



# **Qsan Document - Hardware Manual**

**TrioNAS LX U300 Series  
JBOD J100 Series**

**Version 8.60  
August 2015**

## Copyright

**Copyright@2004~2015, Qsan Technology, Inc.** All rights reserved. No part of this document may be reproduced or transmitted without written permission from Qsan Technology, Inc.

## Trademarks

All products and trade names used in this manual are trademarks or registered trademarks of their respective companies.

# Preface

---

## About This Manual

This manual is the introduction of Qsan unified storage system and it aims to help users know the operations of the disk array system easily. Information contained in this manual has been reviewed for accuracy, but not for product warranty because of the various environments / OS / settings. Information and specification will be changed without further notice. For any update information, please visit [www.qsan.com](http://www.qsan.com) and your contact windows.

Before reading this manual, it assumes that you are familiar with computer skills such as hardware, storage concepts, and network technology. It also assumes you have basic knowledge of Redundant Array of Independent Disks (RAID), Storage Area Network (SAN), Network-Attached Storage (NAS), Internet SCSI (iSCSI), Serial-attached SCSI (SAS), Serial ATA (SATA), technology.



**CAUTION:**


Do not attempt to service, change, disassemble or upgrade the equipment’s components by yourself. Doing so may violate your warranty and expose you to electric shock. Refer all servicing to authorized service personnel. Please always follow the instructions in this user’s manual.


## Technical Support

Thank you for using Qsan Technology, Inc. products; if you have any question, please e-mail to [support@qsan.com](mailto:support@qsan.com). We will answer your question as soon as possible.

## Tips and Cautions

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

Symbol	Meaning	Description
	<b>TIP</b>	Tips provide helpful information, guidelines, or suggestions for performing tasks more effectively.

	<b>CAUTION</b>	Cautions indicate that failure to take a specified action could result in damage to the software or hardware.
---	----------------	---

## Conventions

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

Conventions	Description
<b>Bold</b>	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click OK button.
<i>&lt;Italic&gt;</i>	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 arguments.
/ Slash	Indicates all options or arguments.
underline	Indicates the default value. Example: [ <u>a</u>   b ]

## FCC and CE statements

### FCC statement

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards and Specifications listed below and as indicated in the measurement report number: xxxxxxxx-F

Technical Standard:                   FCC Part 15 Class A (Verification)  
IC ICES-003

### CE statement

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards and Specifications listed below and as indicated in the measurement report number: xxxxxxxx-E

Technical Standard:                   EMC DIRECTIVE 2004/108/EC  
(EN55022 / EN55024)

**UL statement**

Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

**CAUTION:**

The main purpose of the handles is for rack mount use only. Do not use the handles to carry or transport the systems.

---

The ITE is not intended to be installed and used in a home, school or public area accessible to the general population, and the thumbscrews should be tightened with a tool after both initial installation and subsequent access to the panel.

Warning: Remove all power supply cords before service

This equipment intended for installation in restricted access location.

- Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.



---

**CAUTION: (English)**

Risk of explosion if battery is replaced by incorrect type. Please replace the same or equivalent type battery use and dispose of used batteries according to the instructions.

**ATTENTION: (French)**

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT. METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

**VORSICHT: (German)**

Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Entsorgung gebrauchter Batterien nach Anleitung.

**ADVERTENCIA: (Spanish)**

Las baterías pueden explotar si no se manipulan de forma apropiada. No desmonte ni tire las baterías al fuego. Siga las normativas locales al desechar las baterías agotadas.

**警告: (Simplified Chinese)**

本电池如果更换不正确会有爆炸的危险，请依制造商说明处理用过之电池。

---

## Legal Notice

All the features, functionality, and other product specifications are subject to change without prior notice or obligation. Information contained herein is subject to change without notice.

# Contents

---

<b>Chapter 0</b>	<b>PREFACE.....</b>	<b>3</b>
	ABOUT THIS MANUAL .....	3
	TECHNICAL SUPPORT .....	3
	TIPS AND CAUTIONS .....	3
	CONVENTIONS.....	4
	FCC AND CE STATEMENTS.....	4
	LEGAL NOTICE.....	6
<b>Chapter 1</b>	<b>OVERVIEW .....</b>	<b>8</b>
	PRODUCT OVERVIEW.....	8
	Model Comparison.....	8
	Package Contents.....	9
	HARDWARE .....	10
	Front View.....	10
	Disk Drive Assembly .....	11
	Rear View .....	12
<b>Chapter 2</b>	<b>INSTALLATION.....</b>	<b>15</b>
	INSTALLATION OVERVIEW .....	15
	Drive Slot Numbering.....	15
	System Installation and Deployment .....	16
	POWER ON / OFF.....	20
	Power on the System .....	20
	Power off the System.....	20
	WHAT’S NEXT .....	21
<b>Chapter 3</b>	<b>SPECIFICATION .....</b>	<b>22</b>
	TRIONAS LX U300 .....	22
	JBOD J100.....	22

# 1

## Overview

---

Thank you for using Qsan Technology, Inc. products. Qsan for years has won many proven records in enterprise market and now TrioNAS is aimed to bring the enterprise-class features into SMB market at competitive price, helping organizations to manage IT infrastructure at minimum efforts.

### Product Overview

This user manual describes how to set up and use the Qsan storage systems.

#### TrioNAS LX U300 Series and JBOD J100 Series:



**TrioNAS LX U300 and J100  
(3U16bays)**



**TrioNAS U300 and J100  
(4U24bays)**

The storage array, available in different configurations of GbE iSCSI and 10GbE iSCSI interfaces, provides a flexible, intelligent, network-attached storage (NAS) solution for virtualized server environments and the growing demand for data storage. Qsan storage systems can provide non-stop service with a high degree of fault tolerance by using Qsan technology and advanced array management features.

### Model Comparison

Qsan storage system **TrioNAS U300-XXX-YZZZ** stands for the following models.

**TrioNAS LX U300-XXX** stands for front-end interfaces:

- **U300-P10:** 7 x GbE ports per controller.
- **U300-P20:** 2 x 10GbE ports (SFP+) + 7 x GbE ports per controller.
- **U300-P21:** 2 x 10GbE ports (10GBASE-T) + 7 x GbE ports per controller.
- **U300-F30:** 2 x 16Gb Fibre Channel ports (SFP+) + 7 x GbE ports per controller.



**JBOD JXXX(Q)** stands for front-end interfaces:

- **J100:** 6G SAS JBOD (IN) + 6G SAS JBOD (OUT) ports per controller.

**Y** stands for { **D** | **S** | **C** }:

- **D:** Dual controller.
- **S:** Single controller, but can be upgradable to dual.
- **C:** Single controller only.

**ZZZ** stands for chassis height and HDD bays. It can be { **212** | **316** | **424** }:

- **316:** 3U 16 bays with 3.5" HDD trays.
- **424:** 4U 24 bays with 3.5" HDD trays.

**TrionAS LX U300 Series:**

Front-end	3U16	4U24
7 x GbE ports	U300-P10-C316i (i3)* U300-P10-C316e (E3)**	U300-P10-C424i (i3) U300-P10-C424e (E3)
2 x 10GbE (SFP+) + 7 x GbE ports	U300-P20-C316i (i3) U300-P20-C316e (E3)	U300-P20-C424i (i3) U300-P20-C424e (E3)
2 x 10GbE (10GBASE-T) + 7 x GbE ports	U300-P21-C316i (i3) U300-P21-C316e (E3)	U300-P21-C424i (i3) U300-P21-C424e (E3)
2 x 16Gb FC (SFP+) + 7 x GbE iSCSI	U300-F30-C316i (i3) U300-F30-C316e (E3)	U300-F30-C424i (i3) U300-F30-C424e (E3)

\* I3: Intel Core i3

\*\* E3: Intel Xeon E3

**JBOD Series:**

Host Interface	3U16	4U24
6G SAS JBOD	J100-C316	J100-C424

**Package Contents**

The package contains the following items:

- Qsan storage system (x1)
- HDD trays (x16) **(3U16)**  
HDD trays (x24) **(4U24)**
- Power cords (x2) **(3U16)**  
Power cords (x3) **(4U24)**

- Rail kit (x1 set)
- Keys, screws for drives and rail kit (x1 packet)

## Hardware

This section provides basic information about the hardware components.

### TrioNAS LX U300 Series and JBOD J100 Series:



**TrionAS LX U300 and J100  
(3U16bays)**



**TrionAS LX U300 and J100  
(4U24bays)**

## Front View

### TrionAS LX U300 Series and JBOD J100 Series (3U16 / 4U24):

There is a power switch button at the right front handle.



Number	Description
1	Power button and power LED: <ul style="list-style-type: none"> <li>• Blue: Power ON.</li> <li>• Off: Power OFF.</li> </ul>
2	MUTE button: Press to mute the alarm.
3	IP Reset button: (J100 has no function at this button) Press within 2 seconds to reset the system to default settings. The default resets include: <ul style="list-style-type: none"> <li>• LAN 1 IP Address: 192.168.1.234</li> <li>• User Name: admin</li> </ul>

	<ul style="list-style-type: none"> <li>• Password: 1234</li> </ul>
4	<b>Status LED:</b> <ul style="list-style-type: none"> <li>• Red: System failure.</li> <li>• Off: System OK.</li> </ul>
5	<b>Access LED:</b> This indicates the host interface (frontend) connectivity, not the hard drive activity. Please be aware. <ul style="list-style-type: none"> <li>• Blink: There is host interface activity (data I/O or management).</li> <li>• OFF: There is no host interface activity.</li> </ul>

## Disk Drive Assembly

### TrioNAS LX U300 Series and JBOD J100 Series (3U16 / 4U24):

Remove a drive tray. Then install a HDD.

The front of each disk tray has four components:

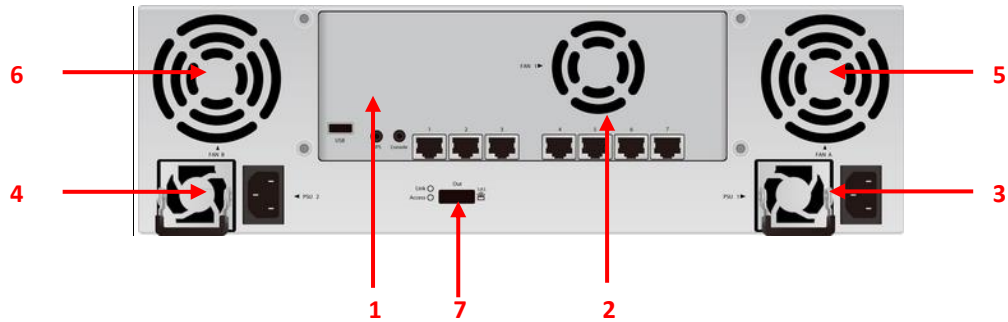


This table provides details about the front components of a disk tray.

Number	Description
1	<b>Status LED:</b> <ul style="list-style-type: none"> <li>• Green: The hard drive is inserted and working normally.</li> <li>• Amber: The hard drive has failed.</li> <li>• Blinking amber: The hard drive data is being rebuilt.</li> <li>• Off: There is no hard drive in the tray or the power is off.</li> </ul>
2	<b>Access LED:</b> <ul style="list-style-type: none"> <li>• Blinking green: The hard drive is being accessed.</li> <li>• Off: The hard drive is not being accessed or there is no hard drive in the tray.</li> </ul>
3	Tray removal handle.
4	Latch to release the tray.

## Rear View

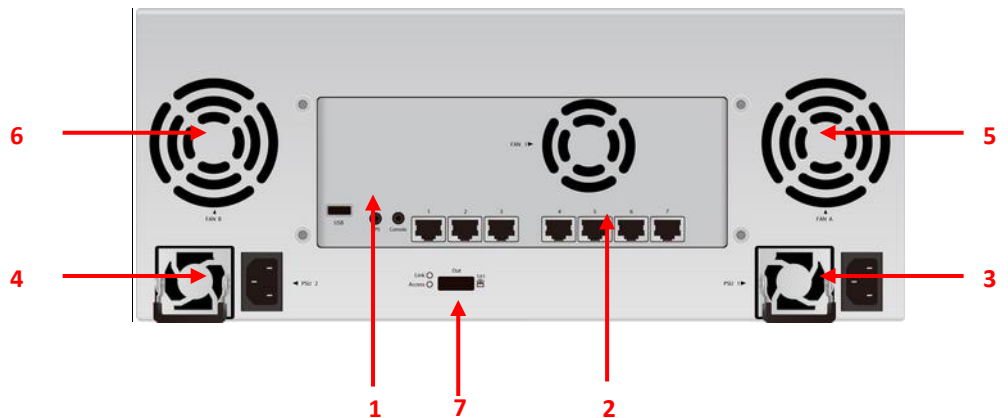
### TrionAS LX U300 3U16 Chassis:



This table describes the rear modules.

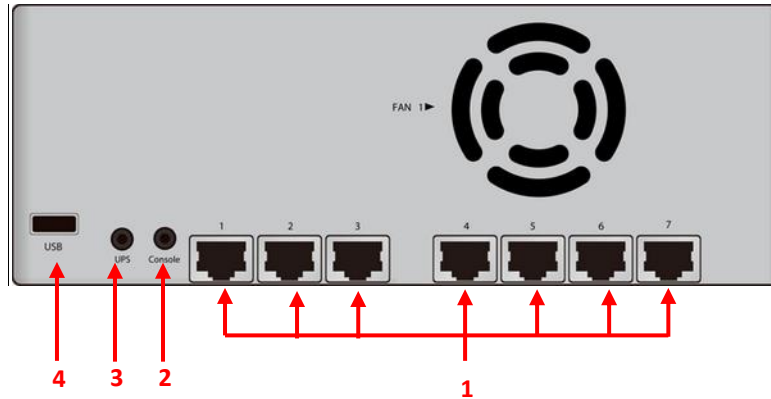
Number	Description
1	Controller 1 (CTRL 1).
2	Fan Module (FAN1 / FAN2).
3	Power Supply Unit (PSU1).
4	Power Supply Unit (PSU2).
5	Fan Module (FAN A).
6	Fan Module (FAN B).
7	SAS JBOD expansion port.

### TrionAS LX U300 4U24 Chassis:



There are many various controllers available. With the exception of the host ports, the connections are the same on all modules.

**TrionAS U300-P10 (7 x GbE ports) controller:**



This table describes the rear components.

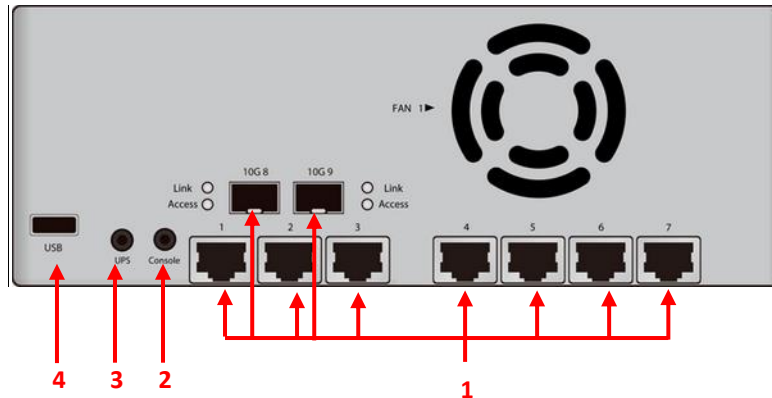
Number	Description
1	Ports (depending on model): <b>TrionAS LX U300:</b> <ul style="list-style-type: none"> <li>• U300-P10: 7 x GbE ports.</li> <li>• U300-P20: 2 x 10GbE ports (SFP+) + 7 x GbE ports.</li> <li>• U300-P21: 2 x 10GbE ports (10GBASE-T) + 7 x GbE ports.</li> <li>• U300-F30: 2 x 16Gb Fibre Channel ports + 7 x GbE ports.</li> </ul>
2	Console port.
3	RS 232 port for UPS.
4	USB port is used to save debugging information.
LED	<p>10GbE Link LED (TrionAS LX U300-P20):</p> <ul style="list-style-type: none"> <li>• Orange: Asserted when a 1G link is established and maintained.</li> <li>• Blue: Asserted when a 10G link is establish and maintained.</li> </ul> <p>10GbE Access LED (TrionAS LX U300-P20):</p> <ul style="list-style-type: none"> <li>• Yellow: Asserted when the link is established and packets are being transmitted along with any receive activity.</li> </ul> <p>16G FC Link LED (TrionAS LX U300-F30):</p> <ul style="list-style-type: none"> <li>• Blue: Asserted when an 8G link is established and maintained.</li> <li>• Amber: Asserted when a 4G and below link is established and maintained.</li> </ul> <p>16G FC Access / fail LED (TrionAS LX U300-F30):</p> <ul style="list-style-type: none"> <li>• Green: Asserted when the link is establish.</li> <li>• Blinking green: Asserted when the link is established and packets are being transmitted along with any receive activity.</li> <li>• Red: Asserted when the link can't establish.</li> </ul>



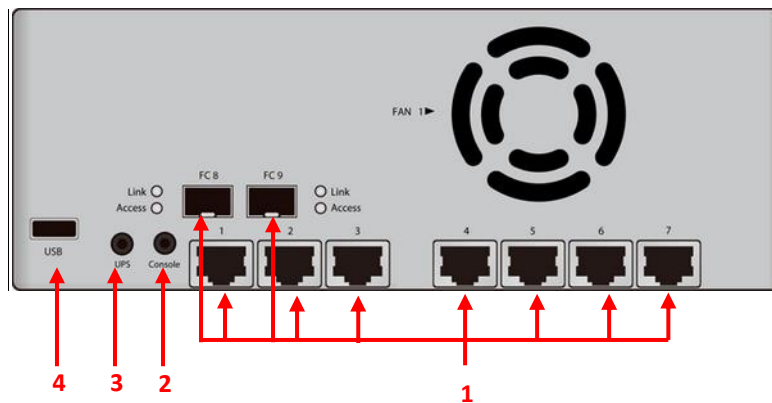
**CAUTION:**

Be aware that when Controller Health LED is in RED, please DO NOT unplug the controller from the system or turn off the power suddenly. This may cause unrecoverable damage, which will not be covered by warranty.

**TrioNAS U300-P20 (2 x 10GbE (SFP+) + 7 x GbE ports) controller:**



**TrioNAS LX U300-F30 (2 x 16G FC (SFP+) + 7 x GbE ports) controller:**



# 2

## Installation

---

### Installation Overview

Before starting, prepare the following items:

- A management computer with a Gigabit Ethernet NIC (recommend) on the same network as the Qsan storage system.

- Connection cables:

**TrioNAS LX:**

- **U300-P10:** CAT 5e, or CAT 6 (recommend) network cables.
- **U300-P21:** CAT 6 network cables.
- **U300-P20 / U300-F30:** Fibre Channel cables or AOCs (Active Optic Cable).

**JBOD:**

- **J100:** SAS cables.

- Prepare a storage system configuration plan by the network administrator. The plan should include network information for all network ports. If using static IP addresses, please prepare a list of the static IP addresses, the subnet mask, and the default gateway.

- Switches:

**TrioNAS LX:**

- **U300-P10:** Gigabit switches (recommended). Or Gigabit switches with VLAN / LCAP / Trunking (optional).
- **U300-P20 / U300-P21:** 10 Gigabit switches with VLAN / LCAP / Trunking (optional).
- **U300-F30:** Fibre Channel switches (optional).

- CHAP security information, including CHAP username and secret (optional).

### Drive Slot Numbering

The drives can be installed into any slot in the enclosure. Slot numbering is reflected in Web UI.

**3U16:**

Slot 1	Slot 5	Slot 9	Slot 13
Slot 2	Slot 6	Slot 10	Slot 14
Slot 3	Slot 7	Slot 11	Slot 15
Slot 4	Slot 8	Slot 12	Slot 16

**4U24:**

Slot 1	Slot 7	Slot 13	Slot 19
Slot 2	Slot 8	Slot 14	Slot 20
Slot 3	Slot 9	Slot 15	Slot 21
Slot 4	Slot 10	Slot 16	Slot 22
Slot 5	Slot 11	Slot 17	Slot 23
Slot 6	Slot 12	Slot 18	Slot 24

## System Installation and Deployment

**TrionAS LX Series:**

Using the following instructions to install and deploy the storage system.

- At the rear, check that the Master Controller is in its slot (CTRL 1).
- Install the Rail Kit onto the unit and insert it into the rack.



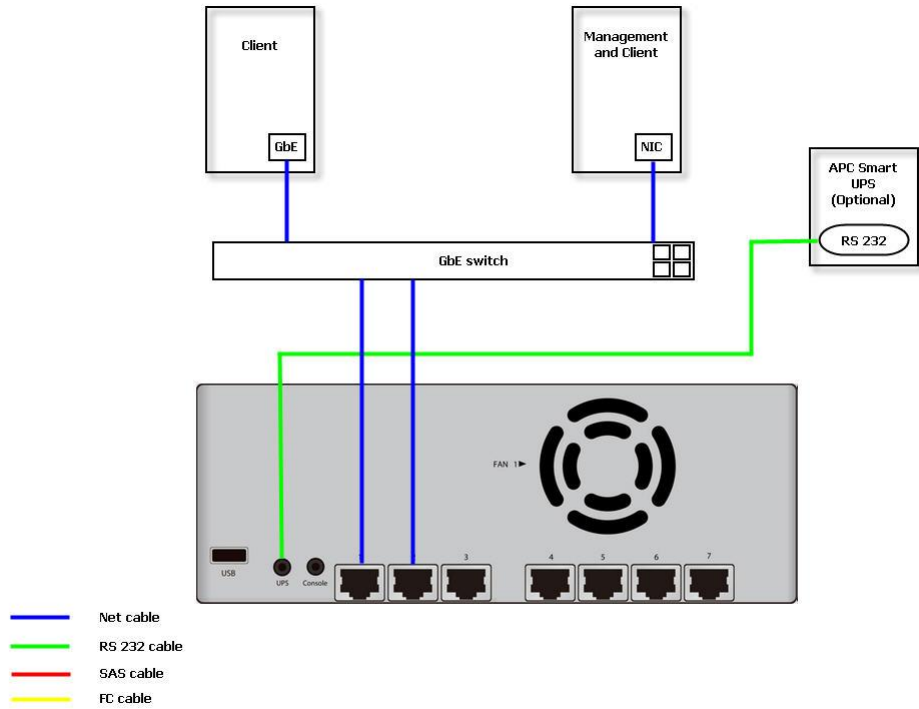
**CAUTION:**

The system is very heavy. It's recommend that a mechanical lifter or at least two persons be used to raise and align the system to prevent injury during installation. Use care when inserting or removing a system into or out of a rack to prevent the accidental tipping or the rack causing damage or personal injury.

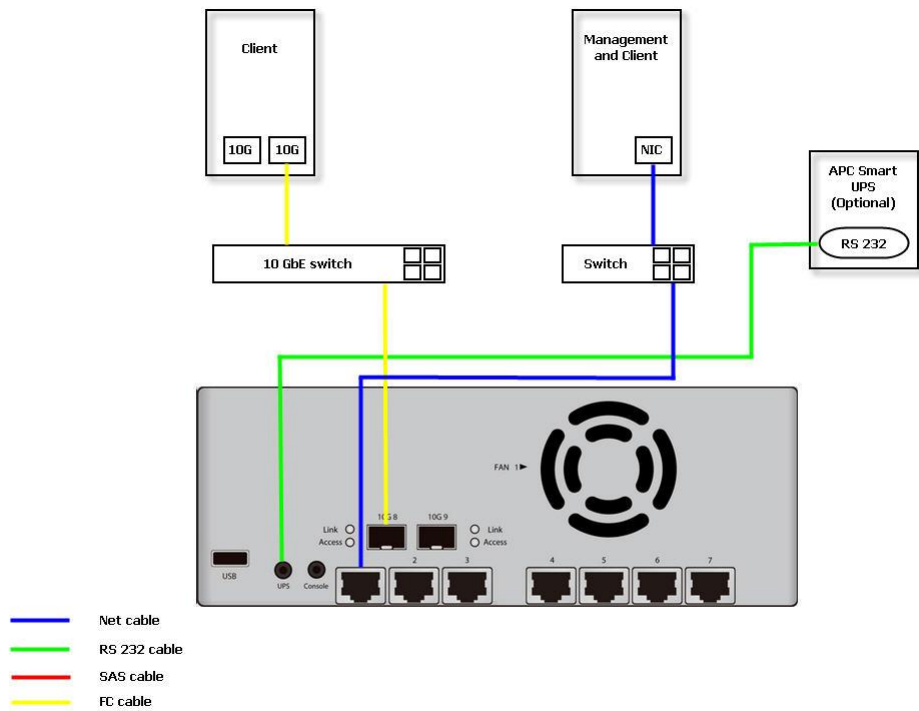
- Install the disk drives.
- Connect the management port cable and data port cables on the network plan, the topology examples are on the following.



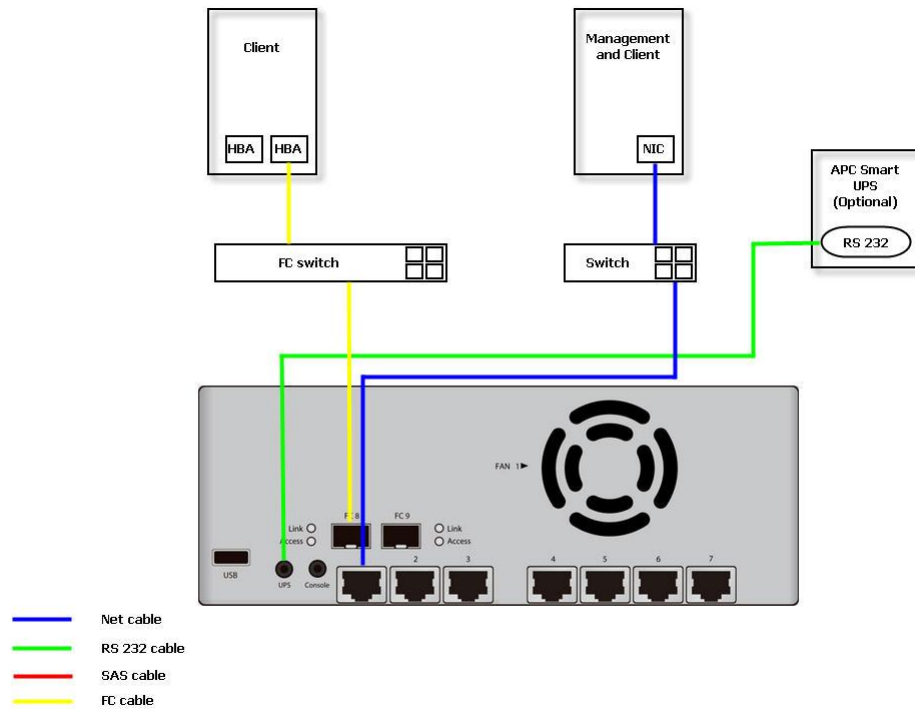
**TrioNAS LX U300-P10:**



**TrioNAS LX U300-P20:**



**TrioNAS LX U300-F30:**



**JBOD Series:**

Using the following instructions to install and deploy the storage system.

- Install the Rail Kit onto the unit and insert it into the rack.

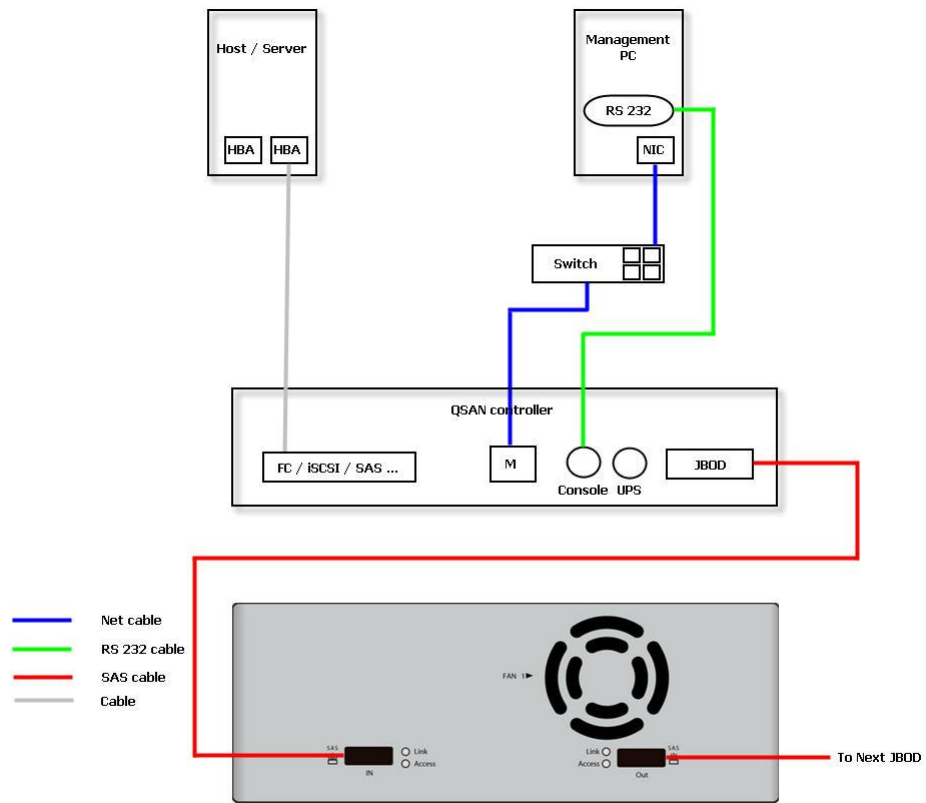


**CAUTION:**

The system is very heavy. It's recommend that a mechanical lifter or at least two persons be used to raise and align the system to prevent injury during installation. Use care when inserting or removing a system into or out of a rack to prevent the accidental tipping or the rack causing damage or personal injury.

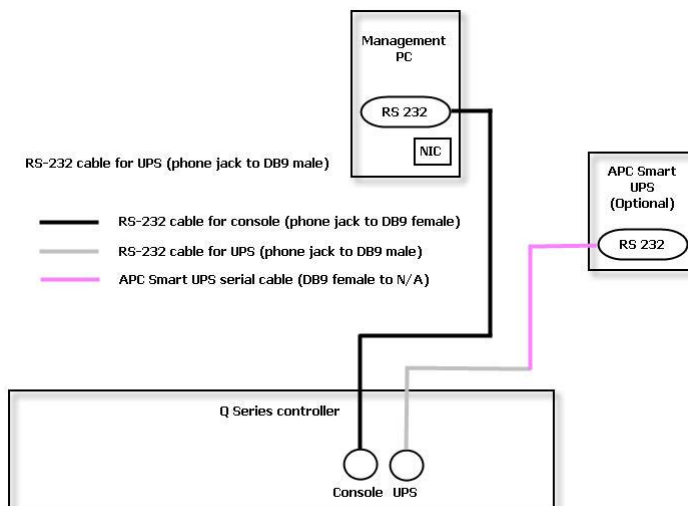
- Install the Disk Drives.
- Connect SAS cable to the head unit, the topology examples are on the following.

**JBOD J100:**



**Console and UPS typology:**

Connect the console cable and UPS as the following.



- Using RS-232 cable for console (back color, phone jack to DB9 female) to connect from controller to management PC directly.

- Using RS-232 cable for UPS (gray color, phone jack to DB9 male) to connect from controller to APC Smart UPS serial cable (DB9 female side), and then connect the serial cable to APC Smart UPS.



**CAUTION:**

It may not work when connecting the RS-232 cable for UPS (gray color, phone jack to DB9 male) to APC Smart UPS directly.

- Attach the power cords and power on the system.
- Start the configuration.

## Power ON / OFF

### Power on the System

**TrionAS LX U300 Series:**

The power button is located at the front of the panel. To turn the system ON, press power button. After you turn the power ON, the system performs a booting process which takes a few minutes.



**TrionAS LX U300**

### Power off the System

If it becomes necessary to power down the system, it is recommended using a normal, controlled shutdown form through either the LCM or QCentral Client to ensure all data is flushed from the cache first.

**TrionAS LX U300 Series:**

TrionAS LX U300 has no LCM, so it can shutdown via Web UI or management software.

1. Shutdown using Web UI:

Using the Web UI:

- Select **Maintenance** -> **Shutdown**.
- Click the **Shutdown** button.
- The power LED will display blue blinking, and then power off.

2. Shutdown using QCentral Client:

Login QCentral Client:

- Select **Maintenance** -> **Reboot and Shutdown**.
- Click the **Shutdown** icon.
- The power LED will display blue blinking, and then power off.

## What's Next

For software operation, please refer to Qsan TrionAS Software Manual.

# 3

## Specification

### TrioNAS LX U300

Hardware Components	
RAID Controller	Single controller
Standard Host Ports	<b>U300-P10:</b> 7 x 1GbE ports
Optional Host Ports	<b>U300-P20:</b> 2 x 10GbE (SFP+) ports <b>U300-P21:</b> 2 x 10GbE (10GBASE-T) ports <b>U300-F30:</b> 2 x 16Gb FC ports
Processor	<b>U300-XXX-XXXXi:</b> Intel Core i3-4330 (Haswell) <b>U300-XXX-XXXXe:</b> Intel Xeon E3-1225V3
Expansion Enclosure	J100Q Series
Cache Memory	16GB DDR3 ECC
Per Controller	Up to 32GB
No. of Hard Drives	<b>U300-XXX-C316:</b> 16 <b>U300-XXX-C424:</b> 24
Max. No. of Hard Drives	192
Power Supply	2 x 550W
Fan	3
Dimensions	<b>U300-XXX-C316:</b> 3U 19" Rackmount 446.0mm x 549.7mm x 130.0mm (W x D x H) <b>U300-XXX-C424:</b> 4U 19" Rackmount 446.0mm x 549.7mm x 176.0mm (W x D x H)
Certifications	
Safety and EMI	RoHS, CE, FCC, BSM
Requirements	
AC Input	90-264V ~ 10A-5A 550W with PFC (Auto Switching), 50/60Hz
Operating Temperature	0 to 40°C
Relative Humidity	5% to 95% non-condensing

### JBOD J100

Hardware Components	
JBOD Controller	Single controller
No. of Host Ports	2 x 6Gb SAS ports
No. of Hard Drives	<b>J100-C316:</b> 16 <b>J100-C424:</b> 24
Power Supply	2 x 550W
Fan	2

Dimensions	<b>J100-C316:</b> 3U 19" Rackmount 446.0mm x 549.7mm x 130.0mm (W x D x H) <b>J100-C424:</b> 4U 19" Rackmount 446.0mm x 549.7mm x 176.0mm (W x D x H)
<b>Certifications</b>	
Safety and EMI	RoHS, CE, FCC, BSM
<b>Requirements</b>	
AC Input	90-264V ~ 10A-5A 550W with PFC (Auto Switching), 50/60Hz
Operating Temperature	0 to 40°C
Relative Humidity	5% to 95% non-condensing

## Revision History

Date	Version	Owner	Description
2015/2/2	8.60	Wilson Fang	Separate HW and SW manual. Remove Index. Add Specification. Add U300-P21, U300-F30. Remove U300-F20.
2015/8/29	8.6.0	Grace Chen	Review P1-P23