XCubeSAN Series Application Note

Connect to Western Digital® Ultrastar® Hybrid Storage Platform Guide

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www.QSAN.com

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Notices

This XCubeSAN series white paper is applicable to the following XCubeSAN models:

XCubeSAN Storage System 4U 19” Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
XS5224D	Dual Controller	LFF 24-disk 4U Chassis
XS3224D	Dual Controller	LFF 24-disk 4U Chassis
XS3224S	Single Controller	LFF 24-disk 4U Chassis
XS1224D	Dual Controller	LFF 24-disk 4U Chassis

Connect to WD Ultrastar Data60 / Data102 Guide

Executive Summary

This application note provides technical guidance for connecting to Western Digital Ultrastar hybrid storage platform, Data60 (hereinafter referred to as WD Data60) and Data102 (hereinafter referred to as WD Data102), which are fully redundant hybrid 4U JBOD disk enclosures, as expansion solutions of QSAN XCubeSAN series storage. The new expansion solutions expand the capacity of QSAN's storage with high density.

Audience

This document is applicable for QSAN customers and partners who are interested in purchasing WD Data60 / WD Data102 as the expansion units of XCubeSAN series. It assumes the reader is familiar with QSAN products and has general IT experience, including knowledge as a system or network administrator. If there is any question, please refer to the user manuals of products, or contact QSAN support for further assistance.

Overview

With today's rapid increase in data volumes, our partnership with Western Digital ensures that our joint enterprise customers receive high density expansion solution at a highly competitive price point. Western Digital Ultrastar Data60 / Data102 hybrid storage platform has dual IO modules with 6 Mini-SAS HD ports per module and can be populated with up to 60/102 SAS/SATA drives, respectively. Ultrastar Data60 / Data102's compact and efficient form factor provides the flexibility to specify the HDD and SSD combinations for balancing capacity, performance, and cost.

Guidelines

Expansion Configuration Rules

According to chapter 5 in the WD Data60 / Data102 user guide, the Ultrastar Data60 / Data102 supports configurations up to four enclosures daisy chained together using active cables. The expansion capability is up to 4 expansion units using WD Data60 / Data102, whether or not there are mixed XCubeDAS series models. By connecting up to 4 expansion units of WD Data60 / Data102, XCubeSAN can support up to 266 / 434 disk drives or up to 3.7PB / 6.0PB of raw storage space when using 14TB Ultrastar DC HC530 HDDs.

INFORMATION:

Western Digital Ultrastar Data60 user guide, please refer to https://documents.westerndigital.com/content/dam/doc-library/en_us/assets/public/western-digital/product/platforms/ultrastar-data60-hybrid-platform/user-guide-ultrastar-data60.pdf

Western Digital Ultrastar Data102 user guide, please refer to https://documents.westerndigital.com/content/dam/doc-library/en_us/assets/public/western-digital/product/platforms/ultrastar-data102-hybrid-platform/user-guide-ultrastar-data102.pdf

Expansion Topology and Deployment

The following images illustrate some examples of deployment types for dual controller XCubeSAN series plus WD Data60 / Data102 expansion units. MPIO (MultiPath I/O) configurations are designed to provide HA (High Availability) data connections to ensure data consistency in the rare event of a failure in the host connectivity from a single path.

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One XCubeSAN / One WD Data60 or Data102 / Dual Path

The following figure shows an example of an XCubeSAN series connected to a WD Data60 or Data102 using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable, SFF-8644 to SFF-8644).

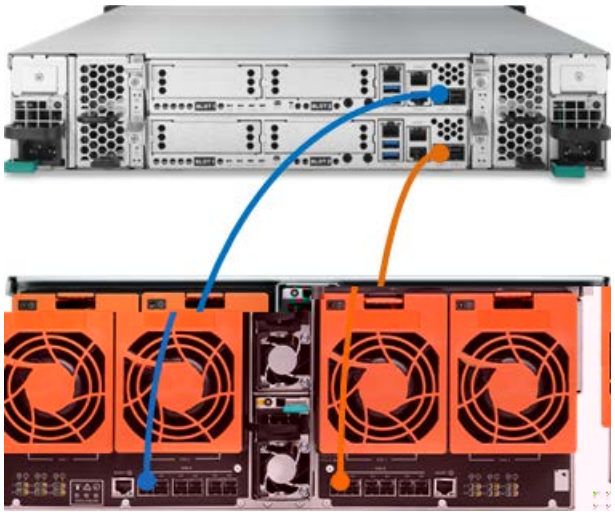

Figure 1 One XCubeSAN / One WD Data60 or Data102 / Dual Path

CAUTION:
WD Data60 / Data102 do not support SAS 12G expansion cable with Wake-on-SAS.

One XCubeSAN / One XCubeDAS / One WD Data60 or Data102 / Dual Path

The following figure shows an example of an XCubeSAN series connected to an XCubeDAS XD5300 series which is in turn connected to the second WD Data60 / Data102 using mini SAS HD to mini SAS HD cable (SAS 12G expansion cable, SFF-8644 to SFF-8644).

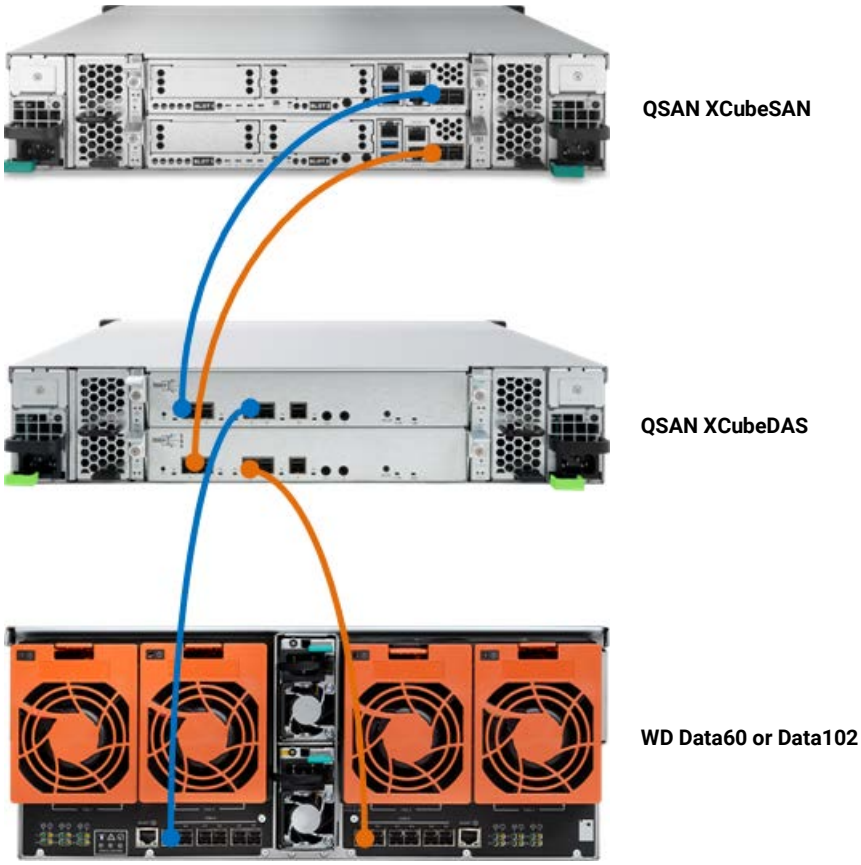

Figure 3 One XCubeSAN / One XCubeDAS / One WD Data60 or Data102 / Dual Path

TIP:
If you have multiple XCubeDAS and WD Data60 / Data102 as the expansion units of XCubeSAN series, connect XCbueDAS series models before WD Data60 / Data102.

Cautions and Limitations

List the following cautions and limitations. You should be aware of the purchase and installation of WD Data60 / Data102.

1. The expansion capability is up to 4 expansion units using WD Data60 / Data102 whether or not there are mixed XCubeDAS series models.
2. According to the WD Data60 / Data102 datasheet, hybrid support for up to 24 SSDs (SAS or SATA) to create a data acceleration tier.

INFORMATION:
Western Digital Ultrastar Data60 datasheet, please refer to https://documents.westerndigital.com/content/dam/doc-library/en_us/assets/public/western-digital/product/platforms/ultrastar-data60-hybrid-platform/data-sheet-ultrastar-data60-storage-platform.pdf

Western Digital Ultrastar Data102 datasheet, please refer to https://documents.westerndigital.com/content/dam/doc-library/en_us/assets/public/western-digital/product/platforms/ultrastar-data102-hybrid-platform/data-sheet-ultrastar-data102-storage-platform.pdf

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3. XCbueSAN SANOS does not support firmware update for WD Data60 / Data102.
4. XCubeSAN does not support active cables.
5. WD Data60 / Data102 do not support SAS 12G expansion cable with Wake-on-SAS.
6. If you have multiple XCubeDAS and WD Data60 / Data102 as the expansion units of XCubeSAN series, connect XCbueDAS series models before WD Data60 / Data102.
7. If you are experiencing poor performance when connecting to WD Data60 / Data102, you can try shorter length cables, such as 1.5M or 1M.

Known Issues

List the following known issues. You should be aware of the purchase and installation of WD Data60 / Data102.

1. If there is HDD in the slot, WD Data60 / Data102 will report the temperature of HDD. If there is no HDD in the slot, Failed will be displayed.

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System

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Type	Item	Value	Low Critical	Low Warning	High Warning	High Critical	Status
Temperature	TEMP SLOT 052	N/A					Failed
Temperature	TEMP SLOT 053	N/A					Failed
Temperature	TEMP SLOT 054	47.0°C / 116.6°F					Good
Temperature	TEMP SLOT 055	59.0°C / 138.2°F					Good
Temperature	TEMP SLOT 056	59.0°C / 138.2°F					Good
Temperature	TEMP SLOT 057	62.0°C / 143.6°F					Good
Temperature	TEMP SLOT 058	56.0°C / 132.8°F					Good
Temperature	TEMP SLOT 059	N/A					Failed
Temperature	TEMP SLOT 060	N/A					Failed
Temperature	TEMP SLOT 061	N/A					Failed
Temperature	TEMP SLOT 062	N/A					Failed
Temperature	TEMP SLOT 063	N/A					Failed
Temperature	TEMP SLOT 064	N/A					Failed
Temperature	TEMP SLOT 065	N/A					Failed

Figure 4 WD Data60 / Data102 Temperature

Apply To

- XCubeSAN XS5200 / XS3200 / XS1200 FW version: 1.4.2 to support WD Data60
- Western Digital Ultrastar Data60
  - HW date code: 2819 or higher
  - FW version: 2.0.4 or later

- XCubeSAN XS5200 / XS3200 / XS1200 FW version: 1.4.3 to support WD Data102
- Western Digital Ultrastar Data102
  - HW date code: 2619 or higher
  - FW version: 2.0.4 or later

References

Western Digital Ultrastar Data60

- Western Digital Ultrastar Data60 Datasheet
- Western Digital Ultrastar Data60 User Guide

Western Digital Ultrastar Data102

- Western Digital Ultrastar Data102 Datasheet
- Western Digital Ultrastar Data102 User Guide

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Appendix

Related Documents

There are related documents which can be downloaded from the website.

- All XCubeSAN Documents
- XCubeSAN QIG (Quick Installation Guide)
- XCubeSAN Hardware Manual
- XCubeSAN Configuration Worksheet
- XCubeSAN SANOS 4.0 Software Manual
- Compatibility Matrix
- White Papers
- Application Notes

Technical Support

Do you have any questions or need help trouble-shooting a problem? Please contact QSAN Support, we will reply to you as soon as possible.

- Via the Web: https://www.qsan.com/technical_support
- Via Telephone: +886-2-77206355
  (Service hours: 09:30 - 18:00, Monday - Friday, UTC+8)
- Via Skype Chat, Skype ID: qsan.support
  (Service hours: 09:30 - 02:00, Monday - Friday, UTC+8, Summer time: 09:30 - 01:00)
- Via Email: support@qsan.com