

EMC VNX5100 AND VNX5300 BLOCK STORAGE



EMCVNX5100™



EMCVNX5300™



EMC® VNX® 5100 and VNX 5300 block storage systems deliver uncompromising scalability and flexibility for the mid-tier while providing market-leading simplicity and efficiency to minimize total cost of ownership.

Specifications

ARCHITECTURE

Based on the powerful new family of Intel Xeon-5600 processors, the EMC VNX5100¹ and VNX5300 implement a modular architecture that integrates hardware components for block and object with concurrent support for native iSCSI, Fibre Channel, and FCoE protocols. These systems deliver block storage functionality via dual storage processors leveraging full 6 Gb SAS disk drive topology. The block configuration includes rack-mounted disk processor enclosure (also holds disk drives), optional disk trays for additional drives and a standby power system to deliver block protocols.

VNX PHYSICAL SPECIFICATIONS

BLOCK COMPONENTS	VNX5100	VNX5300
Min / Max Drives	4/75	4/125
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)
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
Standby Power System	1U 1.2KW	1U 1.2KW
Raid Options	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
Max Block UltraFlex™ IO Modules per Array	0	4
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)
Max Total Ports per Array	8	24
2 / 4 / 8 Gb/s FC Max Ports per Array	8	16

¹ VNX5100 is Fibre Channel Only

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SPECIFICATION SHEET

EMC²

1 GBaseT iSCSI Max Total Ports per Array	N/A	8
10 GbE iSCSI Max Total Ports per Array	N/A	8
Max FCoE Total Ports per Array	N/A	8
6 Gb/s SAS Buses (4 Lanes per Bus) for DAE Connections	2	2
OTHER		
Management Ports	LAN 2x 10/100/1000 Copper GbE	LAN 2x 10/100/1000 Copper GbE
FUNCTIONAL LIMITS	VNX5100	VNX5300
Max Raw Capacity	225 TB	360 TB
Max SAN Hosts	512	2,048
Max Number of Pools	10	20
Max Number of LUNs	512	2,048
Max LUN Size	16 TB (Virtual Pool LUN)	16 TB (Virtual Pool LUN)
OS Support	Block OS's see EMC E-Lab™ Navigator https://elabnavigator.emc.com/	Block OS's see EMC E-Lab Navigator https://elabnavigator.emc.com/

* 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.

Note: In-family Data-in-Place conversions, i.e. converting from a smaller VNX platform to a larger one, are also supported

VNX CONNECTIVITY

The VNX 5300 can be configured with UltraFlex IO modules for FC and iSCSI host connectivity (see above table for number of modules supported per SP).

VNX 5300 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

Caption – Add a caption here if needed. Otherwise delete this row.

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 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 the VNX 5100 and VNX 5300 operating environment software and data structures.

DRIVE 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

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	4 TB 7.2K Drive
Supported in 15 drive DAE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Supported in 60 drive DAE	✓	✓				✓	✓	✓	✓	✓	✓
Supported in 25 drive DAE	✓	✓			✓	✓	✓				
Formatted Capacity*	93.1 GB	186.31 GB	272.59 GB	545.19 GB	272.59 GB	545.1 GB	833.4 GB	926.04 GB	1,863 GB	2794 GB	3726 GB
Drive Form Factor	3.5"	3.5"	3.5"	3.5"	2.5"	2.5"	2.5"	3.5"	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"	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	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	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	16 MB min

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

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	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	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	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	12.2
Idle Mode	1.36	1.36	8.74	11.68	3.5	3.1	3.1	8.0	8.0	8.0	8.0

VNX OE PROTOCOLS AND SOFTWARE FACILITIES

The VNX 5100 and VNX 5300 offer support for a wide variety of protocols and advanced features available via various software suites and packs.

PROTOCOLS AND FACILITIES SUPPORTED

- Address Resolution Protocol (ARP)
- Block Protocols: Fibre Channel (FCP SCSI-3), iSCSI², and FCoE³
- Common Criteria Certification: EAL 2 Assurance Level
- Lightweight Directory Access Protocol (LDAP)
- LDAP signing for Windows
- Network Equipment-Building System (NEBS) Level 3/ETSI Certified
- Object support via EMC Atmos™ Virtual Edition
- Network Time Protocol (NTP) client
- NT LAN Manager (NTLM)
- Restriction of Hazardous Substances (RoHS) compliance
- Simple Network Management Protocol V1-V3 (SNMP)
- Simple Network Time Protocol (SNTP)
- Virtual LAN (IEEE 802.1q)

² VNX 5300 only

³ VNX 5300 only

VNX SOFTWARE

	VNX5100	VNX5300
Management	Unisphere™ for Block	Unisphere for Block
Protocols	FC included	FC, FCoE, iSCSI included
Base Software (included with VNX OE)	EMC Virtual Provisioning™	EMC 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
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
Remote Protection Suite: Protect data against localized failures, outages, and disasters	Storage replication with DVR-like recovery Integrated WAN deduplication and bandwidth reduction	Storage replication with DVR-like recovery Integrated WAN deduplication and bandwidth reduction
Application Protection Suite: Automate application copies	Application copy management	Application copy management

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	Local Protection Suite + Remote Protection Suite + Application Protection Suite	N/A
Total Efficiency Pack	N/A	FAST Suite + Local Protection Suite + Remote Protection Suite + Application Protection Suite

For specific details on software licensing, please contact your sales representative

OPTIONAL VMWARE SOLUTIONS

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
- VMware Site Recovery Manager (SRM) Integration: Managing failover and failback making disaster recovery rapid and reliable
- EMC Storage Analytics: Proactive analytics and visibility into VMware and physical storage infrastructures
- Replication Manager: Host-based management of array-based copies of data

ADDITIONAL OPTIONAL EMC TITLES

- EMC Storage Integrator for Microsoft Windows: manage and provision from Windows
- EMC VIPR SRM Suite: VNX integration with EMC Storage management infrastructure
- EMC PowerPath®: path management

VNX ELECTRICAL SPECIFICATIONS

(For specific power specifications please refer to the EMC Power Calculator at <http://powercalculator.emc.com/>)

DPE AND SPE ENCLOSURES

	VNX5100 DPE (15x3.5" drives)	VNX5100 DPE (25x2.5" drives)	VNX5300 DPE (15x3.5" drives)	VNX5300 DPE (25x2.5" drives)
POWER				
AC Line Voltage	AC Line Voltage			
AC Line Current (operating maximum)	4.97 A max at 100 Vac, 2.6 A max at 200 Vac	5.31 A max at 100 Vac, 2.76 A max at 200 Vac	5.84 A max at 100 Vac, 2.99 A max at 200 Vac	6.18 A max at 100 Vac, 3.16 A max at 200 Vac
Power Consumption (operating maximum)	519 VA (488 W) max	551 VA (521 W) max	599 VA (574 W) max	631 VA (608 W) max
Power Factor	0.98 min at 100 Vac full load, 0.95 min at 200 Vac full load			
Heat Dissipation (operating maximum)	1.76 x 10 ⁶ J/hr, (1,665 Btu/hr) max	1.88 x 10 ⁶ J/hr, (1,778 Btu/hr) max	2.07 x 10 ⁶ J/hr, (1,959 Btu/hr) max	2.19 x 10 ⁶ J/hr, (2,075 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			
Startup Surge Current	27 A rms max for 50 ms, at any line voltage			
AC Protection	7.8 A Normal-blow (non-time delay) fuse on each power supply, both phases			
AC Inlet Type	IEC320-C14 appliance coupler, per power zone			
Ride-through Time	30 ms min			
Current Sharing	± 15 percent of full load, between power supplies			

DIMENSIONS

Height (in/cm)	5.25 in/13.34 cm			
Width (in/cm)	17.5 in/44.45 cm			
Depth (in/cm)	24.25 in/61.6 cm			
Weight (lb/kg) (with/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

NOTE 1: Each DPE requires a Standby Power Supply (see the following information)

NOTE 2: Ratings assume a fully loaded DPE that includes 2 power supplies and worst case disk drives.

NOTE 3: All power figures shown represent max normal operating numbers with the chassis running in a normal ambient temperature environment. The chassis power numbers given may increase 5% when running in a higher ambient temperature environment.

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	0.1 A max at 200 Vac, internal power consumption (Up to 11 A max at 200 Vac, pass-through to AC outlets)

	consumption (Up to 6 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

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

NOTE: All power figures shown represent max normal operating numbers with the chassis running in a normal ambient temperature environment. The chassis power numbers given may increase 5% when running in a higher ambient temperature environment.

CABINETS

	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

ELECTROMAGNETIC EMISSIONS AND IMMUNITY

FCC Class A EN55022 Class A

CE Mark VCCI Class A (for Japan)

ICES-003 Class A (for Canada) AS/NZS 3548 Class A (for Australia/New Zealand)

EN55024 Immunity, ITE BSMI Class A (for Taiwan)

QUALITY AND SAFETY STANDARDS

UL 60950; CSAC 22.2-60950, EN 60950

Manufactured under an ISO 9000-registered quality system

ETSI EN 300 386

CONTACT US

To learn more about how EMC products, services, and solutions can help solve your business and IT challenges, [contact](#) your local representative or authorized reseller—or visit the [EMC Store](#)

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SPECIFICATION SHEET

The EMC logo, consisting of the letters "EMC" in a bold, sans-serif font, with a superscript "2" to the right of the "C".