

XCubeSAN Series Application Note

Monitor Hardware Status with MIB File



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This XCubeSAN series white paper is applicable to the following XCubeSAN 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
XS1224S	Single Controller	LFF 24-disk 4U Chassis

XCubeSAN Storage System 4U 19" Rack Mount Models

XCubeSAN Storage System 3U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
XS5216D	Dual Controller	LFF 16-disk 3U Chassis
XS3216D	Dual Controller	LFF 16-disk 3U Chassis
XS3216S	Single Controller	LFF 16-disk 3U Chassis
XS1216D	Dual Controller	LFF 16-disk 3U Chassis
XS1216S	Single Controller	LFF 16-disk 3U Chassis

XCubeSAN Storage System 2U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
XS5212D	Dual Controller	LFF 12-disk 2U Chassis
XS5212S	Single Controller	LFF 12-disk 2U Chassis
XS3212D	Dual Controller	LFF 12-disk 2U Chassis
XS3212S	Single Controller	LFF 12-disk 2U Chassis
XS1212D	Dual Controller	LFF 12-disk 2U Chassis
XS1212S	Single Controller	LFF 12-disk 2U Chassis
XS5226D	Dual Controller	SFF 26-disk 2U Chassis
XS5226S	Single Controller	SFF 26-disk 2U Chassis
XS3226D	Dual Controller	SFF 26-disk 2U Chassis
XS3226S	Single Controller	SFF 26-disk 2U Chassis
XS1226D	Dual Controller	SFF 26-disk 2U Chassis



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All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.



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Monitor Hardware Status with MIB File

Executive Summary

This application note provides technical guidance for implementation of monitoring the XCubeSAN storage system with **MIB Browser** software via loading **MIB file** downloaded from QSAN XCubeSAN system, and it is intended for use by system administrators, SAN designers, storage consultants, or anyone who has purchased this product and is familiar with servers and computer networks, network administration, storage system installation and configuration, network attached storage management and relevant protocols.

Audience

This document is applicable for QSAN customers and partners who are interested in learning about SNMP with MIB file for monitoring system hardware. 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

SNMP (Simple Network Management Protocol) is an Internet-standard protocol for collecting and organizing information about managed devices on IP networks and for modifying that information to change device behavior. Devices that typically support SNMP include cable modems, routers, switches, servers, workstations, printers, and more.

SNMP is widely used in network management for network monitoring. SNMP exposes management data in the form of variables on the managed systems organized in a MIB (Management Information Base) which describes the system status and configuration. These variables can then be remotely queried by managing applications. Three significant versions of SNMP have been developed and deployed. SNMPv1 is the original version of the protocol. More recent versions, SNMPv2c and SNMPv3, feature improvements in performance, flexibility and security.

CSAN



INFORMATION:

The overview description above is quoted from Wikipedia, for more information, please refer to:

https://en.wikipedia.org/wiki/Simple_Network_Management_Protocol

Prerequisites

Before proceeding the instructions, it is assumed that you have fully read and understood the detail of QSAN product related document before proceeding to implementation.

- XCubeSAN QIG (Quick Installation Guide)
- XCubeSAN Hardware Owner's Manual
- XCubeSAN SANOS 4.0 User's Manual

MIB Browser Software

The **iReasoning MIB Broswer** Personal Edition is a free **MIB browser** for users to manage a network device with SNMP enabled. Just simply download the installer from the URL as below. Run the installer and follow the step by step processes to install it on the host.



INFORMATION:

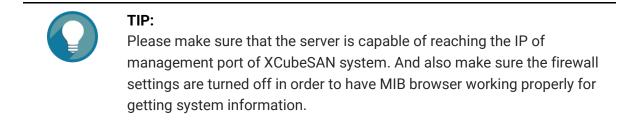
Visit iReasoning software for more information, please refer to: <u>http://www.ireasoning.com/</u>

Environment

- Server
 - Model: ASUS RS700 X7/PS4 (CPU: Intel Xeon E5-2600 v2 / RAM: 8GB) iSCSI HBA: Intel 82574L Gigabit Network Connection OS: Windows Server 2012 R2 MIB Browser: iReasoning MIB Broswer Personal Edition
- Storage
 - Model: XCubeSAN XS3212D
 Memory: 8GB (2 x 4GB in bank 1 & 3) per controller



Firmware 1.2.2 HDD: 12 x Seagate Constellation ES, ST500NM0001, 500GB, SAS 6Gb/s



Configuration

 Download the MIB file from the SAN system. Select the SNMP function tab in the Notification function submenu, and then click the Download button of Download SNMP MIB File.

CSAN SANOS 4.0	
DASHBOARD	Email Alert SNMP
Hardware Monitoring	SNMP Trap
O SYSTEM SETTINGS	Enable SNMP (Simple Network Management Protocol) trap to send system event logs to SNMP trap agent.
General Settings Management Port	Enable SNMP Trap
Power Settings Notifications	SNMP Server
Maintenance Disk Encryption	SNMP Version: SNMP v1/v2
	Apply
Overview iSCSI Ports	SNMP MIB Files
STORAGE MANAGEMENT	Downlaod SNMP MIB File: Download
Disks Pools	Download iSCSI MIB File: Download

Figure 1 Download SNMP MIB File

- The MIB file can be downloaded directly. Save it onto the host for monitoring via MIB Browser.
- 3. Execute iReasoning MIB Browser and then load the MIB file. Click the **Load MIBs** function and then select the MIB file.



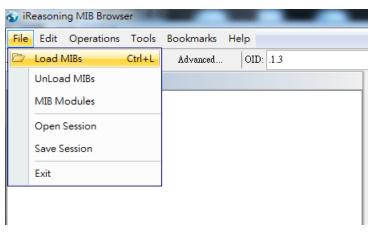


Figure 2 Load the SNMP MIB File into iReasoning MIB Browser



TIP: This step is operated in iReasoning MIB Browser; please have the iReasoning MIB Browser installed.

4. Exam the MIB tree. After the MIB file is loaded, the objects in the MIB file are listed as a tree structure in the SNMP MIBs window.



🕤 iReasor	ning MIB Browser		
	t Operations Tools Bookmarks Help		
	2.168.154.94	1.1.1.0	
SNMP MIB	8		Result Table
🌳 MIB Tre	20		
	org.dod.internet		Nam
	directory	- 11	
	mgmt	- 11	
	experimental	- 11	
	private enterprises	- 11	
	enerprises	- 11	
	in id	- 11	
	🔓 📗 system-config	- 11	
	📄 📲 system-config-status	- 11	
	🔁 sys-status-raid	- 11	
	🧙 sys-status-temp	- 11	
	🔁 sys-status-volt	- 11	
		- 11	
	sys-status-fan	- 11	
	🧶 sys-status-psu 🍋 sys-status-dual	- 11	
		- 11	
	ar a system-config-setting ar a system-config-ip	- 11	
		- 11	
	🗄 🚹 volume-config	- 11	
	🖶 🚺 enclosure-management	- 11	
	🞰 🌗 maintenance	- 11	
	🖶 🌗 iscsi-config	- 11	
		- 11	
	eventString	- 11	
	SNMPv1 TRAPs		
Name	sys-status-raid		
OID	.1.3.6.1.4.1.22274.1.1.1.1		
MIB	QSAN-SNMP-MIB		
Syntax Access	DISPLAYSTRING read-only	=	
Access Status	mandatory		
DefVal	Internation y		
Indexes			
.iso.org.dod	internet.private.enterprises.qsan.raid.system-config.system-config-status.sys-st	atus-raid	1.0

Figure 3 Exam MIB Tree

5. Enter the Management Port IP address of XCubeSAN in Address column.



File	Edit Operations	Tools	Bookmarks	Help		
	-			-		
	.92.168.154.94	•	Advanced	OID:	.1.3.6.1	
SNMP N	fIBs					
	Tree so org dod.internet directory mgmt experimental private SNMPv1 TRAPs					
Name	internet					
OID	.1.3.6.1					
MD						
	1					
MIB Syntax						
Syntax Access						
Syntax						

Figure 4 Enter the Management Port IP Address of XCubeSAN

6. Select an object and click the **Get Subtree** function by the right mouse button to retrieve the object which has multiple values on the XCubeSAN system, such as pd-size (the size of physical drive), vd-name (the name of virtual disk) and so on.



🕤 iReasoning MIB Browser						
File Edit Operations Tools	Bookmarks	Help				
Address: 192.168.154.94 🗸	Advanced	. OID: .1	.3.6.1.4.1.22274.3	1.2.1.1	.1	
SNMP MIBs					Result Table	Trap Receiver
isotorg.aoa.nnemer				~		Name/OID
🗄 🛄 mgmt					sys-name	
experimental					pd-location.1	
📄 \min private					pd-location.2	
- enterprises					pd-location.3	
💼 📄 🛄 qsan					pd-location.4	
📄 🔜 raid					- pd-location.5	
📄 🔛 system-coni	ñg				pd-location.6	
🖪 🕀 😥 😥 🔒	config-status				pd-location.7	
🖬 🕀 🚯 system-	config-setting				pd-location.8	
📄 🕀 😥 😥 🗓	config-ip				pd-location.9	
🖬 💮 🗄 system-	config-mail			=	pd-location.10	
📄 🕛 volume-cor	dig				pd-location.11	
📄 🥅 physic	al-disk				pd-location.12	
	uysical-disk-item					
	pd-location					
	^{pd-si} Fin	d in subtree				
	pd-R					
	pu-si	port to CSV				
		pand subtree	e			
	pd-st pd-v Gra	aph View	Ctrl+R			
	pd-se Get	t Next	Ctrl+N			
	pd-ty pd-w Get	t Bulk	Ctrl+B			
		t Subtree	Ctrl+E			

Figure 5 Get Subtree for Result Value of Query

7. The results are displayed at the right windows.

Conclusion

All XCubeSAN products are SNMP enabled and can be monitored by SNMP tools with the downloaded MIB file. This document is an example of using MIB file. With MIB file, users can query the status of hardware components of XCubeSAN through the **MIB Browser**.

Apply To

• XCubeSAN XS5200 / XS3200 / XS1200 FW 1.2.2 and later



Reference

XCubeSAN SANOS 4.0 User's Manual

• XCubeSAN SANOS 4.0 User's Manual

iReasoning MIB browser

• <u>http://www.ireasoning.com/</u>

SNMP Wikipedia

• https://en.wikipedia.org/wiki/Simple_Network_Management_Protocol



Appendix

Related Documents

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

- All XCubeSAN Documents
- XCubeSAN QIG (Quick Installation Guide)
- <u>XCubeSAN Hardware Owner's Manual</u>
- <u>XCubeSAN Configuration Worksheet</u>
- <u>XCubeSAN SANOS 4.0 User's Manual</u>
- <u>Compatibility Matrix</u>
- White Papers
- <u>Application Notes</u>

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: <u>https://qsan.com/support</u>
- Via Telephone: +886-2-7720-2118 extension 136 (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: <u>support@qsan.com</u>