 40°C for a maximum of 10% of its annual operating hours. For temperatures between 35°C and 40°C (95°F to 104°F), de-rate maximum allowable dry bulb temperature by 1°C per 175m above 950m (1°F per 319 ft above 3117 ft).
Temperature Gradient		20°C / hour (36°F / hour)
Altitude	Max Operating	3,050m (10,000ft)

Service and Support

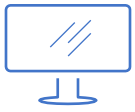
World-Class Dell Technologies Services	
Deployment Services	Dell ProDeploy Enterprise Suite Dell Migration Services Dell Residency Services
Support Services	Dell ProSupport Enterprise Suite Anytime Upgrades Dell Optimize for Storage
Services & Support Technologies	MyService360 SupportAssist Enterprise

Statement of Compliance

Dell Information Technology Equipment is compliant with all currently applicable regulatory requirements for Electromagnetic Compatibility, Product Safety, and Environmental Regulations where placed on market.

Detailed regulatory information and verification of compliance is available at the Dell Regulatory Compliance website. https://www.dell.com/learn/us/en/uscorp1/regulatory-compliance

---



Learn More about Dell PowerStore solutions

Contact a Dell Technologies Expert

View more resources

Join the conversation with #Dell #PowerStore

DELL Technologies