
XCubeSAN
XS5200
QSAN™

XCubeSAN XS5200 series

The most advanced modern technology meets the most outstanding QSAN storage yet. The result of this combination is whole new era of security, performance, and capacity. QSAN XS5200 SAN series gives all the business customers the performance and reliability you need, now with the newest generation Intel Xeon processor, inside the carefully designed world's first ever 2U 26 bay SAN unit. QSAN thoughtfully created the XS5200 series for work intensive businesses and mission-critical applications.

Highlights

New Architecture Platform

- 5th generation Intel® Xeon® processor D-1500 family 4 cores
- Latest 12Gb SAS 3.0 technology
- Dual host card slots per controller, fully redundant and modular design
- Two 10GbE iSCSI (RJ45) ports onboard for default base controller
- Memory protection using super capacitor with M.2 flash module

Performance & Scalability

- Up to 12,000MB/s (read) and 8,000MB/s (write) stable throughput
- Up to 1,500K+ IOPS
- Up to 16x 16Gb Fibre Channel ports
- Up to 20x 10GbE iSCSI ports
- Scale up to 10 expansion units with over 3PB capacity

Innovated SANOS 4.0 operating system with SSD-optimized features

- QSnap (Writeable Snapshot)
- QReplica (Remote Replication with traffic shaping)
- QThin (Thin Provisioning)
- QCache (SSD Caching)
- QTiering (Auto Tiering)

High Availability & Reliability

- Dual active controller design with NTB cache mirroring
- Redundant, hot-swappable components
- Firmware upgrade with zero downtime

High Security

- iSCSI Force Field protection against mutant DDoS network attack
- Support SED drive

Next Generation Hybrid Storage

XS5200 series targets enterprise entry and SMB high-end businesses with limited budget and wanting for enterprise-class storage features. XS5200 series integrates Intel® Xeon® processor D1500 family that is optimized for enterprise SAN and cloud storage along with native 12Gb SAS 3.0 technology to build up the next generation storage platform to the highest standard. Innovative design includes dual host cards, dual onboard 10GBase-T ports, M.2 flash and supercapacitor modules for memory protection, and Wake-on-SAS. Not only performance can be scaled by adding a second SAN controller or adding a second host card, but the storage capacity can be scaled with XCubeDAS expansion enclosures.

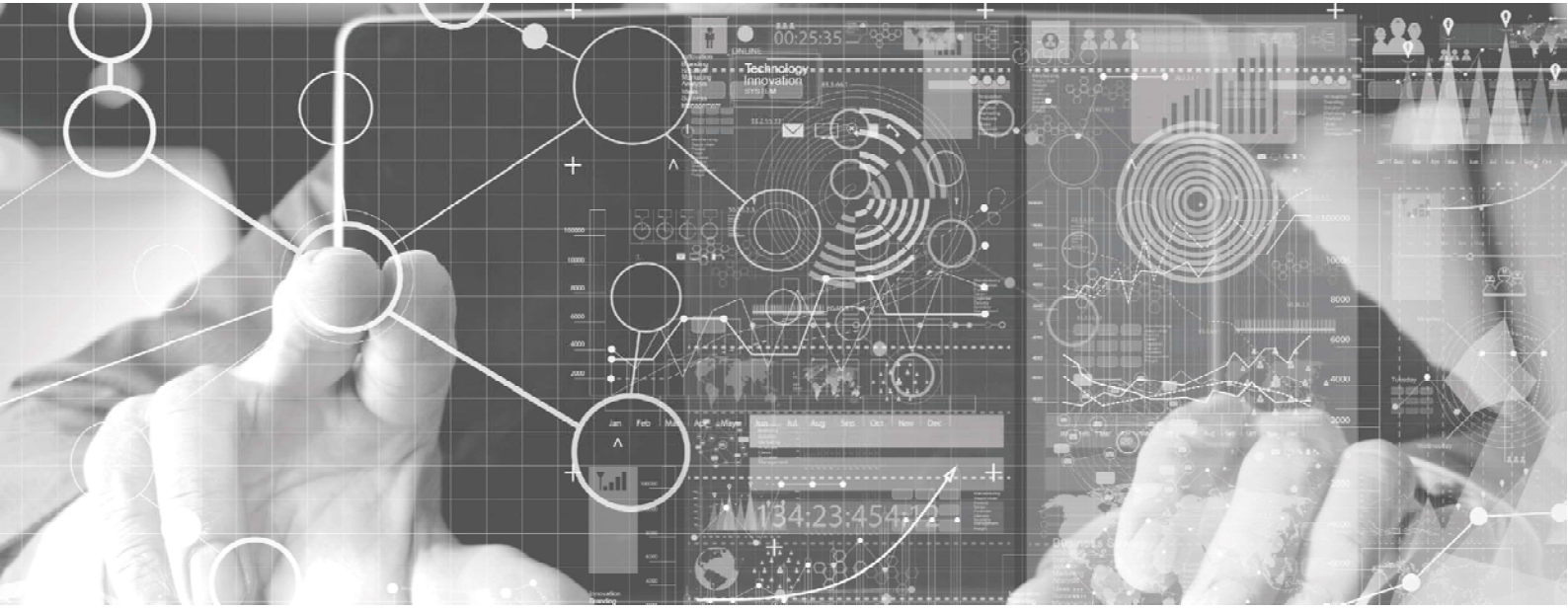
The heart and soul of XCubeSAN product family is SANOS 4.0 operating system, which is optimized to support QCache (SSD Caching) and QTiering (Auto Tiering) to fully leverage the advantages of SSD drives. XS5200 series also features real time wear level indicator to provide early warning and prevent data loss.

Future-Proof Storage Can Enable All Kinds of Enterprise Applications

With the next generation storage platform, XS5200 series is positioned to provide excellent values for customers and can deliver ultra-high performance for both throughput and IOPS to enable all kinds of enterprise applications, such as

- Mission-critical database applications : real-time transactional database (Exchange server, SQL server, RDBMS, DB2), OLTP
- Consolidation & virtualization : virtualized data center, VMware, Hyper-V, Citrix
- Backup & disaster recovery : Symantec, Commvault, Veeam, Acronis
- Media & entertainment : 2K/4K/8K video editing, streaming and archiving.
- Large-scale surveillance : mega structure (shopping mall/skyscraper), public transportation (airport/train station/highway), secure & smart city infrastructure
- Private cloud computing and big data analytics
- Science and HPC (High Performance Computing)
- Corporate analytic or decision-making appliations : CRM, data warehousing, EAI

XS5200 series is built for mission-critical applications that require high availability, high reliability, data security & protection, perfromane and scalability.



Uncompromising Availability for Business Continuity

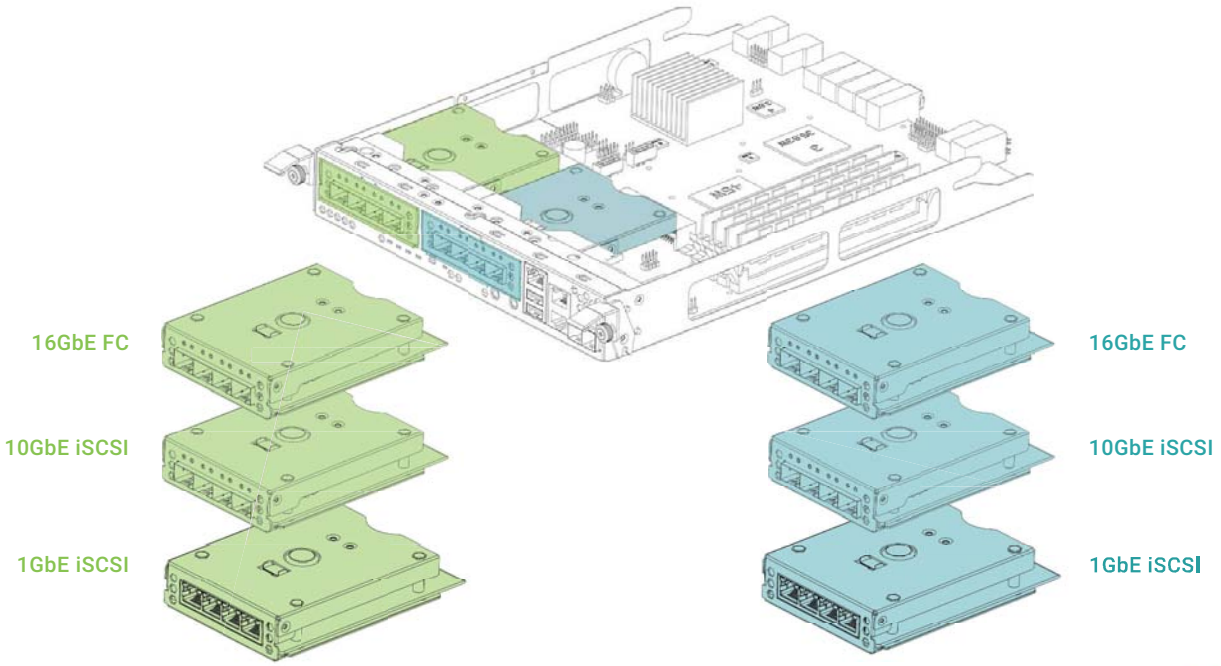
Reliability and availability are two basic requirements for enterprise storage. No one wants to lose business continuity. The worst scenario can result in expensive outage costs and possible legal proceedings with liability claims. XS5200 series comes with active-active dual controller design and the most reliable hardware architecture. Both controllers can deliver services at the same time. If one controller fails, the other controller can take over in seconds and continue providing services. Besides, all critical hardware modules are designed with redundancy and hot-swap capability for easy on-site maintenance. XS5200 series can upgrade its firmware without any system down time and can balance I/O loading through multiple paths and two controllers.

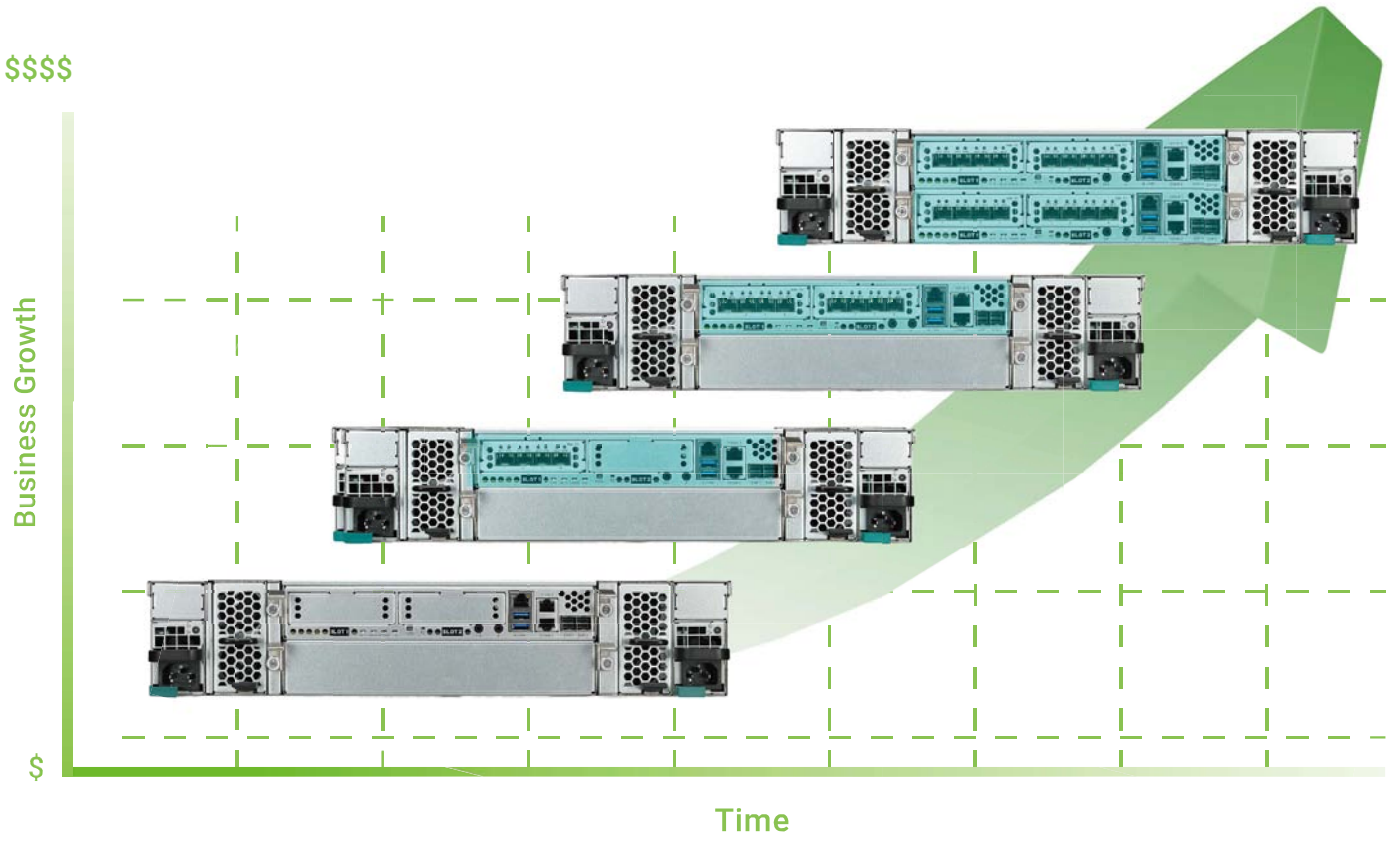
- No Single Point of Failure
- Fully Redundant Components
- Active Active RAID Controllers
- Hot Swappable Modular Design
- Cache Mirroring
- Automatic Fallover
- Automatic Management Service Failover
- Non-Disruptive Firmware Upgrade

99.999% Uptime-Five 9s Availability

Dual Host Cards and Modular Design for Versatility and Scaled Performance

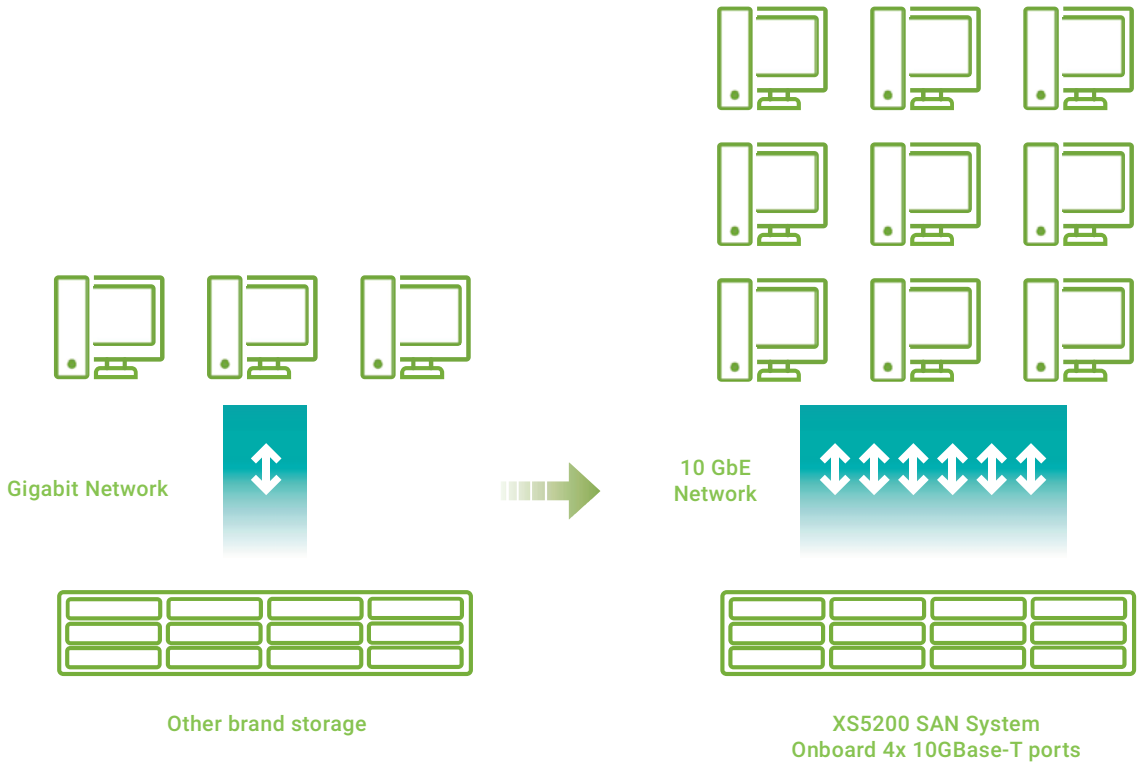
The SAN controller has two host card slots for expanded connectivity and scaled performance. There are three host cards, 4-port 16Gb Fibre Channel, 4-port 10GbE iSCSI, and 4-port 1GbE iSCSI to choose to match the configuration needs of your SAN infrastructure. You may have mixed Fibre Channel and iSCSI connectivity in the same system simultaneously. In dual controller mode, the system can support up to 20 ports of 10GbE iSCSI or 16 ports of 16Gb FC connectivity. Host servers can connect to XS5200 series directly. There is no need to use Fibre Channel switch or Ethernet switch, which can save you substantial amount of money.





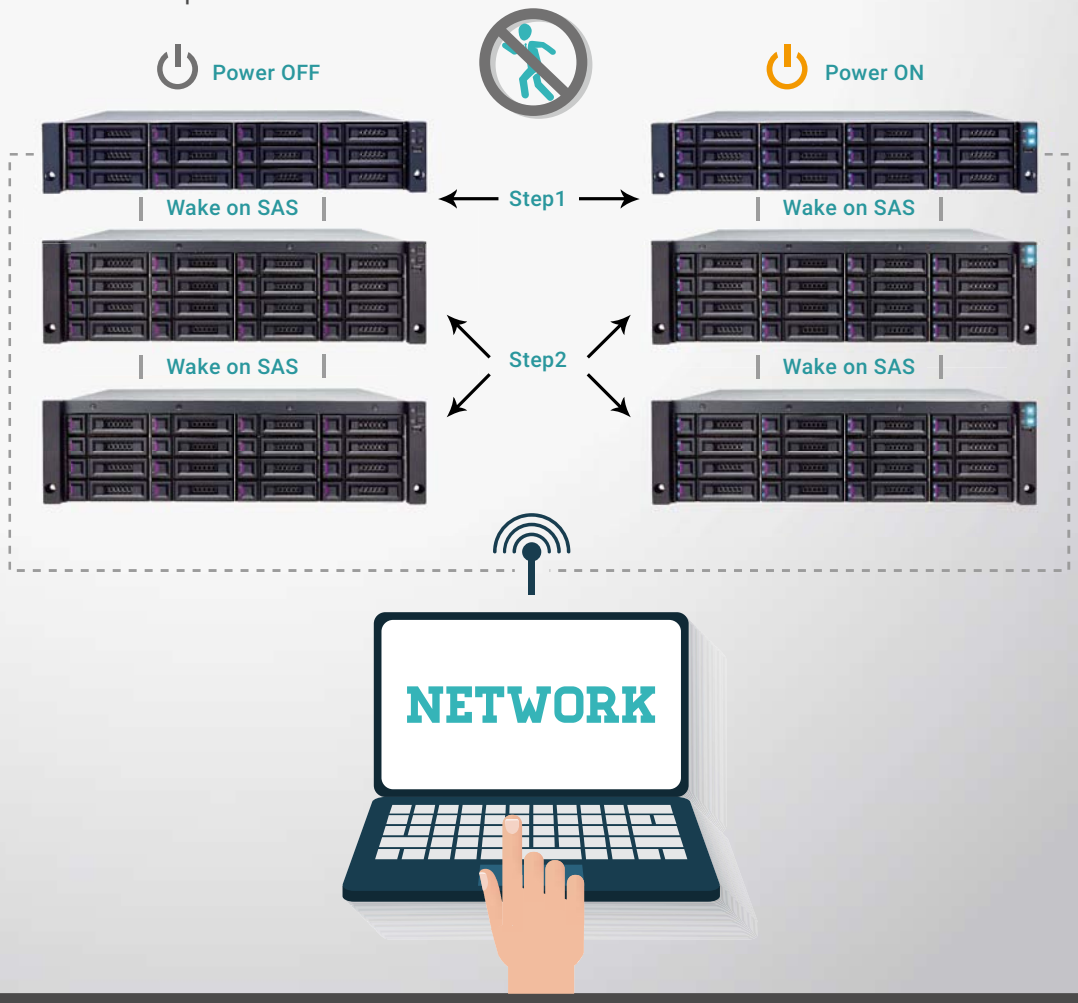
Onboard 10GBase-T Ports for Consolidation and Virtualization

The base unit SAN controller of XS5200 series has no host card, but there are two onboard 10GBase-T iSCSI ports for network storage consolidation and virtualization deployments with up to 256 host servers. This base unit system can already fulfill most bandwidth-demanding applications, such as data sharing, data backup, video editing, and virtualization.



Native 12Gb SAS 3.0 Technology

XCubeSAN product family has fully integrated 12Gb SAS technology to support the latest and fastest disk drives on the market. 12Gb SAS 3.0 doubles data transfer rate than 6Gb SAS 2.0. Your original investment in 6Gb SAS HDDs can still benefit from moving to XS5200 series without any negative impact. XS5200 series provides Wake on SAS wake on SAS function that can power on/off all cascaded XD5300 expansion enclosures by using QSAN proprietary SAS cable. You can power on XS5200 series using Wake on LAN function. And XS5200 series will automatically power on all XD5300 expansion enclosures attached to it using Wake on SAS function. Wake on SAS empowers IT managers to control the storage system from a remote site. This can greatly reduces maintenance efforts and power consumption.



Modular Design for High Availability and Easy Management

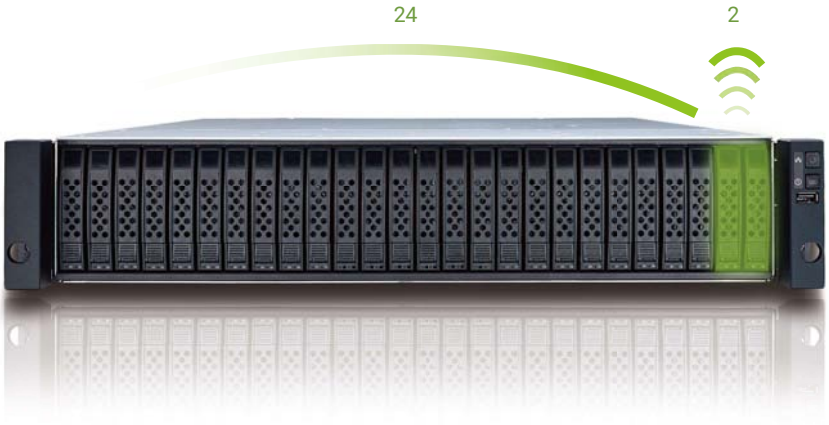
All critical components are fully redundant and hot swappable modules to achieve the highest availability and reliability. Components include power supply unit, cooling fan, host card, SAN controller, and HDD tray. Modular design can significantly reduce maintenance efforts because they are field-replaceable units (FRU) and require no tools to perform the task. Thanks to this modular design of host card, the complete SAN system can be assembled by independent modules. This can greatly reduce inventory stocks in distribution and increase a lot of flexibility and business opportunities.

Fully Redundant & Hot Swappable Modular Design

PSU | Fan | Controller | C2F | HDD/SSD Tray

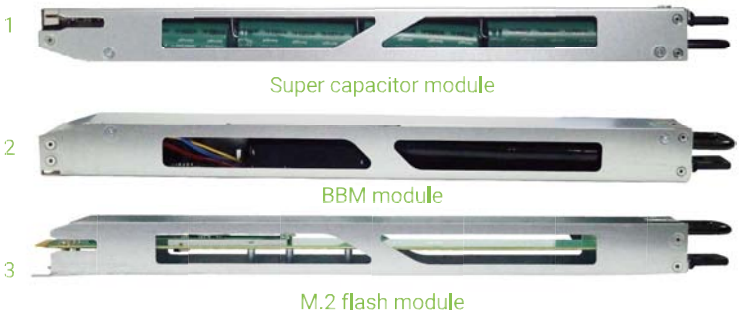
The World's Highest Density SAN

XS5226 supports 26 bays in 2U form factor. It is the highest density 2U SAN storage system in the world. 26 bays can be configured as 24+2 combination, 24 stands for 24 bays for data capacity and 2 stands for 2 bays for SSD caching use. It will efficiently improve the performance of system. More durable than its predecessor, and part of the most durable QSAN XS5200 SAN family, the new XS5200 series undergoes extensive testing to ensure it can survive business customers' everyday workloads, and features premium materials like enhanced HDD tray and HDD door; which make QSAN the global first one to deliver the 2U 26 bays storage system.



Green and Efficient Memory Protection to Safeguard Data

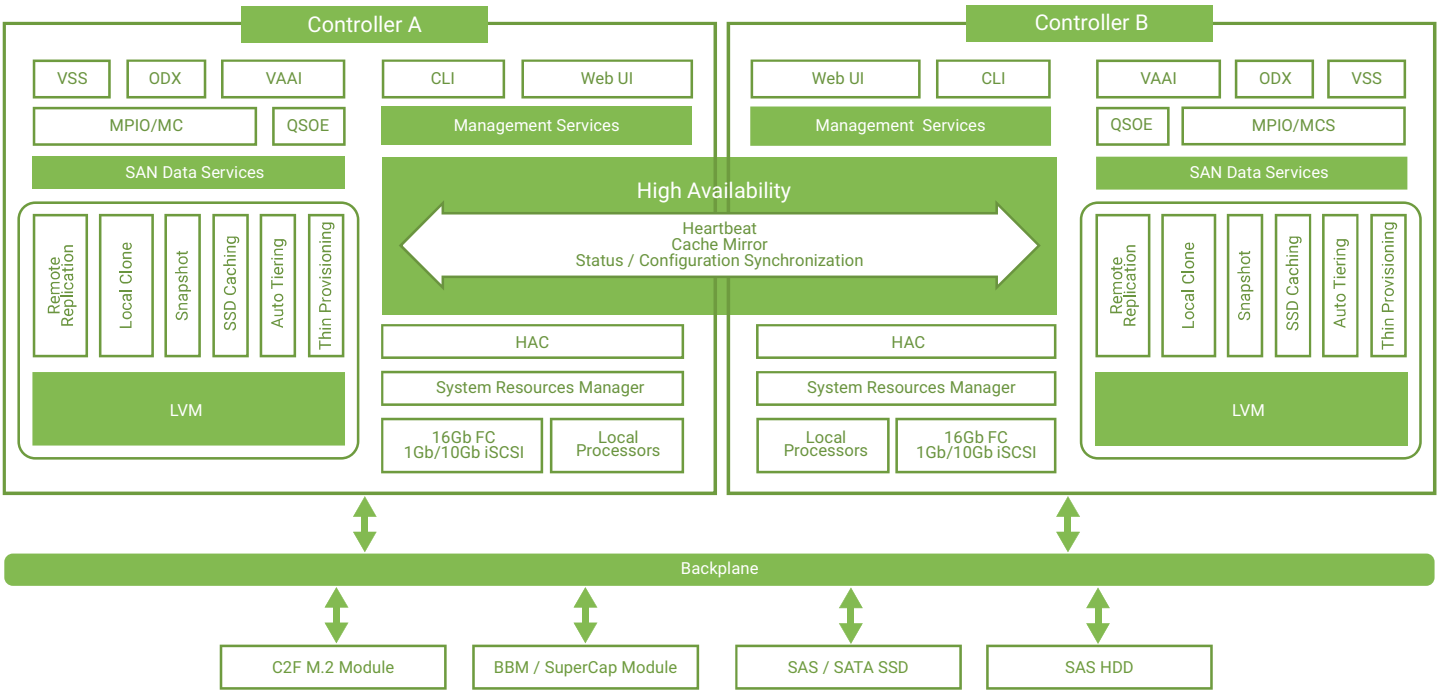
In case of emergence and power outage, data in memory cache need to be protected for data consistency and integrity. X5200 series supports Cache-to-Flash technology with a M.2 flash module and power module. When outage strikes, cache data will be written to M.2 flash module drawing power from power module. Power module has two options to choose from - traditional BBM module and super capacitor module. Super capacitors are environment-friendly and require no maintenance and are more resistant to temperature variation. Both flash module and power module can be hot swapped with zero downtime for extra availability and reliability.



Enhanced SANOS 4.0 Operating System

SANOS 4.0 is the heart and soul of XCubeSAN product line. With 64 bit architecture and many patented technologies, SANOS 4.0 stays ahead of wave in competition to deliver the performance, availability, reliability, data protection, security, and scalability required for enterprise SAN storage. Version 4.0 has optimized for hybrid storage to support auto tiering and SSD caching. Integrated support for vSphere VAAI and Hyper-V ODX allow XS5200 series to perform more efficiently and run more VMs in virtualized environment.

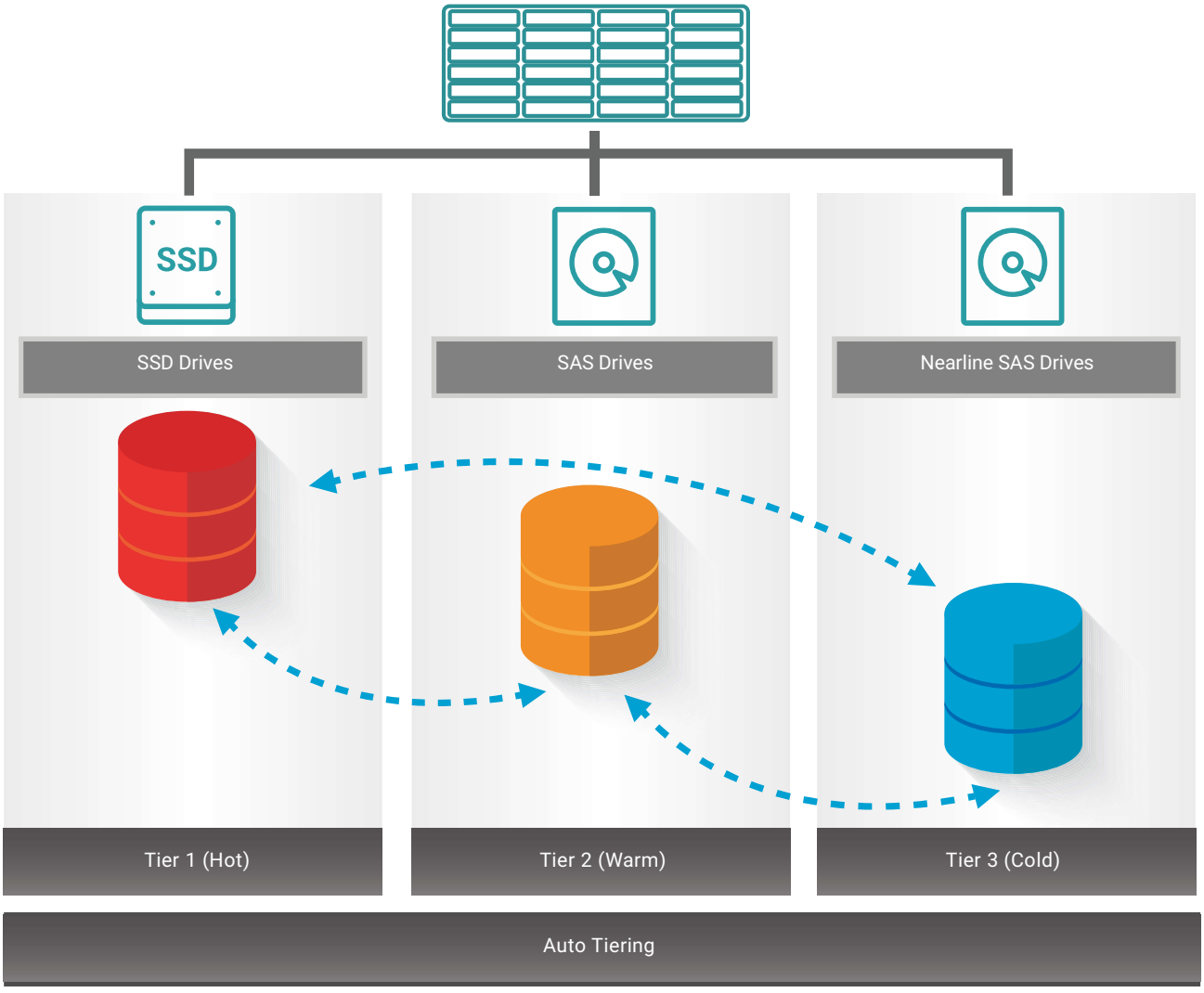
SANOS 4.0 for High-Availability



SSD Optimized Storage

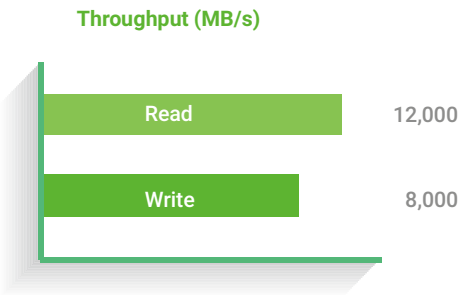
Enterprise applications are more demanding than ever, and the growing use of private clouds and virtualization puts additional strain on storage systems. However, not all applications require the performance of flash storage all the time. QCache (SSD Caching) leverages the strengths of both SSD and SAS/SATA drives to cost-effectively meet both high performance and high capacity requirements. It accelerates application performance by utilizing SSD drives as extended RAID controller cache for frequently-accessed hot data, while most of the cold data are stored in the hard drives . It can improve random read performance by up to 18 times.

With QTiering (Auto Tiering) technology, XS5200 series can help you put the right data at the right place in the right time for optimal use of all storage tiers and allow you to reduce storage costs and management overhead while increasing performance and capacity. Intelligent algorithm behind QTiering manages the data relocation and monitors the data hotness ratio using half-life coefficient and advanced ranking mathematics. 5 tiering policies provide more flexibility and options to satisfy actual deployment scenarios. Big data analytics, data mining, business intelligence, and trend analysis are the target applications because they have different data retention and usage characteristics.



Accelerated Performance and Massive Capacity Expansion

Extra storage capacity can be easily acquired through 2x high speed 12Gb mini SAS HD ports (SFF-8644) per SAN controller to connect to XCubeDAS expansion enclosures. Up to 446 drives support, XS5200 series can deliver up to 12,000MB/s read and 8,000MB/s write in throughput and up to 1,500,000 IOPS performance. Enormous capacity expansion potential makes XS5200 series a perfect candidate for backup/archive application, big data application, and 2K/4K digital image processing applications (media & entertainment, large-scale surveillance).



Highest-Level Data Security

Although SAN storage usually has its own storage networking environment, remote replication using iSCSI connection is still prone to all sorts of Internet network attacks especially mutant DDoS. XS5200 series has gone through rigorous network attack tests using the latest Spirent security appliance. QSAN iSCSI Force Field makes sure iSCSI target protocol stack is robust enough and smart enough to fend off any kinds of malicious attempts.

Gartner market research estimates in the near future all drives will be hardware encrypted. XS5200 series supports self-encrypting drives (SEDs), which can protect from data theft, drive lost, and misplacement. SEDs have no performance impact and data can be securely erased much faster than traditional drive wipe methods. Any illegal tampering with the key will render all data on the drive destroyed and inaccessible.

Streamline Database Applications

XS5200 series is built for mission-critical database applications. Five 9's high availability, dual active controllers, Cache-to-Flash memory protection, and efficient array-based backup solutions are all tailor-made for database applications. Run your SQL Server environment or Orcale 12c database environment on XS5200 series to:

- Accelerate database performance with stunning throughput and random IOPS
- Reduce or eliminate planned/unplanned downtime through high availability and non-disruptive operations
- Reduce storage and data management costs and increase ROI.
- Accelerate application test/dev process and deployment

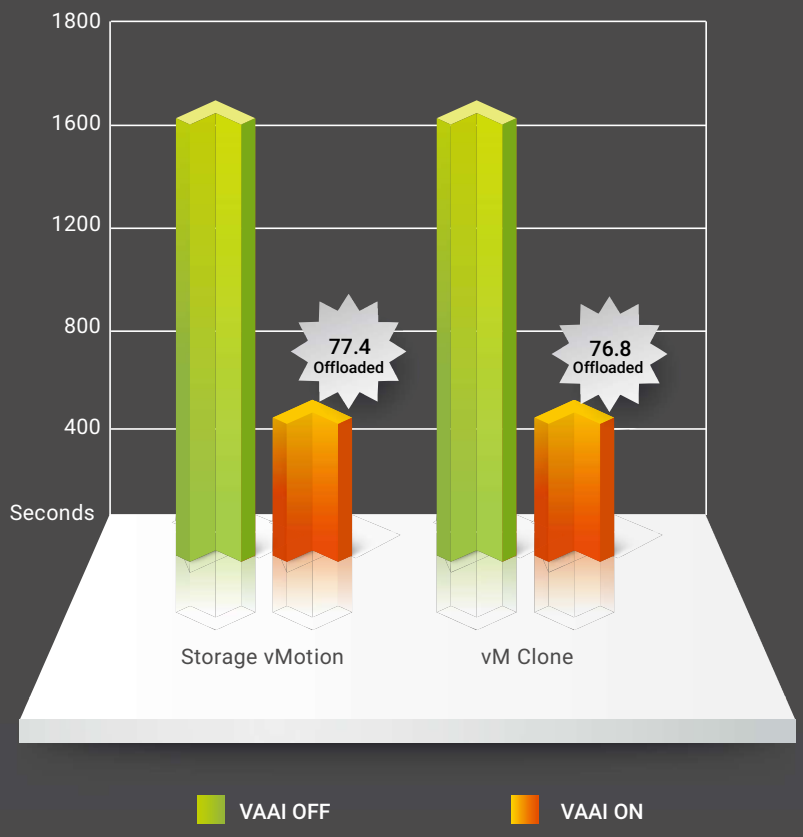
By using QCache and all flash solution, database latency can decrease by up to 80% and increase throughput by up to 4x times. Because of this performance benefit, you can consolidate more databases into XS5200 series and save database license fees by up to 50%. Using free QSnap/QClone/QReplica enterprise storage functions reduces database backup time from hours to minutes. Furthermore XS5200 series can help reduce or eliminate planned and unplanned downtime through five 9's high availability and non-disruptive operations especially for clustered database server environment.

Best Video Storage Solution

The business community at large has embraced HD video. The digital video is rapidly evolving to 4K and beyond, but their adoption and consumption creates immense stress and challenges for the storage domains. 16Gb Fibre Channel and 10GbE iSCSI are ideal tools to solve 2K/4K video entertainment requirements such as editing, rendering, streaming and broadcasting. XS5200 series offers super wide bandwidth up to 16x 16Gb FC ports and 20x 10GbE iSCSI ports through innovative dual host card design. Stable 12,000MB/s throughput supports multiple concurrent streams of 2K, 4K, HD and 3D content without dropping frames.

Virtualized Storage Environment

XS5200 series is highly integrated with leading virtualization hypervisors. It is certified by VMware vSphere with VAAI support that includes Hardware Assisted Locking (ATS), Block Zero, Full Copy, and Thin Provisioning. It is also certified by Windows Server 2012 R2 with Windows ODX support. All these features make XS5200 series an ideal candidate in virtualized datacenters to help provision, migrate and manage VM storage faster and more efficiently and allow hypervisors to run more VMs.



Use thick provision and move a 77GB datastore

Hardware Specification

Model Name	XS5212-D (dual) XS5212-S (single)	XS5216-D (dual) XS5216-S (single)	XS5224-D (dual) XS5224-S (single)	XS5226-D (dual) XS5226-S (single)
RAID Controller	Dual-active or Single-upgradable controller			
Host Channels (per controller)	Host card slot 1 : 1GbE iSCSI (RJ45) x4 ports 10GbE iSCSI (SFP+) x4 ports 16Gb/8Gb FC (SFP+) x4 ports Host card slot 2 : 1GbE iSCSI (RJ45) x4 ports 10GbE iSCSI (SFP+) x4 ports 16Gb/8Gb FC (SFP+) x4 ports			
	10GBase-T iSCSI x2 ports onboard 1GbE management port x1 port onboard			
Host Channels	Intel Xeon D-1500 family 4 cores			
Memory (per controller)	DDR4 ECC 8GB, up to 128GB			
Hard Drive Interface	Native 12Gb SAS backplane 3.5" SAS, Nearline-SAS HDD 2.5" SAS, Nearline-SAS HDD 2.5” SAS, SATA SSD (6G MUX board for 2.5" SATA SSD only)			
Expansion Channels (per controller)	Two mini SAS HD (SFF-8644) ports onboard			
Expansion Enclosure	XCubeDAS XD5300 series 12Gb SAS JBOD			
Max. Expansion Enclosures	10			
Max. Drives	446			
Form Factor	2U 12bays	3U 16bays	4U 24bays	2U 26bays
Dimension (H x W x D)	19” Rackmount 88 x 438 x 515mm	19” Rackmount 130.4 x 438 x 515mm	19” Rackmount 170.3 x 438 x 515mm	19” Rackmount 88 x 438 x 491 x 88mm
LCM Module	USB LCM module (optional[1])			
Power Supply	80 PLUS Platinum two redundant 770W (1+1) AC Input 100~127V 10A, 50-60Hz 200~240V 5A, 50-60Hz DC Output +12V 63.4A +5VSB 2.0A			
Fan Module	Two hot pluggable/redundant fan modules			

Software Specification

Model Name	XS5212-D (dual) XS5212-S (single)	XS5216-D (dual) XS5216-S (single)	XS5224-D (dual) XS5224-S (single)	XS5226-D (dual) XS5226-S (single)
iSCSI	QSOE 2.0 (QSAN Storage Offload Engine) Jumbo frame, CHAP authentication Virtual LAN, iSNS support			
FC	QSOE 2.0 (QSAN Storage Offload Engine) FCP-2 & FCP-3 support Auto detect speed and topology, Topology support : FC-AL, Point-to-point*, Fabric *16Gb connection only supports point-to-point mode.			
RAID & Volume	RAID level 0,1,0+1,3,5,6,10,30,50, 60, N-way mirror Global and dedicated hot spare Write-through or write-back cache policy Online volume expansion Instant RAID volume availability Auto volume rebuilding Online volume migration without system down time QThin (Thin provisioning) QCache (SSD Caching) - optional[1] Fast Rebuild Support SED[2] (Self Encrypting Drive) Disk health check Parity check Batch disk firmware upgrade			
High Availability	Dual-Active RAID controllers Cache mirroring through high bandwidth channels (NTB) Flexible pool ownership management Management port automatic failover Online firmware upgrade with zero system down time (Dual-controller mode only) Multi-path & load-balancing support (Microsoft MPIO, MC/S, Trunking, LACP)			
Advanced Data Protection	QReplica (Remote Replication) QSnap (Writable snapshot) Volume cloning (Local Replication) Microsoft Windows Volume Shadow Copy Services (VSS) Configurable N-way mirror Online disk roaming Instant volume restoration Memory protection : Cache-to-Flash M.2 flash module Power module : BBM module or super capacitor module Network UPS[2]			
Security	Secured Web (HTTPS), SSH (Secure Shell) iSCSI Force Field to protect from mutant network attack CHAP ISE (Instant Secure Erase) Support SED[2] (Self Encrypting Drive)			

Data Efficiency	QThin (Thin Provisioning) QTiering (Auto Tiering) - optional[1]
Management	USB LCM, Serial console, CLI2 support, Online firmware upgrade HTTP Web UI, Secured Web (HTTPS), SSH, LED indicators, iSNS, S.E.S., S.M.A.R.T., Wake-on-LAN, Wake-on-SAS
Networking	DHCP, Static IP, NTP, Trunking, LACP, VLAN, Jumbo frame (up to 9000 bytes)
Notification & Monitor	Email; SNMP trap; Browser pop-up windows; Syslog Disk monitor including SSD wear level indicator Volume monitor Performance monitor System monitor Enclosure monitor
Virtualization	VMware (VAAI), Hyper-V (ODX, Offloaded Data Transfer), Citrix
Green	80 PLUS Platinum energy-efficient power supplies Wake-on-LAN to turn on or wake up the system only when necessary Auto disk spin down

Warranty & Regulatory

Warranty	System : 3 years Battery backup module : 1 year Super Capacitor module : 1 year
Regulatory	CE, FCC, VCCI, BSMI, KCC

Operating Environment

Temperature	Operating temperature 0 to 40°C Shipping temperature -10°C to 50°C
Relative Humidity	Operating relative humidity 20% to 80% non-condensing Non-operating relative humidity 10% to 90%

1. Optional means the feature needs to be purchased separately.
2. SED, CLI support will be provided in later firmware release.
3. Thick means thick provisioning.
4. Thin means thin provisioning.

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