XCubeSAN SANOS RESTful API Software Manual

Applicable Models:
XS5224D, XS5216D, XS5212D, XS5212S, XS5226D, XS5226S
XS3224D, XS3224S, XS3216D, XS3216S, XS3212D, XS3212S
XS3226D, XS3226S, XS1224D, XS1224S, XS1216D, XS1216S
XS1212D, XS1212S, XS1226D, XS1226S

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XCubeSAN Storage System 4U 19" Rack Mount Models

Model Name	Controller Type	Form Factor, Bay Count, and Rack Unit
XS5224D	Dual Controller	LFF 24-disk 4U Chassis
XS3224D	Dual Controller	LFF 24-disk 4U Chassis
XS3224S	Single Controller	LFF 24-disk 4U Chassis
XS1224D	Dual Controller	LFF 24-disk 4U Chassis
XS1224S	Single Controller	LFF 24-disk 4U Chassis

XCubeSAN Storage System 3U 19" Rack Mount Models

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

XCubeSAN Storage System 2U 19" Rack Mount Models

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

XS1226S	Single Controller	SFF 26-disk 2U Chassis

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Preface

About This Manual

This manual provides technical guidance for designing and implementing QSAN XCubeSAN series SAN system, and it is intended for use by system administrators, SAN designers, storage consultants, or anyone who has purchased these products and is familiar with servers and computer networks, network administration, storage system installation and configuration, storage area network management, and relevant protocols.

Related Documents

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

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

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- 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

Information, Tip and Caution

This manual uses the following symbols to draw attention to important safety and operational information.

INFORMATION:
INFORMATION provides useful knowledge, definition, or terminology for reference.

TIP:
TIP provides helpful suggestions for performing tasks more effectively.

CAUTION:
CAUTION indicates that failure to take a specified action could result in damage to the system.

Conventions

The following table describes the typographic conventions used in this manual.

Conventions	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click the **OK** button.
<*Italic*>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: copy <*source-file*> <*target-file*>.
[ ] square brackets	Indicates optional values. Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or

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3.3. Dashboard

This section includes the following API sets.

GET

- **systeminfo:** Show system information.
- **hwmonitor:** Show hardware monitoring information.

3.3.1. System Information

API

GET <baseurl>/rest/dashboard/systeminfo

Description

Show system information.

Parameters

None.

Example
Display the basic information of the system.

3.3.2. Hardware Monitor

API
GET <baseurl>/rest/dashboard/hwmonitor

Description
Show hardware monitoring information.

Parameters
None.

Example
Show summary status of all enclosures. There are current voltage, temperature, status of fan module, and power supply.

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3.4. List Event Logs

API

GET <baseurl>/rest/log/list/<$page_num>

Description

Show system event logs.

Parameters

Table 3-2 List Event Parameters

Name	Type	Description
$page_num	integer	Event log page number

Example

Display the event logs for the first page.

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3.5. Storage

This section includes the following API sets.

GET

- **diskinfo**: Show disk information.
- **disksmart:** Show the S.M.A.R.T. information of the disk.
- **poolinfo:** Show pool information.
- **volumeinfo:** Show volume information.
- **snapshot:** Show snapshot information.
- **availtarget:** Show available target information.
- **availlun:** Show available LUN information.
- **lunmappinginfo:** Show LUN mapping information.

POST

- **snapshot:** Take a snapshot.
- **snapspace:** Set snapshot space.
- **maplun:** Map a LUN.
- **unmaplun:** Unmap the LUN.

3.5.1. Disk Information

API

GET <baseurl>/rest/storage/diskinfo

Description

Show all disk information.

Parameters

None.

Example

Display all disk information of all enclosures.

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3.5.2. Disk S.M.A.R.T.

API

GET <baseurl>/rest/storage/disksmart

Description

Show the disk S.M.A.R.T. information.

Parameters

None.

Example

Display disk S.M.A.R.T. information of all enclosures.

3.5.3. Pool Information

API

GET <baseurl>/rest/storage/poolinfo

Description

Show the pool information.

Parameters

None.

Example

Display all pools of the system.

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3.5.4. Volume Information

API

GET <baseurl>/rest/storage/volumeinfo

Description

Show the system information.

Parameters

None.

Example

Display all volumes of the system.

3.5.5. Snapshot Information

API

GET <baseurl>/rest/storage/snapshot/vdid/$vdid

Description

Show the snapshots of the volume.

Parameters

Table 3-3 Snapshot Information Parameters

Name	Type	Description
$vdid	integer	Volume ID

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Example

Display all taken snapshots of the volume.

3.5.6. List Targets

API

GET <baseurl>/rest/storage/availtarget

Description

List all available targets.

Parameters

None.

Example

Display all targets of the system.

3.5.7. List Target LUNs

API

GET <baseurl>/storage/availlun/targetid/$target_id

Description

List all available LUNs of the target.

Parameters

Table 3-4 List Target LUN Parameters

Name	Type	Description
$target_id	integer	Target ID

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Example

Display all LUNs of the target.

3.5.8. List LUN Mappings

API

GET <baseurl>/rest/storage/lunmappinginfo

Description

Show all LUN mappings.

Parameters

None.

Example

Display all LUN mappings.

3.5.9. Set Snapshot Space

API

POST <baseurl>/rest/storage/snapspace/vdid/<$vdid>/sizegb/<$sizegb>

Description

Set snapshot space 20GB for the volume.

Parameters

Table 3-5 Set Snapshot Space Parameters

Name	Type	Description
$vdid	integer	Volume ID
$sizegb	integer	Snapshot space size in GB

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Example

Set snapshot space for the volume ID “1059612626”.

3.5.10. Take a Snapshot

API

POST <baseurl>/rest/storage/snapshot/vdid/<$vdid>/name/<$snapshotname>

Description

Take a snapshot for the volume.

Parameters

Table 3-6 Take Snapshot Parameters

Name	Type	Description
$vdid	integer	Volume ID
$snapshotname	string	Snapshot name

Example

Take a snapshot named “Snap-1” for the volume ID “1059612626”.

3.5.11. Map a LUN

API

POST
<baseurl>/rest/storage/maplun/vdid/<$vdid>/targetid/<$targetid>/lunid/$lunid/host/$host

Description

Map a LUN for the volume.

Parameters

Table 3-7 Map LUN Parameters

Name	Type	Description
$vdid	integer	Volume ID
$targetid	integer	Target ID
$lunid	integer	LUN ID
$host	string	Allowed hosts

Example

Map a LUN for the volume ID “1059612626” to target ID “0”, LUN ID “0”, and allowed hosts “*”.

3.5.12. Unmap the LUN

API

POST <baseurl>/rest/storage/unmaplun/targetid/<$targetid>/lunid/<$lunid>/host/<$host>"

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Description

Unmap the LUN.

Parameters

Table 3-8 Unmap LUN Parameters

Name	Type	Description
$targetid	integer	Target ID
$lunid	integer	LUN ID
$host	string	Allowed hosts

Example

Unmap the LUN with target ID “0”, LUN ID “0”, and allowed hosts “*”.

4. Support and Other Resources

4.1. Getting Technical Support

After installing your device, locate the serial number on the sticker located on the side of the chassis or from the SANOS UI -> **MAINTINANCE** > **System Information** and use it to register your product at https://www.qsan.com/business_partnership. We recommend registering your product in QSAN partner website for firmware updates, document download, and latest news in eDM. To contact QSAN Support, please use the following information.

- 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

Information to Collect

- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages or capture screenshots
- Product-specific reports and logs
- Add-on products or components installed
- Third-party products or components installed

Information for Technical Support

The following system information is necessary for technical support. Please refer to following for what and where to get the information of your XCubeSAN Series model.

If the technical support requests you to download the Service Package, please navigate in the SANOS UI -> **SYSTEM SETTING** -> **Maintenance** -> **System Information**, and then click the **Download Service Package** button to download. Then the system will automatically generate a zip file the default download location of your web browser.

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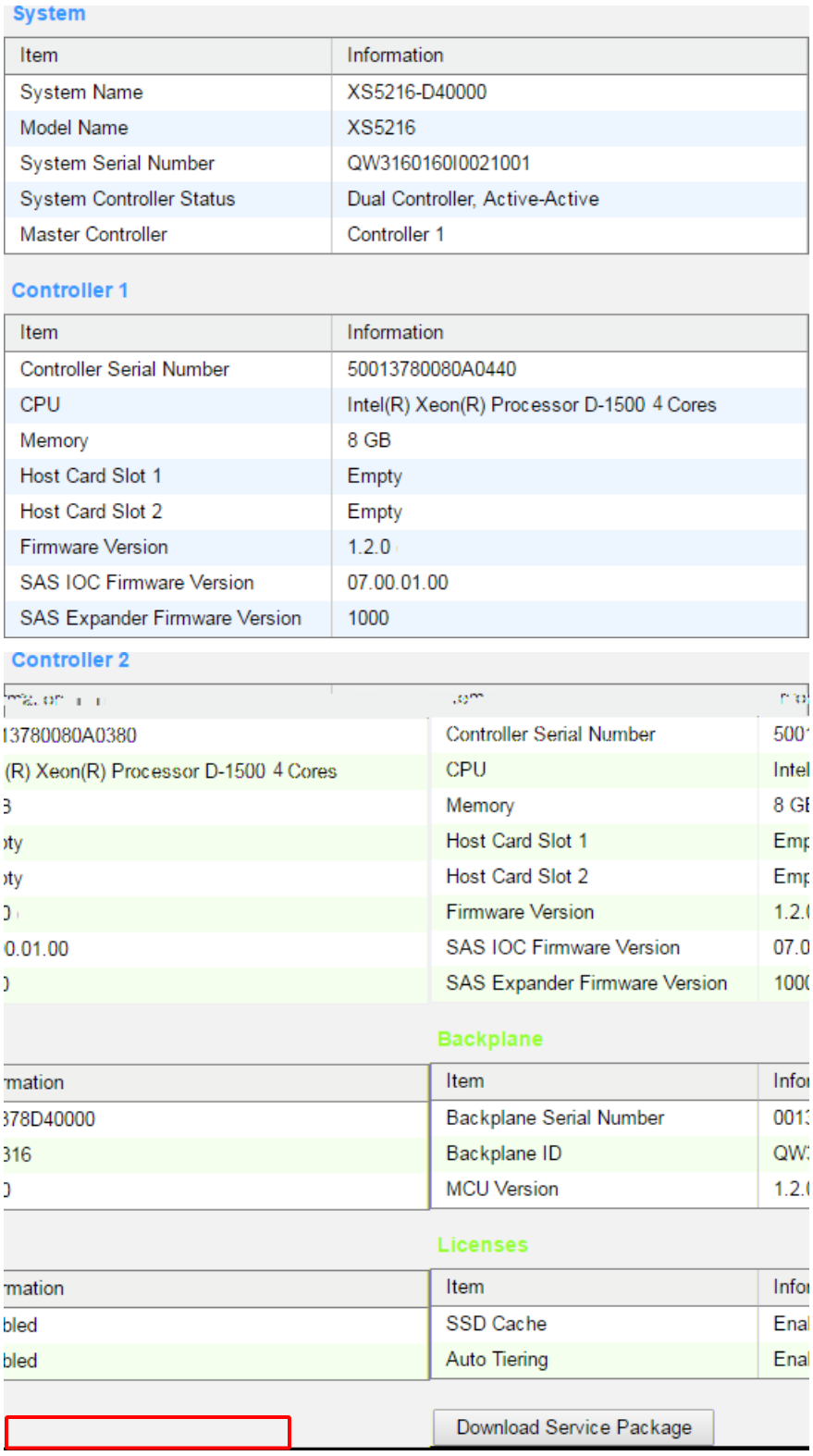


Figure 4-1 Download Service Package in the SANOS UI

2. You must use terminal software such as HyperTerminal or Putty to open the console after the connection is made.

INFORMATION:
For more information about terminal software, please refer to

HyperTerminal: http://www.hilgraeve.com/hyperterminal/

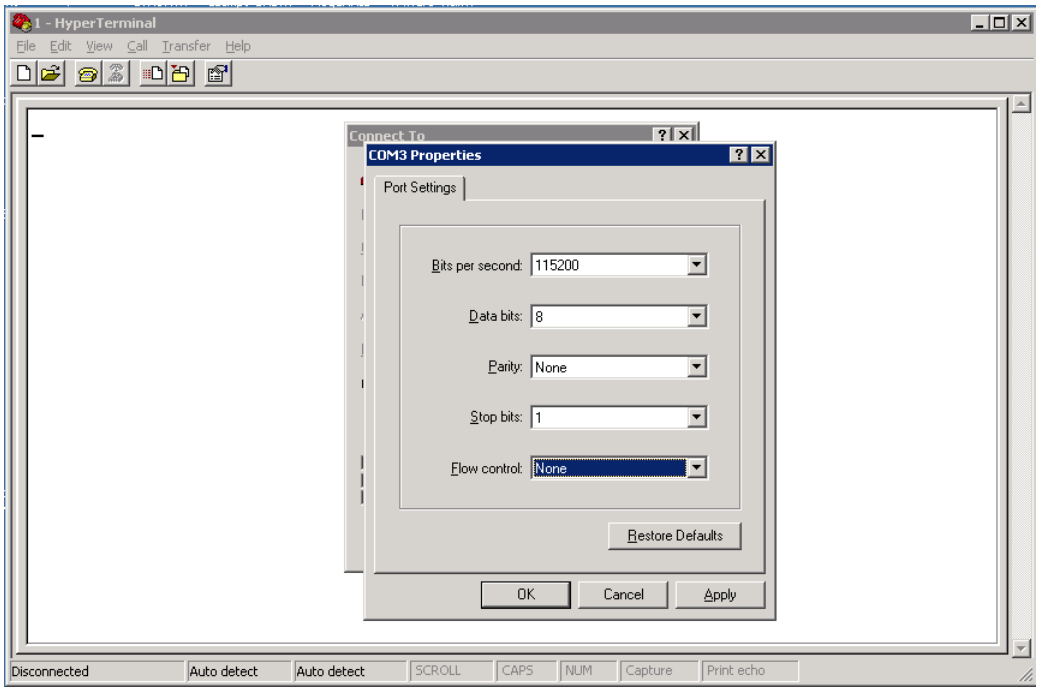
PuTTY: http://www.putty.org/

---

3. Here we first demonstrate HyperTerminal. The console settings are on the following.

   Baud rate: 115200, 8 data bit, no parity, 1 stop bit, and no flow control

   Terminal type: vt100



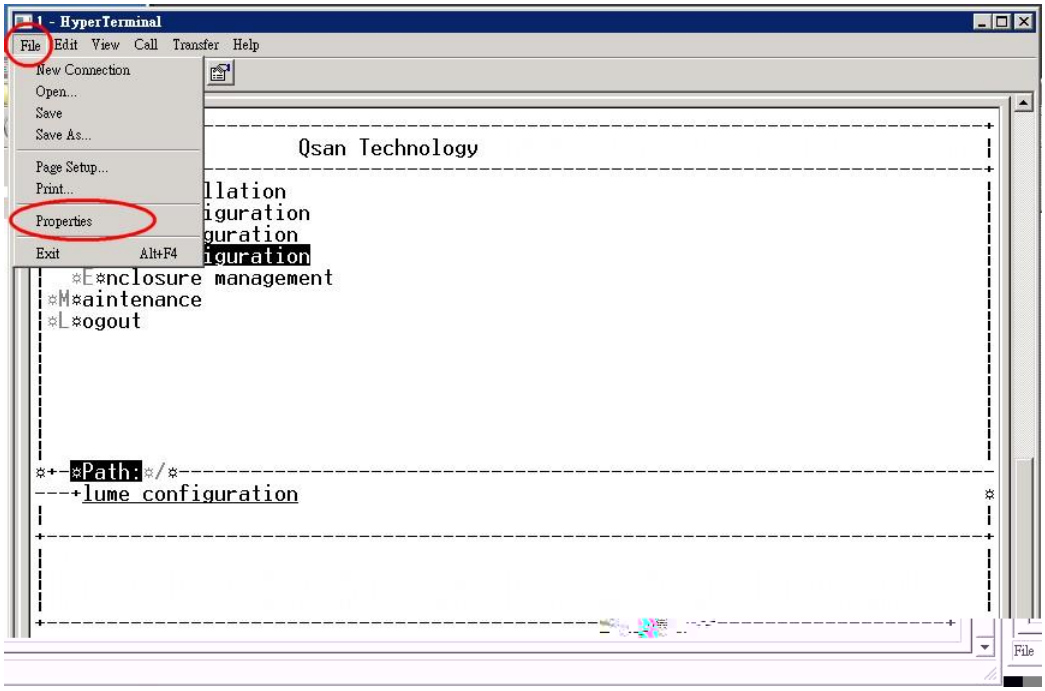


Figure 4-4 The Procedures of Setup Serial Console by HyperTerminal

4. If you are using PuTTY instead, please refer to below

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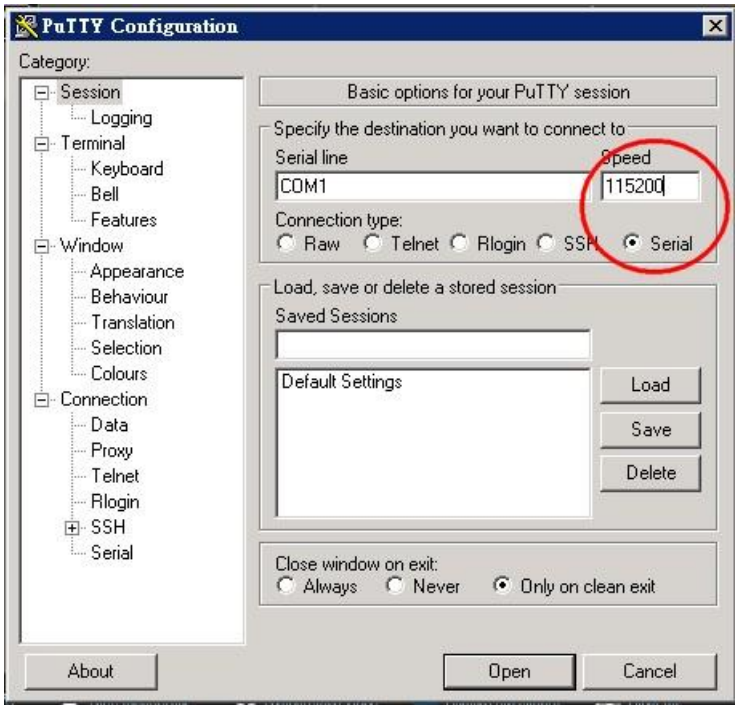
PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
Telnet
Rlogin
SSH
Serial
Basic options for your PuTTY session
Specify the destination you want to connect to
Serial line
Speed
COM1
115200
Connection type:
Raw
Telnet
Rlogin
SSH
Serial
Load, save or delete a stored session
Saved Sessions
Default Settings
Load
Save
Delete
Close window on exit:
Always
Never
Only on clean exit
About
Open
Cancel

PuTTY Configuration
Category:
Session
Logging
Terminal
Keyboard
Bell
Features
Window
Appearance
Behaviour
Translation
Selection
Colours
Connection
Data
Proxy
Telnet
Rlogin
SSH
Serial
Options controlling local serial lines
Select a serial line
Serial line to connect to
COM1
Configure the serial line
Speed (baud)
115200
Data bits
8
Stop bits
1
Parity
None
Flow control
None
None
XON/XOFF
RTS/CTS
DSR/DTR
About
Open
Cancel

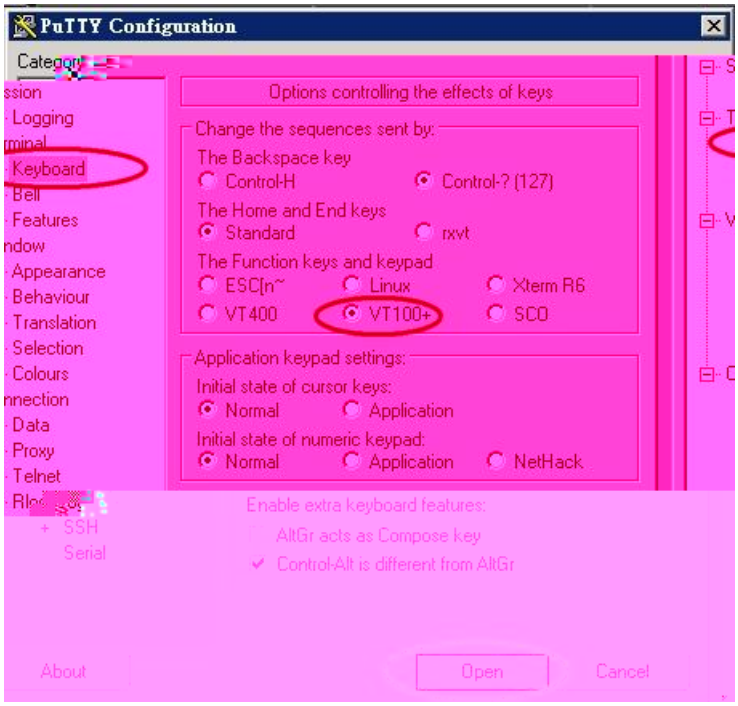

Figure 4-5 The Procedures of Setup Serial Console by PuTTY

5. Users should be able to login the controller system via console cable by following the procedures above.

Setup the Connection for Online Support

Following is the procedure to setup the connection for online support via TeamViewer:

1. Please download the TeamViewer from following hyper link: https://www.teamviewer.com/en/download/
2. Install TeamViewer.
3. Please provide the ID/password showed on the application to QSAN support team member to join the online support session.

4.3. Accessing Product Updates

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https://www.qsan.com/download_center

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Appendix

Glossary and Acronym List

Common Terminology

Item	Description
RAID	Redundant Array of Independent Disks. There are different RAID levels with different degree of data protection, data availability, and performance to host environment.
Disk	The Physical Disk belongs to the member disk of one specific RAID group.
Pool	A collection of removable media. One pool consists of a set of volumes and owns one RAID level attribute.
Volume	Each pool could be divided into several volumes. The volumes from one pool have the same RAID level, but may have different volume capacity.
LUN	Logical Unit Number. A logical unit number (LUN) is a unique identifier which enables it to differentiate among separate devices (each one is a logical unit).
WebUI	Web User Interface.
WT	Write-Through cache-write policy. A cache technique in which the completion of a write request is not signaled until data is safely stored in non-volatile media. Each data is synchronized in both data cache and accessed physical disks.
WB	Write-Back cache-write policy. A cache technique in which the completion of a write request is signaled as soon as the data is in cache and actual writing to non-volatile media occurs at a later time. It speeds up system write performance but needs to bear the risk where data may be inconsistent between data cache and the physical disks in one short time interval.
RO	Set the volume to be Read-Only.
DS	Dedicated Spare disks. The spare disks are only used by one specific

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	RAID group. Others could not use these dedicated spare disks for any rebuilding purpose.
LS	Local Spare disks. The spare disks are only used by the RAID groups of the local enclosure. Other enclosure could not use these local spare disks for any rebuilding purpose.
GS	Global Spare disks. It is shared for rebuilding purpose. If some RAID groups need to use the global spare disks for rebuilding, they could get the spare disks out from the common spare disks pool for such requirement.
DG	DeGraded mode. Not all of the array's member disks are functioning, but the array is able to respond to application read and write requests to its virtual disks.
SCSI	Small Computer System Interface
SAS	Serial Attached SCSI
S.M.A.R.T.	Self-Monitoring Analysis and Reporting Technology
WWN	World Wide Name
HBA	Host Bus Adapter
SES	SCSI Enclosure Services
NIC	Network Interface Card
BBM	Battery Backup Module
SCM	Super Capacitor Module

FC / iSCSI / SAS Terminology

Item	Description
FC	Fibre Channel
FC-P2P	Point-to-Point
FC-AL	Arbitrated Loop
FC-SW	Switched Fabric
iSCSI	Internet Small Computer Systems Interface
LACP	Link Aggregation Control Protocol
MPIO	Multipath Input/Output
MC/S	Multiple Connections per Session
MTU	Maximum Transmission Unit
CHAP	Challenge Handshake Authentication Protocol. An optional security

	mechanism to control access to an iSCSI storage system over the iSCSI data ports.
iSNS	Internet Storage Name Service
SAS	Serial Attached SCSI

Dual Controller Terminology

Item	Description
SBB	Storage Bridge Bay. The objective of the Storage Bridge Bay Working Group (SBB) is to create a specification that defines mechanical, electrical and low-level enclosure management requirements for an enclosure controller slot that will support a variety of storage controllers from a variety of independent hardware vendors (“IHVs”) and system vendors.
6G MUX	Bridge board is for SATA II disk to support dual controller mode.

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