Qsan Document – Hardware Manual

TrioNAS U110 / U120
TrioNAS U210 / U220 / U221

Version 8.60
August 2015

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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 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. 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
	TIP	Tips provide helpful information, guidelines, or suggestions for performing tasks more effectively.

CAUTION	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
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click 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 arguments.
/ Slash	Indicates all options or arguments.
underline	Indicates the default value. Example: [a | 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 (Tma) 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 unsachgemaßem 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

Overview

1

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:

| TrioNAS U110 / U120 (1U4bays) | TrioNAS U210 / U220 / U221 (2U12bays) |

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 U1XX, TrioNAS U2XX** stands for the following models.

TrioNAS U1XX, TrioNAS U2XX stands for front-end interfaces:

- **U110:** 2 x GbE ports.
- **U120:** 2 x GbE ports.
- **U210:** 6 x GbE ports.
- **U220:** 2 x 10GbE ports (SFP+) + 2 x GbE ports.
- **U221:** 2 x 10GbE ports (SFP+) + 2 x GbE ports.

TrioNAS U1XX and TrioNAS U2XX:

	U110	U120	U210	U220	U221
Processor	Intel Atom D2250	Intel Atom D2250	Intel Core i3	Intel Core i3	Intel Xeon E3
Memory	4GB	4GB	16GB	16GB	32GB
Front-end	2 x GbE ports	2 x GbE ports	6 x GbE ports	2 x 10GbE (SFP+) + 2 x GbE ports	2 x 10GbE (SFP+) + 2 x GbE ports
Back-end	SATA 3G	SATA 3G	SATA 6G	SATA 6G	SATA 6G
Form Factor	1U 4Bays	1U 4Bays	2U 12Bays	2U 12Bays	2U 12Bays

Package Contents

The package contains the following items:

- Qsan storage system (x1)
- HDD trays (x4) **(U110 / U120)**

  HDD trays (x12) **(U210 / U220 / U221 / 2U12)**
- Power cords (x1) **(U110)**

  Power cords (x2) **(U120 / U210 / U220 / U221)**
- Rail kit (x1 set)
- Keys, screws for drives and rail kit (x1 packet)

Hardware

This section provides basic information about the hardware components.

TrioNAS:

TrioNAS U110 / U120
(1U4bays)

TrioNAS U210 / U220 / U221
(2U12bays)

Front View

TrioNAS U110 / U120 (1U4):

There are three LEDs and one button on U110 / U120.

This table provides details about the button and LEDs.

Number	Description
1	LAN1(Management port) LED: • Blinking amber: Accessing data.
2	LAN2 LED: • Blinking amber: Accessing data.
3	Status LED: • Blinking amber: System error.
4	Power button. • Blue: Power on.

TrioNAS U210 / U220 / U221 (2U12):

There are one button and one LED on U210 / U220 / U221.
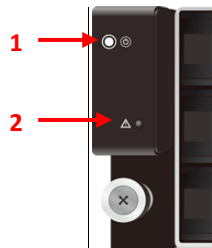
This table provides details about the button and LED.

Number	Description
1	Power button. • Blue: The system has booted successfully. • Blinking blue: System is booting or shutting down. • Off: The power is off.
2	Status LED: • Amber: There is a warning level event. • Off: There is no warning level event or the power is off.

Disk Drive Assembly

TrioNAS U110 / U120 (1U4), U210 / U220 / U221 (2U12):

Remove a drive tray. Then install a HDD.
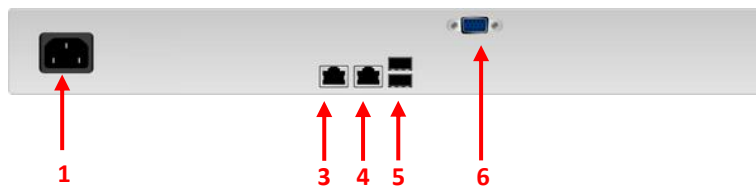
The front of each disk tray has four components:

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

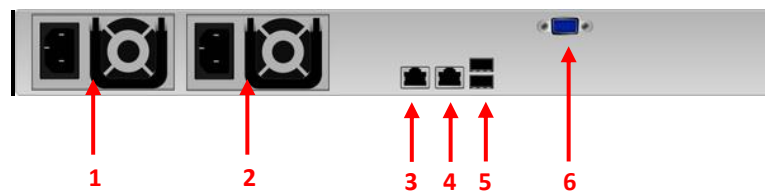| Number	Description
1	Status LED: • Green: The hard drive is inserted and working normally. • Amber: The hard drive has failed. • Blinking amber: The hard drive data is being rebuilt. • Off: There is no hard drive in the tray or the power is off.
2	Access LED: • Blinking green: The hard drive is being accessed. • Off: The hard drive is not being accessed or there is no hard drive in the tray.
3	Tray removal handle.
4	Latch to release the tray.

Rear View

TrioNAS U110 (2 x GbE ports):
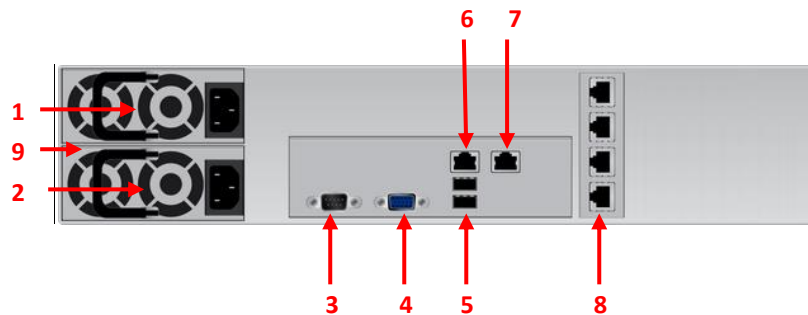

This table describes the rear components.

Number	Description
1	Power Supply Unit (PSU1).
2	Power Supply Unit (PSU2).
3	LAN1 (GbE) and management port.
4	LAN2 (GbE) port.
5	USB ports. • USB keyboard: Connect USB keyboard for debug.

	• USB flash: Connect USB flash for downloading debug information.
6	VGA port.
LED	GbE Activity LED: • Blinking green: The system is transmitting or receiving to/from an Ethernet device through the 1G port. • Off: The system is no transmitting or receiving to/from an Ethernet device through the 1G port. GbE Connection/Speed LED: • Green: The GbE port is connected at 100 Mbps. • Yellow: The GbE port is connected at 1 Gbps. • Off: The GbE port is connected at 10 Mbps or there is no connection.

TrioNAS U120 (2 x GbE ports):

TrioNAS U210 (6 x GbE ports):

This table describes the rear components.

Number	Description
1	Power Supply Unit (PSU1).
2	Power Supply Unit (PSU2).
3	Console port.
4	VGA port.
5	USB ports.
6	LAN 2 (GbE) port.
7	LAN 1 (GbE) and management port.
8	Ports (depending on model): • U210: 4 x GbE ports, LAN3 ~ LAN6 (from down to up). • U220 / U221: 2 x 10GbE ports, LAN3 ~ LAN4 (from down to up).
9	Power buzzer button.
LED	GbE Activity LED: (TrioNAS U210 / U220 / U221)

- Blinking green: The system is transmitting or receiving to/from an Ethernet device through the 1G port.
- Off: The system is no transmitting or receiving to/from an Ethernet device through the 1G port.

GbE Connection/Speed LED: (TrioNAS U210 / U220 / U221)
- Green: The GbE port is connected at 100 Mbps.
- Yellow: The GbE port is connected at 1000 Mbps.
- Off: The GbE port is connected at 10 Mbps or there is no connection.

10 GbE Speed LED: (TrioNAS U220 / U221)
- Green: The 10 GbE port is connected at 10 Gbps.
- Blinking green: The system is transmitting or receiving to/from an Ethernet device through the 10 Gbps port.
- Yellow: The 10 GbE port is connected at 1 Gbps.
- Blinking yellow: The system is transmitting or receiving to/from an Ethernet device through the 1 Gbps port.
- Off: The system is no transmitting or receiving to/from an Ethernet device through the 10G port.

10 GbE Link/Act LED: (TrioNAS U220 / U221)
- Green: The 10 GbE port is connected at a 10G device.
- Off: The 10 GbE port not connected to a 10G device.

Power supply AC and DC LEDs:
- Green: Power supply DC output ON and OK.

Power supply AC LEDs:
- Green: AC present / only standby output on.
- Blinking green: No AC power to this PSU.
- Off: No AC power to all PSU.

Power supply Fail LEDs:
- Amber: Power supply failure.
- Blinking amber: Power supply warning.

Power supply buzzer LEDs:
- Green: The power module(s) connected to the system are supplying power normally.
- Red: An alarm sounds if one of the power modules is connected but not supplying power to the system.
- Off: The power module(s) connected are not receiving power.

TrioNAS U220 / U221 (2 x 10GbE + 2 x GbE ports):
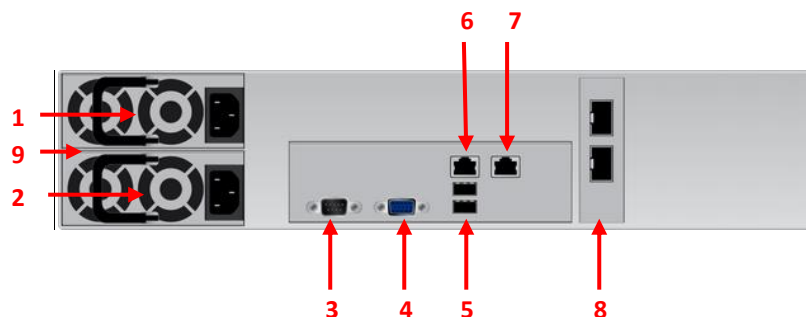
2

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:

  ◦ **U110 / U120 / U210 / U220 / U221:** CAT 5e, or CAT 6 (recommend) network cables.
  ◦ **U220 / U221:** Fibre Channel cables or AOCs (Active Optic Cable).

- 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:

  ◦ **U110 / U120 / U210 / U220 / U221:** Gigabit switches (recommended). Or Gigabit switches with VLAN / LCAP / Trunking (optional).
  ◦ **U220 / U221:** 10 Gigabit switches with VLAN / LCAP / Trunking (optional).

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

Rack Mount Installation (TrioNAS only)

TrioNAS Series:

Please follow the steps to install **TrioNAS (U110 / U120 / U210 / U220 / U221)** on the rack mount:

- A slide rail consists of an inner rail and an outer rail. Release the lock and slide out the inner rail completely to separate the rails.
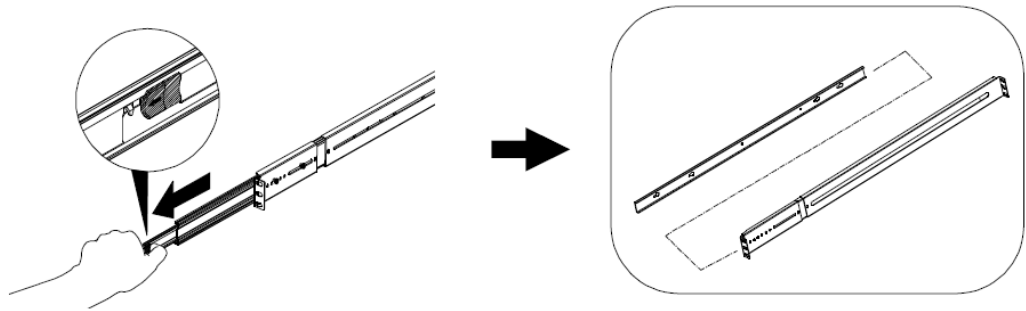
- Connect the inner rail to the system by latching it onto the screws on the system body. And repeat this procedure for the other inner rail on the other side of the system.
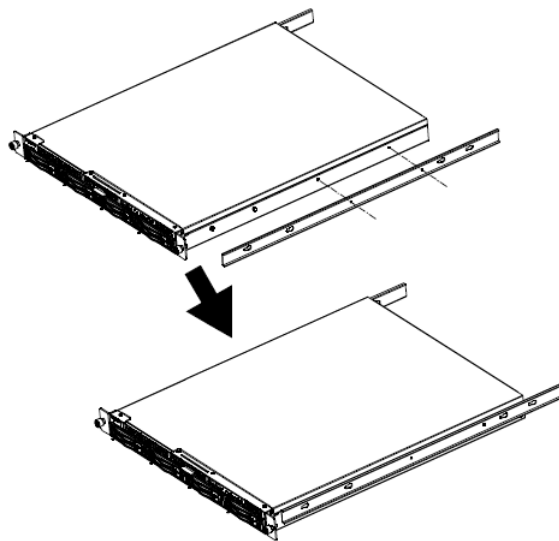

- Adjust the length of the outer slide rail the depth of the rack. The front of the outer rail can slide out. This is the side that should be at the front of the rack. Then screw the outer rail onto the side of the rack using the M6 screws and nuts. Repeat for the other side of the rack.
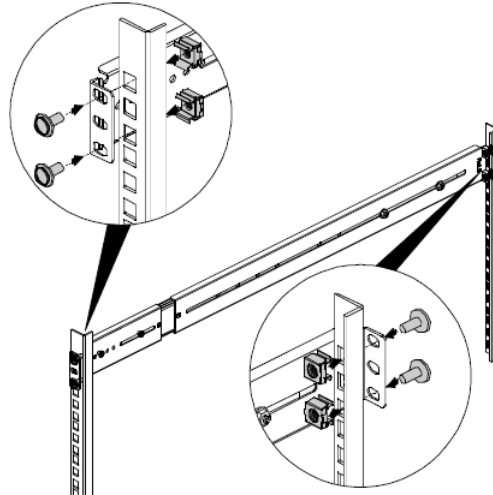
It's recommended that two persons insert the system into the rack. The inner rail (attached to the system) has two locks. Use the inner lock to slide the inner rail into the outer rail (already attached to the rack).
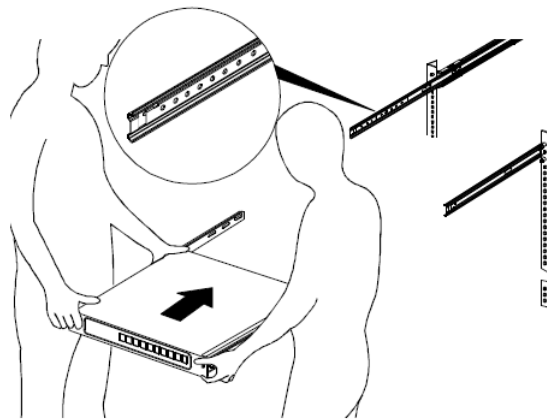
- Release the inner lock and slide the system with inner rail attached onto the outer rail already fastened to the rack. Push the inner rail all the way into the outer rail.
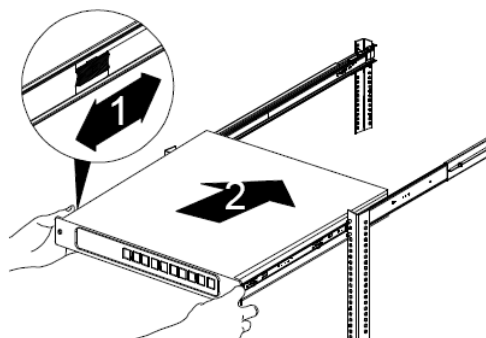
- Use the screws to fasten the inner rail to the rack.
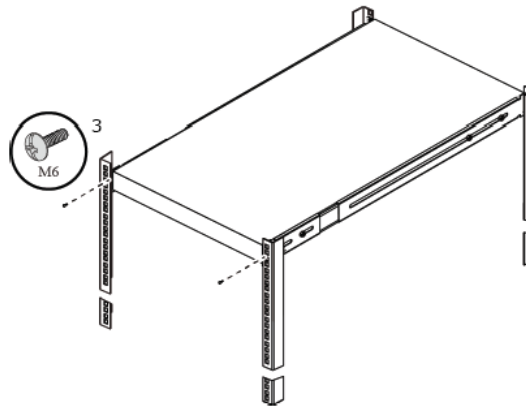
Drive Slot Numbering

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

1U4:

Slot 1	Slot 2	Slot 3	Slot 4

2U12:

Slot 1	Slot 4	Slot 7	Slot 10
Slot 2	Slot 5	Slot 8	Slot 11
Slot 3	Slot 6	Slot 9	Slot 12

System Installation and Deployment

TrioNAS 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 the management port cable and data port cables on the network plan, the topology examples are on the following.

TrioNAS U110:
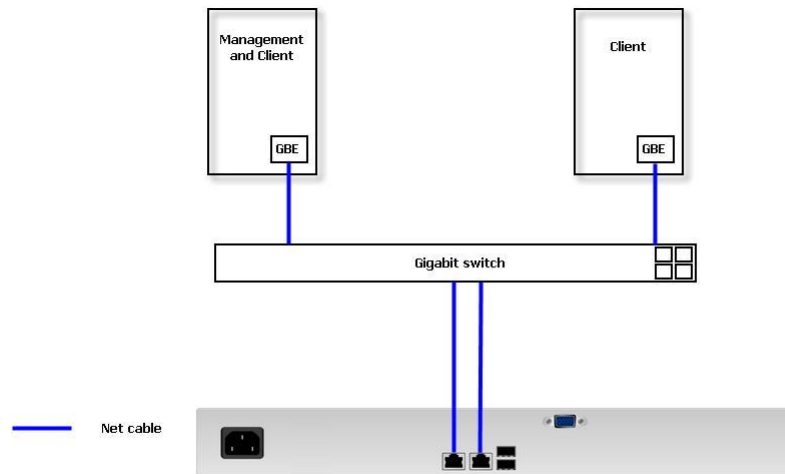
TrioNAS U120:
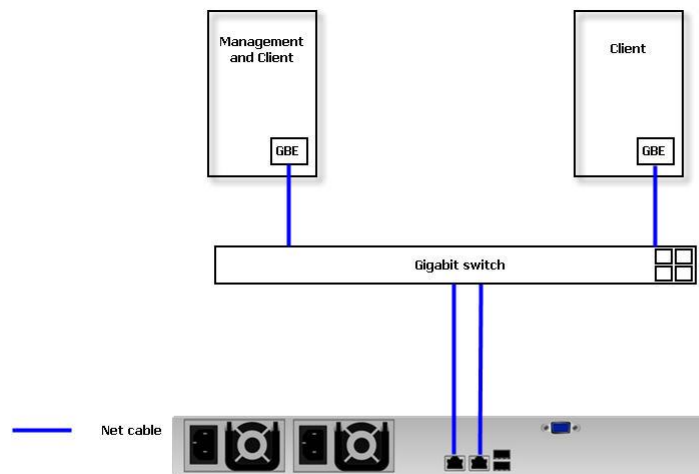
TrioNAS U210:

TrioNAS U220 / U221:

Power ON / OFF

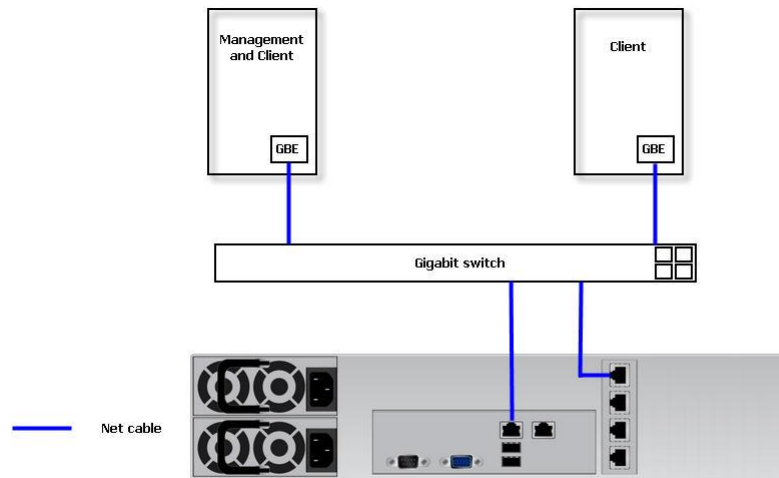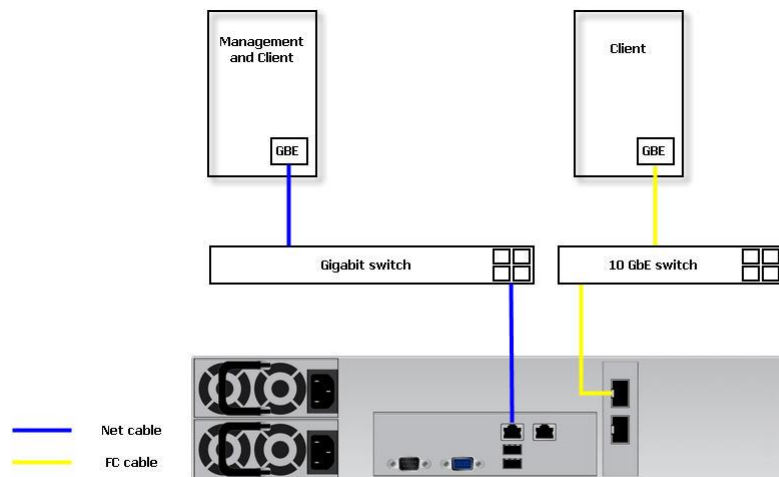## Power on the System

TrioNAS 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 U110 / U120   **TrioNAS U210 / U220 / U221**

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 Series:

TrioNAS 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 U110

Hardware Components	
Processor	Intel Atom D2550
No. of Host Channels	2 x 1Gb Ethernet ports
Cache Memory	4GB DDR3 ECC
Form Factors	1U rack-mount with 4 hot-swappable drive bays
Hard Disk	SATA II / SATA III HDD or SSD
No. of Hard Drives	4
Power Supply	130W Single
Fan	2 x system fans
Dimensions	1U 19" Rackmount 442.0mm x 711.2mm x 44.0mm (W x D x H)
Certifications	
Safety and EMI	RoHS, CE, FCC, BSMI, CB, UL, cUL
Requirements	
AC Input	100-240V ~ 2A-1A 130W with PFC (Auto Switching)
Operating Temperature	0 to 40°C
Relative Humidity	5% to 95% non-condensing

TrioNAS U210

Hardware Components	
Processor	Intel Core i3
No. of Host Channels	6 x 1Gb Ethernet ports
Cache Memory	16GB DDR3 ECC
Form Factors	2U rack-mount with 12 hot-swappable drive bays
Hard Disk	SATA II / SATA III HDD or SSD
No. of Hard Drives	12
Power Supply	549W Redundant
Fan	3 x system fans and 1 x CPU fans
Dimensions	2U 19" Rackmount 442.0mm x 711.2mm x 88.0mm (W x D x H)
Certifications	
Safety and EMI	RoHS, CE, FCC, BSMI, CB, UL, cUL
Requirements	
AC Input	100-240V ~ 2A-1A 130W with PFC (Auto Switching)

Operating Temperature	0 to 40°C
Relative Humidity	5% to 95% non-condensing

TrioNAS U220

Hardware Components	
Processor	Intel Core i3
No. of Host Channels	2 x 10Gb (SFP+) + 2 x 1Gb Ethernet ports
Cache Memory	16GB DDR3 ECC
Form Factors	2U rack-mount with 12 hot-swappable drive bays
Hard Disk	SATA II / SATA III HDD or SSD
No. of Hard Drives	12
Power Supply	549W Redundant
Fan	3 x system fans and 1 x CPU fans
Dimensions	2U 19" Rackmount 442.0mm x 711.2mm x 88.0mm (W x D x H)
Certifications	
Safety and EMI	RoHS, CE, FCC, BSMI, CB, UL, cUL
Requirements	
AC Input	100-240V ~ 2A-1A 130W with PFC (Auto Switching)
Operating Temperature	0 to 40°C
Relative Humidity	5% to 95% non-condensing

TrioNAS U221

Hardware Components	
Processor	Intel Xeon E3
No. of Host Channels	2 x 10Gb (SFP+) + 2 x 1Gb Ethernet ports
Cache Memory	32GB DDR3 ECC
Form Factors	2U rack-mount with 12 hot-swappable drive bays
Hard Disk	SATA II / SATA III HDD or SSD
No. of Hard Drives	12
Power Supply	549W Redundant
Fan	3 x system fans and 1 x CPU fans
Dimensions	2U 19" Rackmount 442.0mm x 711.2mm x 88.0mm (W x D x H)
Certifications	
Safety and EMI	RoHS, CE, FCC, BSMI, CB, UL, cUL
Requirements	
AC Input	100-240V ~ 2A-1A 130W with PFC (Auto Switching)
Operating Temperature	0 to 40°C
Relative Humidity	5% to 95% non-condensing

Revision History

Date	Version	Owner	Description
2014/12/11	8.60	Wilson Fang	Separate HW and SW manual. Remove Index. Add Specification.
2015/08/29	8.60	Grace Chen	P1-P22, Review.