Synology®

Synology Diskstation

MIB Guide

—

Based on
Synology DSM 6.2.4

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Introduction

Synology DiskStation Manager (DSM) allows users to monitor the status of their Synology servers through Network Management Systems (NMS) via Simple Network Management Protocol (SNMP). However, Synology DSM does not provide SNMP trap capability.

This document introduces Management Information Base (MIB) files of Synology servers. It focuses on which MIB files are supported by DSM, while also describes how Object Identifiers (OIDs) in Synology MIBs are used with your preferred NMS software. Users are encouraged to have experience and knowledge of NMS and SNMP before consulting this document.

Supported MIB files

DSM supports numerous MIB files that can help users monitor different information on their Synology NAS/IP SAN (hereinafter referred to as Synology servers). Table 1 shows the MIBs supported by DSM.

These MIB files can be separated into two types: general SNMP MIB and Synology MIB. General SNMP MIB files are equipped on NMS clients natively.

Synology MIB files can provide specific data about a Synology server system, disks, RAID, and connected UPS devices. Please see the "Synology MIB Files" section below for more Synology MIB information.

You can download the Synology MIB file **here**.

Table 2. General MIB Files Supported by DSM

MIB	Explanation
DISMAN-EVENT-MIB	For defining event triggers and actions for network management purposes
DISMAN-SCHEDULE-MIB	For scheduling SNMP set operations periodically or at specific points in time
HOST-RESOURCES-MIB	For use in managing host systems
IF-MIB	For describing network interface sub-layers
IP-FORWARD-MIB	For the management of CIDR multipath IP Routes
IP-MIB	For IP and ICMP management objects
IPV6-ICMP-MIB	For entities implementing the ICMPv6
IPV6-MIB	For entities implementing the IPv6 protocol
IPV6-TCP-MIB	For entities implementing TCP over IPv6
IPV6-UDP-MIB	For entities implementing UDP over IPv6
NET-SNMP-AGENT-MIB	For monitoring structures for the Net-SNMP agent
NET-SNMP-EXTEND-MIB	For scripted extensions for the Net-SNMP agent
NET-SNMP-VACM-MIB	Defines Net-SNMP extensions to the standard VACM view table
NOTIFICATION-LOG-MIB	For logging SNMP Notifications
SNMP-COMMUNITY-MIB	To help support coexistence between SNMPv1, SNMPv2c, and SNMPv3
SNMP-FRAMEWORK-MIB	The SNMP Management Architecture MIB
SNMP-MPD-MIB	For Message Processing and Dispatching
SNMP-USER-BASED-SM-MIB	For the SNMP User-based Security Model
SNMP-VIEW-BASED-ACM-MIB	For the View-based Access Control Model for SNMP
SNMPv2-MIB	For SNMP entities
SYNOLOGY-DISK-MIB	For Synology disk information (Synology only)
SYNOLOGY-EBOX-MIB	For Synology ebox information (Synology only)
SYNOLOGY-FLASHCACHE-MIB	For Synology FlashCache information (Synology only)
SYNOLOGY-GPUINFO-MIB	For Synology GpuIO information (Synology only)
SYNOLOGY-ISCSILUN-MIB	For Synology iSCSI LUN information (Synology only)
SYNOLOGY-PORT-MIB.txt	For Synology Ethernet Port information (Synology only)
SYNOLOGY-RAID-MIB	For Synology RAID information (Synology only)

SYNOLOGY-SERVICES-MIB	For Synology services information (Synology only)
SYNOLOGY-SHA-MIB	For Synology High-Availability information (Synology only)
SYNOLOGY-SMART-MIB	For Synology smart information (Synology only)
SYNOLOGY-SPACEIO-MIB	For Synology SpaceIO information (Synology only)
SYNOLOGY-STORAGEIO-MIB	For Synology StorageIO information (Synology only)
SYNOLOGY-SYSTEM-MIB	For Synology system information (Synology only)
SYNOLOGY-UPS-MIB	For Synology UPS information (Synology only)
TCP-MIB	For managing TCP implementations
UCD-DISKIO-MIB	For disk IO statistics
UCD-DLMOD-MIB	For dynamic loadable MIB modules
UCD-SNMP-MIB	For private UCD SNMP MIB extensions
UDP-MIB	For managing UDP implementations

Synology MIB files

The following Synology MIB files are provided in DSM. These MIB files are the child-nodes of OID (Object Identifier) 1.3.6.1.4.1.6574. Table 3-1 shows the exact OID of each MIB. Please note that the MIB files are mutually dependent. Before your NMS can monitor any of the items in these MIB files, please make sure that all of them have been imported together and use SNMPv2c to obtain the complete Synology OID information.

Table 3-1 OID of Synology MIBs

OID	Name	File Name	Last updated version
.1.3.6.1.4.1.6574.1	synoSystem	SYNOLOGY-SYSTEM-MIB.txt	DSM 6.0.2
.1.3.6.1.4.1.6574.2	synoDisk	SYNOLOGY-DISK-MIB.txt	DSM 6.1.7
.1.3.6.1.4.1.6574.3	synoRaid	SYNOLOGY-RAID-MIB.txt	DSM 6.1.7
.1.3.6.1.4.1.6574.4	synoUPS	SYNOLOGY-UPS-MIB.txt	DSM 6.0.1
.1.3.6.1.4.1.6574.5	synologyDiskSMART	SYNOLOGY-SMART-MIB.txt	DSM 6.0.1
.1.3.6.1.4.1.6574.6	synologyService	SYNOLOGY-SERVICES-MIB.txt	DSM 6.2.1
.1.3.6.1.4.1.6574.101	storageIO	SYNOLOGY-STORAGEIO-MIB.txt	DSM 6.1.7
.1.3.6.1.4.1.6574.102	spaceIO	SYNOLOGY-SPACEIO-MIB.txt	DSM 6.0.1
.1.3.6.1.4.1.6574.103	flashCache	SYNOLOGY-FLASHCACHE-MIB.txt	DSM 6.2.2
.1.3.6.1.4.1.6574.104	synologyiSCSILUN	SYNOLOGY-ISCSILUN-MIB.txt	DSM 6.1.7
.1.3.6.1.4.1.6574.105	synologyEbox	SYNOLOGY-EBOX-MIB	DSM 6.2.1
.1.3.6.1.4.1.6574.106	synologyHA	SYNOLOGY-SHA-MIB	DSM 6.2.2
.1.3.6.1.4.1.6574.108	GpuInfo	SYNOLOGY-GPUINFO-MIB.txt	DSM 6.2.2
.1.3.6.1.4.1.6574.109	synoEthPort	SYNOLOGY-PORT-MIB.txt	SRM 1.2.5

Synology System MIB

(OID: .1.3.6.1.4.1.6574.1)

The Synology System MIB displays all system statuses, including temperature and fan status. Users can monitor this MIB for system functionality. Table 3-2 shows information provided in the System MIB.

Table 3-2. System MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	systemStatus	Integer	Normal(1) Failed(2)	System partition status	DSM, DSM UC
.2	temperature	Integer	-	Temperature of this NAS	DSM, DSM UC
.3	powerStatus	Integer	Normal(1) Failed(2)	Returns error if power supplies fail	DSM, DSM UC
.4.1	systemFanStatus	Integer	Normal(1) Failed(2)	Returns error if system fan fails	DSM, DSM UC
.4.2	cpuFanStatus	Integer	Normal(1) Failed(2)	Returns error if CPU fan fails	DSM, DSM UC
.5.1	modelName	String	-	Model name of this NAS	DSM, DSM UC
.5.2	serialNumber	String	-	Model serial number	DSM, DSM UC
.5.3	version	String	-	The version of DSM	DSM, DSM UC
.5.4	upgradeAvailable	Integer	Available(1) Unavailable(2) Connecting(3) Disconnected(4) Others(5)	Checks whether a new version or update of DSM is available	DSM, DSM UC
.6	controllerNumber	Integer	Controller A(0) Controller B(1)	The controller number	DSM UC

Synology Disk MIB

(OID: .1.3.6.1.4.1.6574.2)

The Synology Disk MIB contains several types of information regarding hard drives, including ID, type and so on, as listed in Table 3-3. This MIB is a table in SNMP. As such, it can increase or decrease in size when disks are inserted or removed. For example, if a disk is inserted, an additional row containing relevant information will emerge. The OID DiskIndex (.1) is reserved for an index of table rows and cannot be accessed. Table 3-4 describes the contents of each DiskStatus in detail.

Table 3-3. Disk MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	diskIndex	Integer	-	Used internally for SNMP table and not accessible	DSM, DSM UC
.2	diskID	String	-	Disk name in DSM	DSM, DSM UC

.3	`diskModel`	String	-	Disk model	DSM, DSM UC
.4	`diskType`	String	-	Disk type, e.g. SATA, SSD	DSM, DSM UC
.5	`diskStatus`	Integer	Normal(1)*	Current disk status	DSM, DSM UC
.6	`diskTemperature`	Integer	-	Disk temperature	DSM, DSM UC

* For DiskStatus details, please Table 3-4

Table 3-4. DiskStatus Explanation

Status	Explanation	Supported OS
`Normal(1)`	The disk is functioning normally	DSM, DSM UC
`Initialized(2)`	The disk has system partitions but no data	DSM, DSM UC
`NotInitialized(3)`	The disk is not partitioned	DSM, DSM UC
`SystemPartitionFailed(4)`	Partitions on the disk are damaged	DSM, DSM UC
`Crashed(5)`	The disk is damaged	DSM, DSM UC

Synology RAID MIB

(OID: .1.3.6.1.4.1.6574.3)

In addition to the disk MIB, Synology also provides an MIB for monitoring RAID status. This MIB is similar to the disk MIB in that rows will appear or disappear to reflect RAID creation and deletion. Table 3-5 lists the contents of the RAID MIB. Table 3-6 describes each RAID status in detail.

Table 3-5. RAID MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	`raidIndex`	Integer	-	Used internally for SNMP table and not accessible	DSM, DSM UC
.2	`raidName`	String	-	The name of each RAID in DSM	DSM, DSM UC
.3	`raidStatus`	Integer	Normal(1)*	It shows the RAID status right now	DSM, DSM UC
.4	`raidFreeSize`	Counter64	-	The free size of volume / disk group	DSM, DSM UC
.5	`raidTotalSize`	Counter64	-	The total size of volume / disk group	DSM, DSM UC

* For RAID status details, please Table 3-6

Table 3-6. RAID Status Explanation

Status	Explanation
`Normal(1)`	RAID is functioning normally
`Repairing(2)` `Migrating(3)` `Expanding(4)` `Deleting(5)` `Creating(6)` `RaidSyncing(7)` `RaidParityChecking(8)` `RaidAssembling(9)` `Canceling(10)`	These statuses are shown when RAID is created or deleted

Status	Explanation
Degrade(11)	Degrade is shown when a tolerable failure of disk(s) occurs
Crashed(12)	RAID has crashed and is now read-only
DataScrubbing (13)	RAID is DataScrubbing
RaidDeploying (14)	RAID is deploying Single volume on pool
RaidUnDeploying (15)	RAID is not deploying Single volume on pool
RaidMountCache (16)	RAID is mounting SSD cache
RaidUnmountCache (17)	RAID is not mounting SSD cache
RaidExpandingUnfinishedSHR (18)	RAID continue expanding SHR if interrupted
RaidConvertSHRToPool (19)	RAID is converting Single volume on SHR to multiple volume on SHR
RaidMigrateSHR1ToSHR2 (20)	RAID is migrating SHR1 to SHR2
RaidUnknownStatus (21)	RAID status is not included in the status above

Synology UPS MIB

(OID: .1.3.6.1.4.1.6574.4)

The Synology UPS MIB provides the ability to monitor the status of a UPS device connected to the Synology servers. Please note that the available OIDs of the UPS MIB depend on what information is provided by the UPS device. If a UPS device does not provide data for a certain OID, that OID will not appear in the NMS software. Table 3-7 shows a partial UPS MIB table only. If you are interested in all OIDs, please refer to the MIB file SYNOLOGY-UPS-MIB.txt.

Table 3-7. Partial UPS MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1.1	upsDeviceModel	String	-	UPS device model	DSM, DSM UC
.1.2	upsDeviceManufacturer	String	-	UPS device manufacturer	DSM, DSM UC
.1.3	upsDeviceSerial	String	-	UPS device serial number	DSM, DSM UC
.2.1	upsInfoStatus	String	-	UPS device status	DSM, DSM UC
.2.6.2	upsInfoMfrDate	String	-	UPS device manufacturing date	DSM, DSM UC
.2.12.1	upsInfoLoadValue	Float	-	Load on UPS device (percent)	DSM, DSM UC
.3.1.1	upsBatteryChargeValue	Float	-	Battery charge	DSM, DSM UC
.3.1.4	upsBatteryChargeWarning	Float	-	Battery level at which UPS switches to Warning state (percent)	DSM, DSM UC
.3.12	upsBatteryType	Float	-	Battery chemistry	DSM, DSM UC

Synology Smart MIB

(OID: .1.3.6.1.4.1.6574.5)

The Synology SMART MIB provides the SMART information of each disk same as Storage Manager does. Because every disk may have different SMART attributes, one OID records one SMART attribute and has diskSMARTInfoDevName to indicate which disk it belongs to.

Table 3-8 SMART MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	diskSMARTInfoIndex	Integer	-	Used internally for SNMP table and not accessible	DSM
.2	diskSMARTInfoDevName	String	-	Describes the disk to which this SMART info belongs to	DSM
.3	diskSMARTAttrName	String	-	The name of the SMART info attribute, e.g. Raw_Read_Error_Rate	DSM
.4	diskSMARTAttrId	Integer	-	SMART attribute ID number	DSM
.5	diskSMARTAttrCurrent	Integer	-	SMART attribute current value	DSM
.6	diskSMARTAttrWorst	Integer	-	SMART attribute worst value	DSM
.7	diskSMARTAttrThreshold	Integer	-	SMART attribute threshold value	DSM
.8	diskSMARTAttrRaw	Integer	-	SMART attribute raw value	DSM
.9	diskSMARTAttrStatus	String	-	Status of this SMART info	DSM

Synology Services MIB

(OID: .1.3.6.1.4.1.6574.6)

The Synology Services MIB monitors the number of users logging in via HTTP, CIFS, AFP, NFS, FTP, SFTP, TELNET, and SSH.

Table 3-9. Services MIB

OID	Name	Type	Status Type	Explanation
.1	serviceInfoIndex	Integer	-	Used internally for services table and not accessible
.2	serviceName	String	-	The name of the service
.3	serviceUsers	Integer	-	The number of users using this service

Synology StorageIO MIB

(OID: .1.3.6.1.4.1.6574.101)

The Synology StorageIO MIB has I/O information of disks.

Table 3-10 StorageIO MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	storageIOIndex	Integer	-	Used internally for storageio table and not accessible	DSM, DSM UC
.2	storageIODevice	String	-	The name of the device we are counting/checking	DSM, DSM UC
.3	storageIONRead	Counter32	-	The number of bytes read from this device since boot (32 bit VER.)	DSM, DSM UC
.4	storageIONWritten	Counter32	-	The number of bytes written to this device since boot (32 bit VER.)	DSM, DSM UC
.5	storageIOReads	Counter32	-	The number of read accesses from this device since boot	DSM, DSM UC
.6	storageIOWrites	Counter32	-	The number of write accesses to this device since boot	DSM, DSM UC
.8	storageIOLA	Integer	-	The load of disk (%)	DSM, DSM UC
.9	storageIOLA1	Integer	-	The 1-minute average load of disk (%)	DSM, DSM UC
.10	storageIOLA5	Integer	-	The 5-minute average load of disk (%)	DSM, DSM UC
.11	storageIOLA15	Integer	-	The-15 minute average load of disk (%)	DSM, DSM UC
.12	storageIONReadX	Counter64	-	The number of bytes read from this device since boot (64 bit VER.)	DSM, DSM UC
.13	storageIONWrittenX	Counter64	-	The number of bytes written to this device since boot (64 bit VER.)	DSM, DSM UC
.14	storageIODeviceSerial	String	-	The serial number of this device	DSM UC

Synology SpaceIO MIB

(OID: .1.3.6.1.4.1.6574.102)

The Synology SpaceIO MIB has I/O information of volumes.

Table 3-11 SpaceIO MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	spaceIOIndex	Integer	-	Used internally for spaceIO table and not accessible	DSM, DSM UC
.2	spaceIODevice	String	-	The name of the device this volume mounted on	DSM, DSM UC
.3	spaceIONRead	Counter32	-	The number of bytes read from this volume since boot (32 bit VER.)	DSM, DSM UC
.4	spaceIONWritten	Counter32	-	The number of bytes written to this volume since boot (32 bit VER.)	DSM, DSM UC
.5	spaceIOReads	Counter32	-	The number of read accesses from this volume since boot	DSM, DSM UC
.6	spaceIOWrites	Counter32	-	The number of write accesses to this volume since boot	DSM, DSM UC
.8	spaceIOLA	Integer	-	The load of disk in the volume (%)	DSM, DSM UC
.9	spaceIOLA1	Integer	-	The 1 minute average load of disk in the volume (%)	DSM, DSM UC
.10	spaceIOLA5	Integer	-	The 5 minute average load of disk in the volume (%)	DSM, DSM UC
.11	spaceIOLA15	Integer	-	The 15 minute average load of disk in the volume (%)	DSM, DSM UC
.12	spaceIONReadX	Counter64	-	The number of bytes read from this volume since boot (64 bit VER.)	DSM, DSM UC
.13	spaceIONWrittenX	Counter64	-	The number of bytes written to this volume since boot (64 bit VER.)	DSM, DSM UC
.14	spaceUUID	String	-	The UUID of this volume	DSM UC

Synology FlashCache MIB

(OID: .1.3.6.1.4.1.6574.103)

The Synology FlashCache MIB monitors the resource usage of SSD cache. The collection frequency is 5 seconds.

Note: The MIB is only suitable for the model which support SSD cache. Otherwise, it will return zero value for each OID path.

Table 3-12 FlashCache MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	`flashCacheIndex`	Integer	-	Reference index for each observed device	DSM, DSM UC
.2	`flashCacheSSDDev`	String	-	The SSD device name on flashcache we are counting/checking	DSM, DSM UC
.3	`flashCacheSpaceDev`	String	-	The space device name on flashcache we are counting/checking	DSM, DSM UC
.4	`flashCacheReadHits`	Counter64	-	The number of reads on flashcache	DSM, DSM UC
.5	`flashCacheWriteHits`	Counter64	-	The number of writes on flashcache	DSM, DSM UC
.6	`flashCacheDiskRead`	Counter64	-	The number of reads on disk	DSM, DSM UC
.7	`flashCacheDiskWrite`	Counter64	-	The number of writes on disk	DSM, DSM UC
.8	`flashCacheTotalRead`	Counter64	-	The number of reads on volume with flashcache	DSM, DSM UC
.9	`flashCacheTotalWrite`	Counter64	-	The number of writes on volume with flashcache	DSM, DSM UC
.10	`flashCacheReadHitRate`	Integer	-	The read hit rate of flashcache (%)	DSM, DSM UC
.11	`flashCacheWriteHitRate`	Integer	-	The write hit rate of flashcache (%)	DSM, DSM UC
.12	`flashCacheReadSeqSkip`	Counter64	-	The number of skipped sequential reads on flashcache	DSM, DSM UC
.13	`flashCacheWriteSeqSkip`	Counter64	-	The number of skipped sequential writes on flashcache	DSM, DSM UC
.14	`flashCacheWriteMissSsd`	Counter64	-	The number of data writes to SSD for the first time	DSM, DSM UC
.15	`flashCacheSsdUuid`	String	-	The SSD UUID on flashcache we are counting/checking	DSM, DSM UC

Synology iSCSI LUN MIB

(OID: .1.3.6.1.4.1.6574.104)

The Synology iSCSI LUN MIB can list all the loaded LUNs and show their running information. If a LUN has been created but not loaded (e.g. when linked to a target), it will not appear in this list. The throughput value may be over int32 range, so we use two i to record it.

Table 3-13 iSCSI LUN MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	iSCSILUNInfoIndex	Integer	-	Used internally for iSCSI LUN table and not accessible	DSM, DSM UC
.2	iSCSILUNUUID	String	-	LUN uuid	DSM, DSM UC
.3	iSCSILUNName	String	-	LUN name	DSM, DSM UC
.4	iSCSILUNThroughputReadHigh	Integer	-	The higher 32 bit of read throughput	DSM, DSM UC
.5	iSCSILUNThroughputReadLow	Integer	-	The lower 32 bit of read throughput	DSM, DSM UC
.6	iSCSILUNThroughputWriteHigh	Integer	-	The higher 32 bit of write throughput	DSM, DSM UC
.7	iSCSILUNThroughputWriteLow	Integer	-	The lower 32 bit of write throughput	DSM, DSM UC
.8	iSCSILUNIopsRead	Integer	-	LUN read iops	DSM, DSM UC
.9	iSCSILUNIopsWrite	Integer	-	LUN write iops	DSM, DSM UC
.10	iSCSILUNDiskLatencyRead	Integer	-	LUN read disk latency	DSM, DSM UC
.11	iSCSILUNDiskLatencyWrite	Integer	-	LUN write disk latency	DSM, DSM UC
.12	iSCSILUNNetworkLatencyTx	Integer	-	LUN network tx latency	DSM, DSM UC
.13	iSCSILUNNetworkLatencyRx	Integer	-	LUN network rx latency	DSM, DSM UC
.14	iSCSILUNIoSizeRead	Integer	-	LUN read average i/o size	DSM, DSM UC
.15	iSCSILUNIoSizeWrite	Integer	-	LUN write average i/o size	DSM, DSM UC
.16	iSCSILUNQueueDepth	Integer	-	Number of iSCSI commands in LUN queue	DSM, DSM UC
.17	iSCSILUNType	String	-	LUN type (advanced lun, block lun, etc.)	DSM, DSM UC

Synology Ebox MIB

(OID: .1.3.6.1.4.1.6574.105)

The Synology Ebox MIB provides the power status of expansion unit connected to Synology servers. Table 14 shows the information provided in ebox MIB. Table 15 describes the content of each eboxPower and eboxRedundantPower status in detail.

Table 3-14 Ebox MIB

OID	Name	Type	Status Type	Explanation
.1	eboxIndex	Integer	-	Expansion unit Index
.2	eboxModel	String	-	Expansion unit model
.3	eboxPower	Integer	Normal (1)*	Power status of expansion unit
.4	eboxRedundantPower	Integer	Normal (1)*	Redundant power status of expansion unit (if the ebox has no redundant power interface, this OID will not appear)

* For eboxPower and eboxRedundantPower details, please see Table 3-15.

Table 3-15 Ebox Power and Redundant Power Status Explanation

Status	Explanation
Normal (1)	The power supplies well
Poor (2)	The power supplies badly
Disconnection (3)	The power is not connected

Synology SHA MIB

(OID: .1.3.6.1.4.1.6574.106)

The Synology SHA MIB provides basic cluster information and monitors cluster status and heartbeat status.

Table 3-16 SHA MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	activeNodeName	String	-	Hostname of active server	DSM
.2	passiveNodeName	String	-	Hostname of passive server	DSM
.3	clusterAutoFailover	Integer	true (1) false (2)	Whether cluster can failover once something went wrong	DSM
.4	clusterName	String	-	Hostname of High-Availability cluster	DSM
.5	clusterStatus	Integer	*	Status of High-Availability cluster	DSM
.6	heartbeatStatus	Integer	*	Status of heartbeat connection	DSM
.7	heartbeatTxRate	Integer	-	Transfer speed of heartbeat in kilo-byte-per-second	DSM
.8	heartbeatLatency	Integer	-	Heartbeat latency in microseconds (10^-6 seconds)	DSM

* For clusterStatus details, please see Table 3-17.

* For heartbeatStatus details, please see Table 3-18.

Table 3-17. Cluster Status Explanation

Status	Explanation	Supported OS
normal (0)	The High-Availability cluster is healthy	DSM
warning (1)	The High-Availability cluster has something went wrong. Action should be taken to resume High-Availability feature. Please refer to High-Availability Manager for more details.	DSM
critical (2)	The High-Availability cluster is in danger, and should be resolved as soon as possible. Please refer to High-Availability Manager for more details.	DSM
upgrading (3)	The High-Availability cluster is upgrading.	DSM
processing (4)	The High-Availability cluster is undergoing some operation.	DSM

Table 3-18 Heartbeat Status Explanation

Status	Explanation	Supported OS
normal (0)	The heartbeat connection is normal.	DSM
abnormal (1)	Some information about heartbeat is not available.	DSM
disconnected (2)	The High-Availability cluster loses connection to passive server through heartbeat interface, or it is currently in split-brain mode.	DSM
empty (3)	The High-Availability cluster has no passive server.	DSM

Synology GPUInfo MIB

(OID: .1.3.6.1.4.1.6574.108)

The Synology GPUInfo MIB monitors the resource usage of GPU card. The collection frequency is 5 seconds.

> **Note:** The MIB only suite for the model which support GPU card like DS1419dva. Otherwise, it will return zero value for each OID path.

Table 3-19 GPUInfo MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	gpuInfoSupported	Integer	Supported (0) Unsupported (1)	Supported GPU	DSM
.2	gpuUtilization	Integer	-	The percentage of GPU time spent on processing user space in last 1 second	DSM
.3	gpuMemoryUtilization	Integer	-	The percentage of GPU memory usage in last 1 second	DSM
.4	gpuMemoryFree	Integer	-	The amount of currently free GPU memory in kb	DSM

OID	Name	Type	Status Type	Explanation	Supported OS
.5	`gpuMemoryUsed`	Integer	-	The amount of currently used GPU memory in kb	DSM
.6	`gpuMemoryTotal`	Integer	-	The total physical GPU memory size	DSM

Synology Port MIB

(OID: .1.3.6.1.4.1.6574.109)

The Synology Port MIB defines the status of each Ethernet port, such as link status and link speed, as listed in table 3-20. The cache interval is 5 seconds.

Note: The MIB is only available on models running SRM, such as RT2600ac.

Table 3-20. Port MIB

OID	Name	Type	Status Type	Explanation	Supported OS
.1	ethPortIndex	Integer32	-	Used internally for SNMP table and not accessible	SRM
.2	ethPortStatus	Integer	unknown(1) up(2) down(3)	The link status of the Ethernet port	SRM
.3	ethPortSpeed	Gauge32	-	The link speed of the Ethernet port in units of 1,000,000 bits per second	SRM

Useful OIDs

Although there are many native MIB files supported by Synology, user may be interested in specific information about the Synology servers, such as CPU, memory and so on. The tables below list the native OIDs related to load, CPU, memory, network and disk for gathering useful device's data easily.

Table 4-1 CPU-Related OID

OID	Name	Explanation	Supported OS
.1.3.6.1.4.1.2021.10.1.5.1	laLoadInt.1	System load average within the last 1 minute	DSM, DSM UC
.1.3.6.1.4.1.2021.10.1.5.2	laLoadInt.2	System load average within the last 5 minutes	DSM, DSM UC
.1.3.6.1.4.1.2021.10.1.5.3	laLoadInt.3	System load average within the last 15 minutes	DSM, DSM UC
.1.3.6.1.4.1.2021.11.9.0	ssCpuUser	The percentage of CPU time spent processing user-level code	DSM, DSM UC
.1.3.6.1.4.1.2021.11.10.0	ssCpuSystem	The percentage of CPU time spent processing system-level code, calculated over the last minute	DSM, DSM UC
.1.3.6.1.4.1.2021.11.11.0	ssCpuIdle	The percentage of processor time spent idle, calculated over the last minute	DSM, DSM UC

Table 4-2 Memory-Related OID

OID	Name	Explanation	Supported OS
.1.3.6.1.4.1.2021.4.3.0	memTotalSwap	The total amount of swap space configured for this host	DSM, DSM UC
.1.3.6.1.4.1.2021.4.4.0	memAvailSwap	The amount of swap space currently unused or available	DSM, DSM UC
.1.3.6.1.4.1.2021.4.5.0	memTotalReal	The total amount of real/physical memory	DSM, DSM UC
.1.3.6.1.4.1.2021.4.6.0	memAvailReal	The amount of real/physical memory currently unused or available	DSM, DSM UC
.1.3.6.1.4.1.2021.4.11.0	memTotalFree	The total amount of memory free or available for use on this host (This value typically covers both real memory and swap space or virtual memory.)	DSM, DSM UC
.1.3.6.1.4.1.2021.4.13.0	memShared	The total amount of real or virtual memory currently allocated for use as shared memory	DSM, DSM UC
.1.3.6.1.4.1.2021.4.14.0	memBuffer	The total amount of real or virtual memory currently allocated for use as memory buffers	DSM, DSM UC
.1.3.6.1.4.1.2021.4.15.0	memCached	The total amount of real or virtual memory currently allocated for use as cached memory	DSM, DSM UC

Table 4-3 Network-Related OID

OID	Name	Explanation	Supported OS
.1.3.6.1.2.1.31.1.1.1.1	ifName	The textual name of the interface	DSM, DSM UC
.1.3.6.1.2.1.31.1.1.1.6	ifHCInOctets	The total number of octets received on the interface	DSM, DSM UC
.1.3.6.1.2.1.31.1.1.1.10	ifHCOutOctets	The total number of octets transmitted out of the interface	DSM, DSM UC

Table 4-4 Disk-Related OID

OID	Name	Explanation	Supported OS
.1.3.6.1.2.1.25.2.3.1.3	hrStorageDescr	A description of the type and instance of the storage described by this entry	DSM, DSM UC
.1.3.6.1.2.1.25.2.3.1.4	hrStorageAllocationUnits	The size, in bytes, of the data objects allocated from this pool	DSM, DSM UC
.1.3.6.1.2.1.25.2.3.1.5	hrStorageSize	The size of the storage represented by this entry, in units of hrStorageAllocationUnits	DSM, DSM UC
.1.3.6.1.2.1.25.2.3.1.6	hrStorageUsed	The amount of the storage represented by this entry	DSM, DSM UC
.1.3.6.1.4.1.2021.13.15.1.1.2	diskIODevice	The name of the device we are counting/checking	DSM, DSM UC
.1.3.6.1.4.1.2021.13.15.1.1.12	diskIONReadX	The number of bytes read from this device since boot	DSM, DSM UC
.1.3.6.1.4.1.2021.13.15.1.1.13	diskIONWrittenX	The number of bytes written to this device since boot	DSM, DSM UC
.1.3.6.1.4.1.6574.2	synoDisk	For Synology disk information (Synology only)	DSM, DSM UC

Table 4-5 System-Related OID

OID	Name	Explanation
.1.3.6.1.4.1.6574.1	synoSystem	For Synology system information (Synology only)

Table 4-6 Disk-Related OID

OID	Name	Explanation
.1.3.6.1.4.1.6574.2	synoDisk	For Synology disk information (Synology only)

Table 4-7 RAID-Related OID

OID	Name	Explanation
.1.3.6.1.4.1.6574.3	synoRaid	For Synology RAID information (Synology only)

Table 4-8 UPS-Related OID

OID	Name	Explanation
.1.3.6.1.4.1.6574.4	synoUPS	For Synology UPS information (Synology only)

Monitor Specific OIDs

In any NMS, particular MIB files are needed in order to capture data through SNMP. Users need to import all MIB files to ensure that the NMS can resolve specific OIDs. Once imported, data can be captured by setting up the NMS. Although the means of operating different kinds of NMS may vary, the process of OID monitoring is similar. The overall procedure is as follows.

1. Import MIB file into NMS.

2. Set up the NMS to monitor specific OIDs.

The following guide demonstrates the usage of PRTG (a type of NMS) including how to import MIB files and set up monitoring for the provided OIDs. For further help regarding PRTG, please consult PRTG documentation, as the following is only intended to be a brief description of OID monitoring.

Import MIB Files

As PRTG cannot import MIB files directly, Paessler MIB Importer is required to convert MIB files into the PRTG format:

1. Download Paessler MIB Importer from **http://www.paessler.com/tools/mibimporter** and install it on your computer.

2. Go to **Import** > **MIB Files**.

3. Choose **all the Synology MIB file together** and click **Open File**.

All MIB files (cf. Table 2) must be imported together as they are mutually dependent and Paessler MIB Importer cannot load them individually. If the import is successful, a window as shown in Figure 1 should appear. Detailed information is shown in Figure 2.
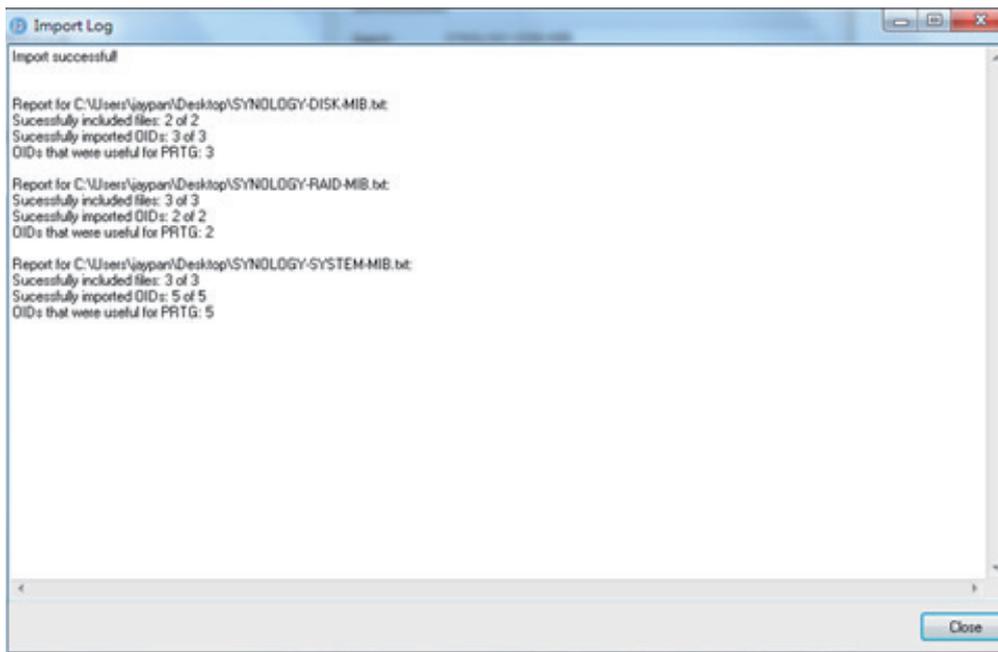
Figure 1. Import MIB: Successful
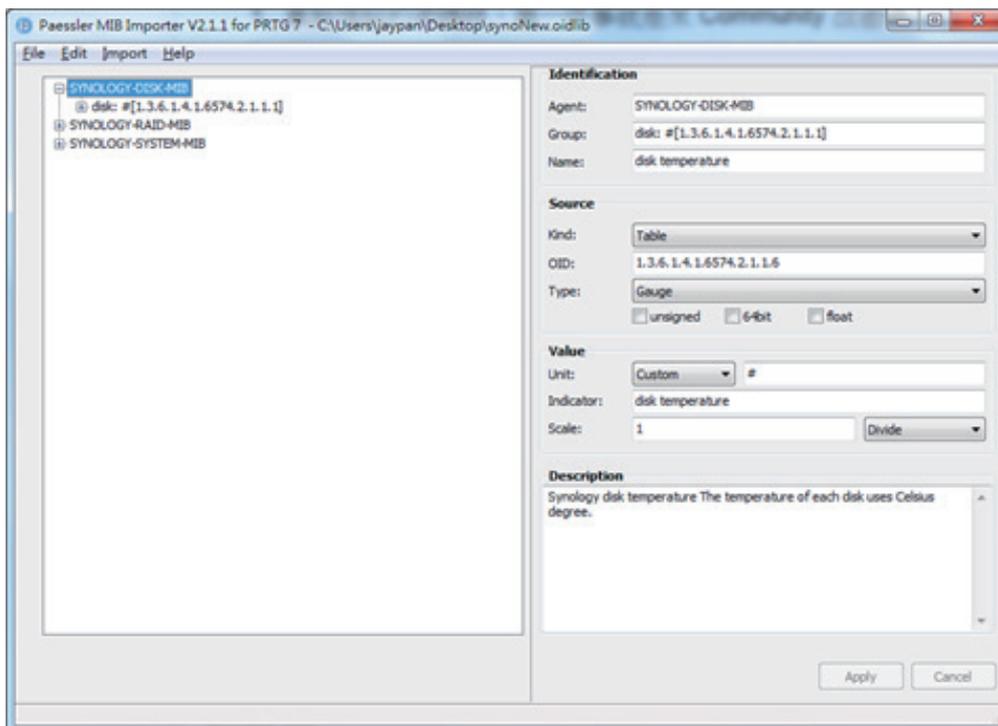
Figure 2. Detailed Information on MIB

4. Go to **File** > **Save As** to export to the PRTG-supported format.

A PRTG-supported library containing the MIB information will then be generated.

Set up the NMS

The PRTG-supported library containing the MIB files in question should be placed into the folder: "snmplibs". Once this has been done, specific OIDs can be set up for monitoring in PRTG. This guide assumes that your Synology servers has already been added to the devices list and focuses only on how to add OIDs for monitoring.

1. Enter the PRTG Network Monitor.

2. Go to **Sensors** > **Add Sensor**.
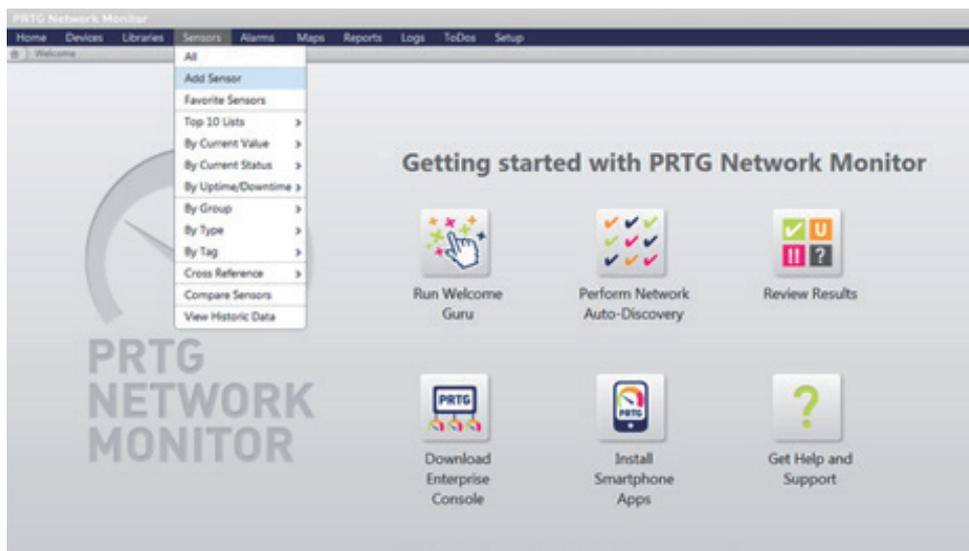
3. Click **Add sensor to an existing device** and **choose a device**.
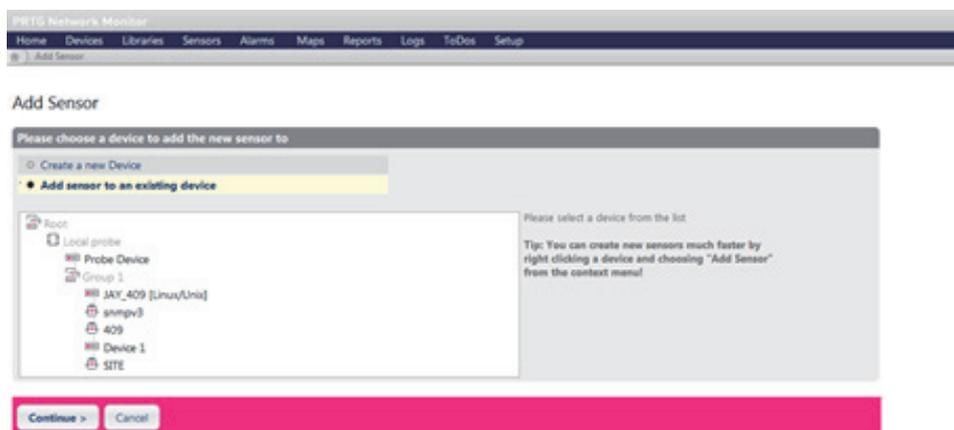
4. Choose **SNMP Library** and the library exported in the previous section.
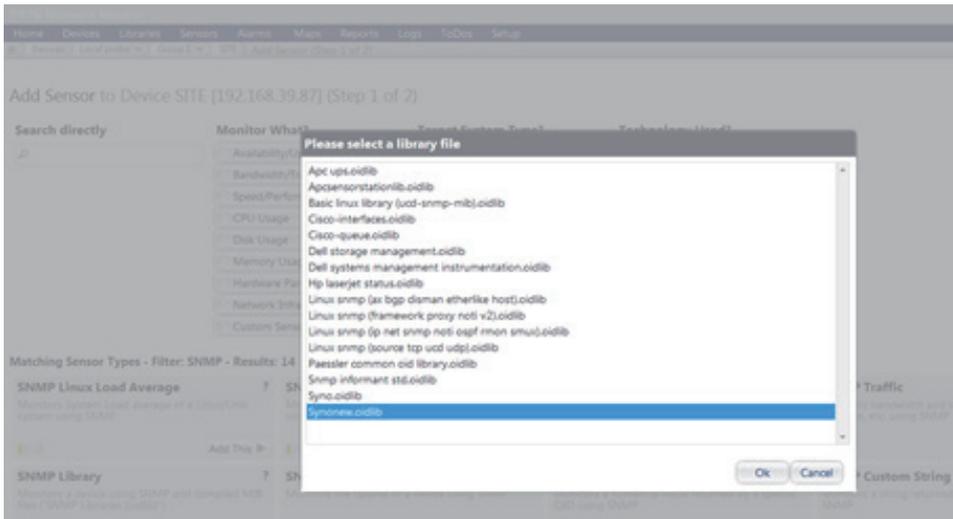
5. Select items for monitoring.
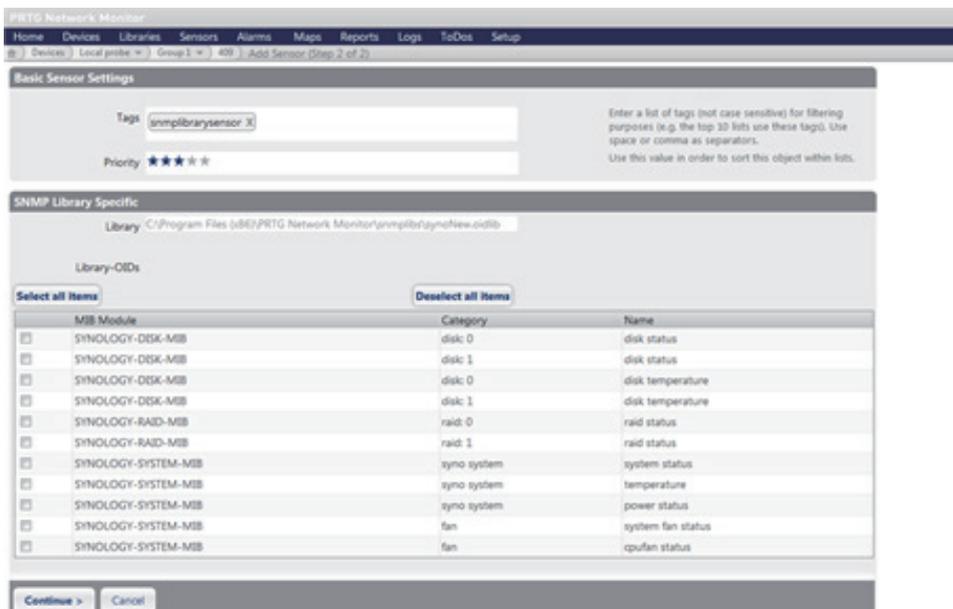
Document Revision History

This table describes the revisions made to Synology servers MIB Guide.

Table 6-1 Document Revision History

Date	Note
2012-07-19	Document created
2013-10-29	Modified OID name and added UPS MIB
2013-11-04	Added more MIBs and useful OID
2016-10-31	Added more MIBs
2018-06-30	Added Ebox MIB Added useful OIDs in RAID MIB
2018-12-18	Added GPUInfo MIB Added FlashCache MIB
2018-12-24	Added SHA MIB
2020-01-10	Added information for Synology Unified Controller
2021-02-23	Added PORT MIB for SRM

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