

# XCubeNAS

XN5000R / XN7000R / XN8000R /  
XN5000RE / XN7000RE / XN8000RE Series



- Native auto-tiering architecture to deliver ongoing optimization of data across SATA HDD, SATA SSD and PCIe U.2 SSD.
- Flexible host interface with 10GbE / Thunderbolt™ 3 options.
- Scale up solution to 3 PB storage capacity.
- Brand new enterprise-level QSM 3 with all new interface and features to empower SMB solutions.
- Unified storage architecture with full virtualiz





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# Product Overview

The XCubeNAS series (XN5000R / XN5000RE / XN7000R / XN7000RE / XN8000R / XN8000RE) is a next generation, highly cost-effective NAS system, which is a perfect solution for SMB and enterprise applications. With Intel Kaby Lake process inside, the XCubeNAS rackmount series deliver the highest performance and stability and support up to 64GB of DDR4 ECC RAM. Cutting edge NVMe SSD technology ready, with up to two additional onboard PCIe U.2 SSD slots for blazing performance and capacity expansion. The brand new and reimagined XCubeNAS operating system, QSM 3, brings the enterprise-level features into the enterprise and SMB storage. QSM 3 supports comprehensive enterprise-level storage features including SSD caching, thin-provisioning, auto-tiering, data deduplication and compression, which transform the capability of every resource to bring you commercial value.

## Powerful Hardware Platform

Combined with the latest hardware technology, the XCubeNAS can fulfill various application demands efficiently. Extensive network bandwidth is provided, enabling the XCubeNAS to thrive in complex network environments. With two PCIe expansion slots inside, XCubeNAS delivers the flexibility as for all the way SMB needs, up to massive data applications, various application demands, and high performance.

### Intel 7th Generation Kaby Lake Series Processor

This processor provides abundant resources to meet computational requirements for of a wide variety of applications.

### PCIe Expansion Slot

With the PCIe expansion slots, XCubeNAS supports Thunderbolt™ 3 and 10GbE network adapter cards to enhance the data transmission bandwidth significantly. Moreover, dual-port SAS expansion cards also give XCubeNAS the ability to scale up to 3PB with our XCubeDAS expansion enclosures.

### 4 x 1GbE Network Interface

Built-in four 1GbE Ethernet ports which meet iSCSI/NFS/CIFS network data transmission requirements.

### Memory

Dual channel DDR4 ECC U-DIMM RAM that can be expanded up to 64GB.

# Innovative (N+E) Hybrid Storage Capacity

The innovative mechanical design makes the XCubeNAS a versatile hybrid storage device. Without affecting existing large form factor slots, the XCubeNAS positions several small form factor bays for SATA and NVMe SSD's at the rear side of the system, this way we can ensure that both the demands for capacity and performance can be satisfied.

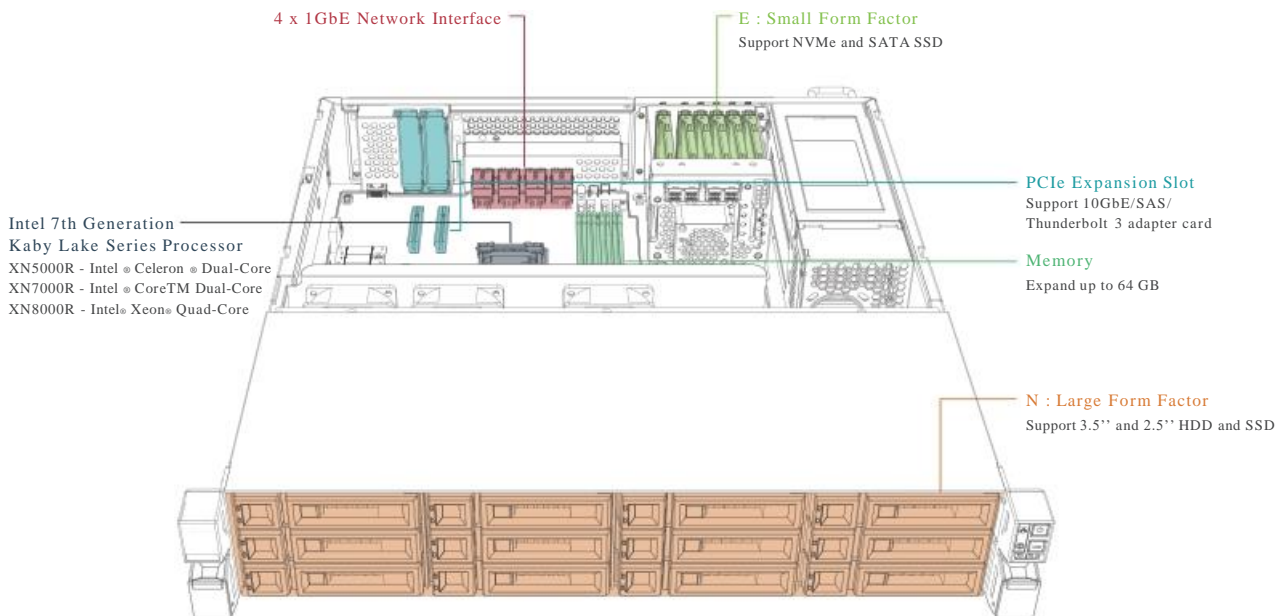
## N : Large Form Factor

Large form factor slots drive trays feature not only 3.5-inch drive support but also 2.5-inch mounting holes are included as standard on all bays on the XCubeNAS. Fitted with up to 14TB drives in the 3.5 inch HDD trays, the XCubeNAS can fulfill capacity demands, and exceed them after adding our XCubeDAS systems.

## E : Small Form Factor

Additional 2.5-inch small form factor are provided in order to enable advanced features without sacrificing storage capacity. As well as SATA SSD, we have additional PCIe SSD slots delivering lightning speeds (32Gb/s). In addition to being used for SSD caching for boosting data access performance, our auto-tiering architecture can be utilized to offer a complete ongoing optimization.

Note: This section is only applicable to XN5000R / XN7000R / XN8000R series.



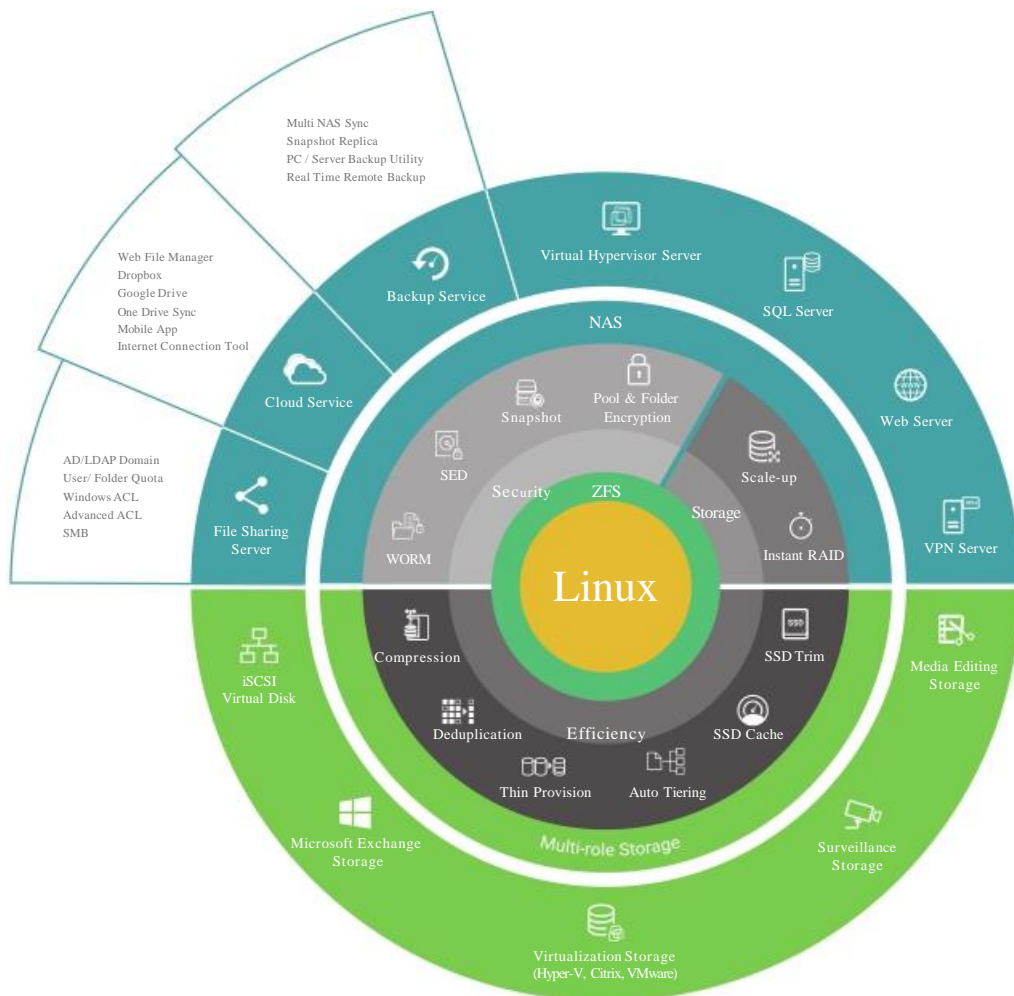
# Leading Enterprise-level NAS Operating System

QSM 3 (QSAN Storage Manager 3) is an innovative storage operating system designed for QSAN XCubeNAS products. Based on Linux and 128-bit ZFS (Zeta-byte File System), QSM 3 not only inherits the outstanding native features of ZFS but also adjust with several bespoke optimization enhancements that make the XCubeNAS series a high-performance, efficient and superior network attached storage device.

Meanwhile, by implying ZFS, QSM guarantees integrity and security of the most valuable asset, data, and the built-in checksum mechanism can automatically correct corrupted data. A wide range of supported RAID types, file and block level snapshots and various backup solution support ensures that data are always well-protected.

By supporting AES-256 pool encryption, WORM, and SED drive, QSM 3 can prevent confidential data from being either stolen or modified. Moreover, QSM 3 utilizes every resource to succeed in data efficiency. Data deduplication and compression technology reduce storing duplicate data blocks and files to maximize storage capacity, making the XCubeNAS capable of storing beyond its raw storage capacity.

QSM 3 effectively addresses the performance demands of various applications. The SSD caching boosts up data access speed. Also, analyzing data by access frequency lets auto-tiering help you fetch frequently used files even faster. Value-added functionalities such as virtualization capability, multiple server center, centralized file station, etc. are also provided making QSM 3 robust and able to carry out dedicated applications.



# High Expandability & Scalability

Empowered by the advantages of PCIe expansion slots, the XCubeNAS could instantly and effectively respond to application demands. Storage capacity can be easily scaled up by plugging in SAS add-on cards with one or more JBODs connected, or by connecting to remote iSCSI LUN. Network speed can be greatly enhanced by using Thunderbolt™, 10GbE adapter cards.

## The Next Generation Thunderbolt™ 3 Solution

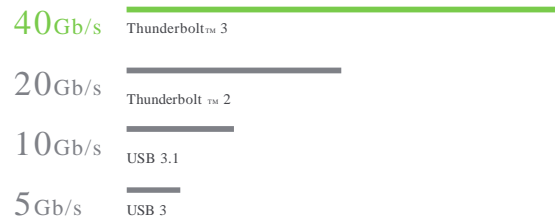
QSAN is proud to announce that XCubeNAS is now supporting the all-new connector, Thunderbolt™ 3, for our XN5000 / XN7000 / XN8000 series. Thunderbolt™ 3 is 2x faster than its 2nd generation and 8x faster than USB 3.0. Accordingly, by connecting to XCubeNAS directly, the client's data storage capacity can easily expand as an external device or back up large media files with 40Gbps data transmission bandwidth. With QSAN Thunderbolt™ 3 adapter card, XCubeNAS is an ideal solution for throughput demanding application, like video production, digital photo editing, high-speed external device data backup to NAS and more. Moreover, QSAN Thunderbolt™ 3 adapter card also support legacy Thunderbolt device connectivity or transfer to the 10GbE Ethernet connection by using certificated connectors.



XCubeNAS Thunderbolt™ 3 Applications

### Breaking The I/O Throughput

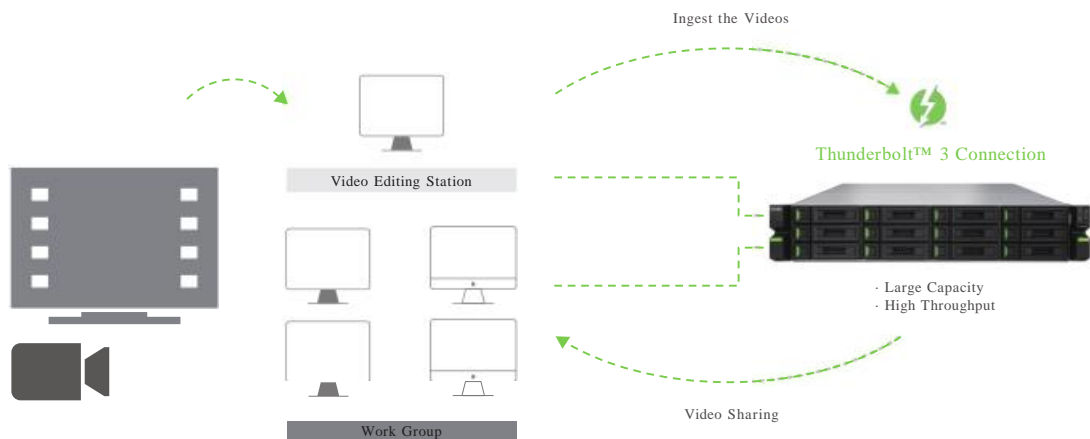
In today's fast-paced world, every second count. By using the Intel Thunderbolt™ 3 technology, we've provided creative professionals in the media industry a way to store, edit, and backup extensive multimedia files at lightning-fast speed. Just merely connect Thunderbolt™ devices to an XCubeNAS directly. With 40Gbps, Thunderbolt™ 3 transferring large data can be even more smoothly than before. By improving the efficiency of handling relative workloads with ease, copying 4.7GB DVD takes less than a minute. In addition to the phenomenal performance, XCubeNAS provides users an easy way to share their work with people.



Type	CD 700MB(seconds)	DVD 4.7GB(seconds)	Blue-ray 25GB(seconds)
Thunderbolt™ 3 (40Gb/s)	0.14	0.95	5
Thunderbolt™ 2 (20Gb/s)	0.28	1.88	10
Thunderbolt™ (10Gb/s)	0.56	3.76	20
USB 3.1 (10 Gb/s)	0.56	3.76	20
USB 3.0 ( 5 Gb/s)	1.12	7.52	40
FireWire 800 (800Mb/s)	7	47	250
USB 2.0 (480Mb/s)	11.66	78.33	416.66

### 4K Video Editing

The XCubeNAS fulfills storage and video editing needs with high-speed Thunderbolt™3. Digital videos can be quickly stored and edited on the XCubeNAS via a stable transmission tunnel without dropping a single frame. So, Therefore, you can achieve blazingly fast transfer speeds to your workstation at up to 40 Gb/s speed with a single cable. That's more than enough bandwidth to handle the highest resolution video formats including Ultra HD and 4K, or even the highly demanding stereoscopic 3D files.



### Scale-Up Solution

The XCubeNAS can scale up its capacity by connecting to other XCubeNAS devices, via the Thunderbolt™ technology. It can support up to 54 disk drives or up to 462 TB of raw storage space by using 12TB HDD drives.



### Enlarge Your MAC's Capacity

With storage in modern computers at a premium, running out of storage space seems like an everyday issue. With the XCubeNAS, when you are out of storage space, directly connect it to your Mac via the Thunderbolt™ port. It will then provide extra space in a secure and high-performance environment. Using Thunderbolt™ connectivity also allows flexibility: to share work between desktops, simply disconnect the cable from your machine, and attach it to another.



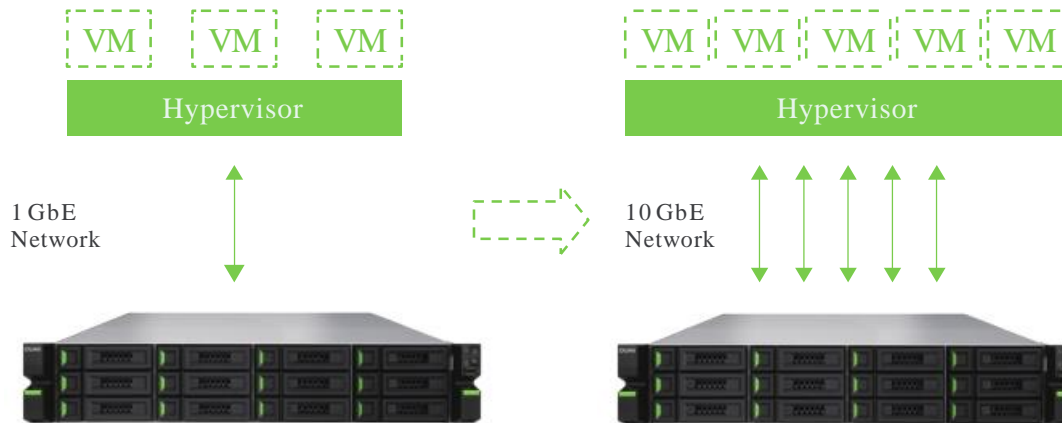


# High Speed 10GbE Adapter Card

Nowadays, a 10GbE (10 Gigabit Ethernet) network becomes IT industry standard and affordable solution for efficiently handling and managing increasingly bandwidth-hungry applications like virtualization, and fast backup and restore. The XCubeNAS Rackmount series provides an affordable storage solution for today's trend for deploying a reliable 10GbE environment.

## Unleash The Full Potential Of Virtualization

Application and processing requirements continuously evolve, heightening the need for higher performance storage, and with virtualization of IT resources, the need for scaling on high-performance storage is essential. The XCubeNAS offers class-leading hardware matched with unparalleled 10Gbps speed for all virtualization needs. The 10Gbps speed will increase the agility of data transmission in a virtualized environment, therefore intensifying NFS and iSCSI connection performance.



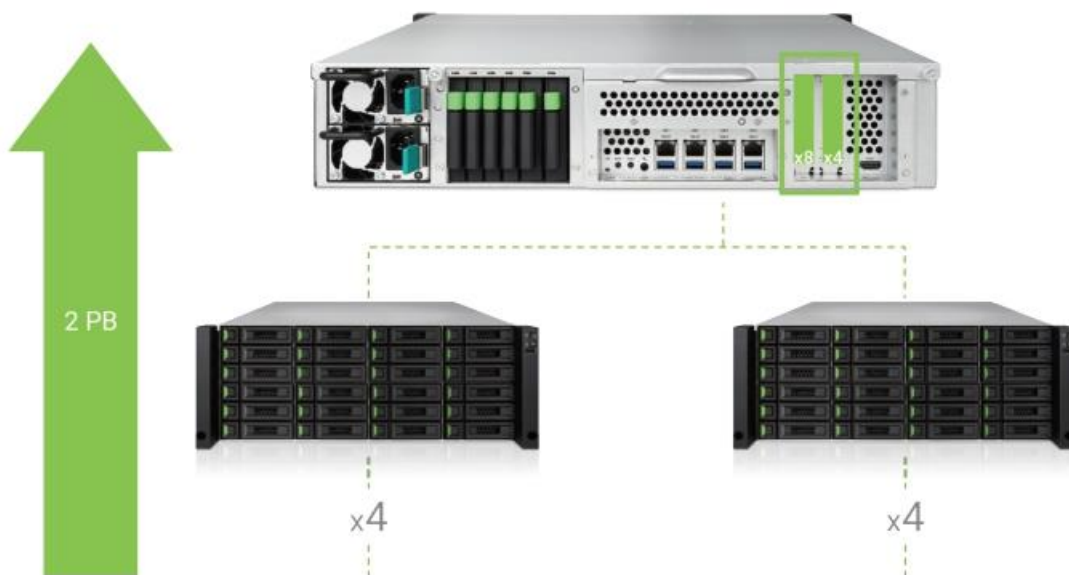
## High-Performance I/O Throughput

Bandwidth and throughput are essential aspects for today IT industry. To scale on multi-servers, support the I/O arbitration needs of VMs, big data computing on databases, high-resolution video editing, and sharing workflows, 10GbE high-speed networks are highly beneficial for all these applications.



# Scale-Up Solution

The XCubeNAS Rackmount series provides massive scale-up capability by connecting any of our expansion enclosures. It gives the ability for up to 226 disk drives or 3 PB of raw storage space when using 14TB HDD drives.



## Flexible: Full Range Drives Support

The XCubeNAS and QSAN expansion enclosure offer high flexibility in hard drive selection. IT administrators can choose enterprise level SAS HDDs in the enclosure unit with high performance and high reliability for mission-critical applications, low-cost but high-capacity SATA HDDs for large data archiving, or high speed and high stability SSDs for I/O-intensive operations. All within one enclosure.



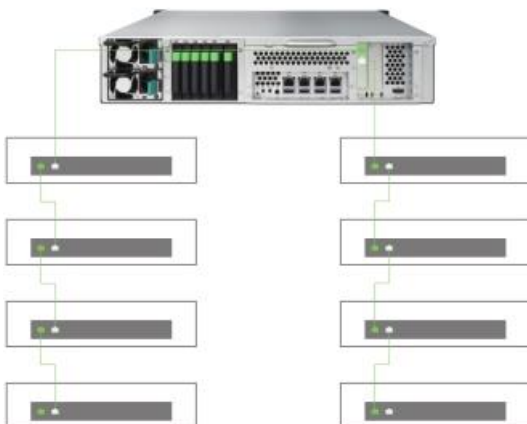
SAS 2.5" / 3.5"



SATA 2.5" / 3.5"



SATASSD  
NVMe SSD



## Simple: Plug And Play

Directly connect an expansion enclosure to an XCubeNAS and power it on. The XCubeNAS will detect the hard drives in the XD5300 series as newly installed local drives. The XCubeNAS capacity can then be expanded seamlessly by using the powerful QSM Storage Operating System.

### High Density, High Flexibility And High Scalability

QSAN Expansion enclosures are available in 2U LFF 12-bay (XD5312D), 3U 16-bay (XD5316D), 4U 24-bay (XD5324D), and the world’s first 2U SFF 26-bay (XD5326D). These can be supported for up to eight DAS units connected to a single NAS head unit. For ultimate flexibility, there is no restriction on mixing different form factors of expansion enclosures together. Users can choose different form factors of expansion enclosures in accordance with their requirement and budget.



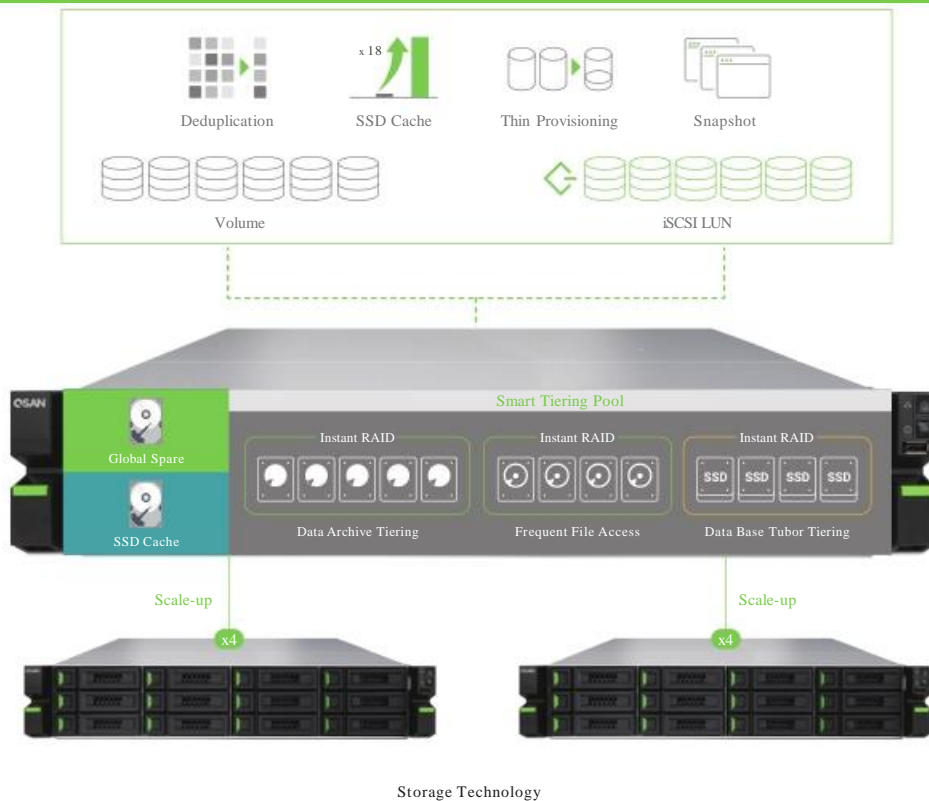
### Maximum Raw Storage Capacity

QSAN Expansion enclosures are available in 2U LFF 12-bay (XD5312D), 3U 16-bay (XD5316D), 4U 24-bay (XD5324D), and the world’s first 2U SFF 26-bay (XD5326D). These can support up to eight units. For ultimate flexibility, there is no restriction on mixing different form factors of expansion enclosures. Users can choose different form factors of expansion enclosures in accordance with their needs and budget.

NAS Models	Enclosure Front Factor	Max. No. of Expansion Units	Max. No. of Hard Drives	Max. Raw Capacity	
				LFF 12TB SATA SFF 2TB NVMe SFF 1TB	LFF 14TB SATA SFF 2TB NVMe SFF 1TB
XN5004R (1U 4+2 bay)	XD5312D (2U 12-bay)	8	(4+2)+12x8=102	1,204TB	1,404TB
	XD5316D (3U 16-bay)	8	(4+2)+16x8=134	1,588TB	1,852TB
	XD5324D (4U 24-bay)	8	(4+2)+24x8=198	2,356TB	2,748TB
	XD5326D (2U 26-bay)	8	(4+2)+26x8=214	468TB	476TB
XN5008R XN8008R (2U 8+6 bay)	XD5312D (2U 12-bay)	8	(8+4+2)+12x8=110	1,258TB	1,466TB
	XD5316D (3U 16-bay)	8	(8+4+2)+16x8=142	1,642TB	1,914TB
	XD5324D (4U 24-bay)	8	(8+4+2)+24x8=206	2,410TB	2,810TB
	XD5326D (2U 26-bay)	8	(8+4+2)+26x8=222	522TB	538TB
XN5012R XN8012R (2U 12+6 bay)	XD5312D (2U 12-bay)	8	(12+4+2)+12x8=114	1,306TB	1,522TB
	XD5316D (3U 16-bay)	8	(12+4+2)+16x8=148	1,690TB	1,970TB
	XD5324D (4U 24-bay)	8	(12+4+2)+24x8=210	2,458TB	2,866TB
	XD5326D (2U 26-bay)	8	(12+4+2)+26x8=226	570TB	594TB

# Define Your Own Business With 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.



Storage Technology

## 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.

RAID Level 0, 1, 5, 6, Z3, 10, 50, 60



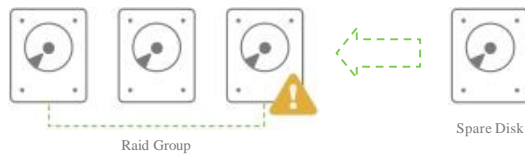
## Fast Rebuild Technology

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.



### Global And Dedicated Spare Drives

Using global hot spare drives helps system to rebuild pools during any failure in a disk in one enclosure, alternatively, assigning a dedicated spare drive for a selected RAID set only rebuilds the RAID set. Both of these options rebuild the storage pool instantly once encountering disk failure to protect your critical data and ensuring data integrity.



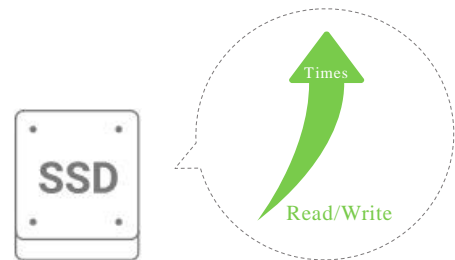
### System Roaming

Unfortunate hardware failure is something no one wants, however with the XCubeNAS, recovery is simple. With disk roaming technology, your data and system configuration can be easily migrated to another XCubeNAS without having to worry about disk order or a lengthy reconfiguration.



### Protect SSD With Trim

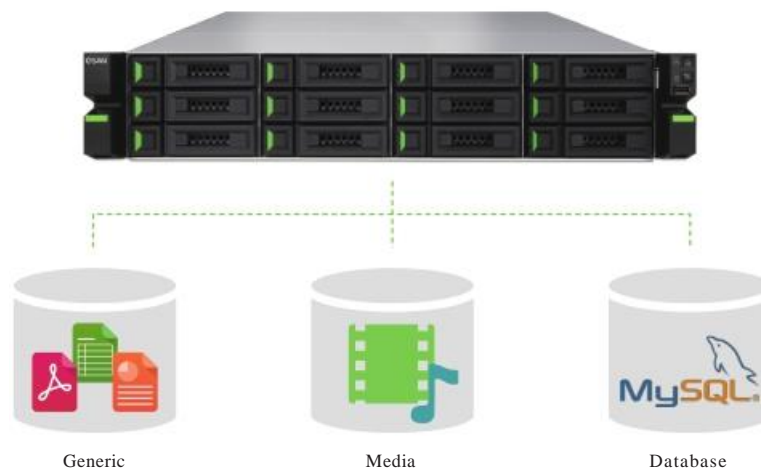
SSD Trim technology was developed to avoid frequent write operations on SSD drives. Enabling the trim mechanism with XCubeNAS will ensure that the SSD drives will have the maximum lifetime.



### User Defined Pool

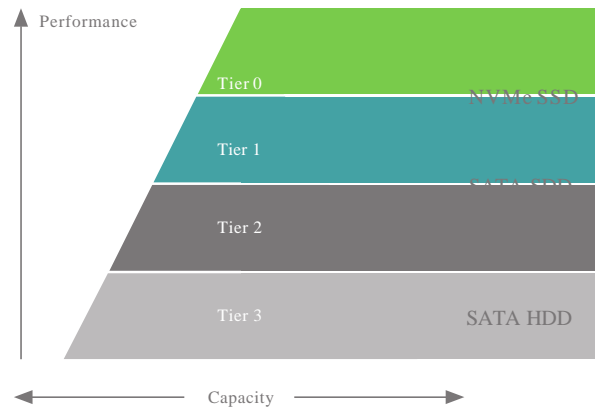
Thinking ahead to everyday usage situations, the XCubeNAS provides three optimized solutions for pools to achieve high performance and availability for dedicated storage applications:

- 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 then be automatically moved to drives with higher access speeds, while rarely-used data would be 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.



### Access Data Faster With SSD Cache

Enhance the performance of your demanding applications as well as the overall system workflow with XCubeNAS SSD cache. The XCubeNAS delivers additional PCIe and SATA SSD slots, enabling you to add SSD without occupying existing HDD slots. Read/write operations across localhost and JBODs are greatly enhanced, and the I/O latency of workload-intensive applications which need frequent random access will be greatly reduced. Both the system performance and storage capacity are given full consideration by the XCubeNAS design.



### 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.

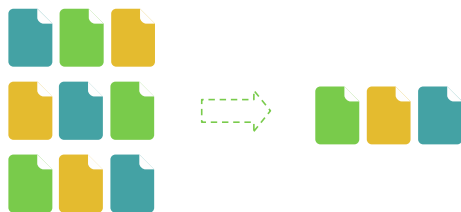
# Optimize Storage Utilization With Enterprise Level Technology

Today's IT challenges have become stressful especially for data growing. Using storage space efficiently has been a significant topic for IT buyers to stretch every budget dollars while providing the applications acceleration your business. Having multiple copies of the same files can potentially waste a significant amount of space. For example, if you send a 1MB email to 1000 coworkers, the email server contain 1GB of the same email. How can storage be used more efficiently? The built-in XCubeNAS data optimization technology reduces stored duplicated data blocks leaving room for new data. By optimizing space utilization, the XCubeNAS provides you with an economical method for storage capacity for your space-demanding applications.



## 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.



# Centralized Data Storage & File Sharing

A centralized data storage system, the XCubeNAS eliminates either physical gaps or virtual boundaries to provide a secure flattened platform that enables your data to be easily accessed from anywhere at any time via the internet, with maximum security.

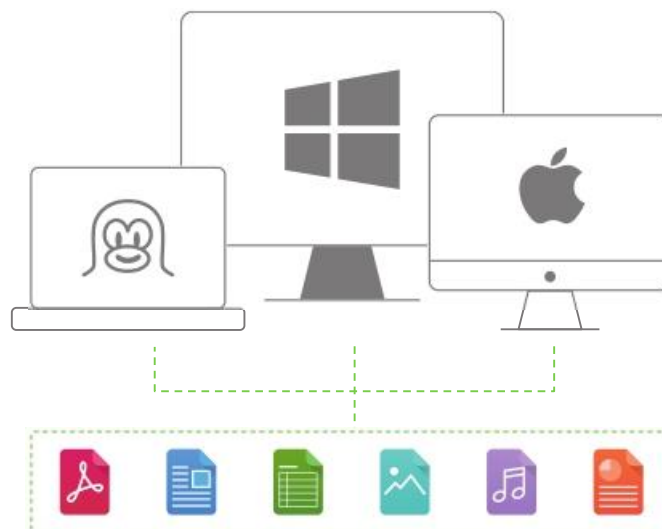
The XCubeNAS provides lightning fast and secure ways to share files with anyone, anywhere. You can explore, organize, and move files between your computer and the XCubeNAS, all the while, being able to customize access rights to enhance security. A seamlessly integrated system allows for file sharing across different computing environments, including Windows, Mac, Linux, Android, and iOS.

## Designed For Office File Sharing

Server Message Block (SMB) 3.0 protocol is a network file sharing protocol that allows applications on a computer to read or write files and to request services from server programs in a computer network, you can share files through TCP/IP or other network protocols and unify all windows local/domain users with a few simple steps. It can entirely replace your traditional windows server and save you money on licensing.

### Cross Platform Access

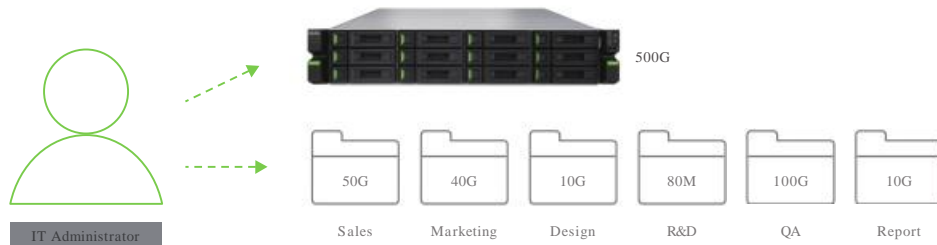
The XCubeNAS provides seamless file sharing across Windows®, Mac®, Linux®, iOS and Android platforms by supporting multiple file access protocols including FTP, SAMBA, CIFS, AFP, NFS and WebDAV.





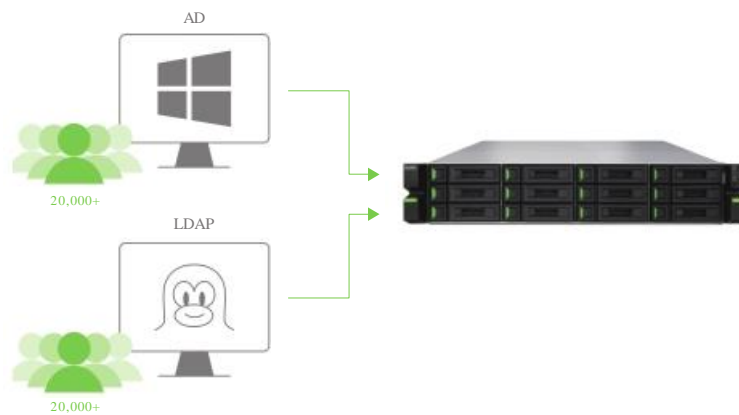
### Quota Control On Accounts And Share Folders

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.



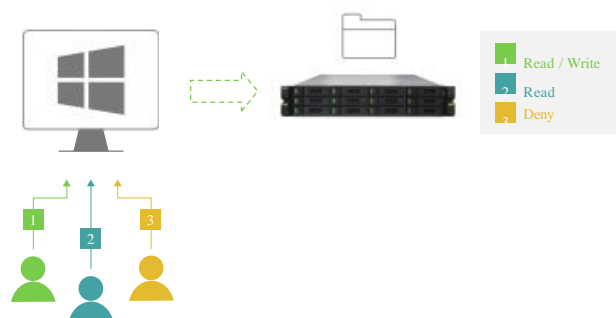
### Windows AD and LDAP Directory Services Support

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.



# Powerful Web File Explorer

Connect/share files via the web from anywhere in the world. The XCubeNAS has a web-based File Manager that allows users to access their data and easily share it with anyone. They can also set links to be valid in a specified period or forever.

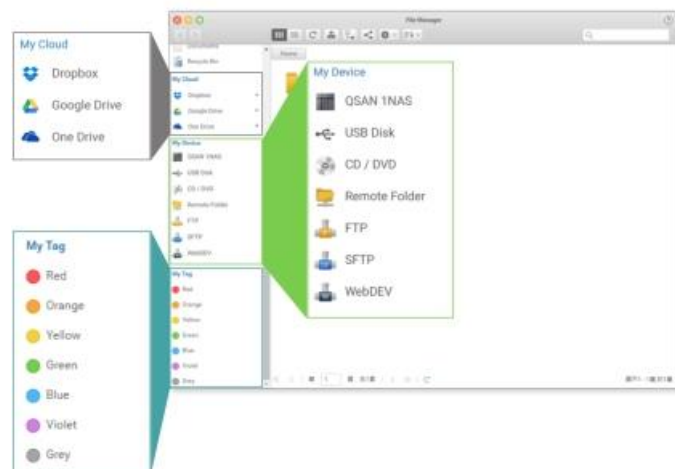


Connect to your private cloud anytime & anywhere

The file manager can also be used as a cloud client to browse and download remote data on third party cloud services such as Google Drive, Dropbox and OneDrive.

## File Tag

With File Manager Tag function, you can organize files by project or purpose, without having to move them into a specific folder. Your tags automatically show in the File Manager menu bar, so it's easy to manage tagged files no matter where they're located. Mount Remote Devices Being able to share files across computers and multiple platforms is vital, so file manager allows users to mount CD/DVD ISO files, folders, remote server's on the XCubeNAS with support for CIFS/SMB, FTP, SFTP and WebDAV protocols to quickly transfer and share files on different operating systems without constraints.



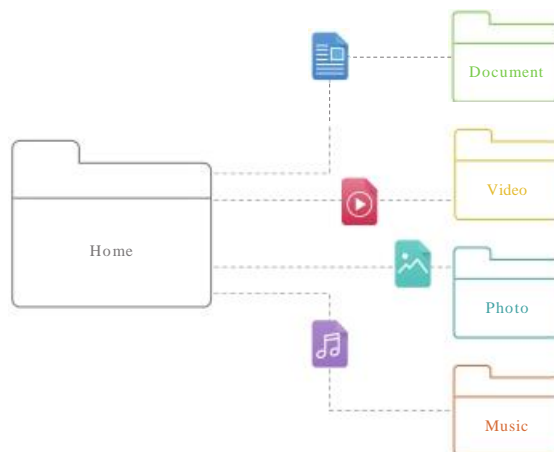
### Team Folder Sharing

With the “User Home Folder” feature, a personal folder will be created automatically when a user logs in to the XCubeNAS for the first time. It effectively saves time for individual users, enabling them to get set-up quicker and thus share files with each other as soon as possible. Online Photo And Office File Preview It is possible to preview Microsoft Office files in the browser with File Manager. The XCubeNAS supports file types such like: .doc, .docx, .xls, .xlsx, .ppt, and .pptx, and it also supports your photo preview. With speeds of up to 40GbE using any Mac or PC with a Thunderbolt™ port, fast read and write speed on data editing can be ensured without any data loss.



### Media library

File Manager can serve as your centralized photo station, allowing you to create albums to manage all the photo by categories and display them with your friends and clients. Free yourself from the limits of traditional photo storage services. Music in shared folders can be displayed succinctly on Media Library. The system will index all the multimedia files in database and manage them by categories automatically so that you can search and organize huge amount of multimedia files more quickly without too many efforts.



# Universal and Efficient Data Backup

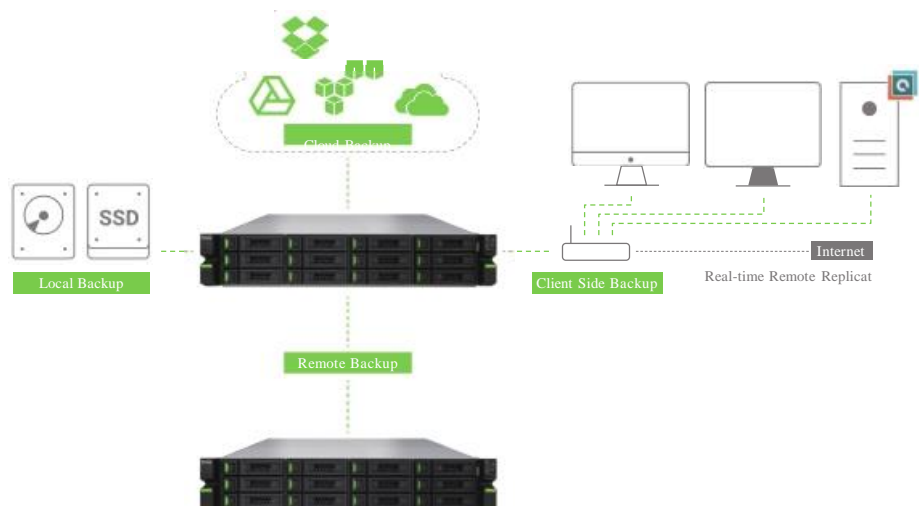
Modern businesses' data faces many potential threats such as unexpected hardware failure, natural disasters, or unintended deletion, which might cause loss of your critical digital assets. The mainstream adoption of cloud, remote and external storage devices for storing documents makes data fragmented.

The explosion in data volume sizes and their demands for efficient data retention methods mean that the XCubeSAN is the perfect solution to fit modern data requirements.

## Backup Your Business Data

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 loss 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.



## XReplicator

XReplicator is a free utility that's 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.



## XMirror

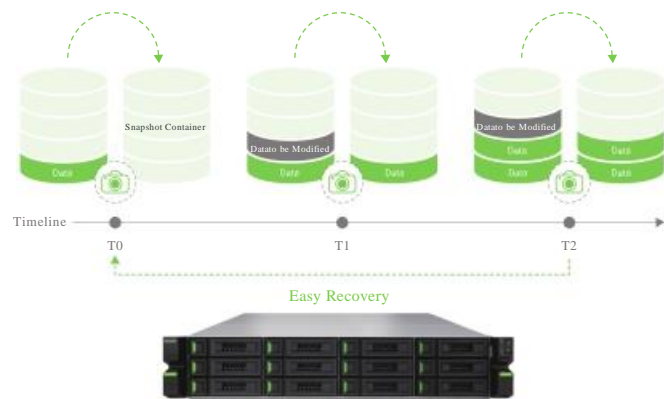
XMirror regularly synchronizes a volume, or the contents of a folder between multiple XCubeNAS devices, any modification to documents will be replicated to other XCubeNAS. By using XMirror, data on different XCubeNAS systems, data consistency, and availability is ensured ability.

- Support Volume and Folder mirror.
- 1-way (unidirectional): data modification of the local NAS will be synchronized to the remote, but any data modification of remote NAS will not be reflected.
- 2-way (bi-directional): any data modification of a NAS will be synchronized to the others.
- Version control (64 versions).
- Permission synchronization between devices.



### Snapshot & Replica

Snapshots record the status of shared folders and iSCSI LUNs as changes happen on write. By periodically taking snapshots, administrators can better control data versions and execute point-in-time recovery on folders and LUNs, and these can be flexibly restored to previously known good states. Moreover, the valuable snapshots make the backup period longer. Snapshot replication provides the ability to transport the version information to another XCubeNAS. With the compelling snapshot function, not only the speedy delta generation of snapshots but the ultimate transmission performance, snapshot replication is the ideal backup solution in a local and remote destination.



### Cloud Backup

Cloud backup ensures that you can back up your data to multiple cloud services such as, Amazon S3, HiCloud S3, Alibaba OSS cloud, and S3 compatible services. This yet another way that XCubeNAS helps you to keep your data easy to be managed between Clouds and local devices. With its compatible service, users can easy manage the data to a remote site instead of another NAS or devices.

### Real-time Remote Replication

Data copies can be distributed to your trusted storage locations through real-time remote backup. By periodically copying data to different branches, your data can be recovered in the unfortunate event that a disaster happens. Data availability is ensured, offering businesses more options for a contingency and recovery plan.

### Build Your Own Cloud

Using Google Drive, OneDrive, and Dropbox, you can build a hybrid cloud which allows you to access and back up the files on mobile devices, PCs, or thin clients anytime and anywhere. The XCubeNAS can be a cloud gateway to bridge your public cloud and private content and act as a central access point.

### USB Backup

Connecting an external USB storage device to your XCubeNAS means, you can backup all the files to either from the USB device to the XCubeNAS or the XCubeNAS to the USB device. This 2-way data transfer enables quick and easy-to-use copy methods to and from your XCubeNAS.



# Security & Data Protection

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The growing tide of data breaches, leaks, and malicious software means your data security systems and procedures are vital. In QSM, QSAN builds security-first ideology storage which offers you full protection for the most essential asset, data. Within XCubeNAS, tools are provided to protect the system from hacking, and interception of data, theft, and accidental deletion.

Furthermore, using the inbuilt Anti-Virus, you can add tasks, scanning the entire NAS or selected folder with specific schedule.

## Comprehensive Security Solution

Developing a comprehensive enterprise security strategy can facilitate more significant control over your threat management activities and help improve the protection of your critical data assets. QSAN helps you to minimize the risk of data breaches with comprehensive protection solutions on both your data and the entire system.

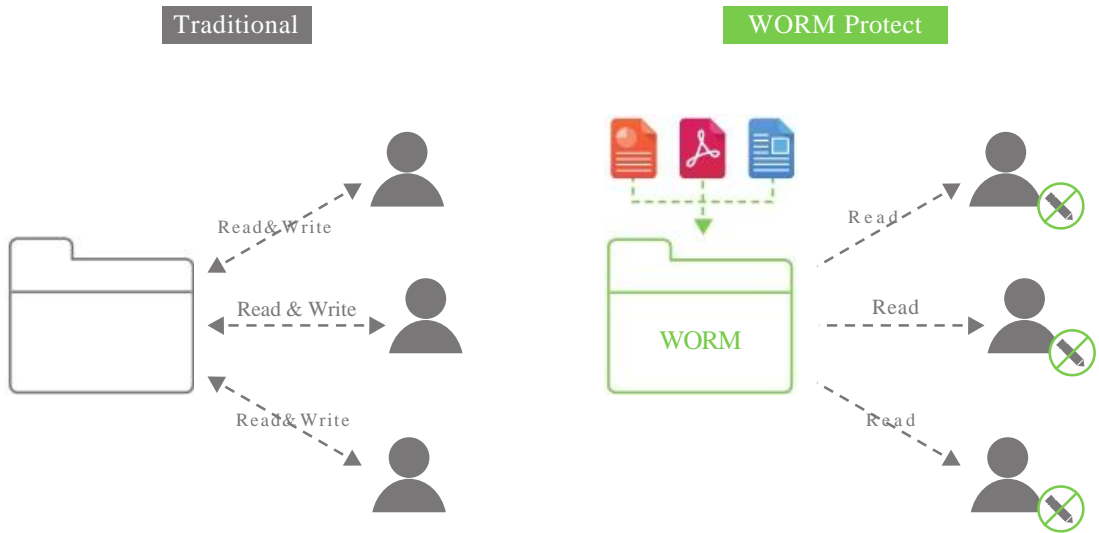
QSAN supports AES 256-bit encryption that gives you the highest level of security and privacy you're your essential data. All data stored in encrypted folders will be automatically encrypted and secured to the highest of standards. The Self-Encrypting Drive (SED) and WORM provide full data protection even under the worst-case scenarios like losing your NAS or hard disks to theft, your valuable data is still protected and won't fall into the wrong hands.

With the rise in the threat to digital assets, QSM provides unified authentication for user management combined with private SSH, the one-time password authentication mechanism forces two-part authentication and protects the system from intrusion.

Also enables you to install and run endpoint protection, eliminating the cost and complexity of connecting an external endpoint protection server. QSM security features including service binding, IP-blocking, firewall, internal SSL, and antivirus, provides all users with a highly available solution that keeps their data fully accessible.

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, and 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 encrypt their files, making them inaccessible. WORM will protect your confidential data from unauthorized modification and threat, ensuring the correctness and integrity of your data.





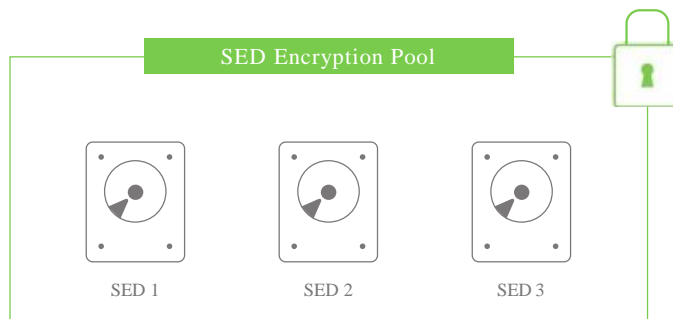
# Pool Encryption with AES-256

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 and 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.



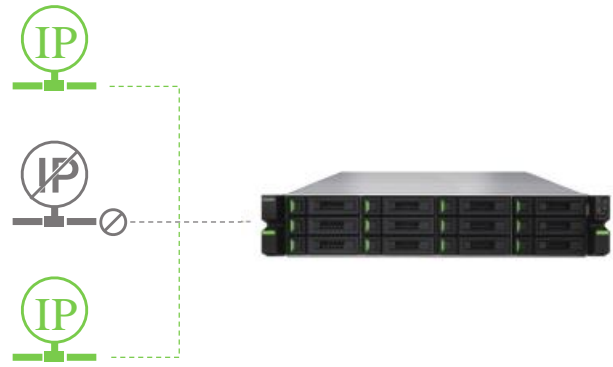
## Service Binding

Service binding enhances system security by letting administrators determine which services can be connected through which network interfaces. The security of sensitive applications as well as bandwidths of critical services are firmly protected.



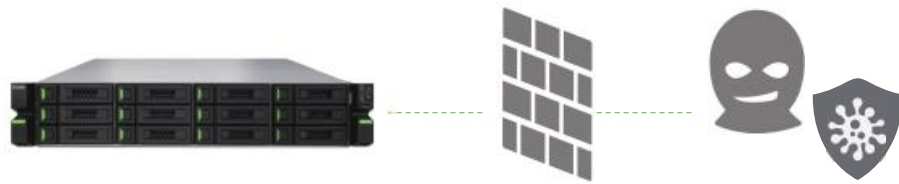
### IP-blocking (Ban-list)

Network ban list denies connections from specific IP addresses or subnets to your NAS. You can block an IP for a specified period or forever if the IP fails to log in from a particular connection method. This feature helps the administrator block suspicious connections to enhance system security.



### Firewall

Firewall guarantees system security by blocking suspicious connections, either malicious attacks or unwanted intrusion.



### Internet SSL

SSL certificates deliver secured tunnels for data transmission ensuring that critical data and information cannot be intercepted or modified during the transfer process.



### Antivirus

The built-in antivirus function periodically scans files automatically quarantining suspicious files to protect the system from potential threats.

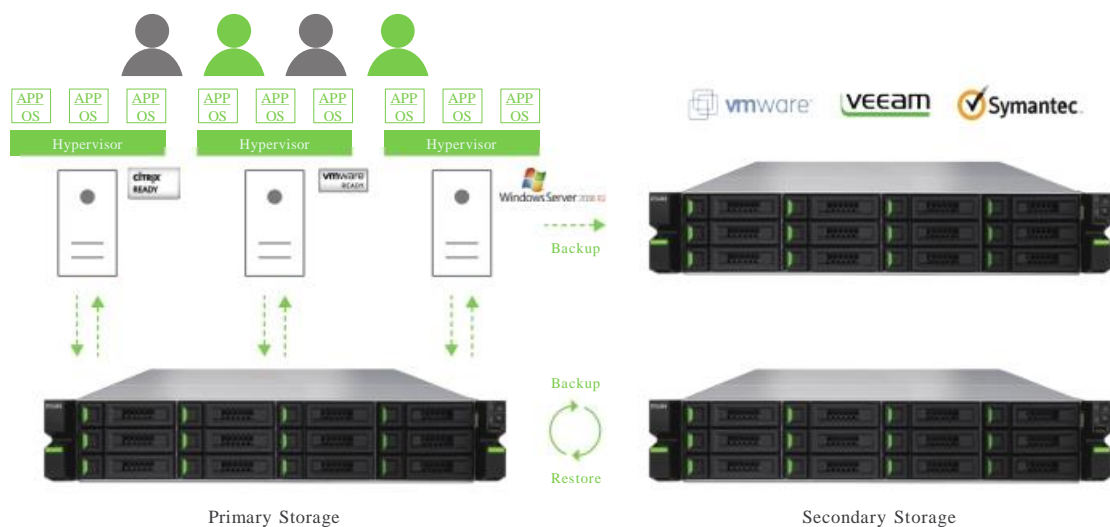
# Virtualization

XCubeNAS is an ideal and economical storage solution that can be used as a shared network storage or IP-SAN storage for virtualization environments. Officially certified with VMware® Ready™, Citrix® Ready™, and Microsoft® Hyper-V™, the XCubeNAS is a stable and efficient data storage system. Virtualized data centers can perform faster and more efficiently with XCubeNAS's assistance on provisioning, migration and management of virtual machines.

The XCubeNAS provides virtualization solutions allowing you to maximize resource utilization to flexibly deliver application services. The built-in hypervisor manager provides a simple and quick way to deploy virtual resources into your infrastructure. This ability means that you can save on listening costs, by moving virtual resources onto the XcubeNAS and free up valuable resources on your hypervisor.

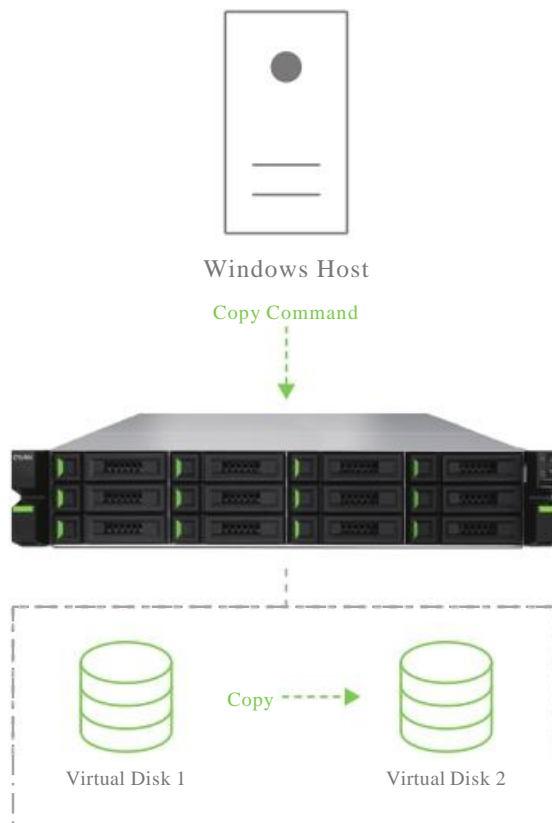
## Virtualization Ready Storage

XCubeNAS is verified with VMware® Ready™, Citrix® Ready™, and Microsoft® Hyper-V™ certified. No matter which virtualization environment you've adopted, the XCubeNAS is a practical and efficient storage system for you to deploy in any virtualization platform. QSAN's XCubeNAS can be used for primary storage repositories and as a backup to existing primary storage. As a backup storage device, the XCubeNAS supports a comprehensive list of 3rd-party virtual machine backup software to ensure that your VMs and data are never at risk of loss.



### Windows Offloaded Data Transfer (ODX)

With ODX support, users using Windows Server 2012 R2 are able to conduct data operations, such as moving large files and virtual machines, directly between iSCSI LUNs. Handled by XCubeNAS, the progress need not involve host servers, therefore can be finished rapidly and with fewer resources. This enables the Windows servers to perform faster and handle more tasks while benefiting from reduced resource consumption.



# Full VMware Support

As a qualified VMware® TAP Elite partner, QSAN put innovative technologies into the XCubeNAS aiming to facilitate VMware®'s feature-rich virtualization environments. By supporting VMware® storage packages, XCubeNAS integrates with vSphere hosts solutions such as disaster recovery, offload capabilities and storage.

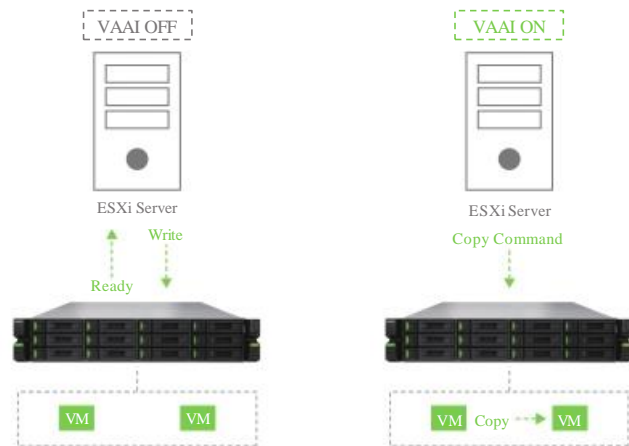
- VMware 6.7 Ready
- VMware® Site Recovery Manager (SRM)
- VMware® vStorage APIs for Array Integration (VAAI) certified
- VMware® Site Recovery Manager (SRM)
- VMware® vStorage APIs for Array Integration (VAAI) certified
- Support SPC-3
- Support MPIO, MC/S



## VMware® vSphere Storage Array Integration (VAAI)

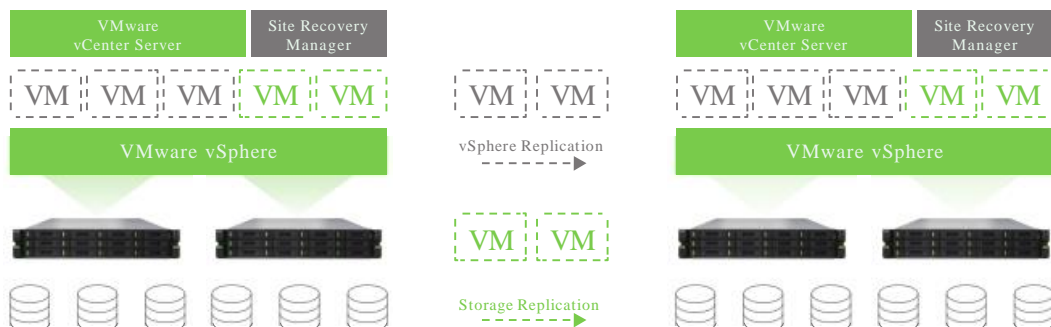
The XCubeNAS supports VAAI (iSCSI and NFS) which enables VMware® ESXi servers to offload specific storage operations onto the XCubeNAS. Commands such as data copy are delegated to the XCubeNAS without passing through the host every time, thus substantially reducing CPU, memory and bandwidth expenditure. The conserved resources can be further distributed to virtual machines, dramatically enhancing their performance.

- VAAI Block (iSCSI) supports Full Copy, Block Zeroing, Hardware-assisted Locking and Thin Provisioning with Space Reclamation.
- VAAI NAS (NFS) supports Full File Clone, Extended Statistics and Reserve Space.



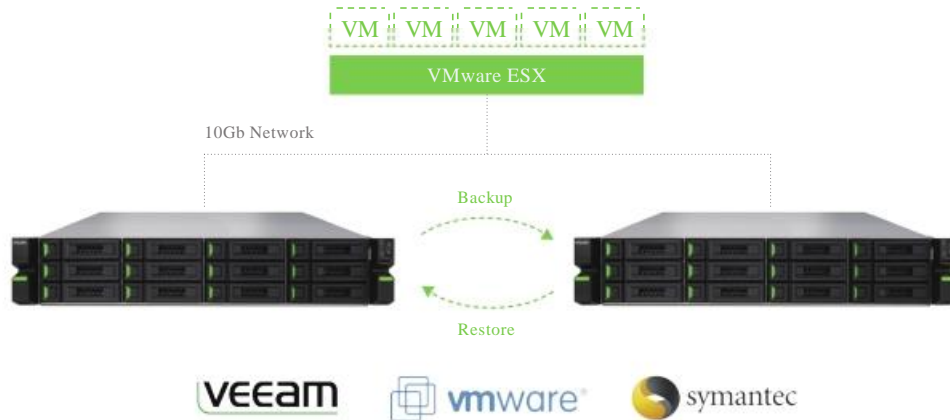
## Site Recovery Manager (SRM)

Site Recovery Manager (SRM) is a disaster recovery mechanism designed to guarantee virtual machine configurations can be properly recovered whenever accidents happen. Dedicated data centers and storage arrays are assigned to store states of virtual machines and data. If the original data center fails, critical services on virtual machines can still be recovered to their original condition. The XCubeNAS ensures the recovery progress can be correctly and rapidly executed.



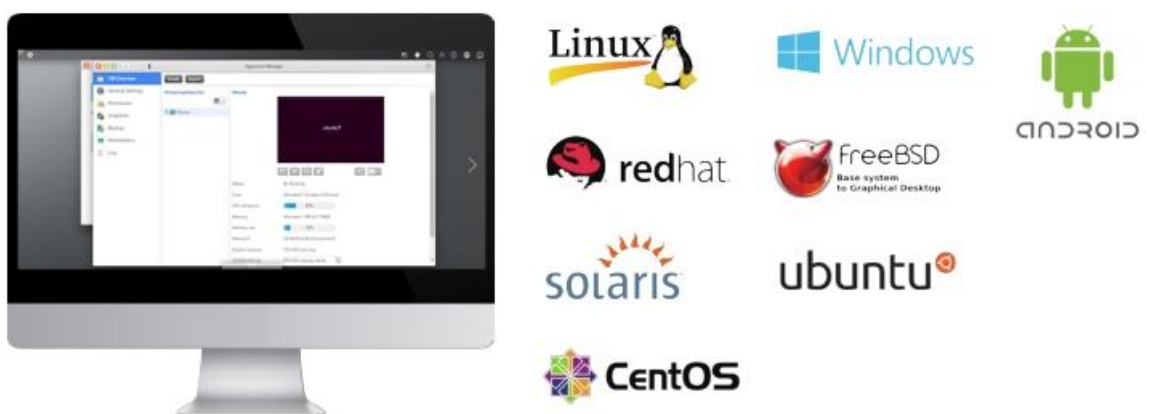
### Professional Virtual Machine Backup Software

Professional virtual machine backup software such as Symantec, Veeam and official VMware Data Recovery (VDR) can all be used with the XCubeNAS for storing and managing virtual machine images.



### Hypervisor Manager

Virtualization in nowadays becomes a primary solution for enterprises to run multiple applications on a single piece of hardware. In QSM, the built-in Hypervisor Manager is an easy-to-use application enabling you to create and manage virtual machines that run directly on the XCubeNAS. Being capable of hosting multiple virtualized environments ensures various customized services and applications are well presented at the same time without the additional hardware investment. Additionally, those virtual machines are isolated reducing the risk of potential data leaks or operation interference. These features make the XCubeNAS an ideal multi-tenant environment for deploying business applications.



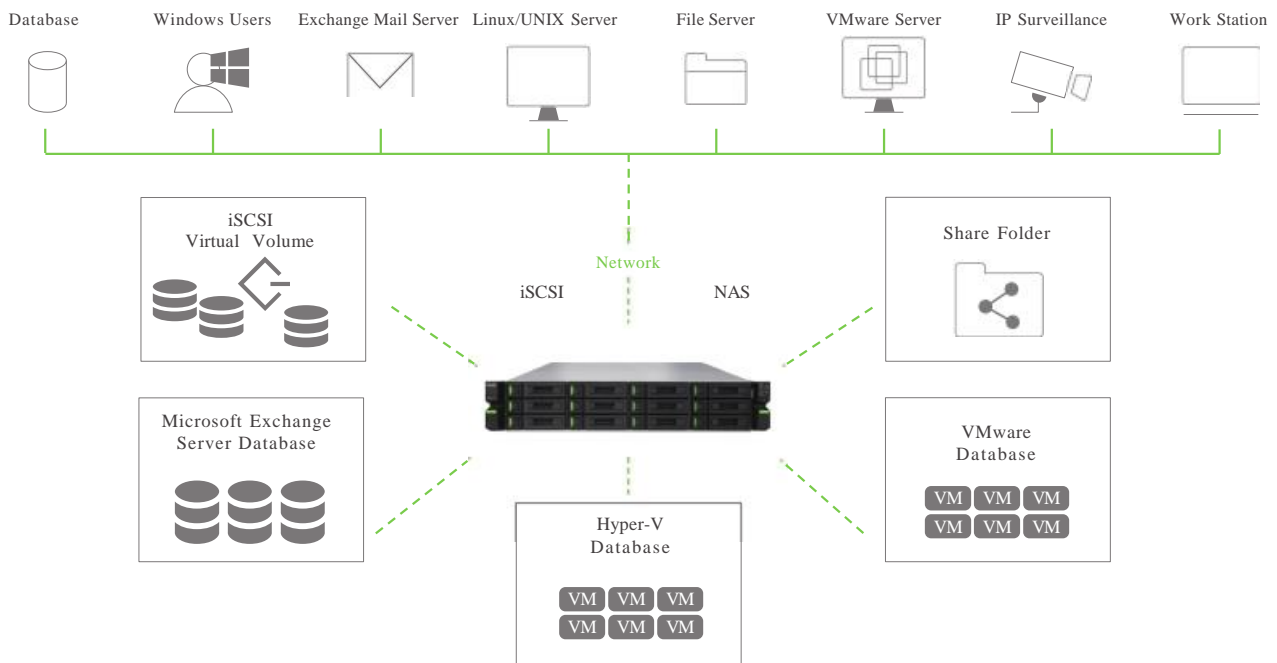
# IP SAN / NAS

## Unified Storage

In XCubeNAS, QSAN provides multi-role storage solutions, QSM, to 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, a simple storage device for centralized office data sharing. Content is gold and XCubeNAS helps business share the information more efficiently and quickly with its high bandwidth network ports. Another scenario in which to use the XCubeNAS is as a media editing platform with Thunderbolt connections.

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.



# Multi Role Storage

With the support of various tools that can improve the effectiveness of NAS storage, the XCube can play multiple roles for different business purposes. Performing not only as a traditional storage device but also other applications on many aspects.

## High Resolution Surveillance Storage

With its high reliability and ultra-fast network ports, you will never lose an image on surveillance. The XCubeNAS can provide flexible and sturdy storage for high-resolution images with real-time monitoring without problems.

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## Storage For Server Or PC

With its expandable data storage as well as high bandwidth network ports, data can be quickly read and written to the system, and the XCubeNAS can be a simple and powerful storage device for any server or PC's application.

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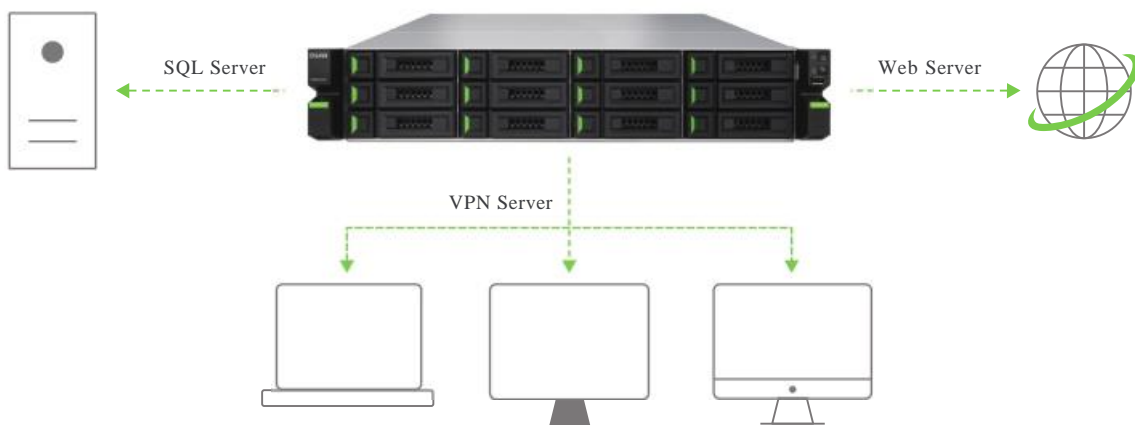
## Superior Media Editing Performance

While editing media contents with many near-line or post-production users at the same time by traditional network ports usually causes performance issue in shared storage. However, with Intel Thunderbolt™ 3, XCubaNAS provides the data communication bandwidth up to 40Gb/s for efficiency production solution, a solution with no backward network bottlenecks.



# All-in-One Business Solution

Since having a dedicated machine for each specific task rapidly becomes an expensive and inefficient solution, QSM allows you to enable comprehensive applications and services on your all in one storage, XCubeNAS, whenever you need them. Everything from file sharing to data storage, even hosting a website, the XCubeNAS can do it all.



## SQL Server

Instead of outsourcing your web hosting to another company, the XCubeNAS built-in SQL service allows the user to build their website, for personal use or business is easier than you can have imagined.

## VPN Server

With VPN service, you can access and share your NAS files with your family and friends via the secured private network. Stay safe when connected to public wifi in hotels or restaurants.

## Web Server

QSAN supports the web server service with PHP support, allowing users to enter their NAS or their web page. With the virtual host service on a web server, users can host multiple websites on the same XCubeNAS

# Access Your Data Anywhere

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XCubeNAS provides free DDNS services so you can pick your own domain name and easily connect from anywhere. This is rather useful when the your broadband has a floating IP address that changes frequently. Furthermore you can use your DDNS domain name to access your XCubeNAS via the Xcess Mobile app for Android and iOS. If your NAS is located behind a NAT router, you can enable UPnP port forwarding to easily access your NAS.

## Mobile On The Go

Liberate your work from the confines of the office. No matter where you are, open Xcess and you can start your work immediately. Files can even be directly uploaded to your XCubeNAS from the public cloud. With Xcess, any changes made to a file is automatically synced between your mobile devices.



### Access Your XCubeNAS Via Xcess

You can use your QSAN Cloud hostname to access NAS without any setting. It's very easy to start your work and entertainment anywhere.

### Auto Upload

Automatically upload your device's photos to your XCubeNAS whenever you take a new one. It works as a real-time backup of your precious photos.

### Organize Your Multimedia Content

Xcess will index all the multimedia files such as photos, music and videos in a database then, manage them by categories automatically so that you can search and organize huge amount of multimedia files more quickly without too many efforts.

### Play Multimedia On Demand

Xcess features real-time streaming, its easy to connect to the XCubeNAS and play your music, photos and video collection with simple operations. Immediately turning your Xcess app into your media player anytime and anywhere.



### Home Entertainment

Xcess supports Airplay and Chromecast. It allows you to easily stream the movies or other videos stored on the XCubeNAS to your TV, while using your mobile devices as a remote control to manage playback. Before going out or traveling, you can also pre-download videos and watch them under offline mode.

# Industrial Applications

## Culture and Education

With the tide of digitalizing cultural assets and the popularity of e-education, organizations such as museums, libraries, schools and academic institutions need safe, reliable and large capacity storage devices for storing those digital properties.

Meanwhile, increasing the conveniently to each facility, instructors or students in the campus helps not only ease for students getting materials smoothly but also increase operations efficiency. Moreover, how to protect the e-learning ecosystem with high efficiency and security, with centralized storage would significantly improve school IT administrators manage the system.

The XCubeNAS is here to provide:

- Digital collection and digital archive storage device.
- Storage devices for building academic repository.
- Centralized storage system.
- Virtualization-ready for hosting institutional services.
- Campus digital surveillance system.
- WORM protection for confidential data.



## Manufacturing

Data generated in the links of each production flow need to be recorded in case of the need for recovery if accidents happen, as well as for further analysis to improve defect rate and efficiency. A factory storage system is also needed to administrate departmental resources better.

The XCubeNAS is here to provide:

- Petabyte level storage system.
- Production process recording and backup storage system.
- Centralized department and factory file platform.
- Disaster recovery solutions.
- Host virtualization applications.



## IT Industry

In the IT industry, a vast amount of data is generated in the process of developing services and products. High capacity and reliable storage system are essential in each business. With QSM, XCubeNAS provides the up to 3PB capacity, highspeed file transfer across platforms, virtualization storage, and advanced data protection. It is also an all-in-one server that supports VPN server, web server, SQL server, print server and more, making the XCubeNAS an ideal and affordable solution which enhances collaboration with colleagues, partners and increases productivity.

The XCubeNAS is here to provide:

- Primary backup storage device.
- Disaster recovery solutions.
- Centralized file storage system.
- Company internal service server.
- Host virtualization applications.



### Media Industry

In the media and entertainment industry, film studios and advertising companies have tens to hundreds of Gigabytes of high-definition video and image files that need to be accessed and stored. The XCubeNAS provides high capacity for data storage and is capable of committing high-speed data transfer through 10G networks or Thunderbolt™ 3 interfaces, the waiting time of file access can be shortened and further increase the work efficiency of users. QSAN cross-platform storage management supports multiple network protocols such as CIFS/SMB, FTP, SFTP, WebDAV that can help data accessing and data sharing more natural and more efficient.

The XCubeNAS is here to provide:

- Audio and video post-production editing system.
- 4K ultra-high definition video transcoding support.
- High speed on-line editing via Thunderbolt™ 3 or 10G network.
- Multimedia database storage system.



### Health Care Professional

Nowadays patients are given with medical advise based on the data doctors have to hand, they can effectively diagnose disease and give treatments based off of this data. Medical histories and clinical cases need to be built as databases to help doctors clarify illness quickly. The medical treatment process of patients should be controlled and recorded on a transparent platform across agencies. Moreover, an administration storage system is needed to better manage across different hospital units.

The XCubeNAS is here to provide:

- Diagnosis and treatment record storage system.
- Clinical database system.
- Internal hospital shared platform.
- Centralized administration storage system.
- Hospital surveillance system.



### Finance & Insurance

Every day, billions of financial transactions are made which should be well preserved in case of an unforeseen issue. The rise of digital banking services transfers several traditional from offline services to online. Each operation needs to be recorded to avoid monetary loss. For insurance companies, insurance policies and legislative documents, which relate to customer rights and company interests and need to be accessible last for decades, they also must be safely stored without being modified. A secured storage system is needed for protecting those economic histories and testimonies.

The XCubeNAS is here to provide:

- Financial operation recording system.
- Decades business and legislative document archive storage.
- Disaster recovery solutions.
- Centralized branch storage system.
- Host virtualization applications.



# Utility

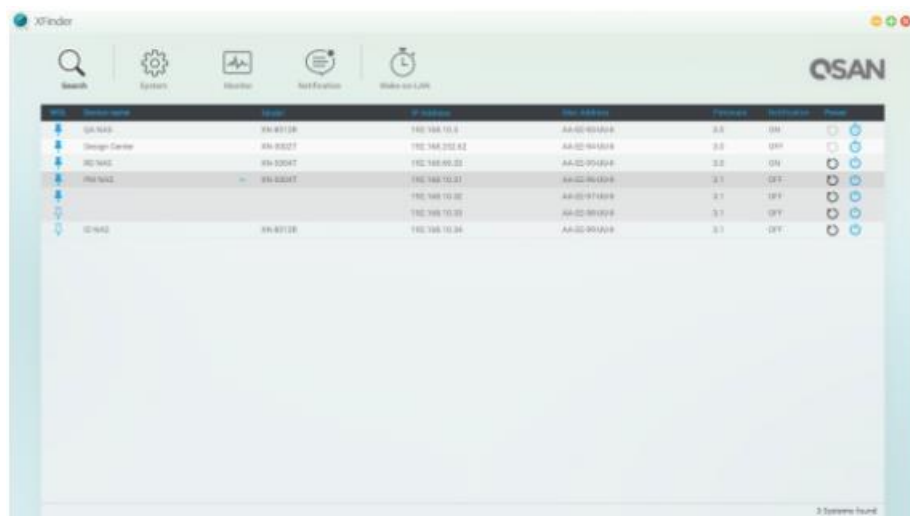
## Media Industry

Web Finder is a browser-based utility that searches for QSAN XCubeNAS devices in the local LAN; you don't need to install any software, open the browser then you can find your NAS. It also helps you to set up and install QSM on your XCubeNAS.

## Find NAS Tools

### Local Access – XFinder

XFinder is a desktop utility that searches for QSAN XCubeNAS devices in the local area network. It helps you to set up and install QSM on your XCubeNAS, connect to network or set up Wake on LAN (WOL), Notification (SNMP) or view monitored resources (Network, CPU, RAM...) of your XCubeNAS.




### Internet Access - Web Finder


Web Finder is a browser-based utility that searches for QSAN XCubeNAS devices in the local LAN, you don't need to install any software, open the browser then you can find your NAS. It also helps you to set up and install QSM on your XCubeNAS



Web Finder: <http://find.qsan.com/>

# Hardware Specifications

	XN5000R Series			XN7000R Series			XN8000R Series	
	XN5004R	XN5008R	XN5012R	XN7004R	XN7008R	XN7012R	XN8008R	XN8012R
NAS Technology								
Form Factor	Rackmount 1U 4+2 Bay	Rackmount 2U 8+6 Bay	Rackmount 2U 12+6 Bay	Rackmount 1U 4+2 Bay	Rackmount 2U 8+6 Bay	Rackmount 2U 12+6 Bay	Rackmount 2U 8+6 Bay	Rackmount 2U 12+6 Bay
CPU	Intel® Celeron® 2.9GHz Dual-Core Processor			Intel® CORE™ i3 3.9GHz Dual-Core Processor			Intel® Xeon® 3.3GHz Quad-Core Processor	
RAM	4GB DDR4 U-DIMM (Max 64GB)	8GB DDR4 U-DIMM (Max 64GB)		8GB DDR4 U-DIMM (Max 64GB)			8GB DDR4 ECC U-DIMM (Max 64GB)	
USB	USB 3.0: 4 (Rear) USB 2.0: 1 (Front)							
Flash	8GB USB DOM							
HDMI	1							
Drive Type	3.5" SATA HDD 2.5" SATA HDD 2.5" SATA SSD	3.5" SATA HDD 2.5" SATA HDD 2.5" SATA SSD 2.5" NVMe SSD		3.5" SATA HDD 2.5" SATA HDD 2.5" SATA SSD	3.5" SATA HDD 2.5" SATA HDD 2.5" SATA SSD 2.5" NVMe SSD			
No. of Disks	4 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 2 x 2.5" SATA SSD	8 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 4 x 2.5" SATA SSD (Rear) 2 x 2.5" NVMe SSD (Rear)	12 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 4 x 2.5" SATA SSD (Rear) 2 x 2.5" NVMe SSD (Rear)	4 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 2 x 2.5" SATA SSD	8 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 4 x 2.5" SATA SSD (Rear) 2 x 2.5" NVMe SSD (Rear)	12 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 4 x 2.5" SATA SSD (Rear) 2 x 2.5" NVMe SSD (Rear)	8 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 4 x 2.5" SATA SSD (Rear) 2 x 2.5" NVMe SSD (Rear)	12 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD 4 x 2.5" SATA SSD (Rear) 2 x 2.5" NVMe SSD (Rear)
Max. Raw Capacity	60TB	122TB	178TB	60TB	122TB	178TB	122TB	178TB
Hard Drive Interface	SATA 6Gb/s (backward compatible with SATA 3Gb/s)							
LAN Port	4 x GbE LAN (RJ45) ports Optional: 2 x 10GbE (SFP+) ports 2 x 10GbE (RJ45) ports 2 x Thunderbolt™ 3 ports							
Expansion Port	Optional: 2 x 12Gb/s SAS wide ports							
PCIe Expansion	1 x Gen3x8 slot	1 x Gen3x8 slot 1 x Gen3x4 slot		1 x Gen3x8 slot			1 x Gen3x8 slot 1 x Gen3x4 slot	
PSU	250W 1+1 redundant							
Dimension (H x W x D) (mm)	19" Rackmount 44 x 438 x 510	19" Rackmount 88.5 x 438 x 510		19" Rackmount 44 x 438 x 510	19" Rackmount 88.5 x 438 x 510			
Warranty	3 years							
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%							
Regulatory	CE, FCC, BSMI, VCCI, RCM, KCC, SASO, EAC	CE, FCC, BSMI, VCCI, RCM, SASO, EAC	CE, FCC, BSMI, VCCI, RCM, KCC, SASO, EAC	CE, FCC, BSMI, VCCI, RCM, SASO, EAC				CE, FCC, BSMI, VCCI, RCM, KCC, SASO, EAC

	XN5000RE Series		XN7000RE Series		XN8000RE Series	
	XN5008RE	XN5012RE	XN7008RE	XN7012RE	XN8008RE	XN8012RE
						
Form Factor	Rackmount 2U 8 Bay	Rackmount 2U 12 Bay	Rackmount 2U 8 Bay	Rackmount 2U 12 Bay	Rackmount 2U 8 Bay	Rackmount 2U 12 Bay
CPU	Intel® Celeron® 2.9GHz Dual-Core Processor		Intel® CORE™ i3 3.9GHz Dual-Core Processor		Intel® Xeon® 3.3GHz Quad-Core Processor	
RAM	8GB DDR4 U-DIMM (Max 64GB)				8GB DDR4 ECC U-DIMM (Max 64GB)	
USB	USB 3.0: 4 (Rear) USB 2.0: 1 (Front)					
Flash	8GB USB DOM					
HDMI	1					
Drive Type	3.5" SATA HDD 2.5" SATA HDD 2.5" SATA SSD					
No. of Disks	8 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD	12 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD	8 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD	12 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD	8 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD	12 x 3.5"/2.5" SATA HDD or 2.5" SATA SSD
Max.Raw Capacity	112TB	168TB	112TB	168TB	112TB	168TB
Hard Drive Interface	SATA 6Gb/s (backward compatible with SATA 3Gb/s)					
LAN Port	4 x GbE LAN (RJ45) ports Optional: 2 x 10GbE (SFP+) ports 2 x 10GbE (RJ45) ports 2 x Thunderbolt™ 3 ports					
Expansion Port	Optional: 2 x 12Gb/s SAS wide ports					
PCIe Expansion	1 x Gen3x8 slot 1 x Gen3x4 slot					
PSU	250W 1+1 redundant					
Dimension (H x W x D) (mm)	19" Rackmount 88.5 x 438 x 510					
Warranty	3 years					
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%					
Regulatory	CE, FCC, BSMI, VCCI, RCM					

# | Expansion Enclosures

XCubeDAS	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 SSD
HBAs & RAID Cards Support	Broadcom (LSI) 12Gb/s & 6Gb/s SAS HBA Broadcom (LSI) 12Gb/s & 6Gb/s SAS RAID Controller Cards ATTO 12Gb/s & 6Gb/s SAS HBA ATTO 6Gb/s SAS RAID Controller Cards			
Expansion Capabilities	Up to 8 expansion units behind QSAN SAN / NAS storage			
SAN/NAS Models Support	QSAN XCubeSAN XS5200 & XS3200 series QSAN XCubeNAS XN5000, XN7000, & XN8000 series			
Dimension (H x W x D)	19" Rackmount 170.3 x 438 x 515 mm	19" Rackmount 130.4 x 438 x 515 mm	19" Rackmount 88 x 438 x 515 mm	19" Rackmount 88 x 438 x 491 mm
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	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°C to 50°C			
Relative Humidity	Operating relative humidity : 20% to 80% non-condensing Non-operating relative humidity : 10% to 90%			



# | Software Specifications

## Unified Storage Server

- NAS application server (Gigabit/10GbE NIC)
- iSCSI storage (Gigabit/10GbE NIC)
- Direct-attached storage with Thunderbolt 3.0 (40GbE)

## 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

## Disk Management

- Single disk, RAID 0, 1,5,6,Z3, 10,50,60• 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

- Xcess (iOS, iPad and Android)



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