EMC VNX5100, VNX5300, VNX5500, VNX5700, VNX7500 UNIFIED STORAGE

EMC® VNX® series unified storage systems deliver uncompromising scalability and flexibility for the mid-tier while providing market-leading simplicity and efficiency to minimize total cost of ownership.

VNX5100™ VNX5300™ VNX5500™ VNX5700™ VNX7500™

Specifications

ARCHITECTURE

Based on the powerful new family of Intel Xeon-5600 processors, the EMC VNX implements a modular architecture that integrates hardware components for block, file, and object with concurrent support for native NAS, iSCSI, Fibre Channel, and FCoE protocols. The series delivers file (NAS) functionality via two-to-eight X-blade data movers and block (iSCSI, FCoE, and FC) storage via dual storage processors leveraging full 6 Gb SAS disk drive topology. You can also start with block or file functionality and easily upgrade to unified when needed. The unified configuration includes the following rack-mounted enclosures:

- Disk processor enclosure (holds disk drives) or storage processor enclosure (requires disk drive tray) plus standby power system to deliver block protocols
- One or more data mover enclosures to deliver file protocols (required for file and unified configurations)
- Control station (required for file and unified configurations)

VNX PHYSICAL SPECIFICATIONS

BLOCK COMPONENTS	VNX5100	VNX5300	VNX5500	VNX5700	VNX7500
Min/Max Drives	4/75	4/125	4/250	4/500	4/1000
Array Enclosure	3U Disk Processor Enclosure (Holds 15x3.5" or 25x2.5" SAS/Flash drives)	3U Disk Processor Enclosure (Holds 15x3.5" or 25x2.5" SAS/Flash drives)	3U Disk Processor Enclosure (Holds 15x3.5" or 25x2.5" SAS/Flash drives)	2U Storage Processor Enclosure (No drives)	2U Storage Processor Enclosure (No drives)
Drive Enclosure Options (DAE)	25x2.5" SAS/Flash drives–2 U 15x3.5" SAS/Flash drives–3 U	25x2.5" SAS/Flash drives–2 U 15x3.5" SAS/Flash drives–3 U	25 x 2.5" SAS / Flash drives–2 U 15 x 3.5" SAS / Flash drives–3 U 60 x 3.5" SAS/Flash drives–4U*	25x2.5" SAS/Flash drives–2 U 15x3.5" SAS/Flash drives–3 U 60x3.5" SAS/Flash drives–4U*	25x2.5" SAS/Flash drives–2 U 15x3.5" SAS/Flash drives–3 U 60x3.5" SAS/Flash drives–4U*
Standby Power System	1U 1.2KW	1U 1.2KW	1U 1.2KW**	1U 1.2KW**	1U 1.2KW**
Raid Options	0/1/10/3/5/6	0/1/10/3/5/6	0/1/10/3/5/6	0/1/10/3/5/6	0/1/10/3/5/6
CPU/Memory per Array	Intel Xeon 5600 /8 GB	Intel Xeon 5600 /16 GB	Intel Xeon 5600 /24 GB	Intel Xeon 5600 /36 GB	Intel Xeon 5600 /48 GB or 96 GB
Max Block UltraFlex™ IO Modules per Array	0	4	4	10	10
Embedded IO Ports per Array	8 FC ports and 4 SAS ports (2 BE SAS buses)	8 FC ports and 4 SAS ports (2 BE SAS buses)***	8 FC ports and 4 SAS ports (2 BE SAS buses)***	0	0
Max Total Ports per Array	8	24	24	24	32
2/4/8 Gb/s FC Max Ports per Array	8	16	16	24	32
1 GBaseT iSCSI Max Total Ports per Array	N/A	8	16	16	16
10 GbE iSCSI Max Total Ports per Array	N/A	8	8	12	12
Max FCoE Total Ports per Array	N/A	8	8	12	16
6 Gb/s SAS Buses (4 Lanes per Bus) for DAE Connections	2	2	2 or 6 (6 if high bandwidth option is required)	4	4 or 8 (consumes 2 or 4 UltraFlex IO modules per array)
FILE COMPONENTS****					
# File X-Blades	N/A	1-2	1-3	2-4	2-8
# Control Stations	N/A	1-2 x 1U Server	1-2 x 1U Server	1-2 x 1U Server	1-2 x 1U Server
X-Blade: CPU/Memory	N/A	Intel Xeon 5600 / 6 GB	Intel Xeon 5600 / 12 GB	Intel Xeon 5600 / 12 GB	Intel Xeon 5600 / 24 GB
Max File UltraFlex IO Modules per X-Blade	N/A	3	4	4	5
Min/Max 2/4/8 Gb/s FC Ports per X-Blade	N/A	4	4	4	4
Max IP Ports per X-Blade	N/A	8	12	12	16
Max 1 GBaseT Ports per X-Blade	N/A	8	12	12	16
Max 10 GbE Ports per X-Blade	N/A	4	6	6	8
OTHER					
Management	LAN 2x 10/100/1000 Copper GbE	LAN 2x 10/100/1000 Copper GbE	LAN 2x 10/100/1000 Copper GbE	LAN 2x 10/100/1000 Copper GbE	LAN 2x 10/100/1000 Copper GbE

FUNCTIONAL LIMITS	VNX5100	VNX5300	VNX5500	VNX5700	VNX7500
Max Raw Capacity	225 TB	360 TB	720 TB	1,485 TB	2,970 TB
Max SAN Hosts	512	2,048	4,096	4,096	8,192
Max Number of Pools	10	20	40	40	60
Max Number of LUNs	512	2,048	4,096	4,096	8,192
Max LUN Size	16 TB (Virtual Pool LUN)	16 TB (Virtual Pool LUN)	16 TB (Virtual Pool LUN)	16 TB (Virtual Pool LUN)	16 TB (Virtual Pool LUN)
Max File System Size	N/A	16 TB	16 TB	16 TB	16 TB
Maximum Usable File Capacity per X-Blade	N/A	256 TB	256 TB	256 TB	256 TB
OS Support	Block OS's see EMC E-Lab™ Navigator on EMC Powerlink™	Block OS's Plus File OS's see E-Lab Navigator and NAS Support Matrix on Powerlink	Block OS's Plus File OS's see E-Lab Navigator and NAS Support Matrix on Powerlink	Block OS's Plus File OS's see E-Lab Navigator and NAS Support Matrix on Powerlink	Block OS's Plus File OS's see E-Lab Navigator and NAS Support Matrix on Powerlink

* 60-Drive 4U DAE is a top-loading DAE and requires a high-density EMC rack.
** If using 60-Disk 4U DAE as Vault DAE, dual SPS (2U 2.2KW) is required.
*** 4 embedded FC ports per array are reserved for file connectivity.
**** The File components are not required when ordering a block-only system.
Note: In-family Data-in-Place conversions, i.e. converting from a smaller VNX platform to a large one, are also supported

VNX CONNECTIVITY

The VNX series provides flexible connectivity options via UltraFlex IO modules for both the file X-blades for NAS connectivity and the block storage processors for FC and iSCSI host connectivity (see above table for number of modules supported per blade or SP).

ULTRAFLEX IO MODULE OPTIONS (BLOCK)

IO Module	Description
Four-Port Fibre Channel Module	FC module with four ports auto-negotiating to 2/4/8 Gbps; uses optical SFP and OM2/OM3 cabling to connect directly to host HBA or FC switch
Four-Port 1 Gb/s iSCSI Module with TOE	iSCSI module with four 1 GBaseT RJ-45 copper connections to Cat 6 cabling to Ethernet switch; includes TCP offload engine
Two-Port 10 Gb/s Opt iSCSI Module with TOE	iSCSI module with two 10 Gb/s Ethernet ports and choice of SFP+ optical connection or active twinax copper connection to Ethernet switch; includes TCP offload engine
Two-Port 10 GBaseT iSCSI Module with TOE	iSCSI module with two 10 GBaseT Ethernet ports with copper connection to Ethernet switch; includes TCP offload engine
Two-Port 10 GbE FCoE Module	FCoE module with two 10 Gb/s Ethernet ports and choice of SFP+ optical connection or active twinax copper connection to converged enhanced Ethernet switch

ULTRAFLEX IO MODULE OPTIONS (FILE)

IO Module	Description
Four-Port 1 GBaseT IP Module	10/100/1000 BaseT module with four ports supporting RJ-45 copper connections to Cat 6 cabling to Ethernet switch
Four-Port 1 GBaseT and 1 GbE Opt IP Module	IP module with two ports of 10/100/1000 BaseT and two ports 1 GbE optical
Two-Port 10 GbE Opt IP Module	IP module with two 10 Gb/s Ethernet ports and choice of SFP+ optical connection or active twinax copper connection to Ethernet switch
Two-Port 10 GBaseT IP Module	IP module with two 10 GBaseT Ethernet ports with copper connection to Ethernet switch
Four-Port 8 Gb/s Fibre Channel Module	FC module with four ports auto-negotiating to 2/4/8 Gbps; uses optical SFP and OM2/OM3 cabling to connect directly to captive array and to provide NDMP tape connection

MAXIMUM CABLE LENGTHS

Shortwave optical OM2: 50 meters (8 Gb), 100 meters (4 Gb), and 300 meters (2 Gb)

Shortwave optical OM3: 150 meters (8 Gb), 380 meters (4 Gb), and 500 meters (2 Gb)

BACK-END (DISK) CONNECTIVITY

Each storage processor connects to one side of each of two or four (or optionally eight for the VNX7500) redundant pairs of four-lane x 6 Gb/s Serial Attached SCSI (SAS) buses, providing continuous drive access to hosts in the event of a storage processor or bus fault. VNX models require a minimum of four "vault" drives (SAS or Near-line SAS) and support a platform specific maximum number of disks (see VNX physical specifications table above). Approximately 200 GB per vault drive is consumed by VNX operating environment software and data structures.

DISK ARRAY ENCLOSURES

	15x3.5" Drive DAE	**60x3.5" Drive DAE**	**25x2.5" Drive DAE**
Drive Types Supported	3.5" Flash 3.5" 15K Rotating 2.5" 10K Rotating (in 3.5" carrier) 3.5" Near-line Rotating	3.5" Flash 2.5" 10K Rotating (in 3.5" carrier) 3.5" Near-line Rotating	2.5" Flash 2.5" 10K Rotating
Drive Mixing	No limitations	No limitations	No limitations
Controller Interface	6 Gb SAS	6 Gb SAS	6 Gb SAS

DISK DRIVES FOR 15X3.5" AND 60X3.5" DRIVE DISK PROCESSOR ENCLOSURE/DISK ARRAY ENCLOSURE

Nominal Capacity	**100 GB Solid State Drive**	**200 GB Solid State Drive**	**300 GB 15K Drive**	**600 GB 15K Drive**	**300 GB 10K Drive**	**600 GB 10K Drive**	**900 GB 10K Drive**	**1 TB 7.2K Drive**	**2 TB 7.2K Drive**	**3 TB 7.2K Drive**
Supported in 15 drive DAE	√	√	√	√	√	√	√	√	√	√
Supported in 60 drive DAE	√	√				√	√	√	√	√
Formatted Capacity*	93.1 GB	186.31 GB	272.59 GB	545.19 GB	272.59 GB	545.19 GB	820.6 GB	926.04 GB	1,852.09 GB	2794.5 GB
Drive Form Factor	3.5"	3.5"	3.5"	3.5"	2.5"	2.5"	2.5"	3.5"	3.5"	3.5"
Height	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"
Rotational Speed	Solid State	Solid State	15,000 rpm	15,000 rpm	10,000 rpm	10,000 rpm	10,000 rpm	7,200 rpm	7,200 rpm	7,200 rpm
Interface	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS
Data Buffer	N/A SSD	N/A SSD	16 MB min	16 MB min	16 MB min	16 MB min	16 MB min	16 MB min	16 MB min	16 MB min
ACCESS TIME										
Average Read	N/A	N/A	3.4 msec	3.4 msec	3.6 msec	3.7 msec	3.7 msec	8.5 msec	8.5 msec	8.5 msec
Average Write	N/A	N/A	3.9 msec	3.9 msec	4.2 msec	4.2 msec	4.2 msec	9.5 msec	9.5 msec	9.5 msec
Rotation Latency	N/A	N/A	2.0 msec	2.0 msec	3.0 msec	3.0 msec	3.0 msec	4.16 msec	4.16 msec	4.16 msec
NOMINAL POWER CONSUMPTION (WATTS)										
Operating Mode	4.97	4.97	12.92	16.35	6.15	5.6	5.6	12.2	12.2	12.2
Idle Mode	1.36	1.36	8.74	11.68	3.5	3.1	3.1	8.0	8.0	8.0

DISK DRIVES FOR 25X2.5" DRIVE DISK PROCESSOR ENCLOSURE/DISKARRAY ENCLOSURE

Nominal Capacity	100 GB Solid State Drive	200 GB Solid State Drive	300 GB 10K Drive	600 GB 10K Drive	900 GB 10K Drive
Formatted Capacity*	93.1 GB	186.31 GB	272.59 GB	545.19 GB	820.6 GB
Form Factor	2.5"	2.5"	2.5"	2.5"	2.5"
Height	1.0"	1.0"	1.0"	1.0"	1.0"
Rotational Speed	Solid State	Solid State	10,000 rpm	10,000 rpm	10,000 rpm
Interface	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS	6 Gb SAS
Data Buffer	N/A SSD	N/A SSD	16 MB min	16 MB min	16 MB min
ACCESS TIME					
Average Read	N/A	N/A	3.6 msec	3.6 msec	3.6 msec
Average Write	N/A	N/A	4.2 msec	4.2 msec	4.2 msec
Rotation Latency	N/A	N/A	3.0 msec	3.0 msec	3.0 msec
NOMINAL POWER CONSUMPTION (WATTS)					
Operating Mode	4.97	4.97	6.15	5.6	5.6
Idle Mode	1.36	1.36	3.5	3.1	3.1

* 520 bytes/sector, 1 MB = 1,048,576 bytes

VNX OE PROTOCOLS AND SOFTWARE FACILITIES

The VNX series offers support for a wide variety of protocol and advanced features available via various software suites and packs.

PROTOCOLS AND FACILITIES SUPPORTED

- Access-based Enumeration (ABE) for Microsoft Windows® Server 2003
- Address Resolution Protocol (ARP)
- Automated Volume Management (AVM): file system provisioning
- Block Protocols: iSCSI, Fibre Channel (FCP SCSI-3), and FCoE
- Common Criteria Certification: EAL 3+ Assurance Level
- DFS Distributed File System (Microsoft) as Leaf node or Root Server
- Ethernet Trunking
- File Protocols: NFSv2, v3, v4, and v4.1 with pNFS; CIFS (SMB 1 and SMB 2); FTP (including SFTP and FTPs)
- FileMover API: Open API for automated, transparent data movement between tiers of the storage network
- Lock Manager (NLM) v1, v3, and v4
- Failsafe Networking
- Internet Control Message Protocol (ICMP)
- Kerberos Authentication
- Lightweight Directory Access Protocol (LDAP)

- LDAP signing for Windows
- Link Aggregation (IEEE 802.3ad)
- UNIX archive utilities (tar/cpio)
- Network Data Management Protocol (NDMP) v1-v4
- Network Equipment-Building System (NEBS) Level 3/ETSI Certified
- Network Information Service (NIS) Client
- Network Status Monitor (NSM) v1
- Object support via EMC Atmos™ Virtual Edition
- Portmapper v2
- Network Time Protocol (NTP) client
- NT LAN Manager (NTLM)
- Restriction of Hazardous Substances (RoHS) compliance
- Routing Information Protocol (RIP) v1-v2
- Simple Network Management Protocol V1-V3 (SNMP)
- Simple Network Time Protocol (SNTP)
- Virtual Data Movers for Microsoft Windows clients
- Virtual LAN (IEEE 802.1q)

VNX SOFTWARE

	VNX5100	VNX5300, VNX5500, VNX5700, AND VNX7500
Management	Unisphere™ for Block	Unisphere for Block, Unisphere for File, or Unisphere for Unified
Protocols	FC included	CIFS, NFS, pNFS, MPFS, FC, FCoE, iSCSI included
Base Software (included with VNX OE)	EMC Virtual Provisioning™	File Single Instancing Compression Virtual Provisioning
SOFTWARE SUITES		
FAST Suite: Automatically optimize for the highest system performance and the lowest storage cost simultaneously	Extendable cache for performance boost Trend analysis and reporting Monitor and achieve performance objectives	Dynamically tier data across drives Extendable cache for performance boost Trend analysis and reporting Monitor and achieve performance objectives
Security and Compliance Suite: Keep data safe from changes, deletions, and malicious activity	Encrypt data where it is created	Encrypt data where it is created Disk-based WORM functionality Anti-virus integration and alerting
Local Protection Suite: Practice Safe Data Protection and Repurposing	Block storage snaps and clones Continuous Data Protection for DVR-like recovery for block storage	Block storage snaps and clones Continuous Data Protection for DVR-like recovery for block storage File system snaps

	VNX5100	VNX5300, VNX5500, VNX5700, AND VNX7500
Remote Protection Suite: Protect data against localized failures, outages, and disasters	Unified storage replication with DVR-like recovery Integrated WAN deduplication and bandwidth reduction	Unified storage replication with DVR-like recovery Integrated WAN deduplication and bandwidth reduction Granular file system level replication and recovery
Application Protection Suite: Automate application copies and prove compliance	Application copy management Prove protection compliance	Application copy management Prove protection compliance
SOFTWARE PACKS		
Protection Pack	Local Protection Suite + Remote Protection Suite + Application Protection Suite	Local Protection Suite + Remote Protection Suite + Application Protection Suite
Total Value Pack	Security & Compliance Suite+ Local Protection Suite + Remote Protection Suite + Application Protection Suite	N/A
Total Efficiency Pack	N/A	FAST Suite + Security & Compliance Suite+ Local Protection Suite + Remote Protection Suite + Application Protection Suite

NOTE: For more detail on software licensing, please contact your sales representative.

OPTIONAL VMWARE FACILITIES AND TITLES

The VNX series offers support for a wide variety of protocol and advanced features available via various software suites and packs.

- EMC Virtual Storage Integrator (VSI) for VMware® vSphere5: For provisioning, management, cloning, and deduplication
- Site Recovery Manager (SRM) Integration: Managing failover and failback making disaster recovery rapid and reliable
- Replication Manager: Host-based management of array-based copies of data

ADDITIONAL OPTIONAL EMC TITLES

- EMC ProSphere®: VNX integration with EMC Storage management infrastructure
- EMC PowerPath®: path management
- EMC Cloud Tiering Appliance (CTA and CTA/VE): policy-based cloud tiering, file archiving, and migration

VNX ELECTRICAL SPECIFICATIONS

(For specific power specifications please refer to the EMC Power Calculator at power.emc.comwith your Powerlink account.)

DPE AND SPE ENCLOSURES

	VNX5100 DPE (15x3.5″ drives)	VNX5100 DPE (25x2.5″ drives)	VNX5300 DPE (15x3.5″ drives)	VNX5300 DPE (25x2.5″ drives)	VNX5500 DPE (15x3.5″ drives)	VNX5500 DPE (25x2.5″ drives)	VNX5700 SPE	VNX7500 SPE
POWER								
AC Line Voltage	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz
AC Line Current (operating maximum)	4.2 A max at 100 Vac, 2.1 A max at 200 Vac	4.0 A max at 100 Vac, 2.0 A max at 200 Vac	4.8 A max at 100 Vac, 2.4 A max at 200 Vac	4.6 A max at 100 Vac, 2.3 A max at 200 Vac	4.8 A max at 100 Vac, 2.4 A max at 200 Vac	4.6 A max at 100 Vac, 2.3 A max at 200 Vac	5.3 A max at 100 Vac, 2.7 A max at 200 Vac	5.3 A max at 100 Vac, 2.7 A max at 200 Vac
Power Consumption (operating maximum)	415 VA (390 W) max	395 VA (385 W) max	480 VA (455 W) max	460 VA (450 W) max	480 VA (455 W) max	460 VA (450 W) max	530 VA (500 W) max	530 VA (500 W) max
Power Factor	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage
Heat Dissipation (operating maximum)	1.40×10^6 J/hr, (1,330 Btu/hr) max	1.39×10^6 J/hr, (1,320 Btu/hr) max	1.64×10^6 J/hr, (1,560 Btu/hr) max	1.62×10^6 J/hr, (1,540 Btu/hr) max	1.64×10^6 J/hr, (1,560 Btu/hr) max	1.62×10^6 J/hr, (1,540 Btu/hr) max	1.80×10^6 J/hr, (1,710 Btu/hr) max	1.80×10^6 J/hr, (1,710 Btu/hr) max
In-rush Current	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac
Startup Surge Current	29 A rms max for 50 ms, at any line voltage	29 A rms max for 50 ms, at any line voltage	29 A rms max for 50 ms, at any line voltage	29 A rms max for 50 ms, at any line voltage	29 A rms max for 50 ms, at any line voltage	29 A rms max for 50 ms, at any line voltage	27 A rms max for 50 ms, at any line voltage	27 A rms max for 50 ms, at any line voltage
AC Protection	12.5 A fuse on each power supply, both phases	12.5 A fuse on each power supply, both phases	12.5 A fuse on each power supply, both phases	12.5 A fuse on each power supply, both phases	12.5 A fuse on each power supply, both phases	12.5 A fuse on each power supply, both phases	7.8 A fuse on each power supply, both phases	7.8 A fuse on each power supply, both phases
AC Inlet Type	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone
Ride-through Time	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min
Current Sharing	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies

	VNX5100 DPE (15x3.5" drives)	VNX5100 DPE (25x2.5" drives)	VNX5300 DPE (15x3.5" drives)	VNX5300 DPE (25x2.5" drives)	VNX5500 DPE (15x3.5" drives)	VNX5500 DPE (25x2.5" drives)	VNX5700 SPE	VNX7500 SPE
DIMENSIONS								
Height (in/cm)	5.25 in/ 13.34 cm	5.25 in/ 13.34 cm	5.25 in/ 13.34 cm	5.25 in/ 13.34 cm	5.25 in/ 13.34 cm	5.25 in/ 13.34 cm	3.5 in/ 8.9 cm	3.5 in/ 8.9 cm
Width (in/cm)	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm
Depth (in/cm)	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm
Weight (lb/kg) (with and without drives)	Full: 96.8/44.0 Empty: 61.8/28.1	Full: 75.25/34.2 Empty: 59.0/26.8	Full: 96.8/44.0 Empty: 61.8/28.1	Full: 75.25/34.2 Empty: 59.0/26.8	Full: 96.8/44.0 Empty: 61.8/28.1	Full: 75.25/34.2 Empty: 59.0/26.8	52.5 lb/ 23.81 kg	52.5 lb/ 23.81 kg

NOTE: Each DPE or SPE requires a Standby Power Supply (see the following information)

STANDBY POWER SUPPLY

POWER	1.2kW Standby Power Supply	2.2KW 2U SPS (Note all ratings assume fully configured systems)
AC Line Voltage	100 to 240 Vac ± 10%, single-phase, 47 to 63 Hz	200 to 240 Vac ± 10%, single-phase, 47 to 63 Hz
AC Line Current, Internal and Pass-through	0.10 A max at 100 Vac, internal power consumption (Up to 10 A max at 100 Vac, pass-through to AC outlets) 0.05 A max at 200 Vac, internal power consumption (Up to 6 A max at 200 Vac, pass-through to AC outlets)	0.1 A max at 200 Vac, internal power consumption (Up to 11 A max at 200 Vac, pass-through to AC outlets)
Internal Power Consumption	70 VA (40 W) pk in hi-charge mode, 10 VA (6 W) in float charge mode	150 VA (135 W) pk in hi-charge mode, 20 VA (12 W) in float charge mode
Power Factor	N/A for pass-through load, internal 10 VA load is 0.60 power factor	N/A for pass-through load, internal 10 VA load is 0.60 power factor
Heat Dissipation	21.6 x 10^3 J/hr, (20 Btu/hr) steady state	43.2 x 10^3 J/hr, (40 Btu/hr) steady state
In-rush Current	9 A max for ½ line cycle, per power supply at 240 Vac	25 A max for ½ line cycle, per power supply at 240 Vac
AC Protection	15 A fuse, both phases	20 A circuit breaker
AC Inlet Type	IEC320-C14 appliance coupler with switch	IEC320-C14 appliance coupler with switch
AC Outlet Type	IEC320-C13 appliance coupler, quantity two	IEC320-C13 appliance coupler, quantity four
Charge Times	190 minutes max	5.5 hours max
AC Failure Detect Time	10 ms max	12 ms max
Transfer Time	25 ms max	25 ms max
Dimensions (H/W/L)	1.6 in/17.5 in/23.75 in or 4.0 cm/44.45 cm/60.3 cm	3.37 in/17.5 in/28 in or 8.56 cm/44.45 cm/71.1 cm
Weight	47 lb/21.6 Kg	79 lb/35.9 Kg

DATA MOVER ENCLOSURES, DISK ARRAY ENCLOSURES AND CONTROL STATION

	VNX5300 DME with (2) Data Movers	VNX5500 DME with (2) Data Movers	VNX5700 DME with (2) Data Movers	VNX7500 DME with (2) Data Movers	15x3.5" Disk Array Enclosure*	60x3.5" Disk Array Enclosure*	25x2.5" Disk Array Enclosure*	Control Station
POWER								
AC Line Voltage	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz	100 to 240 Vac± 10%, single-phase, 47 to 63 Hz
AC Line Current (operating maximum)	4.7 A max at 100 Vac, 2.3 A max at 200 Vac	5.0 A max at 100 Vac, 2.5 A max at 200 Vac	5.3 A max at 100 Vac, 2.7 A max at 200 Vac	5.3 A max at 100 Vac, 2.7 A max at 200 Vac	2.8 A max at 100 Vac, 1.4 A max at 200 Vac	12.0 A max at 100 Vac, 6.0 A max at 200 Vac	2.5 A max at 100 Vac, 1.3 A max at 200 Vac	1.3 A max at 100 Vac, 0.7 A max at 200 Vac
Power Consumption (operating maximum)	465 VA (440 W) max	500 VA (470 W) max	530 VA (500 W) max	530 VA (500 W) max	280 VA (235 W) max	1,200 VA (1,130 W) max	250 VA (230 W) max	132 VA (104 W) max
Power Factor	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.98 min at full load, low voltage	0.80 min at full load, low voltage
Heat Dissipation (operating maximum)	1.58×10^6 J/hr, (1,500 Btu/hr) max	1.69×10^6 J/hr, (1,610 Btu/hr) max	1.80×10^6 J/hr, (1,710 Btu/hr) max	1.80×10^6 J/hr, (1,710 Btu/hr) max	8.46×10^5 J/hr, (800 Btu/hr) max	4.07×10^6 J/hr, (3,860 Btu/hr) max	8.28×10^5 J/hr, (785 Btu/hr) max	3.60×10^5 J/hr, (300 Btu/hr) max
In-rush Current	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac	50 A max for ½ line cycle, per line cord at 240 Vac 25 A max for ½ line cycle, per line cord at 120 Vac	30 A max for ½ line cycle, per line cord at 240 Vac 15 A max for ½ line cycle, per line cord at 120 Vac	50 A max for ½ line cycle, per line cord at 240 Vac 25 A max for ½ line cycle, per line cord at 120 Vac	15 A max for ½ line cycle, per line cord at 240 Vac 8 A max for ½ line cycle, per line cord at 120 Vac
Startup Surge Current	27 A rms max for 50 ms, at any line voltage	27 A rms max for 50 ms, at any line voltage	27 A rms max for 50 ms, at any line voltage	27 A rms max for 50 ms, at any line voltage	10.6 A rms max for 100 ms, at any line voltage	27 A rms max for 100 ms, at any line voltage	10.6 A rms max for 100 ms, at any line voltage	N/A
AC Protection	7.8 A fuse on each power supply, both phases	7.8 A fuse on each power supply, both phases	7.8 A fuse on each power supply, both phases	7.8 A fuse on each power supply, both phases	10 A fuse on each power supply, both phases	12 A fuse on each line cord, both phases	10 A fuse on each power supply, both phases	N/A
AC Inlet Type	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, two per power zone	IEC320-C14 appliance coupler, per power zone	IEC320-C14 appliance coupler, per power zone
Ride-through Time	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min	30 ms min	N/A
Current Sharing	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 15 percent of full load, between power supplies	± 10 percent of full load, between power supplies	± 10 percent of full load, between power supplies	± 10 percent of full load, between power supplies	N/A
DIMENSIONS								
Height (in/cm)	3.5 in/ 8.9 cm	3.5 in/ 8.9 cm	3.5 in/ 8.9 cm	3.5 in/ 8.9 cm	5.25 in/ 13.34 cm	7 in/ 17.8 cm	3.45 in/ 8.76 cm	1.75 in/ 4.45 cm
Width (in/cm)	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.5 in/ 44.45 cm	17.62 in/ 44.75 cm	17.62 in/ 44.75 cm	17.62 in/ 44.75 cm	17.5 in/ 44.45 cm
Depth (in/cm)	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	24.25 in/ 61.6 cm	14 in/35.56 cm	35 in + cable mgmt. arm (needs 44 in deep rack)	13 in/33.02 cm	20 in/50.8 cm
Weight (lb/kg) (with and without drives)	52.5 lb/ 23.81 kg	52.5 lb/ 23.81 kg	52.5 lb/ 23.81 kg	52.5 lb/ 23.81 kg	Full: 67/30.45 Empty: 32/14.5	Full: 213/96.4 Empty: 81/36.7	Full: 38.35/17.4 Empty: 22.1/10.0	18 lb/ 8.16 kg

*Ratings assume a fully loaded DAE that includes two power supplies, two LCCs, and 15/25/60 disk drives.

	Standard 40U Cabinet	Dense 40U Cabinet
AC Line Voltage	200 to 240 Vac ± 10%, single-phase, 47 to 63 Hz	200 to 240 Vac ± 10%, single-phase, 47 to 63 Hz
Power Configuration	Two power domains (base and extended), each redundant	One, two, three or four power domains, each redundant
Power Inlet Count	Either two (for redundant base configuration) or four (for redundant extended configuration)	Two, four, six, or eight (two per domain)
Plug Types	NEMA L6-30P or IEC309-332 P6 or IP57 (Australia)	NEMA L6-30P or IEC309-332 P6 or IP57 (Australia)
Input Power Capacity	4,800 VA @ 200 Vac, 5,760 VA @ 240 Vac (base configuration) 9,600 VA @ 200 Vac, 11,520 VA @ 240 Vac (extended configuration)	1 Domain: 4,800 VA @ 200 Vac, 5,760 VA @ 240 Vac 2 Domain: 9,600 VA @ 200 Vac, 11,520 VA @ 240 Vac 3 Domain: 14,400 VA @ 200 Vac, 17,280 VA @ 240 Vac 4 Domain: 19,200 VA @ 200 Vac, 23,040 VA @ 240 Vac
AC Protection	30 A site circuit breakers on each power branch	30A site circuit breakers on each power branch (8 max)
40U Cabinet Dimensions	Height - 75 in (190.8 cm); Width - 24.0 in (61.1 cm); Depth - 39.0 in (99.2 cm); Weight Empty – 380 lb (173 kg)	Height – 75 in (190.8 cm); Width – 24.0 in (61.1 cm); Depth – 44 in (111.8 cm); Weight Empty – 435 lb (197.3 kg)

OPERATING ENVIRONMENT

Temperature:	50–104 degrees F (10–40 degrees C)
Temperature Gradient:	18 degrees F/hr (10 degrees C/hr)
Relative Humidity:	20% to 80% (non-condensing
Altitude:	7,500 ft. (2,286.4 m) @ 104 degrees F (40 degrees C) max 10,000 ft (3,048 m) @ 98.6 degrees F (37 degrees C) max

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