XCubeSANFW 1.3.3
Release Note

Applicable Models:
XS5224D, XS5216D, XS5212D, XS5212S, XS5226D, XS5226S
XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S
XS3226D, XS3226S, XS1224D, XS1224S, XS1216D, XS1216S
XS1212D, XS1212S, XS1226D, XS1226S

Copyright

September 2018

This edition applies to QSAN XCubeSAN SANOS (SAN Operating System) Firmware. QSAN believes the information in this publication is accurate as of its publication date. The information is subject to change without notice.

Trademarks
QSAN, the QSAN logo, XCubeSAN, and QSAN.com are trademarks or registered trademarks of QSAN Technology, Inc.

Microsoft, Windows, Windows Server, and Hyper-V are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries .

VMware, ESXi, and vSphere are registered trademarks or trademarks of VMware, Inc. in the United States and/or other countries.

Other trademarks and trade names used in this document to refer to either the entities claiming the marks and names or their products are the property of their respective owners.

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.3.3, the latest firmware for the following QSAN SAN products:

Applicable Models: XS5224D, XS5216D, XS5212D, XS5212S, XS5226D, XS5226S, XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226S, XS1224D, XS1224S, XS1216D, XS1216S, XS1212D, XS1212S, XS1226D, XS1226S

Firmware version: 1.3.3 (20180905_1400)

We are pleased to announce that this firmware supports Korean language in web UI. We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware V1.3.2.

CAUTION:
Execute COLD REBOOT after upgrade from firmware 1.2.x to 1.3.0. Notice that it CAN NOT be downgrade to firmware 1.2.x after upgrade to 1.3.0.

New Features

• Support Korean language in Web UI. (19870)

Enhancements

• Enhance the pool status of fast rebuild when starting delay rebuild. (19546)
• Enhance the setting of IP address in LCM. (19637)
• Improve the fan duty for better heat dissipation. (20053)
• Improve the time display in event logs. (20097)

Limitations

None.

Companion Software

- XFinder V1.1.1 Download
- Expansion Units: XD5300 Series FW 1.0.1

Previous firmware release notes

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.3.2, the latest firmware for the following QSAN SAN products:

Applicable Models: XS5224D, XS5216D, XS5212D, XS5212S, XS5226D, XS5226S, XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226S XS1224D, XS1224S, XS1216D, XS1216S, XS1212D, XS1212S, XS1226D, XS1226S

Firmware version: 1.3.2 (20180531_1600)

We are pleased to announce that this firmware enhances random performance issue; it starts to support Russian language in web UI and start to support XFinder utility which can find all QSAN products including SAN and NAS We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware V1.3.0.

New Features

- Support Russian language in Web UI. (19203)
- Support XFinder utility. (19217)

INFORMATION:
XFinder is a storage finder to locate storage arrays in the local area network. Now it can find all QSAN products including SAN and NAS. You can download the utility here.

Enhancements

- Enhance WebUI displays and operations. (18935, 19184, 19338, 19344)
- Enhance to detect the battery voltage to prevent warning message. (18953)

- Enhance to display the hardware monitor of expansion units when there is slave controller only. (19290)
- Enhance the time zone issue to prevent unplanned schedules of snapshot and remote replication. (19292, 19318)
- Enhance WebUI displays and operations. (19180)
- Enhance random performance issue. (19491)

Limitations

None.

Companion Software

- XFinder V1.1.0
- Expansion Units: XD5300 Series FW: 1.0.1

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.2.1, the latest firmware for the following QSAN SAN products:

Applicable Models: XS5224D, XS5216D, XS5212D, XS5212S, XS5226D, XS5226S, XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226, XS1224D, XS1224S, XS1216D, XS1216S, XS1212D, XS1212S, XS1226D, XS1226S
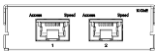
Firmware version: 1.2.1 (20170828_1700)

We are pleased to announce that this firmware supports two new optional host cards. And also add two new functions for better user experience.

We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware V1.2.0.

New Features & Enhancements

- Support two new optional host cards. (14708, 16338)

Model Name	Picture	Description	Applied Models
HQ-16F2S2		2-port 16Gb Fibre Channel Host Card (SFP+)	XS5200 Series XS3200 Series XS1200 Series
HQ-10G2T		2-port 10GBASE-T iSCSI Host Card (RJ45)	

INFORMATION:

For more information about optional host cards, please refer to the chapter 3.3, Installing the Optional Host Cards, chapter 5.2.3 Host Card LEDs, and chapter 6.4 Removing the Host Card in the XCubeSAN Hardware Owner's Manual.

- Add "Clear all volume restoration records" function in "Reset to Defaults" sub. (16780)
- Add email subject prefix in Notifications. (16864)

> **INFORMATION:**
> For more information about "Clear all volume restoration records"
> function and email subject prefix, please refer to the chapter 6.4.1, Email
> settings and chapter 6.5.5, Reset to Factory Defaults in the XCubeSAN
> SANOS 4.0 User's Manual.

- Enhance configuration backup of SSD cache volume and auto tiering policy. (17358)

Issue Resolved

- When connecting with 10Gb switch, the performance may cause slow. (17390)

Known Issues & Restrictions

- Using QSnap (snapshot) in VMware environment will possibly cause data inconsistency issue. (18149)
    - Workaround: 1. Do not use QSnap on volume; 2.Create Thick Provision Eager Zeroed VMDK from VMware; 3. Disable VAAI; 4. Use VMware VR (vSphere Replication)

Companion Software

- QFinder V1.1.1
- Expansion Units: XD5300 Series FW: 1.0.0

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.2.0, the latest firmware for the following QSAN SAN products:

Applicable Models: XS5224D, XS5216D, XS5212D, XS5212S, XS5226D, XS5226S, XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226S, XS1224D, XS1224S, XS1216D, XS1216S, XS1212D, XS1212S, XS1226D, XS1226S

Firmware version: 1.2.0 (20170727_1700)

We are pleased to announce that this firmware supports auto tiering 2.0 with flexible RAID and disk configurations. And also supports SSD endurance, IOPS performance, iSCSI mutual CHAP …etc. Lots of WebUI operations are enhanced.

We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware V1.1.2.

New Features and Enhancements

- Auto Tiering 2.0 with flexible RAID and disk configurations. (11425, 15148)

INFORMATION:
For more information about auto tiering with flexible RAID and disk configurations, please refer to the chapter 11, Auto Tiering chapter in the XCubeSAN SANOS 4.0 User's Manual.

TIP:
The auto tiering function is optional; its license can be extended to auto tiering 2.0.

- Support SAS/SATA SSD Endurance for monitoring the life remaining. (11883)

> **INFORMATION:**
> For more information about SSD endurance, please refer to the chapter 8.3.3, S.M.A.R.T. session in the XCubeSAN SANOS 4.0 User's Manual.

- Add the events of Fibre Channel login/logout message s. (1911)
- Add complete warning events of C2F (Cache to Flash) mechanism. (13282)
- Add system IOPS performance in Dashboard. And add volume IOPS/Throughput performance in Monitoring page. (14203)

> **INFORMATION:**
> For more information about IOPS performance and volume IOPS/Throughput performance, please refer to the chapter 5.1, Dashboard and chapter 13.3.2, Volume Performance Monitoring session in the XCubeSAN SANOS 4.0 User's Manual.

- Enhance the vulnerabilities for SSL/TLS and disable SSLv3 and earlier, TLS 1.1 and earlier. (14206)
- Add a function to reset path of the remote replication for trying to recover the task. (14215)
- Enhance smart BBM (Battery Backup Module) charge. (15467)
- Add the events of iSCSI link up/down messages. (15578)
- Add the events of Fibre Channel port up/down messages. (15725)
- Enhance the "Create SSD Cache Pool" policy. Can "Create SSD Cache Pool" when the status of the Pool is Online, Rebuilding, Relocating and the health of the Pool is Good, Degraded. (16238)
- Support iSCSI mutual CHAP. (16339)

> **INFORMATION:**
> For more information about iSCSI mutual CHAP, please refer to the chapter 7.3.3, Configure iSCSI Targets session in the XCubeSAN SANOS 4.0 User's Manual.

- Add a function to change the destination IP of the remote replication paths and connections. (16343)

- Add a warning message that the block size of created volume becomes to 4096. (16580)
- Support disk group storage architecture in thick provisioning pool.

> **INFORMATION:**
> For more information about disk group storage architecture in thick provisioning pool, please refer to the chapter 8.2, SANOS Storage Architecture session in the [XCubeSAN SANOS 4.0 User's Manual](#).

Bug Fixes

- Enhance WebUI displays and operations. (10327, 14000, 15110,15570, 15613,15690, 15726,15807, 16111,16118, 16135, 16296, 16302, 16336, 16342,16441)
- Performance issue of 15K SAS(6Gb/s) HDD. (15584)
- Performance of remote replication over WAN. (15702)
- Enhance the System Health status in Dashboard. (16341)
- Accuracy issue in monitoring iSCSI performance by adjustment sampling rate and check elapsed time. (16373)
- BBM (Battery Backup Module) hot plug issue. (16386)
- Creating a 256TB volume in a thin provisioning pool. (16469)
- Setting snapshot space over 4TB. (16754)
- Checking disk sector size when adding spares into a pool. (16865)
- Using the capacity of SSDs greater than 1TB in a SSD cache pool, write failures would occur in these SSDs.(16888)
- CHAP validation when creating a remote replication task. (16957)
- Deleting the SSD cache pool when the populateon-read threshold setting is more than 1. (16960)

Limitations

- The link speed of iSCSI ports will be down to 1GB whenconnecting between XCbueSAN onboard 10GB(2 x 10GBASET iSCSI(RJ45) ports) or 10GB host card (2 x 10GbE iSCSI (RJ45) ports) to Ubiquity UniFi US-16-XG 10G Switch (16478)

Companion Software

- QFinder V1.1.1
- Expansion Units: XD5300 Series FW: 1.0.0

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.1.2, the latest firmware for the following QSAN SAN products:

Applicable Models: XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226S

Firmware version: 1.1.2 (20170602_1900)

In this firmware, we improve read/write IOPS in case that the accessed sub blocks are already cached in SSD cache. So the performance of SSD cache increases a lot. We also test some cases of SSD cache. By this technology, QCache 2.0 can improve random read performance by up to 92 times and random write by up to 147 times. If you are interesting, you can download the details and test results in [SSD Cache2.0 White Paper](#).

We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware V1.1.1.

⚠️	CAUTION: SSD cache function is not supported when the system memory is under 8GB per controller.

⚠️	CAUTION: Execute COLD REBOOT after upgrade from firmware 1.0.x to 1.1.0. Notice that it CAN NOT be downgraded to firmware 1.0.x after upgrade to 1.1.0.

New Features and Enhancements

- Improve read/write IOPS in case that the accessed sub blocks are already cached in SSD cache. (16239)

Bug Fixes

- Enhance WebUI displays and operations. (10327, 15726, 15790, 15796, 15798, 15807, 16111, 16118)
- Add SSD cache pool information in Service Package. (15790)
- Fix the bug that the logo will disappear after resetting the unit back to factory default. (16226)

Limitations

- None.

Companion Software

- QFinder V1.1.1
- Expansion Units: XD5300Series FW: 1.0.0

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.1.0, the latest firmware for the following QSAN SAN products:

Applicable Models: XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226S

Firmware version: 1.1.1 (20170421_1900)

We are glad to announce that this firmware supports SSD cache 2.0 with SSD read and write cache. And also supports versatile topologies of expansion enclosure and the enclosure ID of XD5300 series. To support SSD cache 2.0, the resources will be redistributed. So executing COLD REBOOT is necessary after upgrade from firmware V1.0.x to V1.1.1. We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware 1.0.1.

⚠️ **CAUTION:**
Execute COLD REBOOT after upgrade from firmware V1.0.x to V1.1.0.

Notice that it CAN NOT be downgrade to firmware V1.0.x after upgrade to V1.1.0.

New Features and Enhancements

- Add an iqn tip at LUN mappings. (15681)
- Change Thin Provisioning parameters. (13793)
  ◦ Maximum Thin Provisioning Pool Capacity per Pool is 256TB.
  ◦ Maximum Thin Provisioning Pool Capacity per System changes from 256TB to 1,024TB.
  ◦ Maximum Thin Provisioning Volume Capacity changes from 128TB to 256TB.
- Support SSD cache 2.0 with SSD read and write cache. (13847)

ℹ️ **INFORMATION:**
For more information about SSD cache with read and write cache, please

---

refer to the chapter 10, SSD Cache chapter in the [XCubeSAN SANOS 4.0 User's Manual](#).

> **TIP:**
> The SSD cache is optional; the SSD cache license can be extended to SSD cache 2.0 with read and write cache.
>
> The data structure of the SSD cache 2.0 is redesigned from the previous SSD cache. After upgrade to firmware V1.1.0 with SSD cache 2.0, you have to configure SSD cache again if you have already enabled SSD cache in firmware V1.0.x.

- Support versatile topologies of expansion enclosure and the enclosure ID of XD5300 series. (13848)

> **INFORMATION:**
> For more information about expansion topology, please refer to the chapter 4.2.5, Expansion Topology and Deployment section in the [XCubeSAN Hardware Owner's Manual](#).
>
> For more information about enclosure ID, please refer to the chapter 2.7, Seven-segment LED Display section in the [XCubeDAS Hardware Owner's Manual](#).
>
> For more information about how to clean expansion enclosure ID, please refer to the chapter 6.5.5, Rest to Factory Default section in the [XCubeSAN SANOS 4.0 User's Manual](#).

Bug Fixes

- Enhance WebUI displays and operations. (14598, 14732, 14777, 14828, 15063, 15136, 15220, 15279, 15414, 15440, 15452, 15553, 15602, 15110, 15606, 15688, 15723, 15762)
- Update time zone table. (15384)
- Fix the bug of iSCSI/FC port performance monitor. (15617)

Limitations

- None.

Companion Software

- QFinder V1.1.1
- Expansion Units: XD5300 Series FW: 1.0.0

Release Information

QSAN is pleased to announce the release of QSAN XCubeSAN firmware V1.0.1, the latest firmware for the following QSAN SAN products:

Applicable Models: XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S, XS3226D, XS3226S

Firmware version: 1.0.1 (20170217_1500)

In this firmware, we enhanced the stability with BOSCH camera, improved logo changes in QWrap, and also enhanced displays and operations in Web UI. We strongly recommend that you update the QSAN products to this latest release to ensure the storage system is running with all the latest bug fixes. The simplest way to update is to use the "Update" function in Maintenance. The following are changes since firmware V1.0.0.

New Features and Enhancements

- Enhanced BOSCH camera which multiple LUNs are attached to the same target. (14838)
- Improved logo changes in customization utility QWrap V1.4.0.

Bug Fixes

- Enhance WebUI displays and operations. (14118, 14318, 14682, 14722, 14840, 15039, 15077, 15094, 15132)
- Enhance the event log of fast rebuild. (14800)
- System cannot detect Toshiba HDD in expansion units when the system reboots. (14865)
- Pressing the reset button. (14894)

Limitations

- None.

Companion Software

- QFinder V1.1.1

- Customization: QWrap V1.4.0
- Expansion Units: XD5300 Series FW: 1.0.0