



QNAP

TS-x77XU

**TS-977XU
TS-977XU-RP**

User Guide

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1. Preface





About This Guide

This guide provides information on the QNAP TS-x77XU NAS and step-by-step instructions on installing the hardware. It also provides instructions on basic operations and troubleshooting information.

Audience

This document is intended for consumers and storage administrators. This guide assumes that the user has a basic understanding of storage and backup concepts.

Document Conventions

Symbol	Description
	Notes provide default configuration settings and other supplementary information.
	Important notes provide information on required configuration settings and other critical information.
	Tips provide recommendations or alternative methods of performing tasks or configuring settings.
	Warnings provide information that, when ignored, may result in potential loss, injury, or even death.

2. Product Overview

This chapter provides basic information about the QNAP TS-x77XU NAS.

About the TS-x77XU

Equipped with an AMD Ryzen™ processor, the TS-x77XU NAS is a powerful solution for the storage, backup, sharing, and centralized management of your data. Featuring a versatile PCIe expansion card slot and scaling up to 64 GB of memory, the TS-x77XU adapts to your changing business needs. Each TS-x77XU also features four network ports (two 10GbE SFP+ and two 1GbE RJ45) for increased bandwidth and throughput. The TS-x77XU is able to leverage its AES-NI encryption engine to accelerate the performance of encrypted file transfers.

Hardware Specifications



Warning

If your QNAP product has hardware defects, return the product to QNAP or a QNAP-authorized service center for maintenance or replacement. Any attempt to repair or perform maintenance procedures on the product by you or an unauthorized third-party invalidates the warranty.

QNAP is not responsible for any damage or data loss caused by unauthorized modifications and installation of unsupported third-party applications.

For details, see the [QNAP Warranty Terms and Conditions](#).









Tip

Model specifications are subject to change without prior notice. To see the latest specifications, go to <https://www.qnap.com>.

Ordering P/N	CPU	Memory	Power supply
TS-977XU-1200-4G	Ryzen 3 1200	4 GB	Single
TS-977XU-RP-1200-4G	Ryzen 3 1200	4 GB	Redundant
TS-977XU-RP-2600-8G	Ryzen 5 2600	8 GB	Redundant
TS-977XU-RP-3600-8G	Ryzen 5 3600	8 GB	Redundant

Component	TS-977XU TS-977XU-RP
Processor	
CPU	<ul style="list-style-type: none"> TS-977XU: AMD Ryzen™ 3 1200 4-core/4-thread 3.1 GHz base/3.4 GHz turbo TS-977XU-RP: AMD Ryzen™ 5 2600 6-core/12-thread 3.4 GHz base/3.9 GHz turbo TS-977XU-RP-3600-8G: AMD Ryzen™ 5 3600 6-core/12-thread 3.6 GHz base/ 4.2 GHz turbo
Architecture	x86 64-bit
Encryption engine	AES-NI
Memory	

Component	TS-977XU TS-977XU-RP
Pre-installed memory	<ul style="list-style-type: none"> • 4 GB RAM: 1 x 4 GB DDR4 • 8 GB RAM: 2 x 4 GB DDR4
Memory slots	4 x LDIMM DDR4  Important Use only QNAP memory modules to maintain system performance and stability. For NAS devices with more than one memory slot, use QNAP modules with identical specifications. Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting.
Maximum memory	64 GB RAM: 4 x 16 GB
Flash memory	5 GB (dual-boot OS protection)
Storage	
Drive bays	<ul style="list-style-type: none"> • 4 x 3.5-inch SATA 6 Gbps bays • 5 x 2.5-inch SATA 6 Gbps bays
Drive compatibility	<ul style="list-style-type: none"> • 3.5-inch SATA hard disk drives • 2.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives  Important 2.5-inch drive trays only support drives with a maximum height of 9.5 mm.
Network	
10 Gigabit Ethernet ports	2 x 10 GbE SFP+ SmartNIC
Gigabit Ethernet ports	2 x GbE RJ45
External I/O Ports & Expansion Slots	
PCIe slots	1 x PCIe 3.0 x16  Tip For the list of compatible drive models and expansion cards, go to https://www.qnap.com/compatibility .
USB ports	<ul style="list-style-type: none"> • 1 x USB 3.2 Gen 2 (10Gbps) 5V/1A Type-A • 4 x USB 3.2 Gen 1 Type-A
HDMI ports	Optional: PCIe expansion card
Interface	
Buttons	<ul style="list-style-type: none"> • Power • Reset
Dimensions	

Component	TS-977XU TS-977XU-RP
Form factor	1U Rackmount
Dimensions (H x W x D)	<ul style="list-style-type: none"> • TS-977XU: 43.3 x 482.6 x 484.15 mm (1.70 x 19 x 19.06 in) • TS-977XU-RP: 43.3 x 482.6 x 505.54 mm (1.70 x 19 x 19.98 in)
Net weight	<ul style="list-style-type: none"> • TS-977XU: 7.44 kg (15.43 lbs) • TS-977XU-RP: 8.62 kg (19 lbs)
Others	
Rail compatibility	<p>RAIL-B02</p> <div style="display: inline-block; vertical-align: middle;"></div> <p>Note</p> <ul style="list-style-type: none"> • Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to http://shop.qnap.com. • Information on rail kit installation can be found in the installation guide included in the rail kit package.
Power supply unit	<ul style="list-style-type: none"> • TS-977XU: 250W, 100-240V AC, 50/60Hz • TS-977XU-RP: 2 x 300W, 100-240V AC, 50/60Hz <div style="display: inline-block; vertical-align: middle;"></div> <p>Warning</p> <p>To reduce the risk of fire or electric shock, ensure that you only connect the power cord to a properly grounded electrical outlet.</p>
System battery	CR2032 lithium battery (3V, 225 mAh)
Sound level	<ul style="list-style-type: none"> • TS-977XU: 39.2 db(A) • TS-977XU-RP: 43.8 db(A) <div style="display: inline-block; vertical-align: middle;"></div> <p>Note</p> <p>The sound level was tested at a bystander position, which is within one meter of the NAS. The test NAS operated at low speed with the maximum number of drives installed.</p>
Fans	System: 3 x 40 mm, 12V DC fan
Operating temperature	0°C to 40°C (32°F to 104°F)
Relative humidity	<ul style="list-style-type: none"> • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27°C (80.6°F)

**Tip**

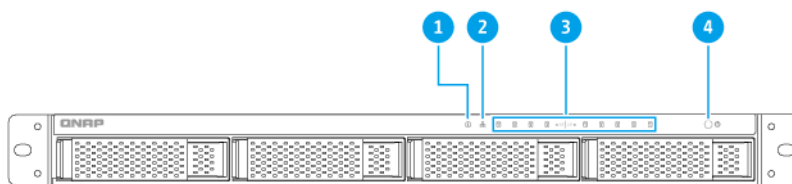
For the list of compatible drive models and expansion cards, go to <https://www.qnap.com/compatibility>.

Package Contents

Item	Quantity
TS-x77XU NAS	1
Power cord	<ul style="list-style-type: none"> • TS-977XU: 1 • TS-977XU-RP: 2
Ethernet cable	2
Screws for 2.5-inch drives	TS-977XU, TS-977XU-RP: 32
Screws for 3.5-inch drives	TS-977XU, TS-977XU-RP: 36
Quick Installation Guide (QIG)	1

Components

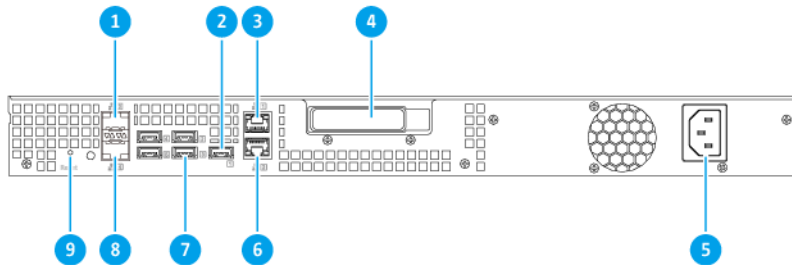
Front Panel



TS-977XU, TS-977XU-RP

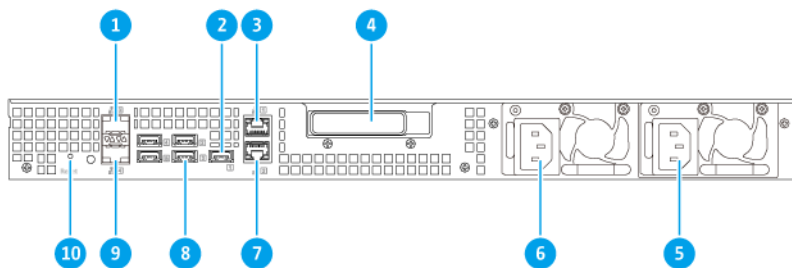
No.	Component	No.	Component
1	Status LED	3	Drive LEDs
2	LAN LED	4	Power button

Rear Panel



TS-977XU

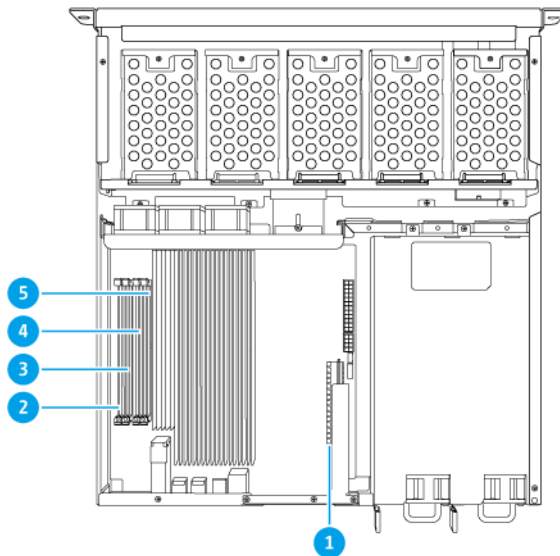
No.	Component	No.	Component
1	Ethernet port 3 (10GbE SFP+)	6	Ethernet port 2 (GbE RJ45)
2	USB 3.2 Gen 2 Type-A port	7	USB 3.2 Gen 1 Type-A ports
3	Ethernet port 1 (GbE RJ45)	8	Ethernet port 4 (10GbE SFP+)
4	PCIe low-profile cover	9	Reset button
5	Power input	-	-



TS-977XU-RP

No.	Component	No.	Component
1	Ethernet port 3 (10GbE SFP+)	6	Power supply unit 2
2	USB 3.2 Gen 2 Type-A port	7	Ethernet port 2 (GbE RJ45)
3	Ethernet port 1 (GbE RJ45)	8	USB 3.2 Gen 1 Type-A ports
4	PCIe low-profile cover	9	Ethernet port 4 (10GbE SFP+)
5	Power supply unit 1	10	Reset button

System Board



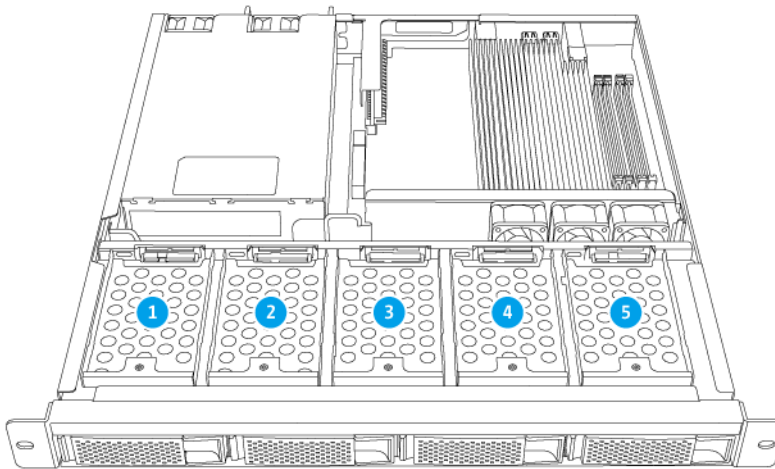
TS-977XU, TS-977XU-RP

No.	Component	No.	Component
1	PCIe slot 1 (PCIe 3.0 x16)	4	Memory slot 2 (Channel A, DIMM 2)
2	Memory slot 4 (Channel B, DIMM 4)	5	Memory slot 1 (Channel A, DIMM 1)
3	Memory slot 3 (Channel B, DIMM 3)	-	-

Front Drive Numbering



TS-977XU, TS-977XU-RP 3.5-inch Trays



TS-977XU, TS-977XU-RP 2.5-inch Trays

Safety Information

The following instructions help ensure personal safety and environmental safety. Read these instructions carefully before performing any operations.

General Instructions

- The device should be stored in a secure location with restricted access, controlled through the use of a tool, lock and key, or any means of security.
- Only qualified, skilled, and authorized persons with knowledge of all restrictions, safety precautions, and installation and maintenance procedures should have physical access to the device.

- To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.
- Observe electrostatic discharge (ESD) procedures to avoid potential injury or damage to components.

Power

- To reduce the risk of fire or electric shock, ensure that you only connect the power cord to a properly grounded electrical outlet.

•



Devices with redundant power supply may have one or more power supply unit (PSU) cords. To avoid serious injuries, a trained service technician must disconnect all PSU cords from the device before installing or replacing system components.

System Battery

- To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.
- Dispose of used batteries properly according to local regulations or the instructions of the battery manufacturer.

Moving Parts

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Moving fan blades: Keep your body parts away from moving fan blades while the device is connected to a power source.

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Moving components: Keep your body parts away from other moving components.

Installation Requirements

Category	Item
Environment	<ul style="list-style-type: none"> • Room temperature: 0°C to 40°C (32°F to 104°F) • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27°C (80.6°F) • Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals

Category	Item
Hardware and peripherals	<ul style="list-style-type: none"> • Storage drives For details on compatible drives, go to https://www.qnap.com/compatibility/. • Network cable
Tools	<ul style="list-style-type: none"> • Phillips #1 or #2 screwdriver • Anti-static wrist strap

Setting Up the NAS



Important

Read all safety requirements and information carefully before setting up the NAS or installing NAS components.

1. Place your NAS device in an environment that meets the requirements.
For details, see [Installation Requirements](#).
2. Install the drives.
For details, see the following topics:
 - [Installing 3.5-inch Hard Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Hard Drives or Solid-State Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Solid-State Drives on 2.5-inch Trays](#)
3. Connect the power cord and all applicable cables.
4. Power on the NAS.
5. Install QTS.
For details, see [QTS Installation](#).
6. Log on to QTS.

3. Installation and Configuration

This chapter provides specific hardware and firmware installation and configuration steps.

Hardware Installation

This section provides information on installing drives, memory modules, and expansion cards.

Drive Installation

The TS-x77XU is compatible with 3.5-inch and 2.5-inch hard drives, and 2.5-inch solid-state drives.

Installing 3.5-inch Hard Drives on 3.5-inch Trays



Warning

- Installing a drive and installing QTS deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

-



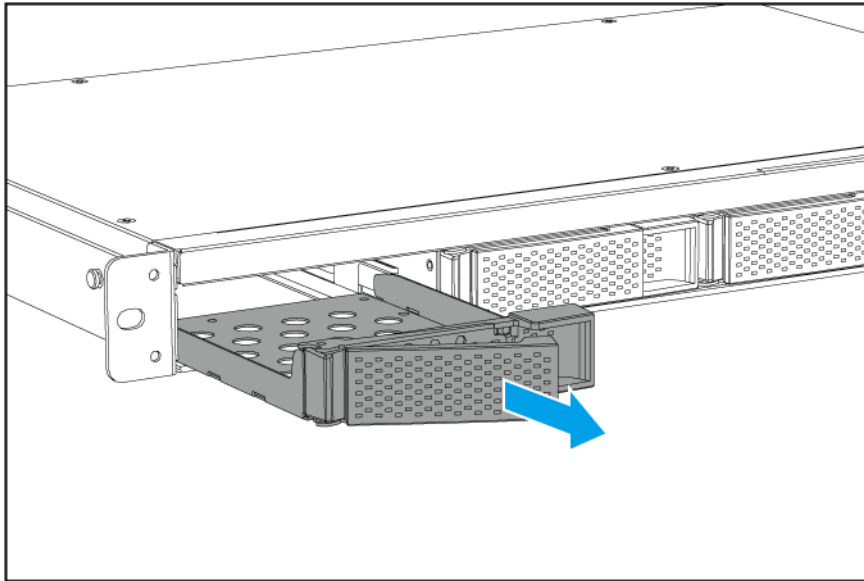
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

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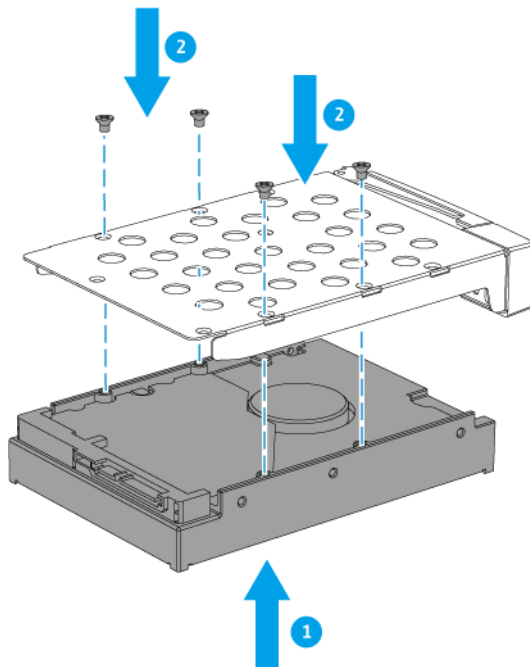
Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Remove the drive tray.
 - a. Pull the tray handle outward.
 - b. Pull the tray out.



3. Install a drive on the tray.

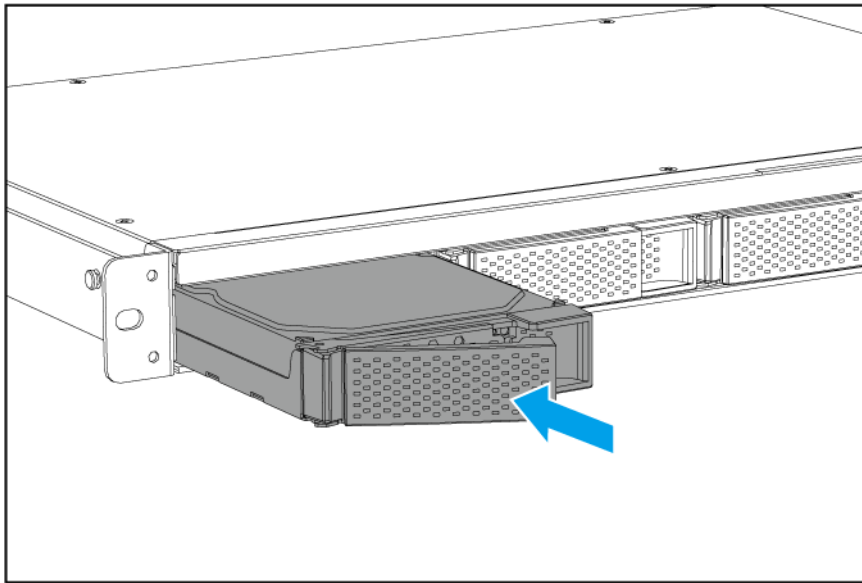
- a.** Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.
- b.** Attach the screws.



4. Load the tray into the bay.

- a.** Insert the tray into the bay.

- b. Push the handle.



5. Power on the NAS.

Installing 2.5-inch Hard Drives or Solid-State Drives on 3.5-inch Trays



Warning

- Installing a drive and installing QTS deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

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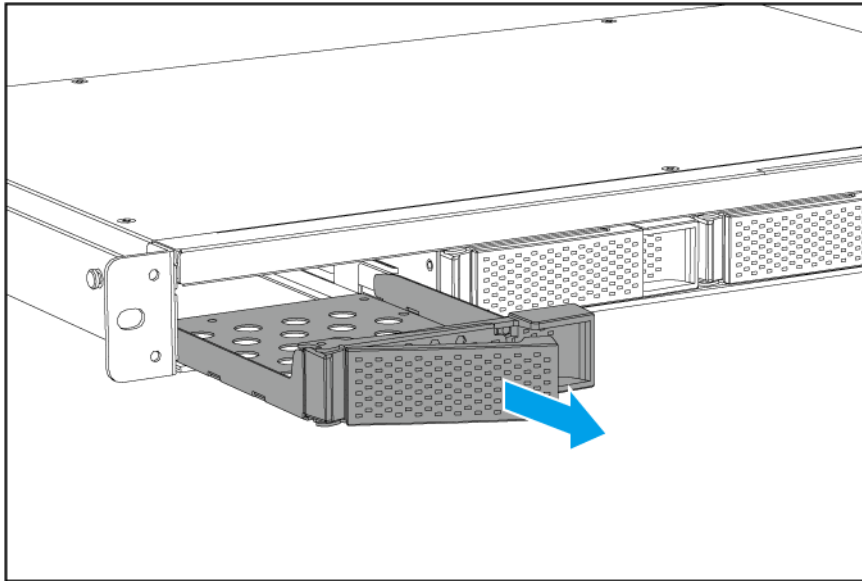
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

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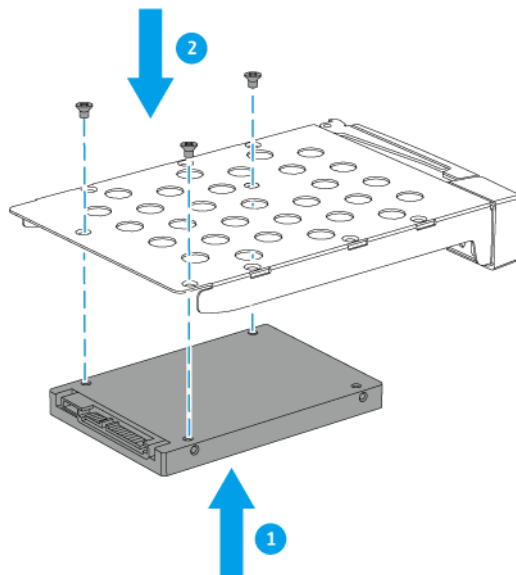
Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Remove the drive tray.
 - a. Pull the tray handle outward.
 - b. Pull the tray out.



3. Install a drive on the tray.

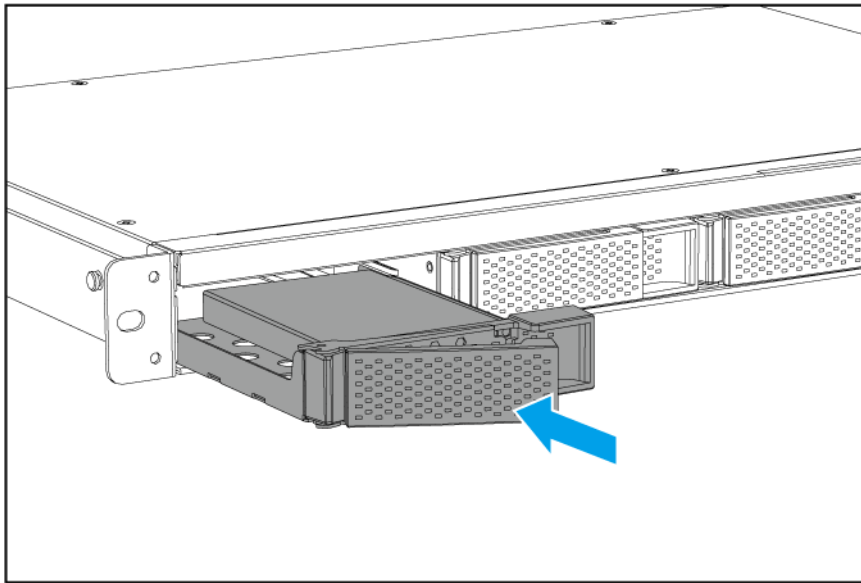
- a.** Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.
- b.** Attach the screws.



4. Load the tray into the bay.

- a.** Insert the tray into the bay.

- b. Push the handle.



5. Power on the NAS.

Installing 2.5-inch Solid-State Drives on 2.5-inch Trays



Warning

- Installing a drive and installing QTS deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

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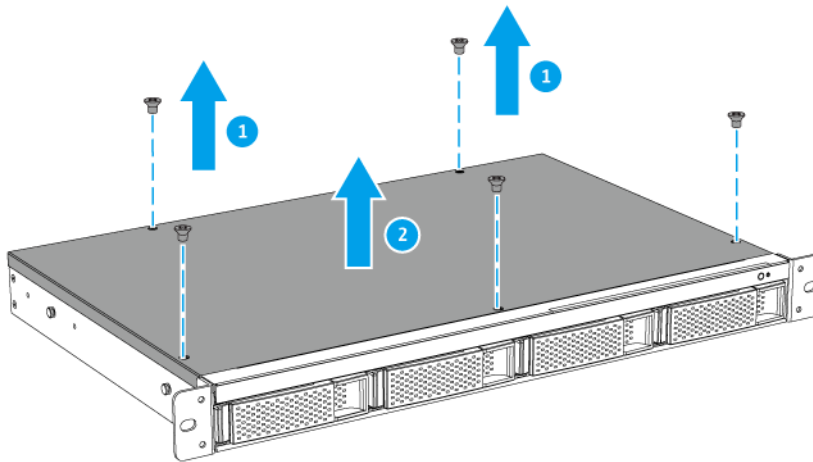
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

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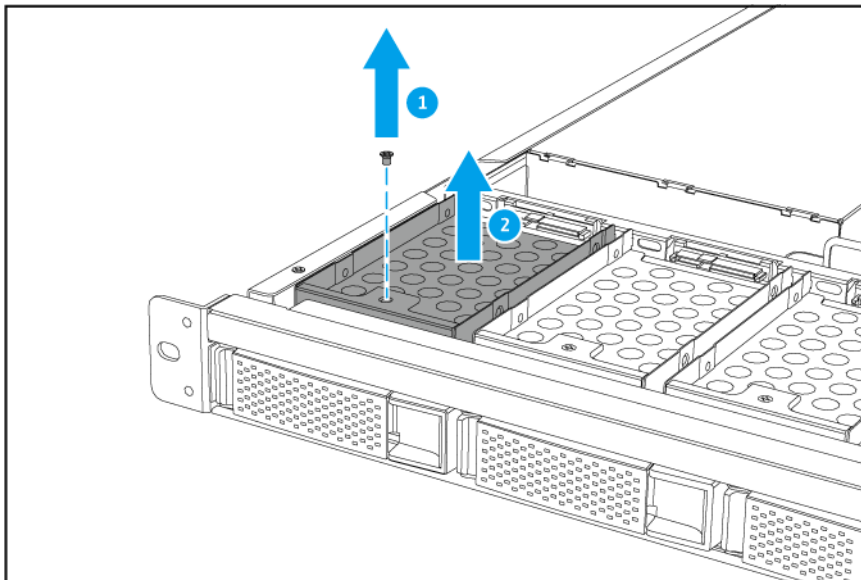


Other moving components: Keep your hands and other body parts away from other moving components.

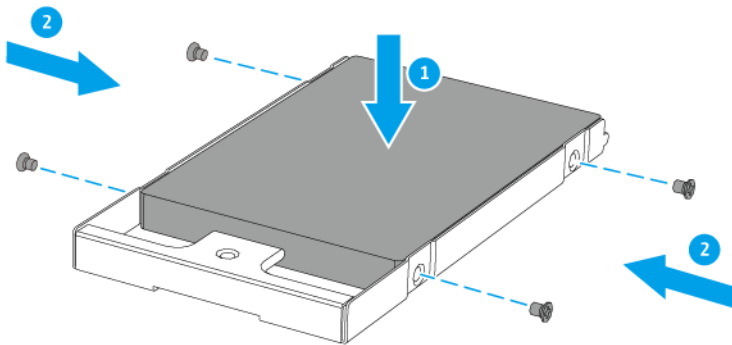
1. Power off the NAS.
2. Remove the top cover.
 - a. Remove the screws connecting the top cover to the chassis.
 - b. Lift the top cover up.



3. Remove the drive tray.
 - a. Remove the screws that secure the tray to the chassis.
 - b. Pull the tray out.

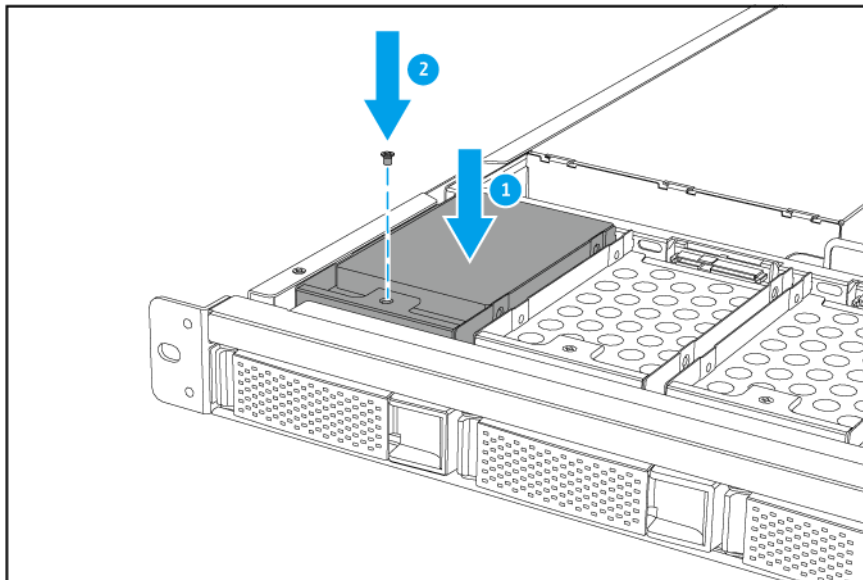


4. Install a drive on the tray.
 - a. Place the drive on the tray so that the holes on the sides of the drive are aligned with the holes on the sides of the tray.
 - b. Attach the screws to further secure the drive.



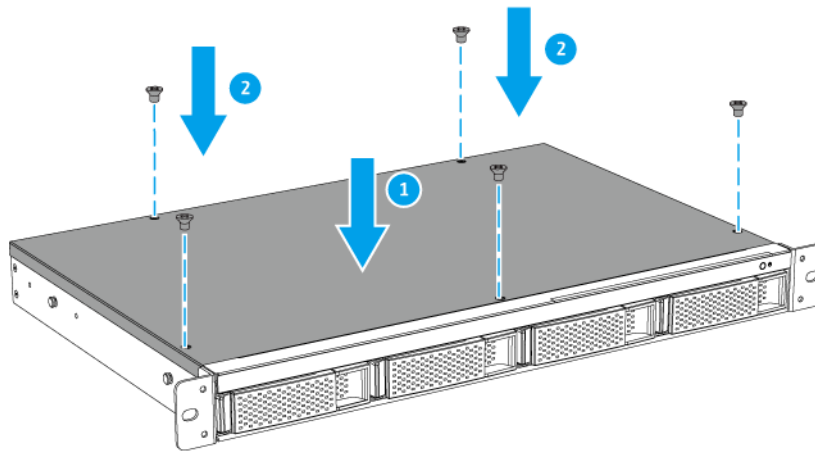
5. Load the tray into the bay.

- a. Insert the tray into the bay.
- b. Attach the screw that secures the drive tray to the chassis.



6. Attach the top cover.

- a. Place the cover on the NAS.
- b. Attach the screws connecting the top cover to the chassis.



7. Power on the NAS.

Replacing Memory Modules

The TS-x77XU has four memory slots. You can increase the memory capacity of the NAS by upgrading memory modules. For optimal dual-channel performance, replace memory modules in pairs.

Use only QNAP memory modules to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.



Important

QNAP recommends installing modules in pairs to run dual-channel mode. Ensure the following when replacing memory modules:

- Ensure that each memory channel uses identical modules. See table below for details:

Channel name	Slot numbering
Channel A	Slots 1, 2
Channel B	Slots 3, 4

- When installing one module use the slot furthest from the CPU (slot 4).
- When installing two modules, use slots 2 and 4.
- When installing four modules, use slots 2 and 4 for the first pair, and slots 1 and 3 for the second pair.

For details on slot numbering, see [System Board](#).



Warning

- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

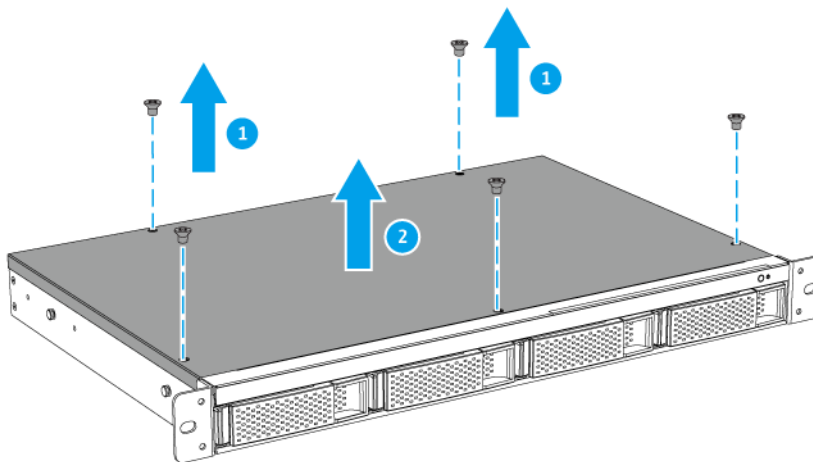


Moving fan blades: Keep your hands and other body parts away from moving fan blades.



Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.
 - a. Remove the screws connecting the top cover to the chassis.
 - b. Lift the cover off the device.



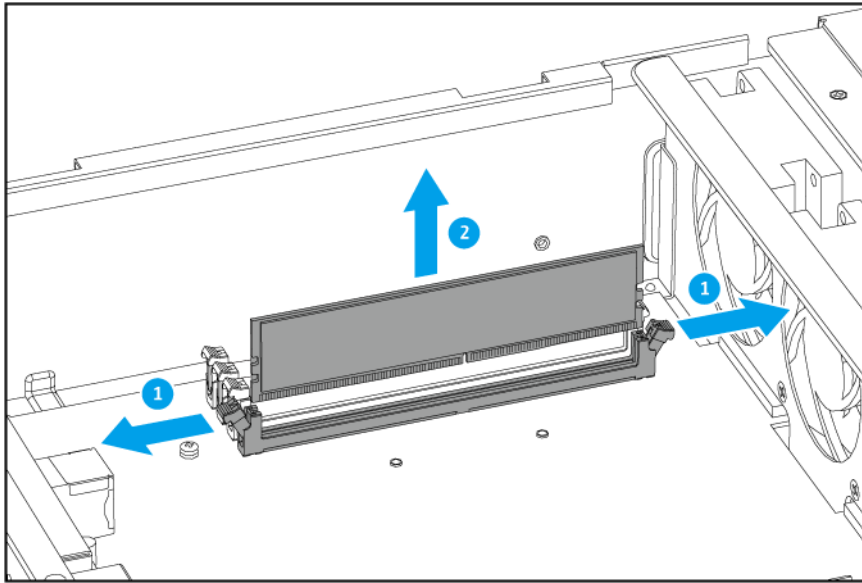
5. Remove an existing module.
 - a. Push the retention clips outward simultaneously to release the module.



Warning

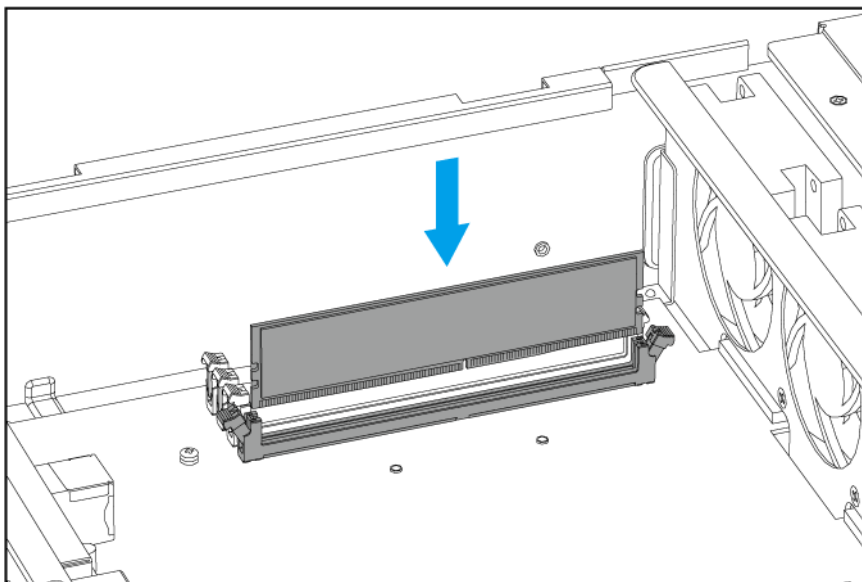
Attempting to remove a module that is not completely released may damage the module and the motherboard.

- b. Hold the module by the edges.



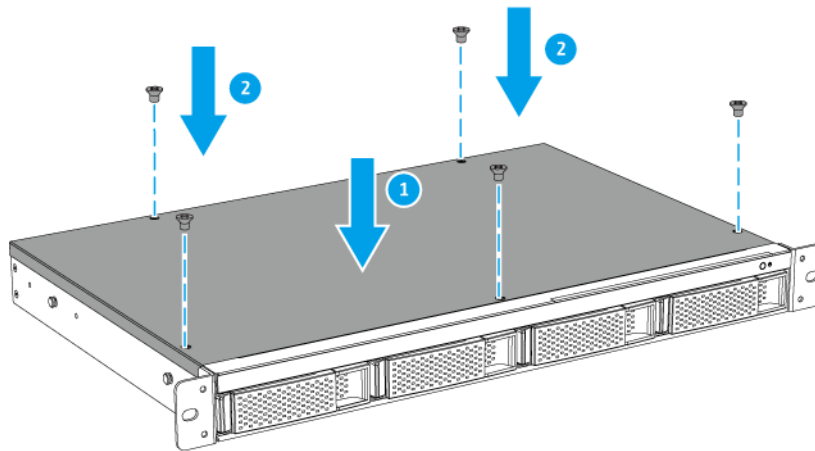
6. Install a new module.

- a. Align the notch with the ridge in the slot.
- b. Insert the module into the slot.
- c. Verify that the metal connectors are completely inserted into the slot.
- d. Carefully press down on the module until the retention clips lock the module into place.



7. Attach the case cover.

- a. Place the cover on the device.
- b. Attach the screws connecting the top cover to the chassis.



8. Connect all cables and external attachments.
9. Power on the device.
10. Verify that the module is recognized by the device.
 - a. Log on to QTS as administrator.
 - b. Go to **Control Panel > System > System Status > Hardware Information** .
 - c. Check the value for **Total memory**.

Installing Expansion Cards

The device supports selected expansion cards, some of which require QNAP PCIe brackets. QNAP-branded expansion cards purchased from the company website are shipped with the brackets necessary to fit the device.



Warning

- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

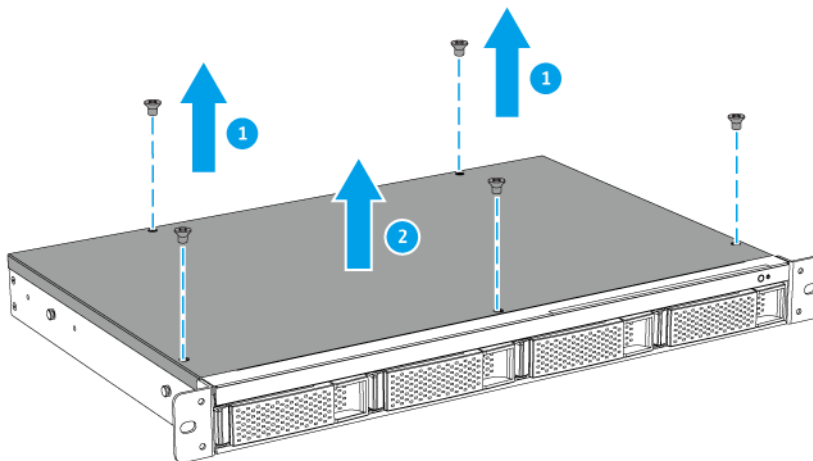


Moving fan blades: Keep your hands and other body parts away from moving fan blades.

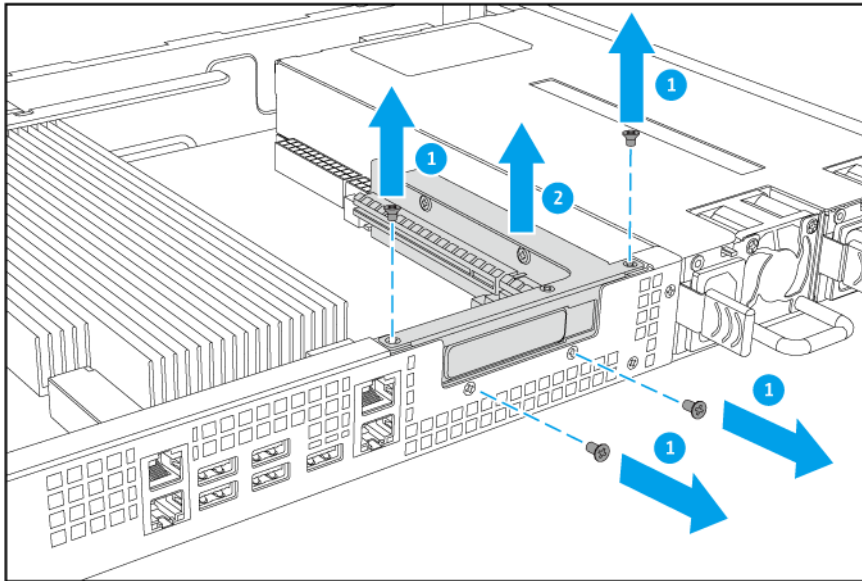


Other moving components: Keep your hands and other body parts away from other moving components.

1. Check the expansion cards and brackets supported by your model on the QNAP website.
 - a. Go to www.qnap.com/compatibility.
 - b. Click **Search by NAS**.
 - c. Specify the number of bays and the specific model of your NAS.
 - d. Under **Category**, select the component or device type.
 - e. Locate a specific component or device model in the list.
 - f. Optional: Click the corresponding **Note** icon to view more information.
2. Power off the device.
3. Disconnect the power cord from the electrical outlet.
4. Disconnect all cables and external attachments.
5. Remove the top cover.
 - a. Remove the screw that secures the cover to the chassis.
 - b. Lift the cover off the device.

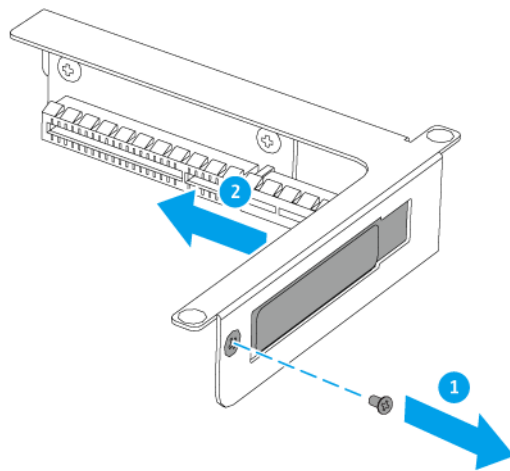


6. Remove the PCIe cover.
 - a. Remove the screw that secures the cover to the bracket.
 - b. Carefully pull the bracket away from the card.



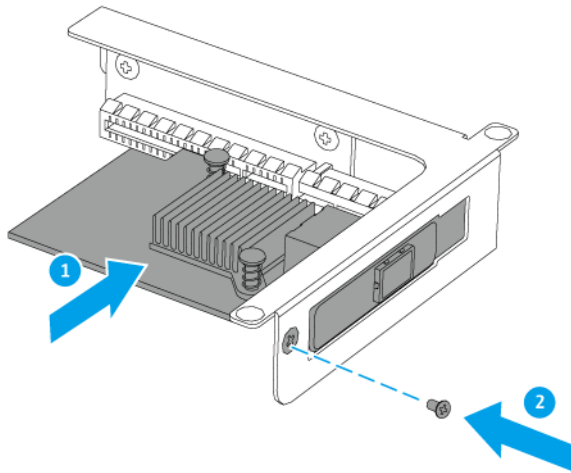
7. Remove the PCIe cover.

- a. Remove the screw that secures the cover to the bracket.
- b. Pull the cover away from the slot.



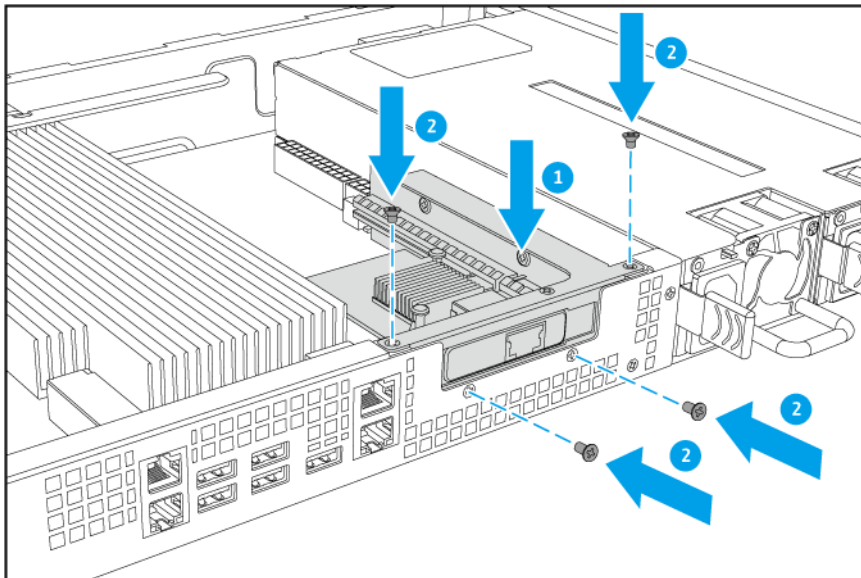
8. Install the expansion card.

- a. Insert the card into the PCIe slot on the bracket.
- b. Attach the screw.



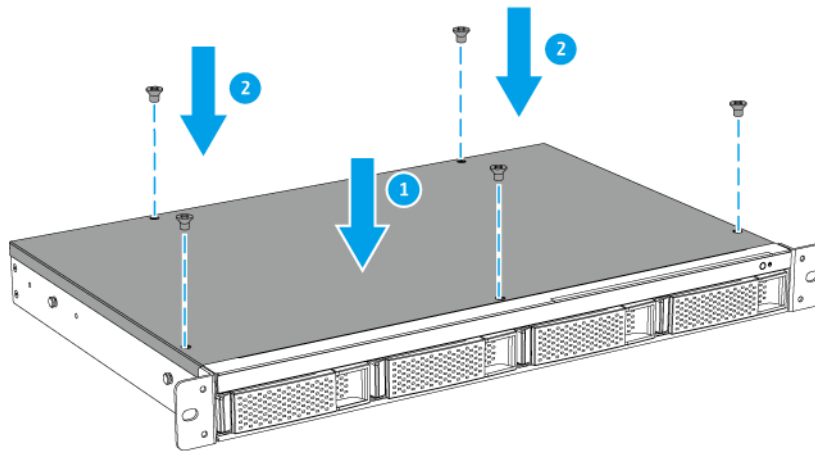
9. Insert the PCIe bracket.

- a. Insert the PCIe connector on the bracket into the PCIe slot on the system board.
- b. Attach the screws that secure the bracket to the chassis.



10. Attach the case cover.

- a. Place the cover on the device.
- b. Attach the screws connecting the top cover to the chassis.



11. Connect all cables and external attachments.
12. Connect the power cord to the electrical outlet.
13. Power on the device.

Hot-swapping Redundant Power Supply Units

NAS devices with redundant power supply units (PSUs) support hot-swapping.

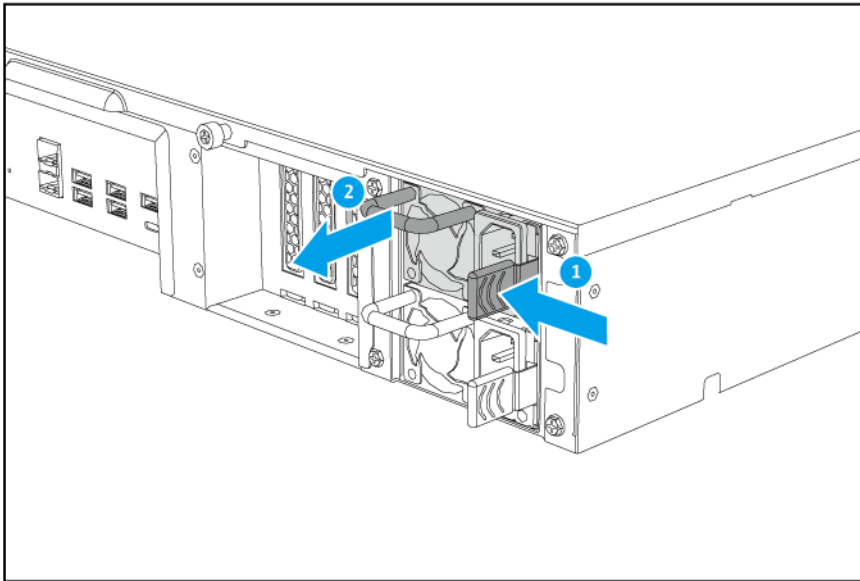


Warning

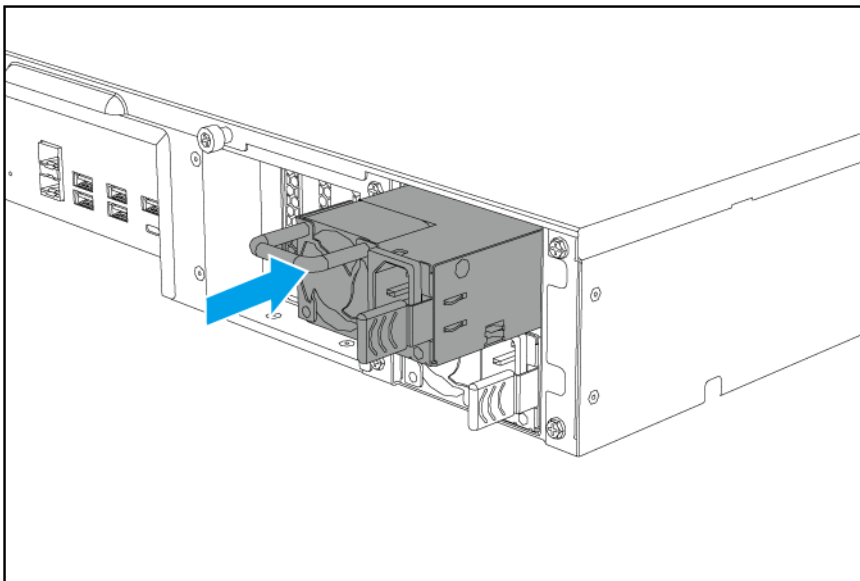


The NAS may have one or more power supply unit (PSU) cords. To avoid serious injuries, a trained service technician must disconnect all PSU cords before installing or replacing system components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet and the power supply unit (PSU) that you are replacing.
3. Firmly press the latch toward the handle and then pull the PSU out.



4. Insert the new PSU.



5. Connect the power cord to the PSU and the electrical outlet.

6. Power on the device.

7. Enable alerts for PSU failures.

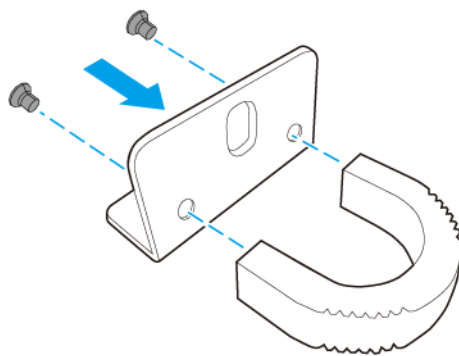
- a. Log on to QTS as administrator.
- b. Go to **Control Panel > System > Hardware > General** .
- c. Select **Enable Redundant Power Supply Mode**.
- d. Click **Apply All**.

Installing Handles on TS-977XU and TS-977XU-RP

Installing handles enables you to better grip and secure the NAS.

Handles on the TS-977XU and TS-977XU-RP require manual installation.

1. Power off the NAS.
2. Install a handle on an angle bracket.
 - a. Align the openings on the handle with the two round screw holes on the angle bracket.
 - b. Attach the screws to lock the handle to the angle bracket.

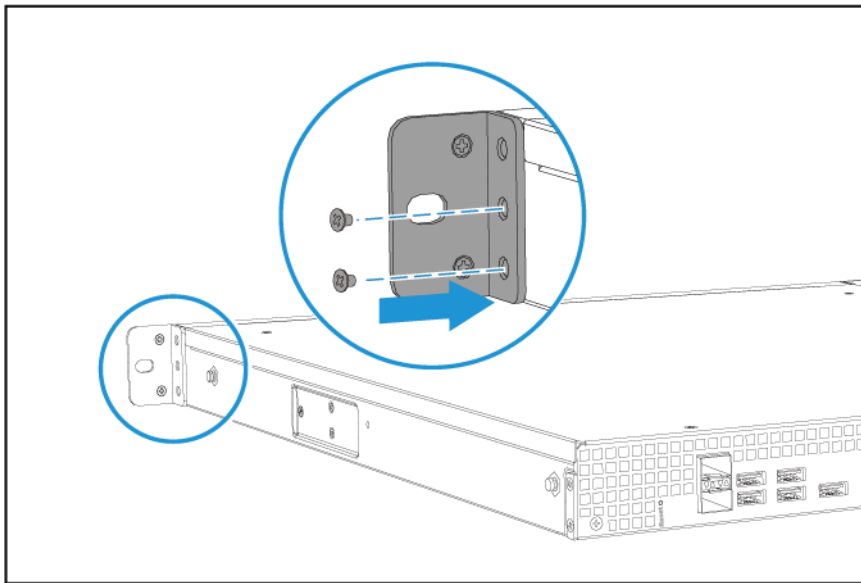


3. Install the angle bracket on the device.
 - a. Align the holes on the angle bracket with the holes on the chassis.

**Note**

Ensure that the handle faces the same direction as the front panel.

- b. Attach the screws.



4. Install a second handle on the other side of the chassis.
5. Power on the NAS.

Rail Kits

Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to <http://shop.qnap.com>.

The TS-x77XU is compatible with the following rail kit models:

Model	Compatible Rail Kit
<ul style="list-style-type: none"> • TS-977XU • TS-977XU-RP 	RAIL-B02

You can find installation information in the rail kit package.

Expansion Unit Installation

The TS-x77XU supports both SAS and USB expansion units.

Expansion Unit Model	Description	Required Accessories
REXP-1000 Pro	<ul style="list-style-type: none"> • Uses a SAS 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD 	<ul style="list-style-type: none"> • SAS-6G2E storage expansion card • mini-SAS SFF-8088 cable
TL-D800C	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable

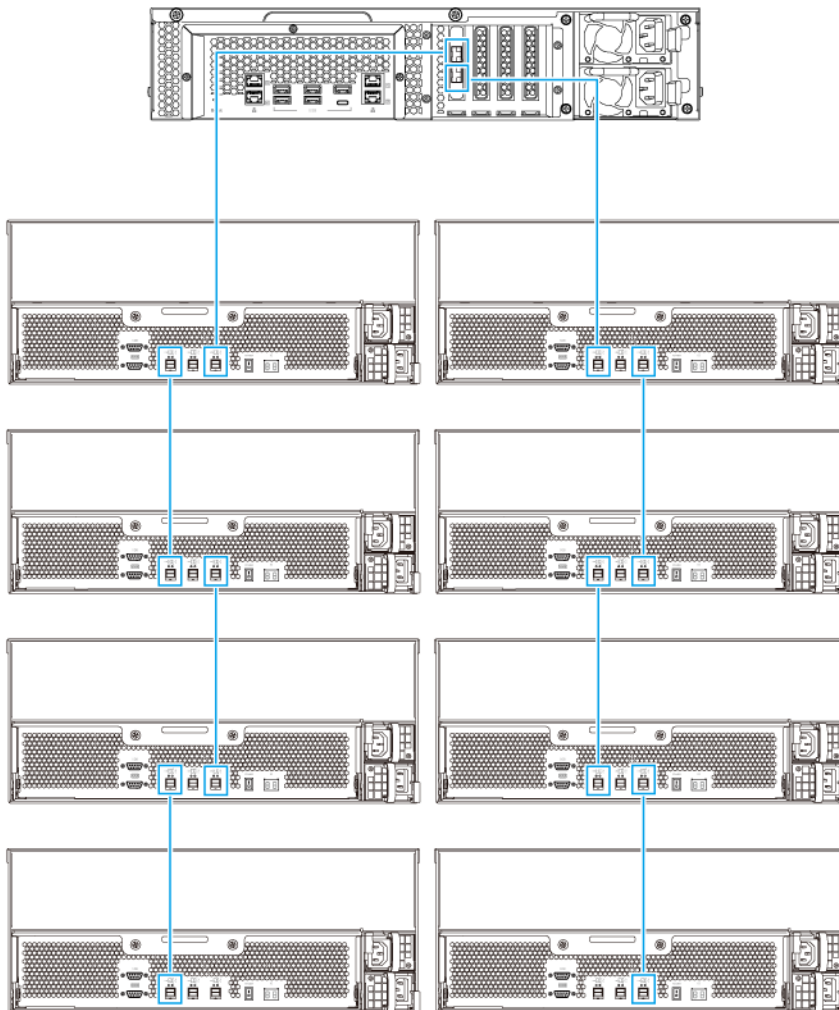
Expansion Unit Model	Description	Required Accessories
TL-D400S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD 	<ul style="list-style-type: none"> • 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter
TL-D800S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD 	<ul style="list-style-type: none"> • 2 x SFF-8088 connector cables • QXP-800eS-A1164 host bus adapter
TL-D1600S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD 	<ul style="list-style-type: none"> • 4 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS host bus adapter
TR-002	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable
TR-004	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable
TR-004U	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 1 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable • RAIL-B02
TL-R400S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD 	<ul style="list-style-type: none"> • 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter • RAIL-B02
TL-R1200C-RP	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable • RAIL-B02

Connecting SAS Expansion Units

To connect the device to SAS expansion units, a storage expansion card must be installed in the device.

For required accessories details, see [Expansion Unit Installation](#).

1. Install a storage expansion card on the PCIe slot.
For details, see [Installing Expansion Cards](#)
2. Connect the expansion units to the device using the following topology.



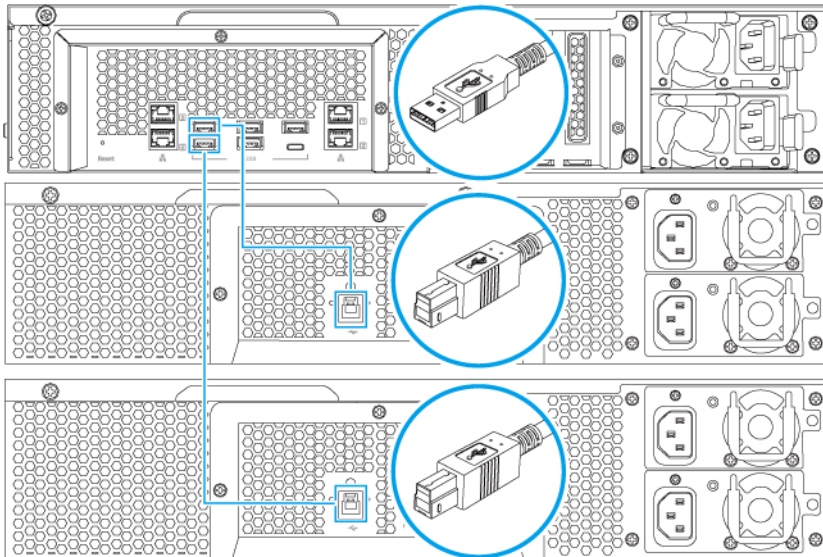
3. Power on the expansion units.
4. Verify that the expansion units are recognized by the device.
 - a. Log on to QTS as administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion units are listed.

Connecting USB Expansion Units

To connect the device to USB expansion units, USB Type-A to USB Type-C cables or USB Type-C to USB Type-C cables are required.

For required accessories details, see [Expansion Unit Installation](#).

1. Verify that the NAS is powered off.
2. Connect the expansion unit to the NAS.
 - a. Connect the USB cable to a USB 3.2 Gen 2 Type-A port on the NAS.
 - b. Connect the USB cable to a USB Type-A port on the NAS.



3. Power on the expansion units.
4. Verify that the expansion units are recognized by the NAS.
 - a. Log on to QTS as administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion units are listed.

QTS Installation

The TS-x77XU uses the QNAP QTS operating system. You can install QTS using any of the following methods.

Method	Description	Requirements
Qfinder Pro installation (Recommended)	<p>If the NAS is connected to your local area network, you can do the following:</p> <ul style="list-style-type: none"> • Locate the NAS using Qfinder Pro. • Complete the steps in the Smart Installation Guide wizard. <p>For details, see Installing QTS Using Qfinder Pro.</p>	<ul style="list-style-type: none"> • Computer • Network cable • Qfinder Pro installer

Method	Description	Requirements
Cloud installation	<p>If the NAS is connected to the internet, you can do the following:</p> <ul style="list-style-type: none"> • Scan the QR code on the NAS. • Log into your myQNAPcloud account. • Use myQNAPcloud Link to remotely access your NAS. • Complete the steps in the Smart Installation Guide wizard. <p>For details, see Installing QTS Using the Cloud Key.</p>	<ul style="list-style-type: none"> • Computer or mobile device • Network cable • myQNAPcloud account • Cloud Key

Installing QTS Using Qfinder Pro



Warning

Installing QTS deletes all data on the drives. Back up your data before proceeding.

1. Power on the NAS.
2. Connect the NAS to your local area network.
3. Run Qfinder Pro on a computer that is connected to the same local area network.



Note

To download Qfinder Pro, go to <https://www.qnap.com/utilities>.

4. Locate the NAS in the list and then double-click the name or IP address.
The **Smart Installation Guide** opens in the default web browser.
5. Click **Start Smart Installation Guide**.
The **Enter the NAS name and administrator's password** screen appears.
6. Specify the following information.
 - **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
 - **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.
7. Click **Next**.
The **Set the date and time** screen appears.
8. Specify the time zone, date, and time.



Tip

QNAP recommends connecting to an NTP server to ensure that the NAS follows the Coordinated Universal Time (UTC) standard.

9. Click **Next**.
The **Configure the network settings** screen appears.
10. Select **Obtain an IP address automatically (DHCP)**.

11. Click **Next**.
The **Cross-platform file transfer service** screen appears.
12. Select the types of devices that you will use to access shared folders on the NAS.
13. Click **Next**.
The **Summary** screen appears.
14. Review the settings.
15. Click **Apply**.
A confirmation message appears.



Warning

Clicking **Confirm** deletes all data on the drive before installing QTS.

16. Click **Confirm**.
QTS is installed.

Installing QTS Using the Cloud Key



Warning

Installing QTS deletes all data on the drives. Back up your data before proceeding.

1. Power on the NAS.
2. Connect the NAS to the internet.
3. Go to the QNAP Cloud Installation page using one of the following methods:
 - On your computer, go to <http://install.qnap.com/>.
 - Scan the QR code on the NAS using a mobile device.

The web page lists all the uninitialized QNAP NAS devices on the local network.

4. Find your NAS from the list and then click **Initialize**.



Note

If your NAS is not listed, follow the instructions on the web page to specify the Cloud Key on the NAS.

The installation wizard opens in the default web browser.

5. Create an account or sign in to myQNAPcloud.



Note

You must return to this page to complete the installation after creating an account.

6. Specify the myQNAPcloud device name for the NAS.



Note

- The myQNAPcloud device name is used when remotely accessing the NAS.
- For security purposes, the myQNAPcloud Link remote connection service will be disabled on your NAS after initialization. You can enable it by connecting to QTS through LAN and then installing myQNAPcloud Link.

7. Click **Next**.
The **Smart Installation Guide** opens in the default web browser.
8. Click **Start Smart Installation Guide**.
9. Specify the following information.
 - **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
 - **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.
10. Click **Next**.
The **Set the date and time** screen appears.
11. Specify the time zone, date, and time.

**Tip**

QNAP recommends connecting to an NTP server to ensure that the NAS follows the Coordinated Universal Time (UTC) standard.

12. Click **Next**.
The **Configure the network settings** screen appears.
13. Select **Obtain an IP address automatically (DHCP)**.
14. Click **Next**.
The **Cross-platform file transfer service** screen appears.
15. Select the types of devices that you will use to access shared folders on the NAS.
16. Click **Next**.
The **Summary** screen appears.
17. Review the settings.
18. Click **Apply**.
A confirmation message appears.

**Warning**


Clicking **Confirm** deletes all data on the drive before installing QTS.

19. Click **Confirm**.
QTS is installed.


4. Basic Operations

This chapter describes basic NAS operations.


Power Button

Operation	User Action	Result
Power on	Press the button once.	The device powers on.
Power off	Press and hold the button for 1.5 seconds.	The device powers off.
Force power off	Press and hold the button for 5 seconds.	The device powers off.  Important Use this method only when the device is unresponsive.

Reset Button

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	<p>The following settings are reset to default:</p> <ul style="list-style-type: none"> • System administrator password: The default password is the first MAC address in uppercase letters without special characters. For example, if the first MAC address is 00-08-9B-F6-15-75, then the admin password will be 00089BF61575. <p> Tip You can find the first MAC address using Qfinder Pro. A label attached to the device also lists the address as MAC1.</p> <ul style="list-style-type: none"> • TCP/IP configuration: <ul style="list-style-type: none"> • Obtain IP address settings automatically via DHCP • Disable jumbo frames • If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to “Active Backup (Failover)”. • System port: 8080 (system service port) • Security level: Low (Allow all connections) • LCD panel password: (blank) • VLAN: Disabled
Advanced system reset	Press and hold the button for 10 seconds.	<p>The default factory settings are restored.</p> <ul style="list-style-type: none"> • To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

Reset Button

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	<p>The following settings are reset to default:</p> <ul style="list-style-type: none"> • System administrator password: The default password is the first MAC address in uppercase letters without special characters. For example, if the first MAC address is 00-08-9B-F6-15-75, then the admin password will be 00089BF61575. <p> Tip You can find the first MAC address using Qfinder Pro. A label attached to the device also lists the address as MAC1.</p> <ul style="list-style-type: none"> • The admin account will be automatically enabled • TCP/IP configuration: <ul style="list-style-type: none"> • Obtain IP address settings automatically via DHCP • Disable jumbo frames • If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to “Active Backup (Failover)”. • System port: 8080 (system service port) • Security level: Low (Allow all connections) • LCD panel password: (blank) • VLAN: Disabled
Advanced system reset	Press and hold the button for 15 seconds. Press and hold the button for 10 seconds.	<p>The default factory settings are restored.</p> <ul style="list-style-type: none"> • To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

LEDs

LEDs indicate system status and related information when the NAS is powered on. The following LED information applies only when the drive is correctly installed and when the NAS is connected to the network.

For details on the location of the LEDs, see [Components](#).



Tip

The expansion LEDs are not applicable to 9-drive bay models.

LED	Status	Description
System Status	Flashes green and red alternately every 0.5 seconds	<ul style="list-style-type: none"> The drive is being formatted. The NAS is being initialized. The operating system is being updated. RAID rebuilding is in progress. Online RAID Capacity Expansion is in progress. Online RAID Level Migration is in progress.
	Red	<ul style="list-style-type: none"> The drive is invalid. The disk volume has reached its full capacity. The disk volume is about to reach its full capacity. The system fan is not functioning. An error occurred when accessing (read/write) the data. A bad sector is detected on the hard drive. The NAS is in degraded read-only mode (two member drives failed in RAID 5 or RAID 6 but the data can still be read). A hardware self-test error occurred.
	Flashes red every 0.5 seconds	The NAS is in degraded mode (one member drive failed in RAID 1, RAID 5, or RAID 6).
	Flashes green every 0.5 seconds	<ul style="list-style-type: none"> The NAS is starting up. The NAS is not configured. A drive is not formatted.
	Green	The NAS is ready.
	Off	All drives are in standby mode.
LAN	Orange	A read/write error occurred while another device is accessing data.
	Flashes orange	The NAS is being accessed from the network.

LED	Status	Description
Drive	Flashes red	The drive is being accessed and a read/write error occurs during the process.
	Red	A drive read/write error has occurred.
	Flashes green	The data is being accessed.
	Green	The drive can be accessed.
Expansion	Orange	<ul style="list-style-type: none"> • A USB JBOD expansion unit has been detected. • A SAS JBOD expansion unit has been detected. • A REXP expansion unit has been detected.
	Off	No expansion unit has been detected.

Audio Alert

Duration	Frequency	Description
Short beep (0.5 seconds)	1	<ul style="list-style-type: none"> • The NAS is starting up. • When the reset button is pressed for 3 seconds, the NAS resets configurations. • When the reset button is pressed for 10 seconds, the NAS resets configurations and reboots. • The operating system was updated. • The device is starting USB One-Touch Copy.
	2	The USB device has been removed (USB One Touch copy button).
	3	<ul style="list-style-type: none"> • Cannot detect installed disk. • The firmware was updated.

Duration	Frequency	Description
Long beep (1.5 seconds)	3 (every 5 minutes)	<ul style="list-style-type: none"> • A power error occurred. • The system fan is not functioning. • The fan module has been removed. • The NAS data cannot be copied to the external storage device connected to the front USB port.
	2	<ul style="list-style-type: none"> • The storage pool is about to reach full capacity. • The storage pool has reached full capacity. • A storage pool status error occurred. • The shared folder is about to reach its full capacity. • The shared folder has reached its full capacity. • The drives are in degraded mode. • The drive is rebuilding. • The USB device is being removed (USB one-touch copy button). • A shared folder status error occurred. • A drive is plugged in or out. • The iSCSI is about to reach full capacity.
	1	<ul style="list-style-type: none"> • The NAS was powered off by force shutdown (hardware shutdown). • The NAS was powered on successfully and is ready.
Long and short beeps	1 long and 2 short beeps	The JBOD expansion unit has been removed.

5. Troubleshooting

This chapter describes basic troubleshooting information.

Forcing Qfinder Pro or myQNAPcloud to Locate the NAS

If Qfinder Pro or myQNAPcloud is unable to locate the NAS during QTS installation, the drives or data may be faulty.

1. Power off the NAS.
2. Remove all drives.
3. Power on the NAS.
4. Locate the NAS using Qfinder Pro or myQNAPcloud.
5. Reinsert the drives.
6. Continue with the QTS installation.

Hot-Swapping Failed Drives

The NAS supports hot-swapping of drives in the following situations:

RAID Type	Number of Disks	Situation
RAID 1	2	One member drive fails.
RAID 5	≥ 3	One member drive fails.
RAID 6	≥ 4	One or two member drives fail.
RAID 10	≥ 4 (Must be an even number)	One or two member drives in two different pairs fail.
RAID 50	≥ 6	One disk per subgroup fails.
RAID 60	≥ 8	Two disks per subgroup fail.

1. Log on to QTS.
2. Go to **Main Menu > Storage & Snapshots > Storage > Disks/VJBOD** .
3. Locate the failed drive.
4. Prepare a new hard drive with a capacity that is the same as or larger than the failed hard drive.
5. Remove the failed drive from the device.
6. Wait for 20 seconds or until the device beeps twice.
7. Remove the failed drive from the drive tray.
8. Insert the new drive into the drive tray.
9. Install the new drive.
The NAS beeps twice.
10. Go to **Main Menu > Storage & Snapshots > Storage Space** .
11. Locate the volume that contains the new drive and then verify that the status is `Rebuilding`.

Conref- Hot-swapping Failed Drives

The NAS supports hot-swapping of drives in the following situations:

RAID Type	Number of Disks	Situation
RAID 1	2	One member drive fails.
RAID 5	≥ 3 3 to 16	One member drive fails.
RAID 6	≥ 4 5 to 16	One or two member drives fail.
RAID 10	≥ 4 (Must be an even number) 4 to 16 (Creating) 2 to 16 (Expanding)	One or two member drives in two different pairs fail.
RAID 50	≥ 6 3 to 16	One disk per subgroup fails.
RAID 60	≥ 8 5 to 16	Two disks per subgroup fail.
Triple Mirror	Multiple of 3. (For example, 3, 6, 9, 12 disks and so forth.)	One or two member drives fail.
RAID-TP	≥ 5 8 to 16	One, two, or three member drives fail.



Important

QES only supports up to 16 member drives per RAID group.

For devices with more than 16 drives, QNAP recommends configuring several RAID groups with less than 16 member drives. For example, if a device has 24 drives, QNAP recommends configuring two 12-drive member RAID groups for optimized storage performance.

1. Log on to the operating system.
 - a. Log on to QTS.
 - b. Log on to QuTS hero.
 - c. Log on to QES.
2. Go to storage configuration.
 - a. Go to **Main Menu > Storage & Snapshots > Storage > Disks/VJBOD** .
 - b. Go to **Main Menu > Storage Manager > Storage > Disks** .
3. Locate the failed drive.
4. Prepare a new hard drive with a capacity that is the same as or larger than the failed hard drive.
5. Remove the failed drive from the device.
6. Wait for 20 seconds or until the device beeps twice.
7. Remove the failed drive from the drive tray.
8. Insert the new drive into the drive tray.

9. Install the new drive.
The NAS beeps twice.
10. Go to storage space configuration.
 - a. Go to **Main Menu > Storage & Snapshots > Storage Space** .
 - b. Go to **Main Menu > Storage Manager > Storage Space** .
11. Locate the new drive and verify its status.
 - a. Locate the volume that contains the new drive and then verify that the status is *Rebuilding*.
 - b. Locate the shared folder that contains the new drive and then verify that the status is *Rebuilding*.

Support and Other Resources

QNAP provides the following resources:

Resource	URL
Documentation	https://download.qnap.com
Compatibility List	https://www.qnap.com/compatibility
NAS Migration Compatibility	https://www.qnap.com/en/nas-migration
Expansion Unit Compatibility	http://www.qnap.com/go/compatibility-expansion
Service Portal	https://service.qnap.com
Product Support Status	https://www.qnap.com/en/product/eol.php
Downloads	https://download.qnap.com
Community Forum	https://forum.qnap.com
QNAP Accessories Store	https://shop.qnap.com

6. Glossary

Cloud Key

Unique 8-digit code assigned to each NAS device

myQNAPcloud

Provides various remote access services such as DDNS and myQNAPcloud Link

myQNAPcloud Link

Enables you to access QNAP devices over the internet without configuring complex port forwarding settings

QNAP ID

User account that enables you to use myQNAPcloud remote access and other QNAP services

Qfinder Pro

QNAP utility that lets you locate and access QNAP NAS devices in your local area network

QTS

QNAP NAS operating system

7. Notices

This chapter provides information about warranty, disclaimers, licensing, and federal regulations.

Limited Warranty

QNAP offers limited warranty service on our products. Your QNAP-branded hardware product is warranted against defects in materials and workmanship for a period of one (1) year or more from the date printed on the invoice. ("Warranty Period"). Please review your statutory rights at www.qnap.com/warranty, which may be amended from time to time by QNAP in its discretion.

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Back up the system periodically to avoid any potential data loss is recommended. QNAP disclaims any responsibility of all sorts of data loss or recovery.

Should you return any components of the package of QNAP products such as NAS (Network Attached Storage) for refund or maintenance, make sure they are carefully packed for shipping. Any form of damages due to improper packaging will not be compensated.

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.

Further, the ® or ™ symbols are not used in the text.

BSMI Notice



D33B77
RoHS

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

CE Notice



This device complies with CE Compliance Class A.

FCC Notice

FCC Class A Notice



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.



Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.



Important

Any modifications made to this device that are not approved by QNAP Systems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

GNU Public License

Version 3, 29 June 2007

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