DELL Technologies

SPECIFICATION SHEET

DELL UNITY XT HFA AND AFA STORAGE

(DC POWER – NEBS* COMPLIANT)

Simplify the path to IT transformation and unlock the full potential of your data capital with Dell Unity XT storage arrays that are designed for performance, optimized for efficiency, and built to simplify your multi-cloud journey. Unity XT arrays feature up to 2X more IOPS for both HFAs and AFAs, more memory, and up to 50% more drives than previous Dell Unity models. These cost-efficient storage systems are equipped with dual-active controllers and include a rich set of all-inclusive enterprise-class software. Unity XT AFAs are available with a Future Proof guaranteed 3:1 data reduction rate while the Unity XT HFAs are ideal for workloads that don't require the speed and low latency of NVMe architectures.

Architecture

Unity XT storage systems implement an integrated unified architecture for block, file, and VMware vVols with concurrent support for native NAS, iSCSI, and Fibre Channel protocols. Each system leverages dual-active storage processors, full 12Gb SAS back-end connectivity and Dell's patented multicore architected operating environment to deliver unparalleled performance & efficiency with multicloud interoperability. Additional storage capacity is added via Disk Array Enclosures (DAEs).

*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

Physical Specifications

	380/380F	480/480F
Min/Max Drive Count	Min. 6 SSDs or 10 HDDs / Max. 500	Min. 6 SSDs or 10 HDDs / Max. 750
Array Enclosure	A 2U Disk Processor Enclosure (DPE) with twenty five 2.5" drives	
Drive Enclosure (DAE - Disk Array Enclosure)	. All models support 2.5" drives in 2U twenty five drive and 3U eighty drive trays; and 3.5" drives in 3U fifteen drive trays.	
Standby Power System	Dell Unity systems are powered by 2 power supplies (PS) per DPE/DAE. Each power supply can provide power to the entire module if the peer PS has been removed or is faulted. DPE power during a power failure is provided by a Battery Back Up (BBU) module. BBU is located within the SP enclosure and provides power to a single module (power zone)	
RAID Options	1/0, 5, 6	
CPU per Array	2 x Intel CPUs, 12 cores per Array, 1.7GHz	2 x dual-socket Intel CPUs, 32 cores per Array, 1.8GHz
System Memory/Cache per Array	128 GB	192 GB
Max FAST Cache per Array*	Up to 800 GBs	Up to 1.2 TBs
Total Cache[A]	Up to 928 GBs	Up to 1.39 TBs
Max Mezzanine cards per Array[B]	NA	2
Max IO Modules per Array[C]	4	4
Embedded SAS IO Ports per Array	4 x 4 lane 12Gb/s SAS ports for BE (back end) Connection	4 x 4 lane 12Gb/s SAS ports for BE Connection

	380/380F	480/480F
Optional SAS IO ports per Array	NA	8 x 4 lane or 4 x 8 lane 12Gb/s SAS ports (for BE Connection)
Base 12 Gb/s SAS BE Buses per Array	2 x 4 Lane	2 x 4 Lane
Max 12 Gb/s SAS BE Buses per Array	2 x 4 Lane	6 x 4 Lane; or 2 x 4 lane and 2 x 8 lane
Max FE (front end) Total Ports per Array (all types)	20	24
Max Initiators per Array	1,024	2,048
Max FC Ports per Array	20	16
Embedded CNA ports per Array	4 ports: 8/16 Gb FC[D], 10GbE IP/iSCSI, or 1Gb RJ45	NA
1 Gbase-T/iSCSI Max Total Ports per Array	20	24
10/25 GbE/iSCSI Max Total Ports per Array	20 – 10GbE 16 – 25GbE	24
Max Raw Capacity[E]	2.4 PBs	4.0 PBs
Max SAN Hosts	512	1,024
Max Number of Pools	20	30
Max Number of LUNs per Array	1,000	1,500
Max LUN Size	256 TB	256 TB
Max File Systems per Array	1000	1500
Max File System Size	256 TB	256 TB
Max attached snapshots per Array (Block)	1000	1500
OS Support	See the Dell Simple Support Matrix on dell.com	

[A] Specific to Hybrid Arrays
[B] One Mezzanine card per Storage Processor (SP), mirrored.
[C] Two IO Modules per Storage Processor (SP), mirrored.
[D] 16Gb available in both single mode and multimode.
[E] Maximum raw capacity will vary based on drive sizes available at time of purchase.

Connectivity

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

Connectivity Options		
Type	**Description**	**Details**
Converged Network Adapter (CNA) Ports	Two embedded CNA ports (File & Block)	On 380/380F systems only, there are 2 CNA ports per SP, which can be used for 8/16Gb FC, 10GbE IP/iSCSI, or 1Gb
Mezzanine card* or IO Module	Four-Port 10Gbase-T Module (File & Block)	Four port 10Gbase-T Ethernet IP/iSCSI module with four 10Gbase-T Ethernet ports with copper connection to Ethernet switch
Mezzanine card* or IO Module	Four-Port 10 Gb/s Optical Module (File & Block)	Four port 10GbE IP/iSCSI module with choice of SFP+ optical connection or active/passive twinax copper connection to Ethernet switch
Mezzanine card* or IO Module	Four-Port 25 Gb/s Optical Module (File & Block)	Four port 10GbE IP/iSCSI module with choice of SFP+ optical connection or passive twinax copper connection to Ethernet switch
Mezzanine card* or IO Module	Four-Port 32 Gb/s Fibre Channel Module (Block only)	Four port FC module with four ports auto-negotiating to 4/8/16 or 8/16/32 Gbps; uses single mode or multimode optical SFP and OM2/OM3/OM4 cabling to connect directly to host HBA or FC switch
IO Module	Four-Port 12 Gb/s SAS V3.0 Module*	Four port SAS module, used for back-end storage (DAE) connectivity to Storage Processors. Each SAS port has 4 lanes/port @ 12Gbps, delivering 48Gbps nominal throughput. Also available for an installed 80 drive DAE is 8 lane connectivity utilizing a pair of SAS ports to deliver high bandwidth for added performance.
* For 480/480F models		

Maximum Cable Lengths

Shortwave optical OM4: 125 meters (16 Gb) 190 meters (8 Gb), 400 meters (4 Gb), and 500 meters (2 Gb)

Back-end (Drive) Connectivity

Each storage processor connects to one side of each of two redundant pairs of four-lane x 12 Gb/s Serial Attached SCSI (SAS) buses, providing continuous drive access to hosts in the event of a storage processor or bus fault. All models require four “system” drives and support a platform specific maximum number of disks (see Physical Specifications table above). 107 GBs per system drive on the Dell Unity XT 380 models and 150 GBs on the Dell Unity XT 480, 680, and 880 models is consumed by the operating environment software and data structures.

Disk Array Enclosure (DAE)	
	25 X 2.5” Drive DAE
Drive Types Supported	FLASH & SAS
Controller Interface	12 Gb SAS

Hybrid Systems: Supported Media							
System Category	Type	Usage/ Purpose	Nominal Capacity	Formatted Capacity*	Interface	DPE 25 Drive	25 X 2.5" Drive DAE
Hybrid	SSD (SAS)	All-Flash or Mixed Pool	800 GB	733.5 GB	12 Gb SAS	✓	✓
Hybrid	10K HDD (SAS)	Mixed Pool	600 GB	536.7 GB	12 Gb SAS	✓	✓
Hybrid	10K HDD (SAS)	Mixed Pool	1.8 TB	1650.8 GB	12 Gb SAS	✓	✓
*GB = Base2 GiB (GiB = 1024x1024x1024) All drives are 520 bytes/sector. All drives are non-SED. Data at Rest Encryption is done via the storage controller							

All-Flash Systems: Supported Media							
System Category	Type	Usage/ Purpose	Nominal Capacity	Formatted Capacity*	Interface	DPE 25 Drive	25 X 2.5" Drive DAE
All-Flash	SSD (SAS)	All-Flash	1.92 TB	1751.9 GB	12 Gb SAS	✓	✓
All-Flash	SSD (SAS)	All-Flash	3.84 TB	3503.9 GB	12 Gb SAS	✓	✓
*GB = Base2 GiB (GiB = 1024x1024x1024) All drives are 520 bytes/sector. All drives are non-SED. Data at Rest Encryption is done via the storage controller							

Dell Unity 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	Address Resolution Protocol (ARP)	Block Protocols: iSCSI, Fibre Channel (FCP SCSI-3)
Container Storage Interface (CSI) Driver	Controller based Data at Rest Encryption (D@RE), with self-managed keys	DFS Distributed File System (Microsoft) as Leaf node or Standalone Root Server
Direct Host Attach for Fibre Channel and iSCSI	Dynamic Access Control (DAC) with claims support	Fail-Safe Networking (FSN)
Internet Control Message Protocol (ICMP)	Kerberos Authentication	Key Management Interoperability Protocol (KMIP) compliant external key manager for D@RE
LDAP (Lightweight Directory Access Protocol)	LDAP SSL	Link Aggregation for File (IEEE 802.3ad)
Lock Manager (NLM) v1, v2, v3, and v4	Management & Data Ports IPv4 and/or IPv6	NAS Servers Multi-protocol for UNIX and SMB clients (Microsoft, Apple, Samba)
Network Data Management Protocol (NDMP) v1-v4, 2-way & 3-way	Network Information Service (NIS) Client	Network Status Monitor (NSM) v1 Network Status Monitor (NSM) v1
Network Time Protocol (NTP) client	NFS v3/v4 Secure Support	NT LAN Manager (NTLM)
Portmapper v2	REST API: Open API that uses HTTP requests to provide management	Restriction of Hazardous Substances (RoHS) compliance
RSVD v1 for Microsoft Hyper-V	Simple Home Directory access for SMB protocol	SMI-S v1.6.1 compatible Dell Unity Block & File client
Simple Mail Transfer Protocol (SMTP)	Simple Network Management Protocol v2c & v3 (SNMP)	Virtual LAN (IEEE 802.1q)
VMware® Virtual Volumes (vVols) 2.0	VMware® vRealize™ Orchestrator (vRO) Plug-in	

Security & Compliance (applies to all Dell Unity XT systems, except Dell UnityVSA)
Department of Defense Information Network Approved Products List (DODIN APL): Unity OE5.3 listed or purchased on or before 14-MAR-2024
Common Criteria
Controller based Data at Rest Encryption (D@RE) with self-managed keys
KMIP compliant external key manager for D@RE
FIPS 140-2 Level 1 validation
IPv6 and dual stack (IPv4) modes of operation
Native SHA2 certificate
Security Technical Implementation Guide /Security Requirements Guide (STIG/SRG)
TLS 1.2 support and TLS 1.0/1.1 disablement
File-Level Retention: Enterprise FLR-E and Compliance FLR-C with requirements for SEC rule 17a-4(f)

Software	
All Inclusive Base Software	Management Software: • Unisphere: Element Manager • Unisphere Central: Consolidated dashboard and alerting • CloudIQ: Cloud-based storage analytics • Thin Provisioning • Dynamic Pools supported on all Unity XT platforms • Inline Data Reduction: Zero Detect/Deduplication/Compression supported on all Unity XT platforms • Host Groups • Proactive Assist: Configure remote support, online chat, open a service request, etc. • Quality of Service (Block and VVols) • Dell Storage Analytics Adapter for VMware® vRealize™ • File & Block Tiering / Archiving to Public/Private Cloud (Cloud Tiering Appliance) • File-Level Retention (FLR-E & FLR-C) Unified Protocols: • File • Block • VVols Local Protection: • Controller Based Encryption (optional), with self-managed or external key management • Local Point-In-Time Copies (Snapshots and Thin Clones) • AppSync Basic • Dell Common Event Enabler; AntiVirus Agent, Event Publishing Agent Remote Protection: • Native Asynchronous Block & File Replication • Native Synchronous Block & File Replication • MetroSync Manager (optional software to automate synchronous file replication and failover sessions) • Snapshot Shipping • Dell RecoverPoint Basic Migration: • Native Block & File migration from legacy Dell VNX • SAN Copy Pull: Integrated Block migration from 3rd party arrays Performance Optimization for Hybrid Arrays: • FAST Cache • FAST VP
Interface Protocols	NFSv3, NFSv4, NFSv4.1; CIFS (SMB 1), SMB 2, SMB 3.0, SMB 3.02, and SMB 3.1.1; FTP and SFTP; FC, iSCSI and VMware Virtual Volumes (VVols) 2.0
Optional Solutions	• AppSync Advanced • Connectrix SAN • Dell Data Protection Hardware & Software platforms • Dell RecoverPoint Advanced • Dell RP4VM • PowerPath Migration Enabler • PowerPath Multipathing • Unity XT metro node • VPLEX
Note: For more details on software licensing, please contact your sales representative	

Virtualization Solutions

Dell Unity offers support for a wide variety of protocol and advanced features available via various software suites and packs including but not limited to:

- OpenStack Cinder Driver: For provisioning and managing block volumes within an OpenStack environment
- OpenStack Manila Driver: For managing shared file systems within an OpenStack environment
- Dell Virtual Storage Integrator (VSI) for VMware vSphere™: For provisioning, management, and cloning
- VMware Site Recovery Manager (SRM) Integration: Managing failover and failback making disaster recovery rapid and reliable
- Virtualization API Integration: VMware: VAAI and VASA. Hyper-V: Offloaded Data Transfer (ODX) and Offload Copy for File
- Ansible Module for Unity

Electrical Specifications

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

The chassis power numbers provided may increase when operating in a higher ambient temperature environment.

Disk Processor Enclosure (DPE)		
	380/380F DPE 25 2.5” SFF drives and four IO modules	480/480F DPE 25 2.5” SFF drives and four IO modules
POWER		
DC Line Voltage	-39 to -72 V DC (Nominal -48V or -60V power systems)	
DC Line Current (operating maximum)	25.7 A max at -39 V DC 20.5 A max at -48 V DC 13.9 A max at -72 V DC	27.6 A max at -39 V DC 22.1 A max at -48 V DC 14.9 A max at -72 V DC
Power Consumption (operating maximum)	1001.4 W max at -39 V DC 982.2 W max at -48 V DC 999.6 W max at -72 V DC	1078 W max at -39 V DC 1059 W max at -48 V DC 1075 W max at -72 V DC
Heat Dissipation (operating maximum)	3.61 x 10^6 J/hr, (3,150 Btu/hr) max at -39 V DC 3.54 x 10^6 J/hr, (3,088 Btu/hr) max at -48 V DC 3.60 x 10^6 J/hr, (3,142 Btu/hr) max at -72 V DC	3.88 x 10^6 J/hr, (3678 Btu/hr) max at -39 V DC 3.81 x 10^6 J/hr, (3613 Btu/hr) max at -48 V DC 3.87 x 10^6 J/hr, (3668 Btu/hr) max at -72 V DC
In-rush Current	40 A peak, per requirement in EN300 132-2 Sect. 4.7 limit curve	
DC Protection	50 A fuse in each power supply	
DC Inlet Type	Positronics PLBH3W3M4B0A1/AA	
Mating DC connector	Positronics PLBH3W3F0000/AA; Positronics Inc., www.connectpositronics.com	
Ride-through Time	1 ms min at -50 V input	
Current Sharing	± 5 percent of full load, between power supplies	
DIMENSIONS		
Weight kgs/lbs	empty 24.60/54.11	empty 25.90/57.10
Vertical size	2 NEMA units	2 NEMA units
Height cm/inches	8.88/3.5	8.72/3.43
Width cm/inches	44.76/17.62	44.72/17.61
Depth cm/inches	61.39/24.17	79.55/31.32
Note: Power consumption values for DPEs and DAEs are based on fully populated enclosures (power supplies, drives and I/O modules).		

Disk Array Enclosure (DAE)	
	25 X 2.5” Drive DAE
POWER	
DC Line Voltage	-39 to -72 V DC (Nominal -48V or -60V power systems)
DC Line Current (operating maximum)	11.0 max at -39 V DC 9.10 A max at -48 V DC 6.2 A max at -72 V DC
Power Consumption (operating maximum)	428 W max at -39 V DC 437 W max at -48 V DC 448 W max at -72 V DC
Heat Dissipation (operating maximum)	1.54 x 10^6 J/hr, (1,460 Btu/hr) max at -39 V DC 1.57 x 10^6 J/hr, (1,491 Btu/hr) max at -48 V DC 1.61 x 10^6 J/hr, (1,529 Btu/hr) max at -72 V DC
In-rush Current	40 A peak, per requirement in EN300 132-2 Sect. 4.7 limit curve
DC Protection	50 A fuse in each power supply
DC Inlet Type	Positronics PLBH3W3M4B0A1/AA
Mating DC Connector	Positronics PLBH3W3F0000/AA; Positronics Inc., www.connectpositronics.com
Ride-through Time	1 ms min at -50 V input
Current Sharing	± 5 percent of full load, between power supplies
WEIGHT AND DIMENSIONS	
Weight kg/lbs	Empty: 10.0/22.1 Full: 20.23/44.61
Vertical size	2 NEMA units
Height cm/inches	8.46/3.40
Width cm/inches	44.45/17.5
Depth cm/inches	33.02/13
Note: Power consumption values for DPEs and DAEs are based on fully populated enclosures (power supplies, drives and I/O modules).	

Operating environment

The Dell Unity XT 480/480F models meet ASHRAE Equipment Class A3 and the 380/380F models meet ASHRAE Equipment Class A4.

	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) at 5.5°C (59°F) dew.
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 dew point and 8% to 85% relative humidity with 24°C dew point (maximum 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).
Exceptional Operation (Excursion Limited) ASHRAE 4 only	During certain times of the day or year, equipment inlet conditions may fall outside the continuously allowable range but still within the expanded exceptional range. Equipment operation is limited to ≤ 1% of annual operating hours in this range.	40°C to 45°C (with no direct sunlight on the equipment) at -12°C dew point and 8% to 90% relative humidity with 24°C dew point (maximum wet bulb temperature). Outside the continuously allowable range (10°C to 35°C), the system can operate down to 5°C or up to 45°C for a maximum of 1% of its annual operating hours. For temperatures between 35°C and 45°C (95°F to 104°F), de-rate maximum allowable dry bulb temperature by 1°C per 125m above 950m (1°F per 228 ft above 3117 ft).
Temperature Gradient		20°C / hour (36°F / hour)
Altitude	Max Operating	3050m (10,000ft)

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. http://dell.com/regulatory_compliance

Learn more about Dell Unity XT solutions

Contact a Dell Expert