QSAN Unified RESTful API Software Manual

Version 1.0

Applicable Models:
QSM
XEVO
SANOS

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QSAN

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This edition applies to QSAN XCubeFAS XEVO, XCubeNAS QSM and XCubeSAN SANOS. QSAN believes the information in this publication is accurate as of its publication date. The information is subject to change without notice.

Notices

This Restful API user's manual is applicable to the following QSAN software:

QSM 3.2.0 or above
XEVO 1.1.1 or above
SANOS 1.4.2 or above

Information contained in this manual has been reviewed for accuracy. But it could include typographical errors or technical inaccuracies. Changes are made to the document periodically. These changes will be incorporated in new editions of the publication. QSAN may make improvements or changes in the products. All features, functionality, and product specifications are subject to change without prior notice or obligation. All statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. 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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1. HTTP Status code

Http status will change according to the state of restful api. Please refer to the following instructions

Reference:

https://developer.mozilla.org/zh-TW/docs/Web/HTTP/Status

Success response code:

- 200 OK
- 201 Created
- 202 Accepted
- 204 No content
- 205 Reset content

Client side error response code :

- 400 Bad request (ex: Parameter error
- 401 Unauthorized (ex: Not entered access token, token expired, token invalid
- 403 Forbidden (ex: user don't have permission to do the operation
- 404 Not found (ex: do not have this api
- 408 Request timeout

Server side error response code:

- 500 Internal server error (ex:
- 501 Not implement (ex
- 502 Bad gateway
- 503 Service unavaliable

2. Authentication :

To access a resource using Rest Api, you must provide an access token in the request header, ex: Header

Authorization: $accessToken

The Access token is obtained through the '/auth/get' api. The Token will expire after 60 minutes of the expiration. After the expiration, please re-use the api to obtain a new access token, or use the offlineAccess mode to update the access token.

Offline access:

After starting the offline access with the '/auth/get' api and the parameter offlineAccess: true, the api will provide a set of refresh tokens to request new access tokens. The offline access mode is provided for long-term resource access by the user. The refresh token will have a longer effective time than the access token. However, the refresh token will still be forced to fail under the following conditions.:

1. The user manually removes the token
2. User change password
3. Refresh token exceeds its lifetime (180 days)Refresh token

Exceeding the user limit (10 per user), after the limit is exceeded, the oldest refresh token starts to rotate

3. Auth: Get

Description:

Get access token by user name and password.

Path:

POST http://{deviceip}/auth/get

Request body: {

"user": "admin",

"password": "woivldl23=f3",

"offlineAccess": true

}

Property name	Value	Description
user	string	User's name
password	string	User's password after encode. Encryption method refers to the chapter of Password encode
offlineAccess	boolean	Enable offline access or not. If true, refresh key will provided in response for accessToken refresh

Response: {

"accessToken": "FCBF8A5F-E86E-4369-90CE-684BDF269E97",

"expireTime": 1564651542,

"refreshToken": "3092F94A-9EB1-4535-80A7-EF3AB87F708F"

}

Property name	Value	Description
accessToken	string	A unique token used to access other api.
expireTime	int	An unix timestamp to show which time the access token expired.
refreshToken	string	A unique token used to get a new access token. Only provided when offlineAccess is true.

4. Auth: Refresh

Description:

Get new access token by your refresh token if you requested the offlineAccess.

Path:

POST http://{deviceip}/auth/refresh

Request body: {

“refreshToken ": “3092F94A-9EB1-4535-80A7-EF3AB87F708F”,

}

Property name	Value	Description
refreshToken	string	Refresh token you get from previous operation

Response: {

“accessToken": “F521637B-E702-462D-95EC-04AA9C0630ED",

“expireTime”: 1564651542

}

Property name	Value	Description
accessToken	string	A unique token used to access other api.
expireTime	int	An unix timestamp to show which time the access token expired.

5. Auth: Revoke

Description:

Clear your authentication.

Path:

POST http://{deviceip}/auth/revoke

Request body: {

"refreshToken ": "3092F94A-9EB1-4535-80A7-EF3AB87F708F",

}

Property name	Value	Description
refreshToken	string	Refresh token you get from previous operation

Response: {}

6. Storage: Pools List

Description:

Get pool info list in the device.

Path:

GET http://{deviceip}/rest/v1/storage/pool/list

Parameters: {}

Response:{

```
pools: [{
        “name”: “Pool1”,
        “id”: “”,
        “totalSize”: 10240,
        “usedSize”: 5120,
        “isThin”: false,
        “isSED”: false,
        “health”: “Good”,
        “status”: “”,
        “isCacheEnable”:true,
        "cacheInfo": {
                "readCache": true,
                "readCapacity": 114217,
                "writeCache": false,
                "writeCapacity": 0,
                "readWriteCache": false,
                "readWriteCapacity": 0
        },
        “raidsets”:[{
                        “id”: 0,
                        “totalSize”: 1906688,
                        “usedSize”: 1024,
                        “raidLevel”: “RAID 1”,
                        “eeSpareNum”: 0,
                        “status”: “Online”,
                        “health”: “Good”,
                        “disks":[
                                        "330897208",
                                        "1256553884"
                        ]
                },...],
        “autoTier”: “”
        },…]
}
```


Property name	Value	Description
pools	object	

pools:

Property name	Value	Description
name	string	The name of the pool set at the time of creating
id	string	Pool unique identifier
totalSize	int	Total space (unit: MB)
usedSize	int	Total used space (unit: MB)
isThin	boolean	Whether to enable the Thin provisioning function
isSED	boolean	Is it a SED pool?
health	string	Pool Health Status
status	string	Pool status
autoTier	boolean	Whether to enable the Auto tiering function
isCacheEnable	boolean	Whether to enable SSD Cache
cacheInfo	object	Refer to the CacheInfo table below, if the pool does not have a cache, it will not be displayed.
raidSets	Object array	Array with raidset info, refer to the RaidSet table below

pools -> cacheInfo:

Property name	Value	Description
readCache	boolean	Whether to enable read cache
readCapacity	int	Read cache capacity (unit: MB)
writeCache	boolean	Whether to enable write cache
writeCapacity	int	Write cache capacity (unit: MB)
readWriteCache	boolean	Whether to enable readwrite cache
readWriteCapacity	int	Read-write cache capacity (unit: MB) SAN: Treat writeCapacity as readWriteCapacity

pools -> RaidSet:

Property name	Value	Description
id	String	Disk group identification code
totalSize	integer	Total space (unit: MB) NAS: always 0
usedSize	integer	Used space (unit: MB) NAS: always 0
raidLevel	String	Used RAID type
eeSpareNum	integer	Raid EE spare amount NAS: always 0
spare	String Array	Dedicated spare id Only for NAS
status	String	Disk group status
health	String	Disk group health status
disks	String array	disk id array

7. Storage: Disks List

Description:

Get disk info list in the device.

Path:

GET http://{deviceip}/rest/v1/storage/disk/list

Parameters: {}

Response: {

```
disks: [{
        “id”: “e0d0”,
        “encID”:  “0”,
        “slot”: 0,
        “size”: 1024000,
        “poolID”: 2976963663,
        “poolName”: “aaa”,
        “health”: “Good”,
        “status”: "”,
        “isSSD”: true,
        “isISE”:false,
        “isSED”: false,
        “spinRate”: 32,
        “vendor”: “WDC”,
        “serial”: “”,
        “model”: “”,
        “firmware”: “”,
        “busType”: “SATA”,
        “type”: "HDD”,
        “rate”: 6.0,
        “writeCache”:  true,
        “standby”:  true,
        “readahead”:  true,
        “cmdQueue”:  true
    }, ...]
}
```

Property name	Value	Description
disks	object	

disks:

Property name	Value	Description
id	string	String and int are accepted.
slot	int	The hard disk is located in the slot on the host
encID	string	Enclosure id

size	int	Disk total capacity (unit :MB)
health	string	HDD health
status	string	HDD status
usage	string	Hard disk usage Free, RAID, %s SPARE, SSD Cache
isSSD	boolean	Whether it is an SSD hard drive
isISE	boolean	Whether to support ISE function
isSED	boolean	Whether to support SED function
poolName	string	The name of the pool being used, if it is not owned, it is empty.
poolID	string	The unique identifier of the pool used. If it is not owned, it is empty.
vendor	string	Hard disk manufacturer name
serial	string	Hard disk serial number
model	string	Hard disk model
firmware	string	Firmware version
busType	string	HDD Front Side Bus interface EX: SATA, SAS, PCIE, NL-SAS
type	string	HDD type EX: HDD, SSD, NVMe
rate	int	Hard disk transfer rate (unit : Gbps)
writeCache	boolean	Whether to enable the Write Cache function
spinRate	int	Disk spin rate, SSD always 0
standby	boolean	Whether to enable the Standby function
readahead	boolean	Whether to enable the Read-ahead function
cmdQueue	boolean	Whether to enable Command Queuing
ssdLifeRemain	int	Percentage Used Endurance Indicator or 0(no data) NAS: always 0
totalWrittenByte	long long	Total bytes written or 0(no data) NAS: always 0
temperature	int	Temperature or 0(no data)
performance	object	Only for SAN、FAS

disk performance:

Property name	Value	Description
throughput	int	Current disk throughput (unit: MB)
latency	int	Current disk response time (unit: msec)

8. Storage: Volumes List

Description:

Get volume info list in the device.

Path:

GET http://{deviceip}/rest/v1/storage/volume/list

Parameters: {}

Response: {


```
"volumes": [{
    "id": 2982171380,
    "name": "backup_wei",
    "status": "Online",
    "health": "Optimal",
    "type": "BACKUP",
    "poolID": 2976963663,
    "cacheMode": "Write-back",
    "priority": "Medium",
    "bgPriority": "High",
    "videoEditingMode": false,
    "tierPolicy": "No Data Movement",
    “stripeSize”:64,
    "isQosEnable": true,
    "qosInfo": {
        "method": "maximum",
        "setting": {
            "maxIOPS": 0,
            "maxThroughput": 0
        }
    },

    "isLunMap": true,
    "lunInfo": {
        "iscsi": [{
            "host": "*",
            "targetID": "0",
            "lun": "0",
            "permission": "Read-write"

        } ],
    "fc": []
    }
}
}
```


Property name	Value	Description
volumes	object	

volumes:

Property name	Value	Description
id	string	Volume unique identifier
name	string	Volume name set at build time
status	string	Volume status
health	string	Volume health status
type	string	SAN、FAS：RAID, BACKUP, READ_ONLY NAS：Generic, Media streaming, Database
poolID	string	Pool unique identifier
cacheMode	string	Cache Mode NAS always ”none”
priority	string	I/O priority High, Medium, Low NAS always ”none”
bgPriority	string	Background I/O priority High, Medium, Low NAS always ”none”
videoEditingMode	boolean	Video edit switch NAS always false
tierPolicy	string	Auto tiering method FAS: (hidden) NAS always ”none”
stripeSize	int	Read/Write cmd length (unit: KB) NAS always 0
isQosEnable	boolean	Qos function switch NAS always false
qosInfo	object	Only show when isQosEnable true
isLunMap	boolean	Is it a lun map?
lunInfo	Object array	Only show when isLunMap true

qosInfo info

Property name	Value	Description
method	string	Qos method, “priority” or “maximum”

setting	object	

qosInfo->setting info

Property name	Value	Description
priority	string	Only for method = Priority High, Medium, Low
targetResponseTime	integer	Only for method = Priority 0 = unlimited (unit :MB)
maxIOPS	integer	Only for method = maximum 0 = unlimited
maxThroughput	integer	Only for method = maximum 0 = unlimited (unit: KBps)

lunInfo info

Property name	Value	Description
iscsi	Object array	Iscsi lun info
fc	Object array	Fiber channel lun info

lunInfo ->iscsi、fc info

Property name	Value	Description
host	string	Allow host name
targetID	string	Lun mapping target id
lun	string	Lun id
permission	string	Permission status

9. Tasks: List

Description:

Get device's schedule tasks. Task type is snapshot, clone, replication and cloud. San and fas not support cloud task.

Path:

GET http://{deviceip}/rest/v1/backup/{backup type}/list

Property name	Value	Description
Backup type	string	Task type, each model have following type: Snapshot (SAN、FAS、NAS) clone (SAN、FAS) replication (SAN 、 FAS 、 NAS) cloud (NAS)

Parameters: {}

Response: {


```
"tasks": [{
        "id": "2977911538",
        "destination": "",
        "schedule": {
            "minute": [],
            "hour": [],
            "day": [],
            "week": [1],
            "month": [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]
            "startTime":{
                "hour": 0,
                "minute": 10
            },
            "stopTime":{
                "hour": 12,
                "minute": 10
            }
        },
    },{...}]
}
```


Property name	Value	Description
tasks	array	Return the Tasks of all the specified categories on the machine. Task info refer to the following information

Task (snapshot) info

Property name	Value	Description
id	string	Task id, this is the basis for setting the task
usedSize	integer	Snapshot space used size (unit : MB)
totalSize	integer	Snapshot space total size (unit : MB)
schedule	array	Schedule info. Refer to the definition below

Task (clone) info

Property name	Value	Description
id	string	Task id, this is the basis for setting the task
destination	string	Clone object ID
schedule	array	schedule base on crontab

Task (replication) info

Property name	Value	Description
id	string	Task id, this is the basis for setting the task
source	string	Remote replication source
status	String	Task current status
shaping	String	Shaping rule group name Only for SAN、FAS
rate	integer	Replication rate Only for SAN、FAS
createTime	String	Task create time
destination	object	Divided into two versions (SAN、FAS) & (NAS)
schedule	array	schedule base on crontab

Task (replication)-> destination info (SAN、FAS)

Property name	Value	Description
no	int	Line number SAN: A set of lines can support up to four connections
sourcePort	string	Source nic name
IP	String	Address info of this task
targetName	String	target name
Lun	String	Lun id
status	String	Replication status

Task (replication)-> destination info (NAS)

Property name	Value	Description
no	int	Task index
name	string	Destination target volume
IP	String	Address info of this task

Task (cloud) info (NAS)

Property name	Value	Description
id	string	Task id, this is the basis for setting the task
provider	string	Cloud space provider
action	String	Task action
source	String	Task source path
destination	integer	Task destination path
schedule	array	schedule base on crontab

Schedule info

Property name	Value	Description
minute	Integer array	Corresponds to the minute field in the crontab, (0~ 59)
hour	Integer array	Corresponds to the hour field in crontab, (0~ 23)
day	Integer array	Corresponds to the day field in crontab, (1~ 31)
month	Integer array	Corresponds to the month field in crontab, (1~ 12)
week	Integer array	Corresponds to the weak field in crontab, (0~6)
weekOfMouth	Integer array	Number of weeks in the month (0~ 4) Only for SAN
startTime	object	Task start time, if you want to get the task execution time, you must calculate with crontab , Only for NAS
EndTime	object	Task end time Only for NAS

10. Logs: List

Description:

Get device logs

Path:

GET http://{deviceip}/rest/v1/log/list

Parameters: {

startTime: 155273525,

type[]: “access”,

pageNumber: 1,

pageSize: 500

}

Property name	Value	Description
startTime	integer	Is a timestamp. List all logs after startTime.
type	string array	If this parameter is set, the API will return the log of the specified category, and the null value will be returned. type :(info, warning, error) (Default: all type)
pageNumber	integer	Current page to return. (Default: 1)
pageSize	integer	The maximum number of logs to return per page. (Default: 1000)

Response: {

“logs”: [{

“type”: “info”,

“timestamp”: 155284325,

“message”: “User ‘admin’ is login.”

},{...}],

“total”: 1000,

“haveNextPage”: true

}

Property name	Value	Description
logs	array	All logs in this page. Log info refer to the information below
total	string	Total logs after filter.
haveNextPage	boolean	Return true if next page exists.

Logs info :

Property name	Value	Description
type	string	Log’s type. (Include: access, info, warning, error)
timestamp	integer	Timestamp when the log is sent.
message	string	Description of log. (Only display in english.)

11. Hardware: Info

Description:

Get current device hardware enclosure info

Path:

GET http://{deviceip}/rest/v1/hardware/info

Parameters: {}

Response: {

"enclosureNumbers": [0, 1, 3]

}

Property name	Value	Description
enclosureNumbers	Integer array	The attachment number of the device on the line (enclosure id)

12. Hardware: Enclosure Info

Description:

Get current device hardware info

Path:

GET http://{deviceIP}/rest/v1/hardware/all/info

GET http://{deviceIP}/rest/v1/hardware/{$enc_id}/info

Property name	Value	Description
$ enc_id	Integer	Device attachment number (enclosure id)

Parameters: {

moreInfo: true

}

Property name	Value	Description
moreInfo	boolean	Whether to view hardware information (default : false)

Response:

```
[
    "encId": 0,
    "info": {
        “sysHealth": “Good",
        “cpuInfo”:” Intel® Celeron® CPU 1.10GHz Quad-Core Processor”,
        “cpuUsage”: 50.2,
        “memoryInfo”:[
            "Samsung 32768MB",
            "",
            "",
            ""
        ],
        “memTotal”: 8192,
        “memUsed”: 3156,
        “controllerNum”: 1,
        “backplaneID”: “QW316”,
        “systemUptime”: 680775,
        “serialNumber”: “001378D82734”,
        “modelName”: “XN8008R”,
        “moreInfo”: {
            “voltage“: [
                {
                    "name": "+3.3V",
                    "value": 3
                },…
            ],
```



```
            " cacheToFlash ": [
                {
                    "name": "Power Module Status ",
                    "value": "absent"
                },...
            ],
            "temperature": [
                {
                    "name": "CPU",
                    "value": 61
                },...
            ],
            “fanSpeed”: [
                {
                    name:”FAN1”
                    value:”1225”,
                },…
            ],
            “psuStatus”: [
                {
                    name: “1”,
                    status: “Good”
                },…
        }]
    }
]
```


Property name	Value	Description
encID	integer	Device attachment number (encolsure id)
info	Object array	

Info (local):

Property name	Value	Description
sysHealth	string	System health status Ex: Good, abnormal, failed
cpuInfo	string	Cpu model
cpuUsage	float	Cpu usage(unit : %)
memoryInfo	stringArray	Memory hardware information
memTotal	integer	Memory space (unit : MB)
memUsed	integer	Memory usage (unit : MB)
controllerNum	integer	Quantity of controller
backplaneID	string	Backplane unique identifier
systemUptime	integer	Total time of boot system (unit: sec)
modelName	string	Qsan product model name
serialNumber	string	Qsan product serial number

moreInfo	Object	

Info (expansion):

Property name	Value	Description
serialNumber	string	Qsan product serial number
backplaneID	string	Backplane Unique identification code
modelName	string	Qsan product model name
wwn	string	
vendor	string	Hard disk manufacturer name
moreInfo	Object	{voltage, temperature, psuStatus, fanSpeed,cacheToFlash} Info

moreInfo info:

Property name	Value	Description
voltage	Object Array	
cacheToFlash	Object Array	SAN、FAS: Only local Only for SAN、FAS
temperature	Object Array	
fanSpeed	Object Array	
psuStatus	Object Array	

voltage、temperature、 fanSpeed info:

Property name	Value	Description
name	string	Element name
value	integer	Voltage unit: V Temperature unit: °C FanSpeed unit: rpm

cacheToFlash 、 psuStatus info:

Property name	Value	Description
name	string	Element name
status	string	Element status

voltage、temperature、 fanSpeed info:

Property name	Value	Description
name	string	Element name
status	string	Element status Ex: Good, Warning, Failed
value	integer	Element value, • Voltage unit: V • Temperature unit: °C • FanSpeed unit: rpm

13. ISCSI: Target List

Description:

Get device iscsi information

Path:

GET http://{deviceip}/rest/v1/iscsi/target/list

Parameters: {}

Response: {

```
"iscsi": [
    {
        "ctrlID": 0,
        "port":3260,
        "targets": [
            {
                "id": 0,
                "name": "iqn.2004-08.com.qsan:xs5216-000124750:dev0.ctr1",
                "auth": "CHAP",
                "alias": 123,
                "portals": [
                    "1", "2"
                ],
                "freeLuns": [0, 1, 2, 3, ...]
            }
        ]
    }, ...
]
```

}

Property name	Value	Description
iscsi	object	

Iscsi:

Property name	Value	Description
ctrlID	Integer	Ctrl index
port	Integer	ISCSI service port
targets	Object array	

Iscsi -> targets info

Property name	Value	Description
id	String	Target id
name	string	Target name
auth	string	Auth type, CHAP or None
alias	string	Nick name
portals	String array	enable portal ID

freeLuns	Integer array	[0,1,2 ...] lun id

14. ISCSI: Session List

Description:

Get device iscsi session information

Path:

GET http://{deviceip}/rest/v1/iscsi/session/list

Paramters: {}

Response: {

"iscsi" : [

{

"ctrlID": 0,

"sessions": []

}, ...

]

}

Property name	Value	Description
iscsi	object	

Iscsi:

Property name	Value	Description
status	Object array	Iscsi connection status
ctrlID	integer	Controller index
sessions	Object array	

session info

Property name	Value	Description
id	String	Session idenify Only for SAN、FAS
TSIH	String	(Target Session Identifying Handle) is used for this active session. Only for SAN、FAS
initiatorName	String	Iscsi initialor name
targetID	String	Iscsi target id Only for SAN、FAS
targetName	String	Iscsi target name
initialR2T	boolean	(Initial Ready to Transfer) is used to turn off either the use of a unidirectional R2T command or the output part of a bidirectional command. The default value is Yes. Only for SAN、FAS

immedData	boolean	(Immediate Data) sets the support for immediate data between the initiator and the target. Both must be set to the same setting. The default value is Yes. Only for SAN、FAS
maxOutR2T	String	(Maximum Data Outstanding Ready to Transfer) determines the maximum number of outstanding ready to transfer per task. The default value is 1. Only for SAN、FAS
maxDataBurstLen	Integer	(Maximum Data Burst Length) determines the maximum SCSI data payload. The default value is 256kb. Only for SAN、FAS
dataSeqInOrder	boolean	(Data Sequence in Order) determines if the PDU (Protocol Data Units) are transferred in continuously non-decreasing sequence offsets. The default value is Yes. Only for SAN、FAS
dataPDUInOrder	boolean	(Data PDU in Order) determines if the data PDUs within sequences are to be in order and overlays forbidden. The Host Configuration 109 default value is Yes. Only for SAN、FAS
clientIP	String	Client IP Only for NAS
clientPort	integer	Client port Only for NAS
clientName	String	Client host name Only for NAS
loginTime	integer	Session create timestamp Only for NAS

15. Support and Other Resources

- 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

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