QSAN
Beyond Storage

XCubeNAS

XN7016R / XN7024R / XN8016R / XN8024R

- 5th generation Intel® D1500, quad-core processor, up to 128GB ECC RAM
- Scale up solution supports over 3PB of raw storage capacity
- QSM 3 (QSAN Storage manager), Easy management
- Advanced storage management
  - Pool wise Deduplication
  - SSD cache
  - Auto-tiering
  - Compression
- Native snapshot and replication
- Disaster recovery
- Virtualization-ready storage

Ingenious NAS Systems

The XCubeNAS series (XN7016R / XN7024R / XN8016R / XN8024R) are a next generation, highly efficient NAS systems, which design for enterprise applications. With Intel® Xeon® processor, XN7016R / XN7024R / XN8016R and XN8024R support up to 128GB of DDR4 ECC RAM.

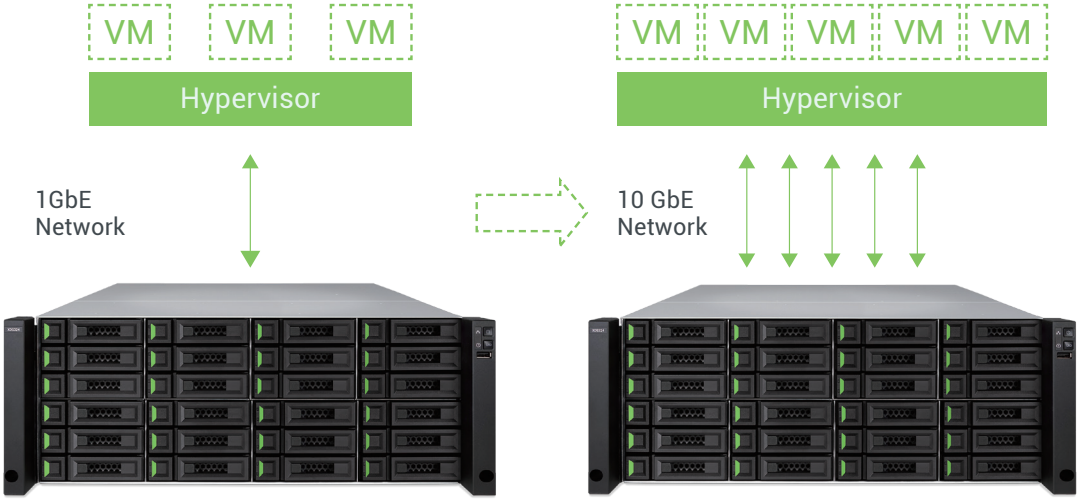
The PCIe expansion slots give the XCubeNAS the flexibility to respond to various application demands. The two built-in and the optional 10GbE network solution significantly enhance the data transmission bandwidth. Moreover, two onboard SAS 12Gb/s wide ports provide the scalability to fulfill capacity demands with QSAN expansion enclosures.

Modularized Hardware Design

XN7016R / XN7024R / XN8016R and XN8024R are designed as a modular system. All major components are user - replaceable design, providing an easy upgrade and maintenance for the IT administrators. The N+1 System components are fully redundant, cable-less and hot-swappable FRUs (field-replaceable units) design, including the controller, power supplies, fans modules and host cards. XN7016R / XN7024R / XN8016R and XN8024R have the highest flexibility among the XCubeNAS series. The onboard connectivity supports 10GbE port for data service connectivity and 12Gb/s SAS-3 wide ports, the latest 12Gb/s SAS technology, for capacity expansion. XN7016R / XN7024R / XN8016R and XN8024R support two additional host card slots, providing up to x8 10GbE ports to increase flexibility and performance based on your demand.

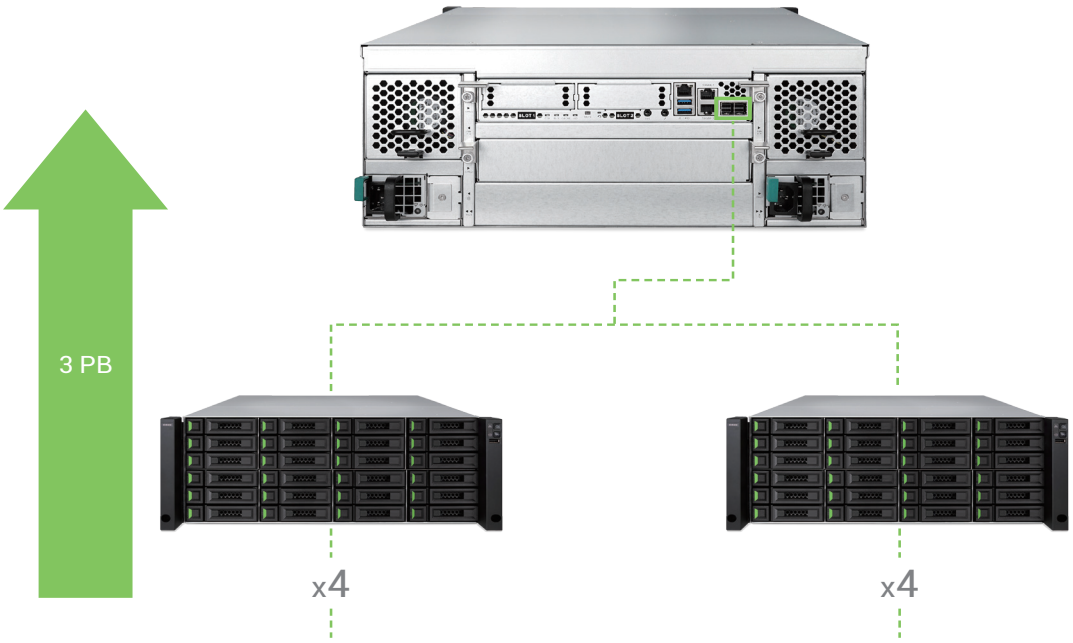
Bulit-in 10GbE Solution

A 10 Gigabit Ethernet (10GbE) network is imperative for enterprises that require high bandwidth for virtualization and fast backup and restore for an ever-growing amount of data. The XN7016R / XN7024R / XN8016R/XN8024R are affordable and reliable storage solutions for deploying a 10GbE environment.



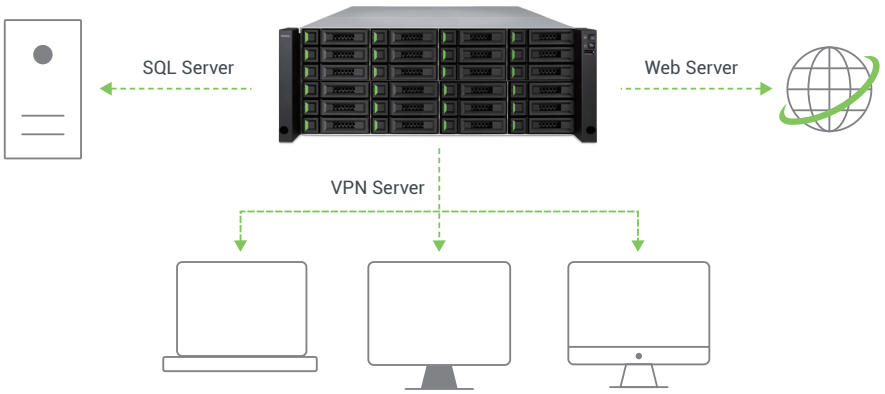
Scale-Up Solution

XN7016R / XN7024R / XN8016R and XN8024R provide massive scale-up capability by connecting any of our expansion enclosures. It gives the ability for up to 216 disk drives or 3 PB of raw storage space when using 12TB HDD drives.



All-in-One Business Solution

Since having a dedicated machine for each specific task rapidly becomes expensive and inefficient, the XCubeNAS Series gives you an affordable and comprehensive choice for all you need. Everything from file sharing to data storage, even hosting a website, the XCubeNAS can do it all.

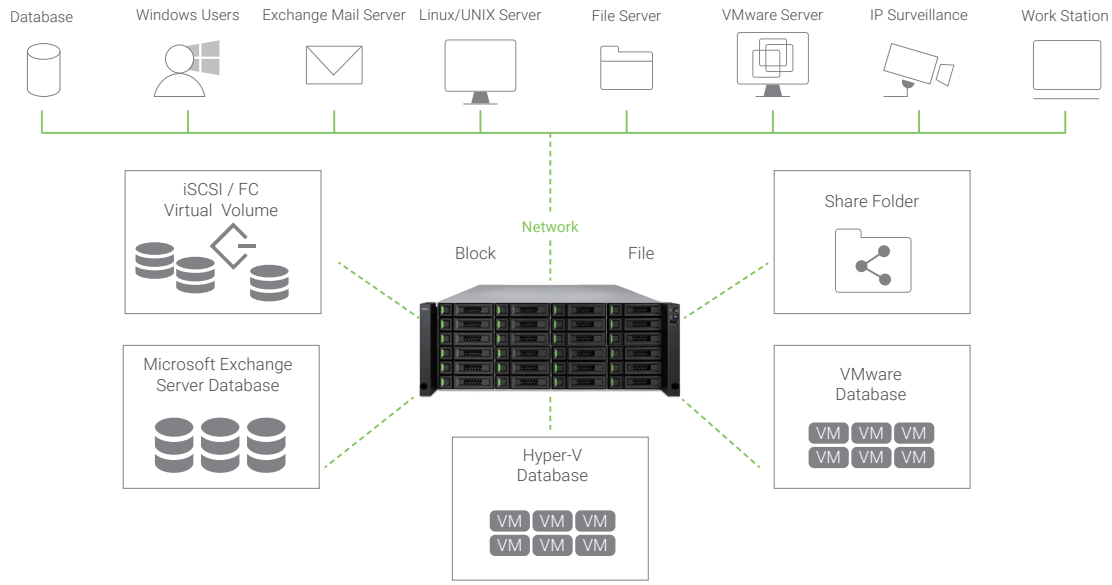


Unified Storage

In XCubeNAS, QSM provides multi-role storage solutions, including block storage and file system. This can help IT administrators easy to run different applications to fulfill the business ever changing demands. In the simplest scenario, the XCubeNAS can be a file sharing server, or a simple storage device for centralized office data sharing via iSCSI or Fibre Channel. XCubeNAS helps business to share the information more efficiently and quickly with its high bandwidth network ports.

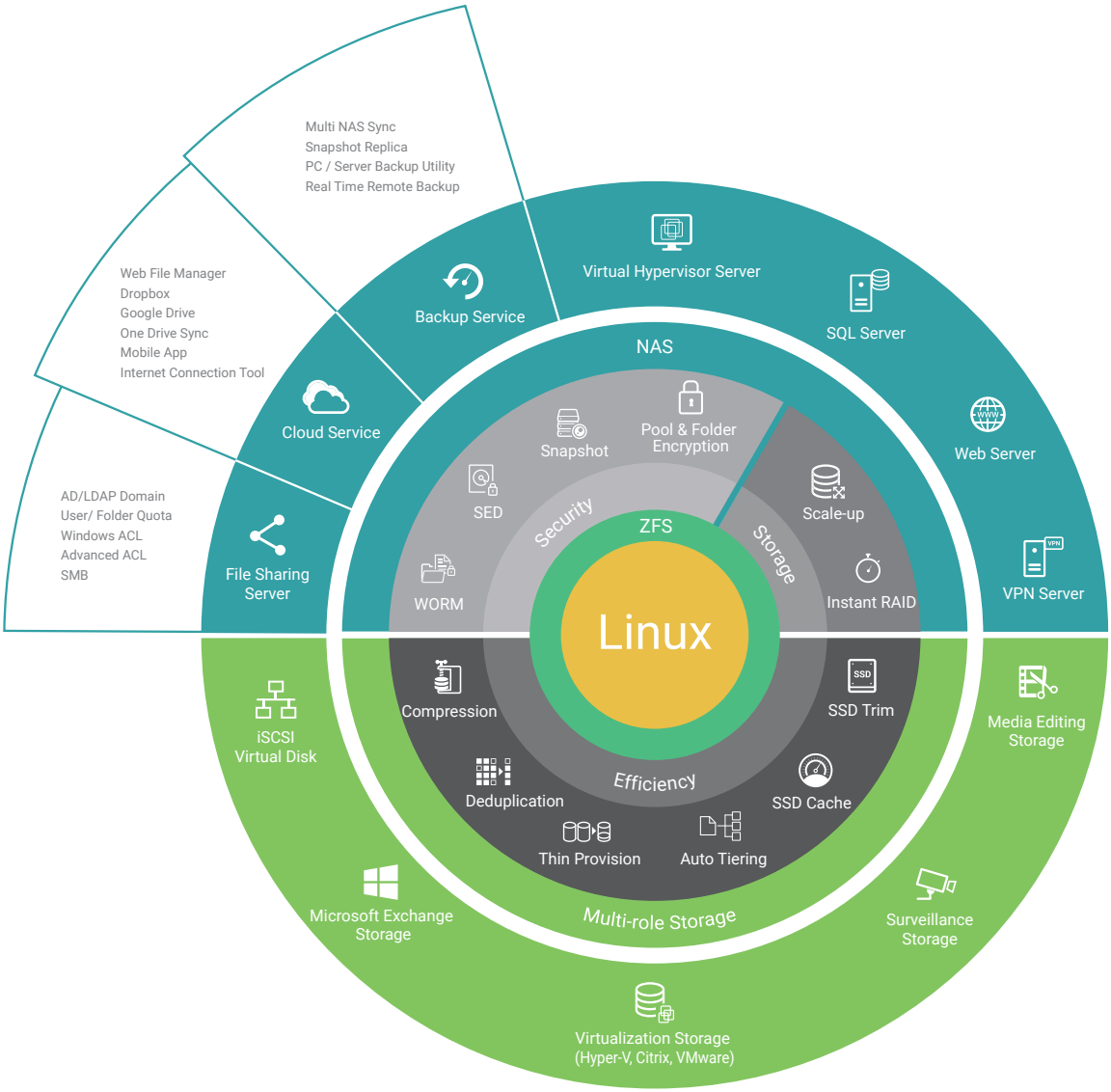
With the performance and the stability, XCubeNAS is the best solution for intensive media editing and production for a single and group of users. The third example for the power of the XCubeNAS is as an IP surveillance storage. In the surveillance world, recording every frame is of utmost importance. The XCubeNAS has the ability and stability to record every frame sent to it without any problems.

As you can see, this is just a sample of the many roles that an XCube can play. The characters that an XCube can take is limited to the users' imagination.



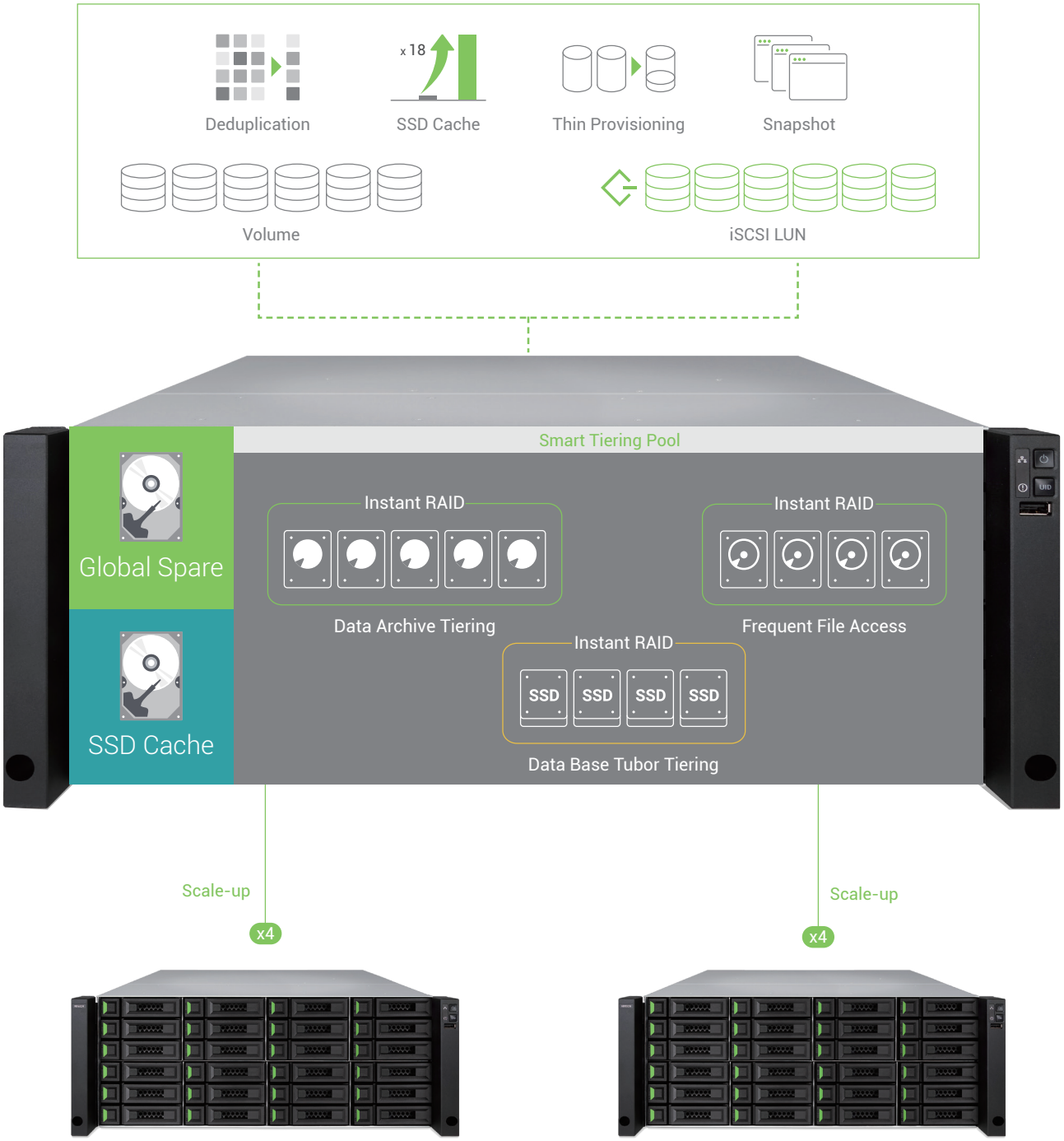
Leading Enterprise-level NAS Operating System

QSM 3 (QSAN Storage Management 3) is a NAS operation system for QSAN XCubeNAS series. The core of QSM is Linux kernel and in-house fine-tuning 128-bit ZFS file system.QSM's powerful storage features ensure persistent, reliable storage management, protection against data corruption, seamless capacity expansion, several data integrity mechanisms, pool and disk encryption protection, unlimited snapshots, and unlimited clones.



Advanced Storage Technology

XCubeNAS tailor-made storage pool technology effectively caters to diverse storage demands on data integrity, scalability, high performance, and availability. Comprehensive RAID levels are supported to ensure data integrity under every application scenario. Pool capacity could be expanded on the fly, rapidly responding to growing needs of for capacity. The design of the XCubeNAS allows for creating customized storage pools and auto-categorization of data based on usage. “Hot” data moves to front-line storage while “cold” data stores on slower disks. All this is done automatically with the XCubeNAS.



Wide RAID Type Support And Instant RAID

XCubeNAS provides comprehensive RAID levels, 0, 1, 5, 6,Z3, 10, 50, 60, for various application scenarios. Each RAID types can be instantly deployed with no initialization or synchronization phase, delivering safe, protected and high-performance storage space without any delays.

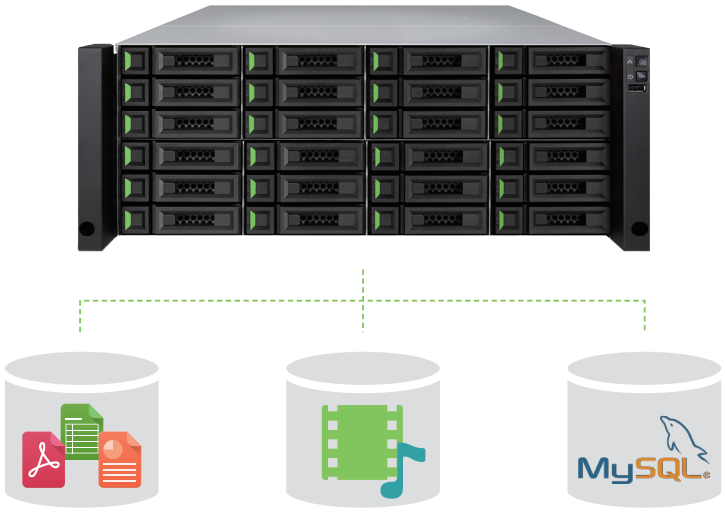
Fast Rebuild Technology

When a drive fails in a RAID set, the XCubeNAS is capable of rebuilding the data blocks that have been used, and not the entire RAID set. This helps reduce the risk of data loss during the rebuilding process.

User Defined Pool

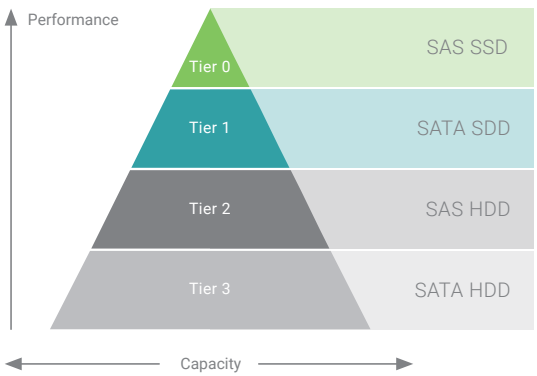
Thinking ahead to everyday usage situations, the XCubeNAS provides three optimized solutions for pools to achieve high performance and availability for dedicated storage applications:

- Generic: Default type for generic file service or backup usage.
- Media: Optimize IOPS for small packets of sequential RW and throughput for large, random packages.
- Database: Data is synchronized between the memory cache and disks in real time for assurance of database Integrity.



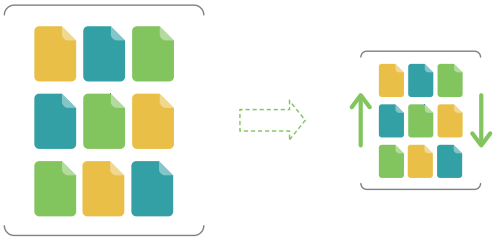
Smart Auto-tiering

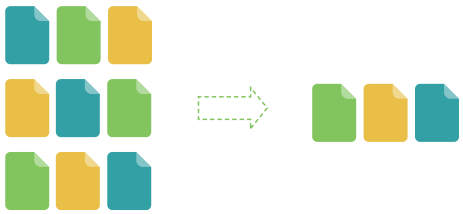
Increase the performance of your business-related applications by using auto-tiering; without crippling your budget. The XCubeNAS features auto-tiering technology that continuously analyzes how often data has been accessed. Frequently-used data would will then be automatically moved to drives with higher access speeds, while rarely-used data would be is moved to large capacity, slower drives. Demanding workloads of your business applications could be dramatically reduced and the performance increased without significant investment in expensive All-Flash storage devices – this is all done by the XCubeNAS's intelligent auto-tiering technology.



Data Compression

By enabling compression, QSM drives pervasive cost reduction with data for your storage investment and get the best balance with the performance. Moreover, compression helps ITs to reduce the amount of storage you need to purchase and maintain.





Data Deduplication

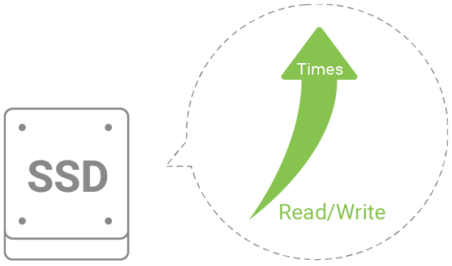
The data deduplication feature of the XCubeNAS is an inline, block-level function that checks the block similarity of data as it enters the system. With deduplication, QSM will auto remove of the redundant data object to reduce the usage of storage capacity.

Thin Provisioning

"Take whatever you need." That's the philosophy of thin provisioning. Thin provisioning lets various services and applications use the same storage space without limiting how much of the quota can be used by each. With thin provisioning, space resources are dynamically distributed to the most demanding, responding to your business applications with higher flexibility and promising potentials.

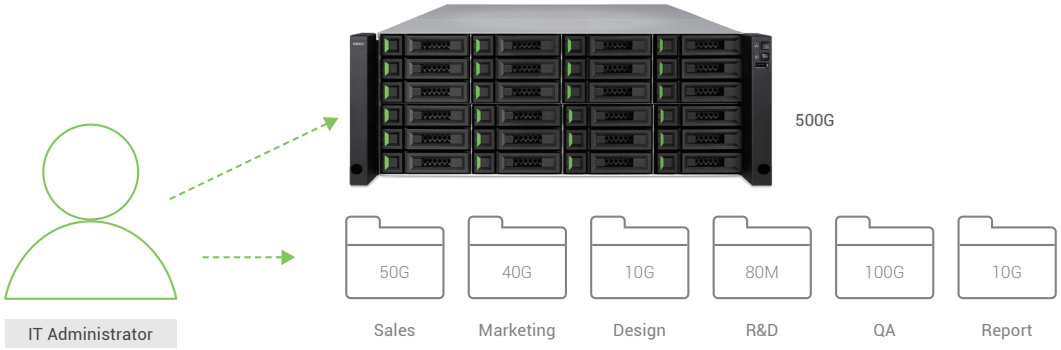
Deep Into SSD Caching

The XCubeNAS uses high-speed SSD drives as fast caching storage. Therefore, the random IO performance of your storage pool can be significantly improved. You can combine SSD drive and SATA drives to fulfill your demand for capacity and performance.



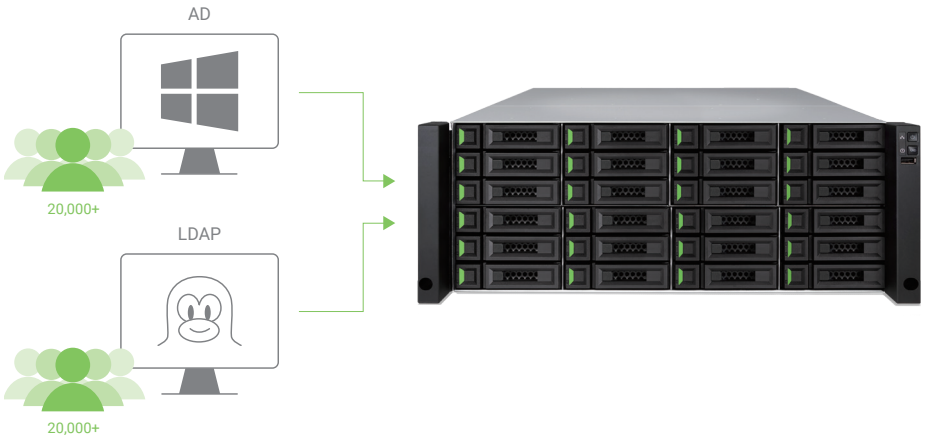
Quota Control On Accounts And Share Folders

Take control of your storage space, by adding quotas (limits) to the amount of data a user can store. Users can be limited on how much data a folder can store or the quota can apply to the entire system, thus empowering the admin with complete control of what is stored on the XCubeNAS.



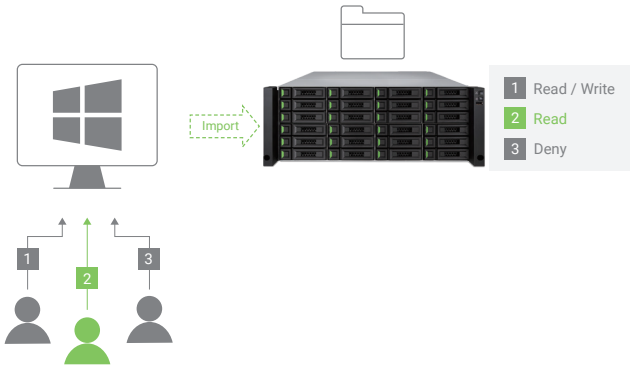
Windows AD and LDAP Directory Services Support

By supporting Windows AD and LDAP, the XCubeNAS enables seamless account integration. QSM supports up to 200,000 domain accounts, and their Home folder is automatically created, helping IT administrators reduce duplicated sets of credentials and minimizing their workload for giving default account settings and new user setup.



Windows ACLs And Advanced ACLs

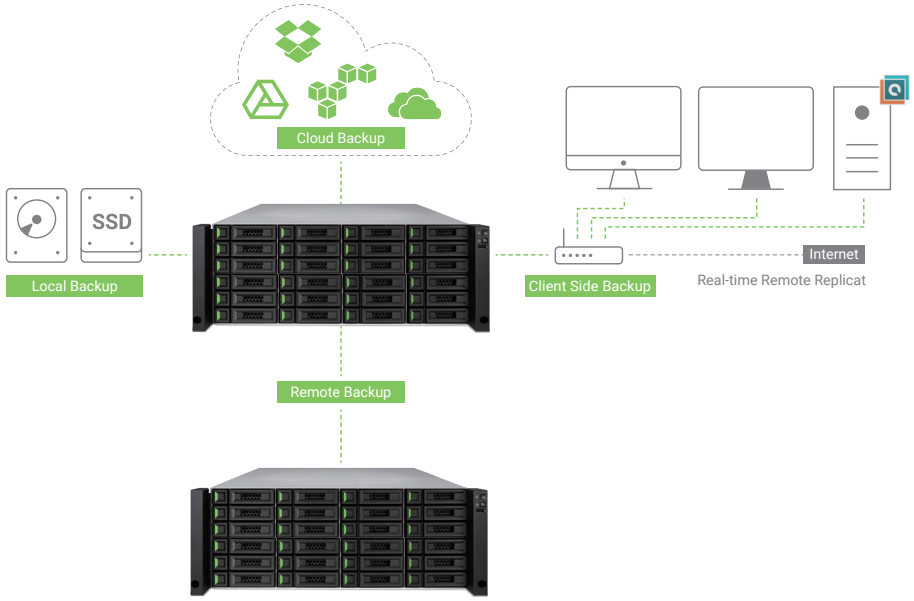
Access Control List (ACL) is a permission list specifying what actions specific accounts take on folders and files. Advanced ACL lets you set permissions on subfolders, whereas Windows ACL enables you to apply Windows file permission mechanisms on files and folders. With both kinds of ACL supported, IT administrators can flexibly regulate file access rules no matter what operating system they use, protecting your data from unauthorized access or theft.



Universal & Efficient Data Backup

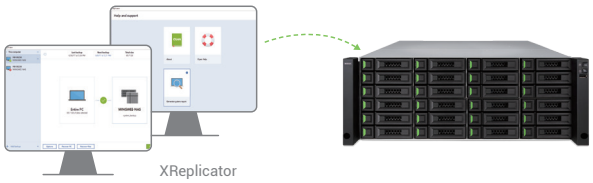
The XCubeNAS effectively addresses the above challenges by providing comprehensive and effective backup solutions that assist you design a complete and efficient backup solution to minimize the risk of data loss. Various storage devices, remote servers, public clouds even other XCubeNAS can be seamlessly integrated into your XCubeNAS, achieving an all-encompassing backup solution allowing data to be free, safely and efficiently preserved.

- Client side backup
- Remote backup
- Cloud backup
- Local backup



Client Backup To Your XCubeNAS

The most common cause of data lose is HDD failure, OS crashes or most commonly, accidental deletion. Comprehensive data backup is the solution to all your data loss woes. Backup all your data on your computer to your XCubeNAS with QSAN's free utility, XReplicator.



Powered by Acronis AnyData Technology

XReplicator

XReplicator is a free utility that's is provided to help you easily backup an image of a disk, partition, folder or file. XReplicator is also able to backup an entire PC to the XCubeNAS as a bare metal backup. There is a way to quickly and simply recover your entire system, disk or file when using the XReplicator utility and the XCubeNAS solution.

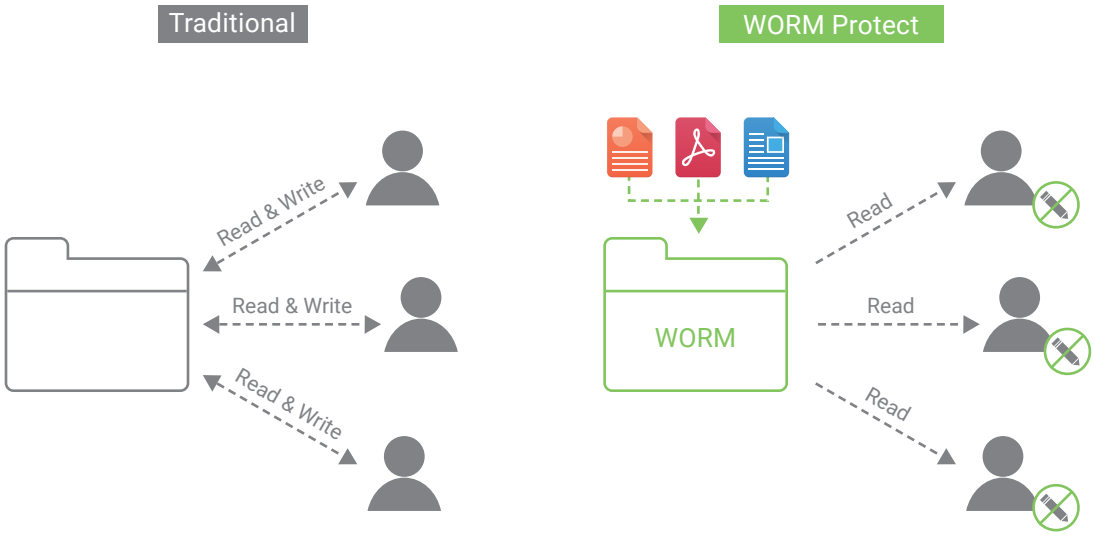
- Supported Windows XP or higher
- Expert backup solution.
- Backup image only stored on XCubeNAS.
- Opened file backup support.
- Scheduling backup support (Monthly, weekly, daily, automatically).
- Backup configuration for fast upload speeds (Single version, incremental and differential).
- Personal key encryption.
- Version control and clean up.
- Backup filter.

Security & Data Protection

The growing tide of data breaches, leaks, and malicious software means your data security systems and procedures are vital. Our QSM for XCubeNAS was built on a security-first ideology, it can offer you full protection of the data within your XCubeNAS. Tools are provided to prevent the system from hacking, and interception of data, theft, and accidental deletion.

Write Once Read Many (WORM)

WORM technology is design to prevent intentional or accidental modification of data in a specified period. Files and folders under WORM's protection can only be read in a user-defined period, it's unable to modify any files or folders until the period has expired. WORM it can protect your data from encryption-based ransomware that installs covertly on a victim's system and encrypts their files, making them inaccessible. WORM will protect your confidential data from unauthorized modification and threat, ensuring the correctness and integrity of your data.

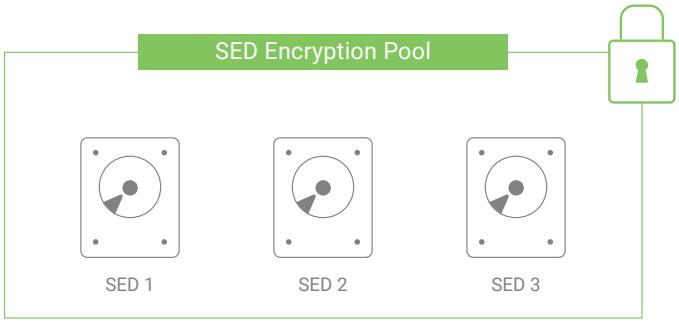


Pool Encryption with AES-256

XCubeNAS pool encryption mechanism ensures secured storage environment any user who wants to modify data must first pass authentication. The XCubeNAS supports up to AES 256-bit encryption for internal drives moreover, external USB/eSATA drives and adopts a military level FIPS 140-2 validated encryption, which is considered to be the highest security certification for compliance.

Self-Encrypting Drive (SED)

XCubeNAS can be much safer more than you can imagine with the disk self-encrypting technology called SED (Self-Encrypting Drive). With the technology, even if the physical drive is stolen or misplaced, the data on it remains protected against data breach by generating the authentication key (AK) to prevent the unauthorized access. However, the SED offered by QSAN provides the secured pools migration between different XCubeNASs and easy to manage the key by exporting AK for more efficient.



| Hardware Specifications

	XN7000R Series		XN8000R Series	
	XN7016R	XN7024R	XN8016R	XN8024R
				
Form Factor	Rackmount 3U 16 Bay	Rackmount 4U 24 Bay	Rackmount 3U 16 Bay	Rackmount 4U 24 Bay
CPU	Intel® Pentium® 1.6GHz Quad-Core Processor		Intel® Xeon® 2.2GHz Quad-Core Processor	
RAM	8GB DDR4 ECC U-DIMM (Max 128GB)			
USB	USB 3.0: 2 (Rear) USB 2.0: 1 (Front)			
Flash	8GB SATA DOM			
Drive Type	3.5" SAS HDD 3.5" SATA HDD 2.5" SAS SSD 2.5" SATA HDD 2.5" SATA SSD			
No. of Disks	16	24	16	24
Max. Raw Capacity	224TB	336TB	224TB	336TB
Hard Drive Interface	SAS 12Gb/s and SATA 6Gb/s (backward compatible with SAS 6Gb/s and SATA 3Gb/s)			
LAN Port	1 GbE LAN (RJ45) x1 10 GbE LAN (RJ45) x2 Optional: 4 x 16Gb FC (SFP+) ports 2 x 16Gb FC (SFP+) ports 4 x 10GbE (SFP+) ports 2 x 10GbE (RJ45) ports 4 x 1GbE (RJ45) ports			
Expansion Slot	Built-in 2 x 12Gb/s SAS wide ports (SFF-8644)			
PSU	770W/850W 1+1 redundant 80 PLUS Platinum			
Dimension (H x W x D) (mm)	19" Rackmount 130.3 x 438 x 515	19" Rackmount 170.3 x 438 x 515	19" Rackmount 130.3 x 438 x 515	19" Rackmount 170.3 x 438 x 515
Warranty	3 years			
Temperature	Operating temperature : 0 to 40°C Shipping temperature : -10°Cto 50°C			
Relative Humidity	Operating relative humidity : 20% to 80% non-condensing Non-operating relative humidity : 10% to 90%			
Regulatory	CE, FCC, BSMI, VCCI		CE, FCC, BSMI, VCCI, KCC	

Slot 2 provides 20Gb bandwidth

| Expansion Enclosures

	XD5300 Series			
	XD5324D (Dual) XD5324S (Single)	XD5316D (Dual) XD5316S (Single)	XD5312D (Dual) XD5312S (Single)	XD5326D (Dual) XD5326S (Single)
				
Form Factor	4U 24 Bay, LFF	3U 16 Bay, LFF	2U 12 Bay, LFF	2U 26 Bay, SFF
I/O Controller	Dual-active or Single-upgradable controller			
Host & Expansion Connectivity (per controller)	5 x 12Gb/s SAS wide ports (SFF-8644)			
Drive Type	Mix & match 3.5" & 2.5" SAS, NL-SAS HDD 2.5" SAS, SATA SSD			2.5" SAS, NL-SAS HDD 2.5" SAS, SATA[1] SSD
HBAs & RAID Cards Support[2]	Broadcom (LSI) 12Gb/s & 6Gb/s SAS HBAs Broadcom (LSI) 12Gb/s & 6Gb/s SAS RAID Controller Cards ATTO 12Gb/s & 6Gb/s SAS HBAs ATTO 6Gb/s SAS RAID Controller Cards			
Expansion Capabilities	Up to 8 expansion units behind QSAN SAN storage			
Models Support	QSAN XCubeSAN XS5200 & XS3200 series QSAN XCubeFAS XF2026D & XF2026S QSAN XCubeNAS XN5000R, XN7000R & XN8000R series			
Dimension (H x W x D) (mm)	19" Rackmount 170.3 x 438 x 515	19" Rackmount 130.4 x 438 x 515	19" Rackmount 88 x 438 x 515	19" Rackmount 88 x 438 x 491
Power Supply	770W/850W 1+1 redundant 80 PLUS Platinum			
Fan Module	2 x hot pluggable/redundant fan modules			
Warranty	System: 3 years			
Regulatory	CE, FCC, BSMI, VCCI, KCC			
Temperature	Operating temperature: 0 to 40°C Shipping temperature: -10°Cto 50°C			
Relative Humidity	Operating relative humidity: 20% to 80% non-condensing Non-operating relative humidity: 10% to 90%			

[1] 6Gb MUX board needed for 2.5" SATA drives in dual controller system.
[2] The HBAs and RAID controller cards also specify the maximum number of drive/device support. Broadcom (LSI) 12Gb/s SAS HBA supports up to 1,024 drives/devices, Broadcom (LSI) 12Gb/s SAS RAID controller card up to 240 drives/devices, and ATTO 12Gb/s SAS HBA supports up to 2,048 drives.

| Software Specifications

Unified Storage Server

- NAS application server (Gigabit/10GbE NIC)
- iSCSI storage (Gigabit/10GbE NIC)
- Fibre Channel storage (16Gb)

File Server

- File sharing across Windows/ Mac/ Linux/ UNIX and centralized management

FTP Server

- Supports data access from remote location via FTP
- Bandwidth Control
- Connection control
- FTP with SSL/ TLS (explicit) mode
- FXP supported
- Passive FTP port range control

Backup Server

- Snapshot and Replication
- Block-Level Snapshot and Replication
- Schedule and manually taking Snapshot
- Snapshot retention policy
- Snapshot Single file restore
- Snapshot lock
- XMirror (Multi-sites Volume and folder backup and synchronization)
- Public Cloud backup: Alibaba Cloud OSS, HiCloud S3, Amazon S3 and S3 compatible.
- Public Cloud synchronization: Google Drive,Microsoft OneDrive, Dropbox
- Time machine Backup server
- External storage device backup
- 3rd party backup software support: Acronis True Image, CA BrightStor ARCserve Backup,EMC Retrospect, Symantec Backup Exec,LaCie Silverkeeper

Web Server

- Built-in phpMyAdmin

SQL Server

- MariaDB database server

VPN Server

- Supports OpenVPN, PPTP and IPsec+L2TP

Virtualization Server

- Virtual machine import/export
- Virtual machine backup
- Virtual machine snapshot
- User-based permissions settings
- Support virtual switch
- Supports access from IE, Safari, Firefox,Chrome
- Windows, Linux, UNIX and Android

Operating System

- Linux-embedded system

Connection

- IPv4, IPv6 and DDNS domain name registration (QSAN Cloud)
- Auto port forwarding

Networking

- VLAN
- Link aggregation (support 11 bonding modes)
- Multi-IP settings
- Gigabit Jumbo Frame

File System

- ZFS file system
- EXT2 (Virtual Volume)
- EXT3 (Virtual Volume)
- EXT4 (Virtual Volume)
- FAT (Virtual Volume)
- NTFS (Virtual Volume)
- HFS (Virtual Volume)

Supported Operating Systems

- Windows
- Mac OS X
- Linux (2.6 or later) and UNIX

Storage Management

- Single disk, RAID 0, 1,5,6,Z3, 10,50,60 and JBOD
- Global and Dedicated spare disk
- Disk management
- Disk S.M.A.R.T check
- Instant RAID
- RAID Fast Rebuild
- Pool application mode: General, Media Streaming, and Database
- Multi-pool and volume management
- Storage capacity management
- Pool and Volume thread hole notification
- Online Pool expansion and migration
- Online volume expansion
- Build in iSCSI initiator and Target
- Virtual Volume
- Auto-Tiering
- External storage device management
- Pool Encryption
- Support Disk cache
- Data Scrubbing
- Virtual Volume
- SSD Read and Write cache
- Deduplication (volume and LUN)
- Snapshot (folder and LUN)
- Compression (volume and LUN)
- Thin Provision for LUN
- Self encryption Drive (SED) pool level protection

User Management

- Local / domain user and group management
- Local / domain application privilege
- User quota for local and domain user
- Home folder
- Windows AD and LDAP support
- Trust domain and support up to 200,000 domain users

Folder Management

- Advanced ACL
- Windows ACL
- Hide shared folder on Windows network
- Unicode support
- WORM (Write Once Read Many protection)
- Folder usage threshold notification
- Folder quota

System Tools

- NTP time settings
- Notification: Email alert (SMTP authentication), syslog, and SNMP
- System firmware update
- Back up, restore, reset system settings
- Import system configuration
- Antivirus
- Smart fan
- IP access control
- Policy-based unauthorized IP blocking
- Secure remote login by SSH connection
- Connection list management
- SNMP UPS support
- Network recycle bin
- Import SSL certificate
- Real-time Resource (CPU, Memory, Storage , Pool, Process) / Hardware/ Service/ Network resource monitor

Power Management

- HDD Hibernation
- Power schedule
- Wake on LAN
- UPS settings
- Recover from power outage

System Optimization Settings

- Service binding
- User application mode
- SSD Trim

Log

- System log
- System connection and data transfer log

Multilingual Support

- Chinese (Traditional & Simplified), English, French, German, Italian, Japanese, Korean, Russian, Polish)

File Manager

- File preview
- Embedded file player
- Filter
- Mount Cloud (Google Drive, OneDrive, Dropbox)
- ISO image mount
- CIFS, FTP, SFTP and WebDAV client
- Share link
- Team folder sharing
- Publish to facebook, twitter, weibo
- Media library
- Media streaming
- Online doc preview and editing
- Transcoding (online/offline), compression

Service

- Data service: CIFS, AFP, NFS, FTP, WebDAV
- Backup service: Rsync
- Discover service: Bonjour

Virtualization Storage

- Windows: Hyper-V, storage space
- VMware: VMware 6.7 ready, VAAI, SRM
- Citrix: Citrix 7.0 ready

Multi Browser Support

- Internet Explorer
- Safari
- Firefox
- Google Chrome

Utility

- XFinder
- Web Finder

Mobile App

- Xccess (iOS, Android)

QSAN Technology, Inc. | **Learn more by visiting www.qsan.com**

Address : 4F., No.103, RuiHu Street, NeiHu District, Taipei, Taiwan 114 Email : sales@qsan.com Telephone : +886-2-7720-2118 Fax : +886-2-7720-0295

December 2018