

Synology DiskStation

MIB Guide



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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 and SRM supports numerous MIB files that can help users monitor different information on their Synology NAS/IP SAN (hereinafter referred to as Synology servers). Table 2-1 shows the MIBs supported by DSM and SRM.

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](#).

Note: For all tables in this document, unless otherwise noted, DSM denotes that this OID is compatible with DSM 6.2.4 and above, and DSM UC denotes that this OID is compatible with DSM UC 3.0.

Table 2-1 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-ISCSITarget-MIB | For Synology iSCSI Target information (Synology only) |
| SYNOLOGY-NFS-MIB | For Synology NFS 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 SpacelO 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 7.1 |
| .1.3.6.1.4.1.6574.3 | synoRaid | SYNOLOGY-RAID-MIB.txt | DSM 7.0 |
| .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 |
| .1.3.6.1.4.1.6574.107 | NFS | SYNOLOGY-NFS-MIB.txt | DSM 7.0 |
| .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 |
| .1.3.6.1.4.1.6574.110 | synologyiSCSITarget | SYNOLOGY-ISCSITarget-MIB | DSM 7.0 |

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.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.2.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.2.1.1.3" can be used to get the disk model.

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 |
| .7 | diskRole | String | data * | The role of the disk in system | DSM 7.0 and above |
| .8 | diskRetry | Integer | - | The count of each disk connection retries | DSM 7.0 and above |
| .9 | diskBadSector | Integer | - | The count of each disk I/O bad sector | DSM 7.0 and above |
| .10 | diskIdentifyFail | Integer | - | The count of each disk identify fails | DSM 7.0 and above |
| .11 | diskRemainLife | Integer | - | The estimate remain life of each disk | DSM 7.0 and above |
| .12 | diskName | String | - | Disk name which will keep the same value in different DSM version | DSM 7.0 and above |
| .13 | diskHealthStatus | Integer | Normal(1)* | Current disk health status | DSM 7.1 and above |

* For diskStatus details, please Table 3-4

* For diskRole details, please see Table 3-5

* For diskHealthStatus details, please see Table 3-6

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 |

Table 3-5 DiskRole Explanation

| Status | Explanation | Supported OS |
|-----------|--|-------------------|
| data | Used by storage pool | DSM 7.0 and above |
| hotspare | Assigned as a hot spare disk | DSM 7.0 and above |
| ssd_cache | Used by SSD Cache | DSM 7.0 and above |
| none | Not used by storage pool, nor hot spare, nor SSD Cache | DSM 7.0 and above |
| unknown | Some error occurred | DSM 7.0 and above |

Table 3-6 diskHealthStatus Explanation

| Status | Explanation | Supported OS |
|-------------|-------------------------------------|-------------------|
| Normal(1) | The disk health status is normal. | DSM 7.1 and above |
| Warning(2) | The disk health status is warning. | DSM 7.1 and above |
| Critical(3) | The disk health status is critical. | DSM 7.1 and above |
| Failing(4) | The disk health status is failing. | DSM 7.1 and above |

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 3-7 lists the contents of the RAID MIB. Table 3-8 describes each RAID status in detail.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.3.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.3.1.1.3" can be used to get the RAID status.

Table 3-7 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 |
| .6 | raidHotspareCnt | Integer | - | Total hotspare disks count which can protected raid (smaller than 0 means something wrong) | DSM 7.0 and above |

* For RAID status details, please Table 3-8

Table 3-8 RAID Status Explanation

| Status | Explanation |
|---------------------------------|---|
| Normal (1) | RAID is functioning normally |
| Repairing (2) | These statuses are shown when RAID is created or deleted |
| Migrating (3) | |
| Expanding (4) | |
| Deleting (5) | |
| Creating (6) | |
| RaidSyncing (7) | |
| RaidParityChecking (8) | |
| RaidAssembling (9) | |
| Canceling (10) | |
| Degrade (11) | |
| 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 3-9 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 3-9 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 |

| OID | Name | Type | Status Type | Explanation | Supported OS |
|--------|-------------------------|-------|-------------|--|--------------|
| .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.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.5.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.5.1.1.3" can be used to get the SMART attribute name.

Table 3-10 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 |
| .10 | diskSMARTAttrRaw64 | Counter64 | - | SMART attribute raw value (64 bit VER.) | 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.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.6.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.6.1.1.2" can be used to get the service name.

Table 3-11 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.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.101.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.101.1.1.2" can be used to get the name of the device that we are counting/checking.

Table 3-12 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 |

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|-----------------------|-----------|-------------|--|--------------|
| .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.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.102.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.102.1.1.2" can be used to get the name of the device where this volume is mounted.

Table 3-13 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 |

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|------------------|-----------|-------------|--|--------------|
| .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.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.103.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.103.1.1.2" can be used to get the name of the SSD on the flashcache that we are counting/checking.

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

Table 3-14 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 |

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|------------------------|-----------|-------------|---|--------------|
| .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 is 64-bit and composed of two 32-bit integers. For example, the iSCSI LUN read throughput is composed of higher 32-bit and lower 32-bit throughput.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.104.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.104.1.1.2" can be used to get the iSCSI LUN uuid.

Table 3-15 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 |

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|---------------------------------|---------|-------------|--|-------------------|
| .7 | iSCSILUNThroughputWriteLow | Integer | - | The lower 32 bit of write throughput | DSM, DSM UC |
| .8 | iSCSILUNOpsRead | Integer | - | LUN read iops | DSM, DSM UC |
| .9 | iSCSILUNOpsWrite | 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 |
| .18 | iSCSILUNDiskLatencyAvg | Integer | - | Average latency of LUN disk | DSM 7.0 and above |
| .19 | iSCSILUNThinProvisionVolFreeMBs | Integer | - | Free space(MB) of thin provisioning lun's volume | DSM 7.0 and above |

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 3-16 shows the information provided in ebox MIB. Table 3-17 describes the content of each eboxPower and eboxRedundantPower status in detail.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.105.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.105.1.1.2" can be used to get the expansion unit model.

Table 3-16 Ebox MIB

| OID | Name | Type | Status Type | Explanation |
|-----|-----------|---------|-------------|----------------------|
| .1 | eboxIndex | Integer | - | Expansion unit Index |
| .2 | eboxModel | String | - | Expansion unit model |

| OID | Name | Type | Status Type | Explanation |
|-----|--------------------|---------|-------------|---|
| .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 3-17.

Table 3-17 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 3-18 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 3-19.

* For heartbeatStatus details, please see Table 3-20.

Table 3-19 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 3-20 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 NFS MIB (OID: .1.3.6.1.4.1.6574.107)

The Synology NFS MIB monitors the maximum latency and operations of NFS. Every value will be cached for 3 seconds. Therefore, if you access a value twice within 3 seconds, you will get the same value. The maximum latency will always clear the cache and recount the value once the value has been updated.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.107.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.107.1.1.2" can be used to get the name of NFS.

Table 3-21 NFS MIB

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|--------------------|-----------|-------------|--|-------------------|
| .1 | nfsIndex | Integer | - | Used internally for NFS table and not accessible | DSM 7.0 and above |
| .2 | nfsName | String | - | The name of NFS | DSM 7.0 and above |
| .3 | nfsTotalMaxLatency | Integer | - | Maximum latency of all the NFS operations | DSM 7.0 and above |
| .4 | nfsReadMaxLatency | Integer | - | Maximum latency of the NFS read operations | DSM 7.0 and above |
| .5 | nfsWriteMaxLatency | Integer | - | Maximum latency of the NFS write operations | DSM 7.0 and above |
| .6 | nfsTotalOPS | Counter64 | - | Accumulated counts of all the NFS operations | DSM 7.0 and above |
| .7 | nfsReadOPS | Counter64 | - | Accumulated counts of the NFS read operations | DSM 7.0 and above |
| .8 | nfsWriteOPS | Counter64 | - | Accumulated counts of the NFS write operations | DSM 7.0 and above |

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 is only available on models which supports GPU card such as the DVA3221. Otherwise, it will return zero value for each OID path.

Table 3-22 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 |
| .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 3-23. The cache interval is 5 seconds.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.109.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.109.1.1.2" can be used to get the link status of the Ethernet port.

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

Table 3-23 Port MIB

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|---------------|-----------|--------------------------------|---|---------------------|
| .1 | ethPortIndex | Integer32 | - | Used internally for SNMP table and not accessible | SRM 1.2.5 and above |
| .2 | ethPortStatus | Integer | unknown(1) up(2) down(3) | The link status of the Ethernet port | SRM 1.2.5 and above |
| .3 | ethPortSpeed | Gauge32 | - | The link speed of the Ethernet port in units of 1,000,000 bits per second | SRM 1.2.5 and above |

Synology iSCSI Target MIB (OID: .1.3.6.1.4.1.6574.110)

The Synology iSCSI Target MIB can list all iSCSI targets and show their basic information, such as target name, IQN and connection status.

In order to directly access a specific OID, you must use ".1.3.6.1.4.1.6574.110.1.1" as a prefix since this MIB contains the relative table and entry number. For example, ".1.3.6.1.4.1.6574.110.1.1.2" can be used to get the iSCSI target name.

Table 3-24 iSCSI Target MIB

| OID | Name | Type | Status Type | Explanation | Supported OS |
|-----|-----------------------------|-----------|-------------|---|-------------------|
| .1 | iSCSITargetInfoIndex | Integer32 | - | Used internally for SNMP table and not accessible | DSM 7.0 and above |
| .2 | iSCSITargetName | String | - | Name of the iSCSI target | DSM 7.0 and above |
| .3 | iSCSITargetIQN | String | - | IQN of the iSCSI target | DSM 7.0 and above |
| .4 | iSCSITargetConnectionStatus | String | - | Connection status of the iSCSI target | DSM 7.0 and above |

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 |

| OID | Name | Explanation | Supported OS |
|--------------------------|-----------|--|--------------|
| .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 | Supported OS |
|---------------------|-------------|---|---------------------|
| .1.3.6.1.4.1.6574.1 | synoSystem | For Synology system information (Synology only) | DSM, DSM UC |

Table 4-6 RAID-Related OID

| OID | Name | Explanation | Supported OS |
|---------------------|-------------|---|---------------------|
| .1.3.6.1.4.1.6574.3 | synoRaid | For Synology RAID information (Synology only) | DSM, DSM UC |

Table 4-7 UPS-Related OID

| OID | Name | Explanation | Supported OS |
|---------------------|-------------|--|---------------------|
| .1.3.6.1.4.1.6574.4 | synoUPS | For Synology UPS information (Synology only) | DSM, DSM UC |

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 2-1) 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

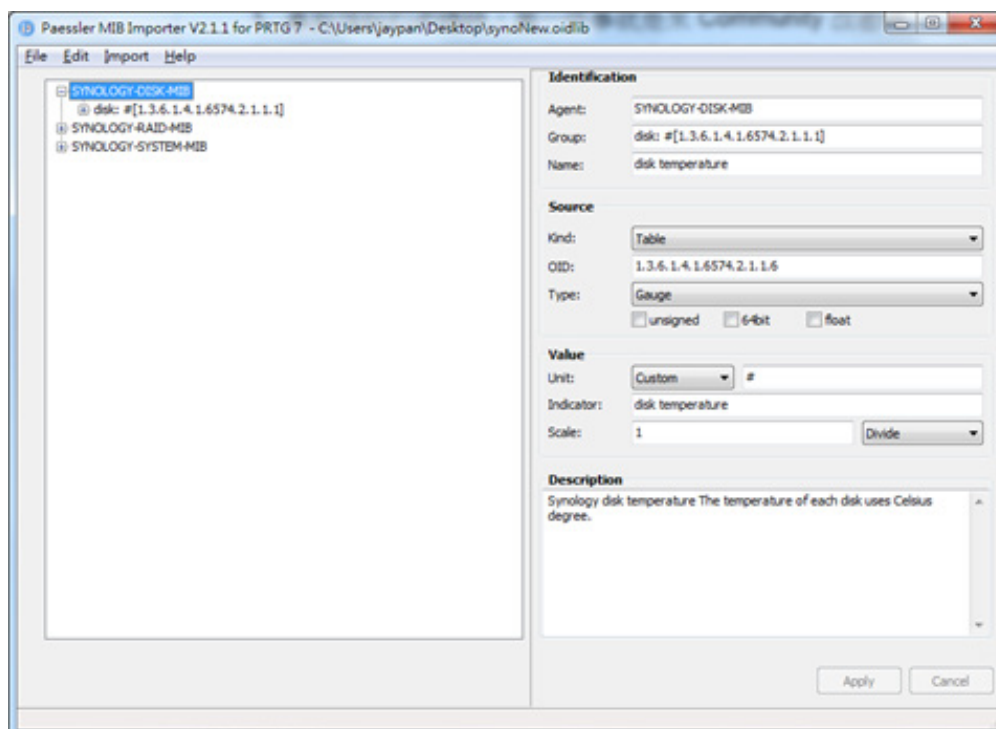


Figure 2. Detailed Information on MIB

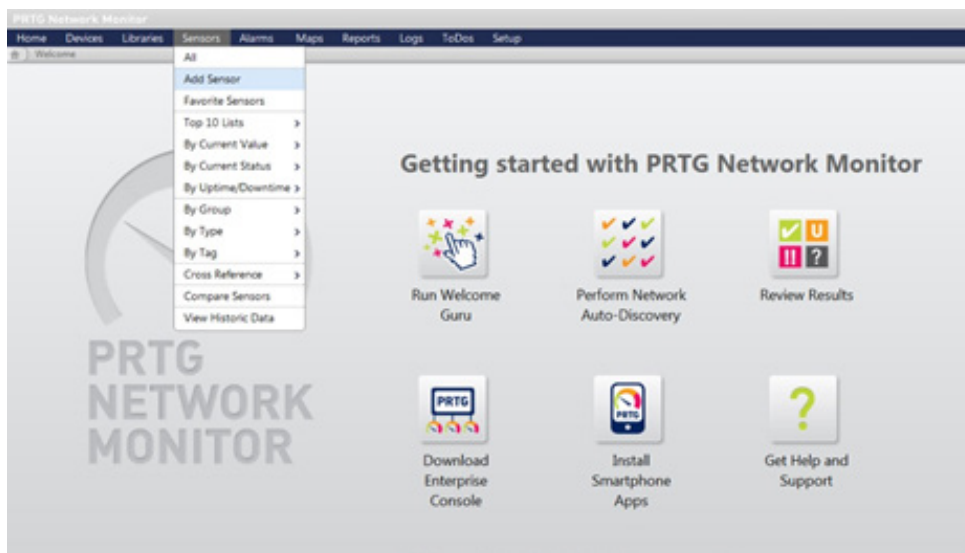
4. Go to **File > Save As** to export to the PRTG-supported format.

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

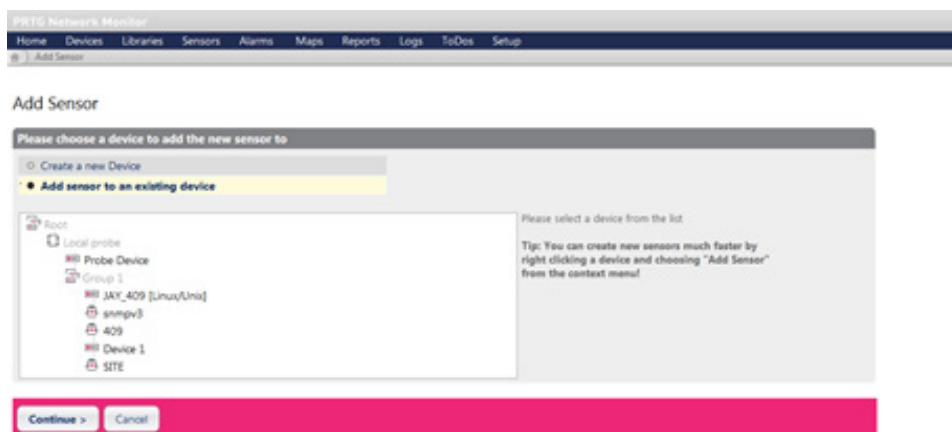
Set up the NMS

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.

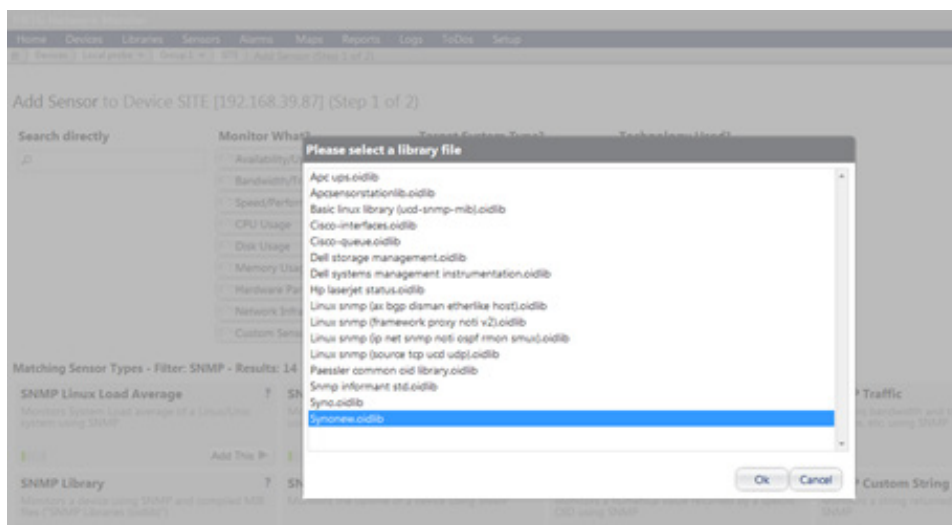
1. Enter the PRTG Network Monitor.
2. Go to **Sensors > Add Sensor**.



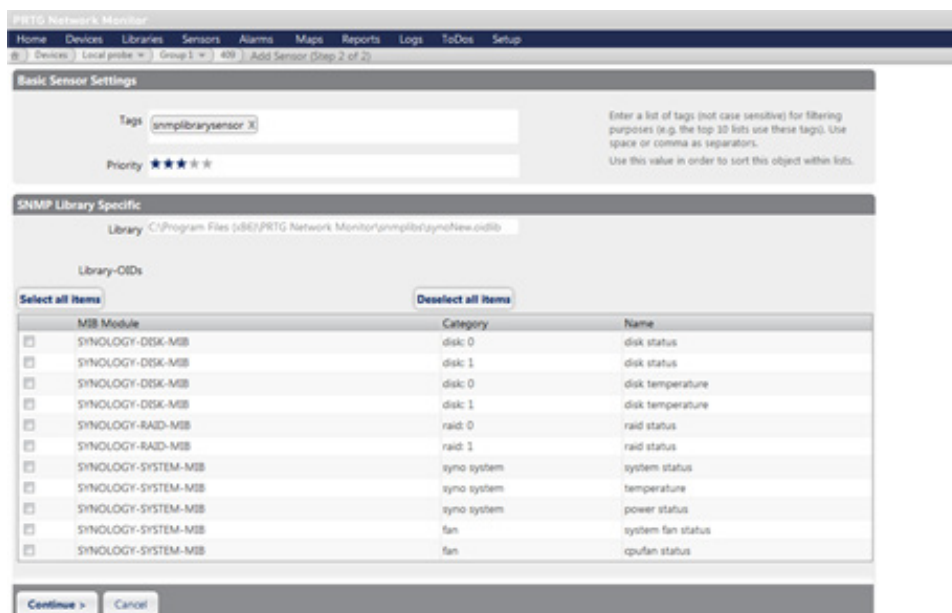
3. Click **Add sensor to an existing device** and **choose a device**.



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 |
| 2018-12-18 | Added useful OIDs in RAID MIB |
| 2018-12-18 | Added GPUInfo MIB |
| 2018-12-24 | Added FlashCache MIB |
| 2018-12-24 | Added SHA MIB |
| 2020-01-10 | Added information for Synology Unified Controller and eGPU |
| 2021-02-23 | MIB |
| 2021-02-23 | Added PORT MIB for SRM |
| 2021-05-25 | Added NFS MIB and iSCSI Target MIB |
| 2022-04-19 | Added useful OIDs in Disk MIB |



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