



TS-x77XU

TS-1677XU-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 four memory slots that can scale up to 64 GB of memory, as well as a quartet of PCIe expansion card slots, 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



Important

Modifying the hardware or software of your QNAP product invalidates the warranty. QNAP is not responsible for any damage or data loss caused by unauthorized modifications and installation of unsupported third-party applications.

Ordering P/N	CPU	Memory	Power Supply
TS-1677XU-RP-1200-4G	Ryzen 3 1200	4 GB	Redundant
TS-1677XU-RP-2600-8G	Ryzen 5 2600	8 GB	Redundant
TS-1677XU-RP-2700-16G	Ryzen 7 2700	16 GB	Redundant

Component	TS-1677XU-RP
Processor	
CPU	• AMD Ryzen™ 3 1200 4-core/4-thread 3.1 GHz processor, Turbo Core 3.4 GHz • AMD Ryzen™ 5 2600 6-core/12-thread 3.4 GHz processor, Turbo Core 3.9 GHz • AMD Ryzen™ 7 2700 8-core/16-thread 3.2 GHz processor, Turbo Core 4.1 GHz
Architecture	x86 64-bit
Encryption engine	AES-NI
Memory	

Component	TS-1677XU-RP
Pre-installed memory	• 4 GB RAM: 1 x 4 GB DDR4 • 8 GB RAM: 2 x 4 GB DDR4 • 16 GB RAM: 2 x 8 GB 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.
Total memory slots	4 x Long-DIMM DDR4  Important For dual- or quad-DIMM configurations, you must use a pair of identical DDR4 modules.
Maximum memory	64 GB (4 x 16 GB)
Flash Memory	4 GB
Storage	
Drive bays	16 x 3.5-inch SATA 6 Gbps bays
Drive compatibility	• 3.5-inch SATA hard disk drives • 2.5-inch SATA hard disk drives • 2.5-inch SATA solid state drives
Hot-swappable	Yes
Network	
10 gigabit Ethernet ports	2 x 10 Gigabit SFP+
Gigabit Ethernet ports	2 x Gigabit RJ45
External I/O Ports & Expansion Slots	
PCIe slots	• 2 x PCIe 3.0 x8 • 2 x PCIe 3.0 x4
USB ports	• 1 x USB 3.1 Gen 2 (10Gbps) Type-A • 1 x USB 3.1 Gen 2 (10Gbps) Type-C • 4 x USB 3.0 Type-A
HDMI outputs	Optional: PCIe expansion card
Interface	

Component	TS-1677XU-RP
Buttons	• Power • Reset
Dimensions	
Form factor	3U Rackmount
Dimensions (H x W x D)	130 x 481 x 573.5 mm (5.12 x 18.94 x 22.56 in)
Net weight	15.23 kg (33.58 lbs)
Other	
Power supply unit	2 x 500W, 100-240V AC, 50/60Hz
System battery	CR2032 lithium battery (3V, 225mAh)  Warning When replacing the system battery, only use the same battery type as the existing one to avoid explosions.
Sound level	46.6 dB(A)  Note The sound levels were tested at a bystander position, which is within one meter from the NAS. The test NAS operated at low speed with the maximum number of drives installed.
Fans	System: 4 x 92 mm, 12V DC  Warning To avoid serious injuries, do not touch the fans while the NAS is connected to a power source.
Operating temperature	0 to 40°C (32 to 104°F)
Relative humidity	• Non-condensing relative humidity: 5 to 95% • Wet-bulb temperature: 27°C (80.6°F)

**Tip**

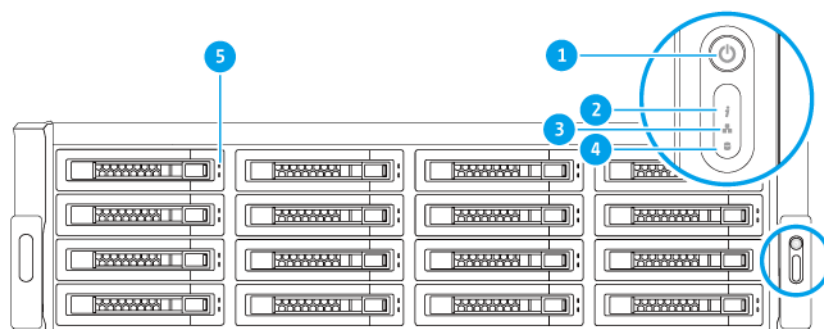
Model specifications are subject to change without prior notice. To see the latest specifications, go to <https://www.qnap.com>.

Package Contents

Item	Quantity
TS-x77XU NAS	1
Power cord	TS-1677XU-RP: 2
Ethernet cable	2
Screws for 2.5-inch drives	TS-1677XU-RP: 48
Screws for 3.5-inch drives	TS-1677XU-RP: 64
Quick Installation Guide (QIG)	1

Components

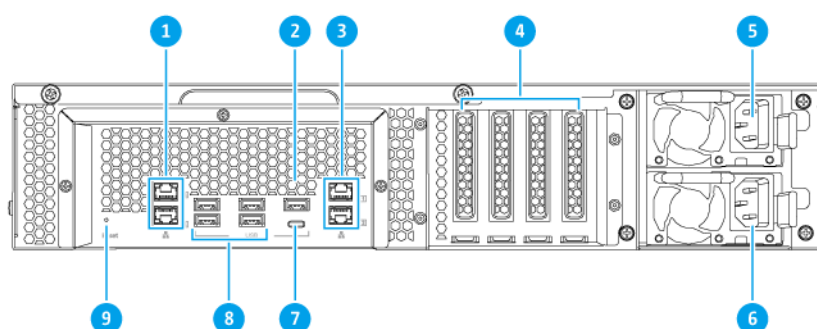
Front Panel



TS-1677XU-RP

No.	Component	No.	Component
1	Power button	4	Expansion unit LED
2	Status LED	5	Drive LEDs
3	LAN LED	-	-

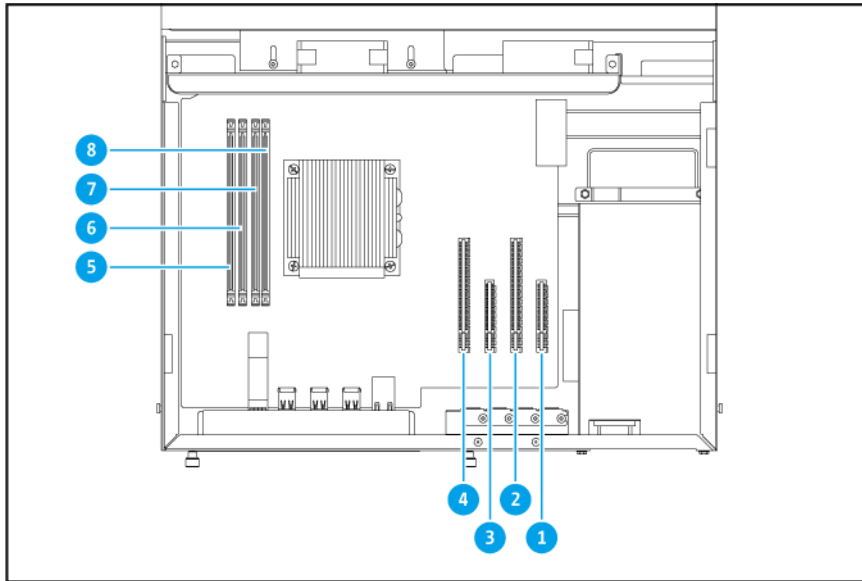
Rear Panel



TS-1677XU-RP

No.	Component	No.	Component
1	10 gigabit SFP+ ports	6	Power supply unit 2
2	USB 3.1 Gen 2 (10Gbps) Type-A port	7	USB 3.1 Gen 2 (10Gbps) Type-C ports
3	Gigabit Ethernet RJ45 ports	8	USB 2.0 Type-A ports
4	PCIe full-height covers	9	Reset button
5	Power supply unit 1	-	-

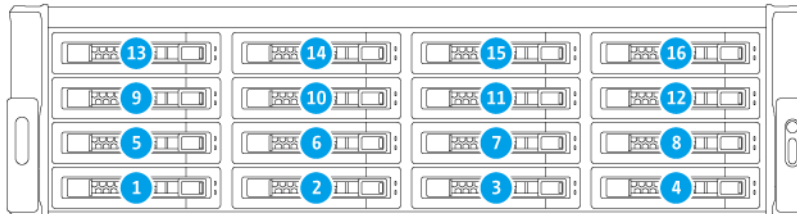
System Board



TS-1677XU-RP

No.	Component	No.	Component
1	PCIe 3.0 slot 1 (x4)	5	Memory Slot 1
2	PCIe 3.0 slot 2 (x8)	6	Memory Slot 2
3	PCIe 3.0 slot 3 (x4)	7	Memory Slot 3
4	PCIe 3.0 slot 4 (x8)	8	Memory Slot 4

Front Drive Numbering



TS-1677XU-RP

Installation Requirements

Category	Item
Environment	- Room temperature: 0 to 40°C (32 to 104°F) - Non-condensing relative humidity: 5 to 95% - Wet-bulb temperature: 27°C (80.6°F) - Flat, anti-static surface with no exposure to direct sunlight, liquids, and chemicals
Hardware and peripherals	- Storage drives For details on compatible drives, go to https://www.qnap.com/compatibility/. - Network cable
Tools	- Phillips #1 or #2 screwdriver - Anti-static wrist strap

Setting Up the NAS

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](#)
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.

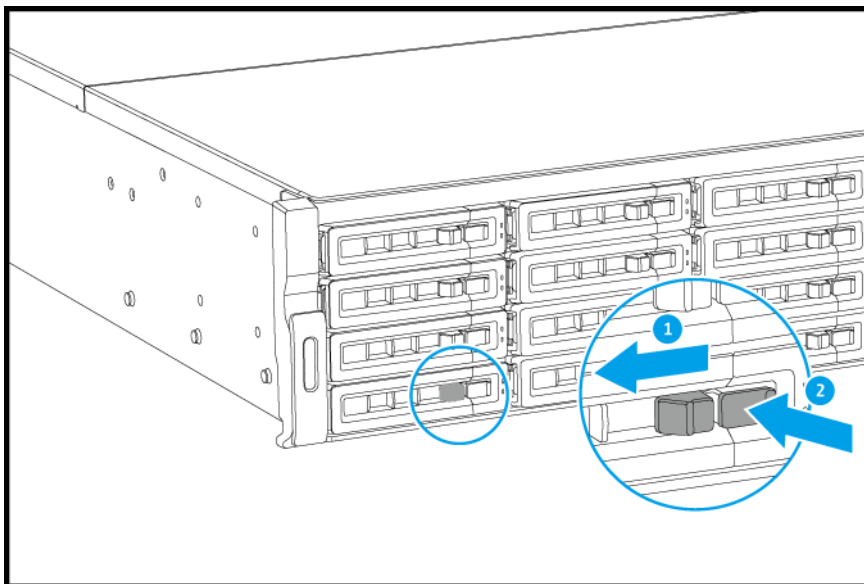
Installing 3.5-inch Hard Drives on 3.5-inch Trays



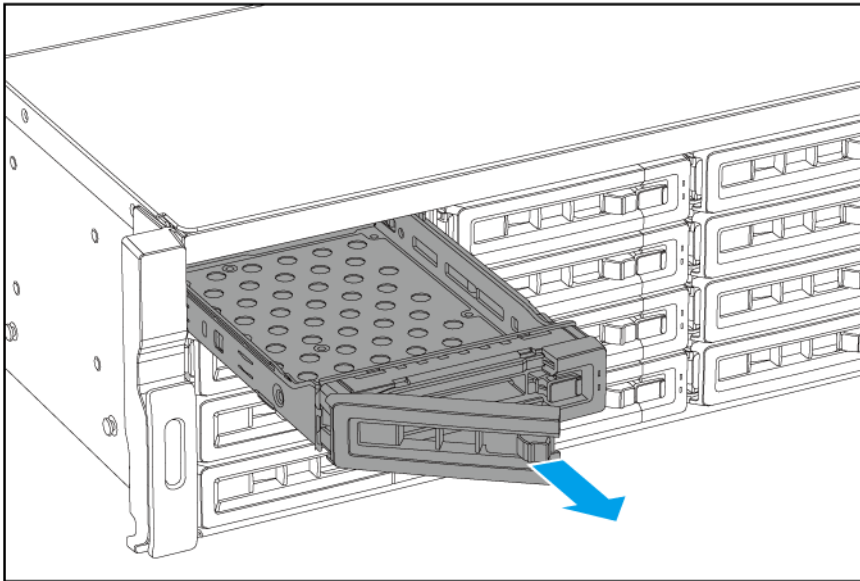
Warning

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

1. Power off the NAS.
2. Remove the drive tray.
 - a. Locate the lock.
 - b. Slide the lock to the left.

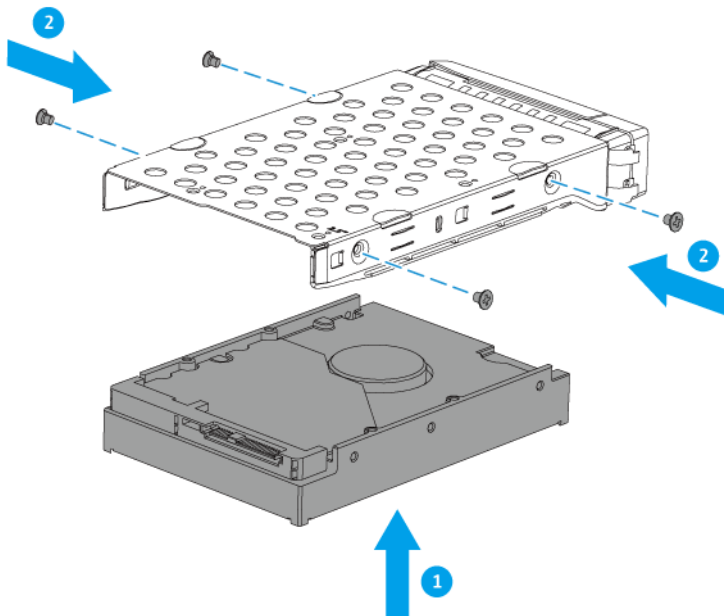


- c. Push the gray button to release the handle.
- d. Pull the tray out.



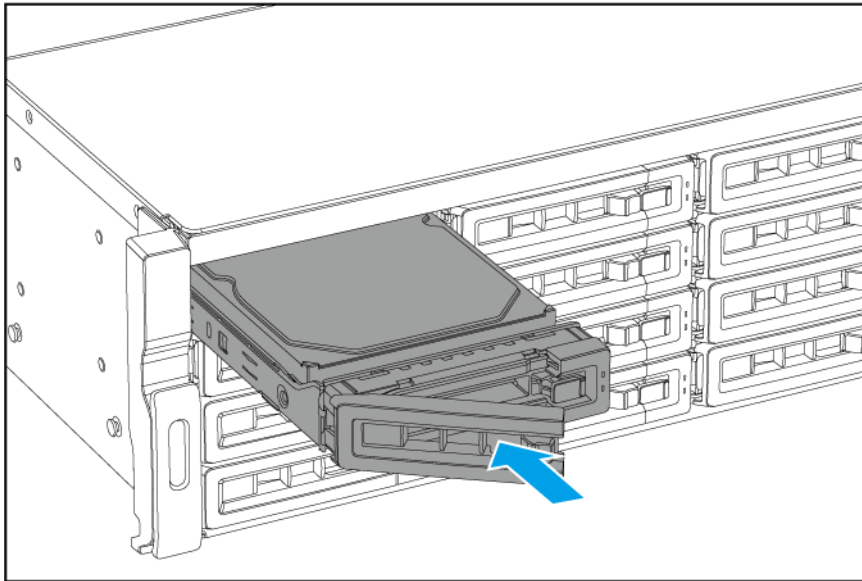
3. Install a drive on the tray.

- a. Place the drive on the tray so that the holes on the side of the drive are aligned with the holes on the side of the tray.
- b. Attach the screws to lock the drive to the tray.

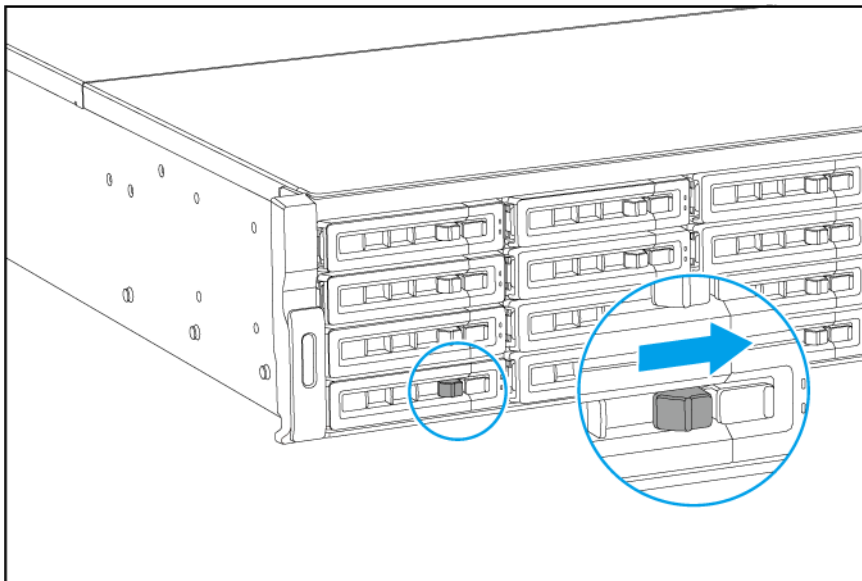


4. Load the tray into the bay.

- a. Insert the tray into the drive bay.
- b. Push the handle.



c. Slide the lock to the right.



5. Power on the NAS.

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

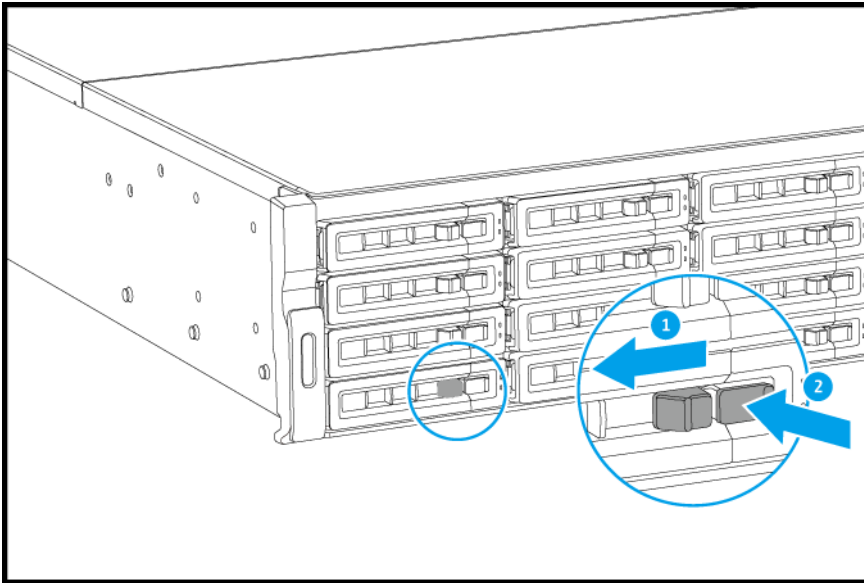


Warning

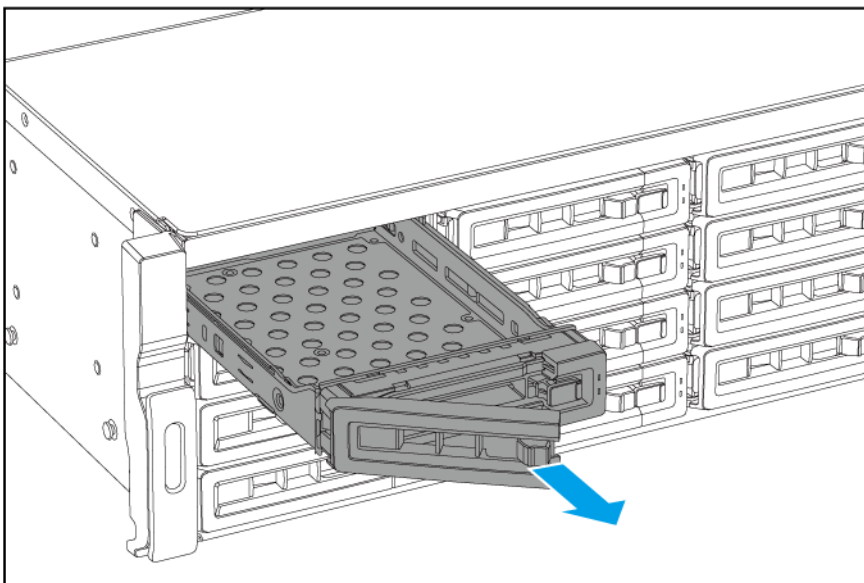
- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Power off the NAS.
2. Remove the drive tray.

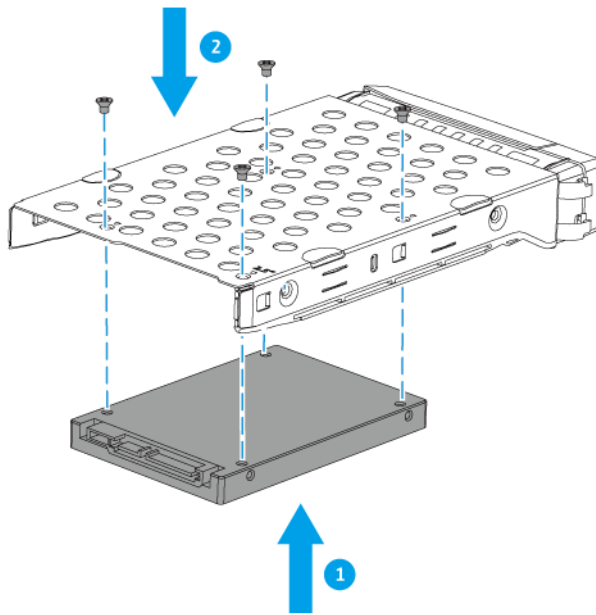
- a. Locate the lock.
- b. Slide the lock to the left.



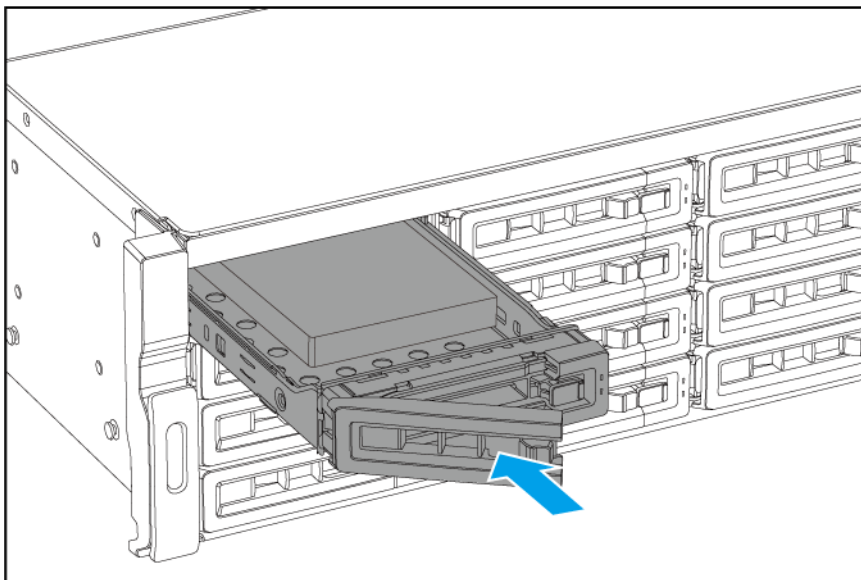
- c. Push the gray button to release the handle.
- d. Pull the tray out.



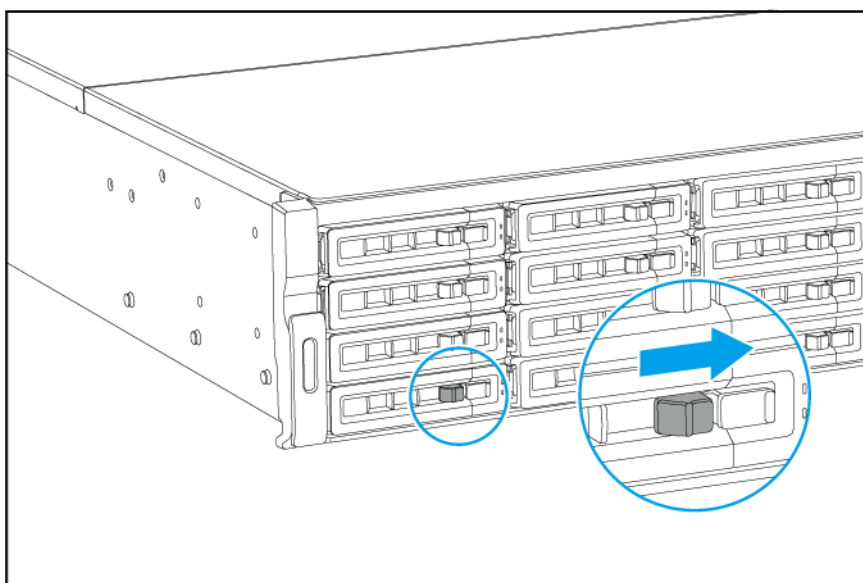
3. Install a drive on the tray.
 - a. Place the drive on the tray so that the holes on the side of the drive are aligned with the holes on the side of the tray.
 - b. Attach the screws to lock the drive to the tray.



4. Load the tray into the bay.
 - a. Insert the tray into the drive bay.
 - b. Push the handle.



- c. Slide the lock to the right.



5. Power on the NAS.

Expansion Unit Installation

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

Type	Description	Required Accessories
SAS	• Uses a SAS 12 Gbps interface • Supports a maximum of eight expansion units • Supports SAS 12 Gbps and 6 Gbps drives	• SAS-12G2E storage expansion card • mini-SAS SFF-8644 cable • RAIL-A03-57 rail kit
USB	• Uses a USB 3.0 Type-A interface • Supports a maximum of two expansion units • Supports SATA 6 Gbps drives	RAIL-B01 rail kit

Connecting SAS Expansion Units

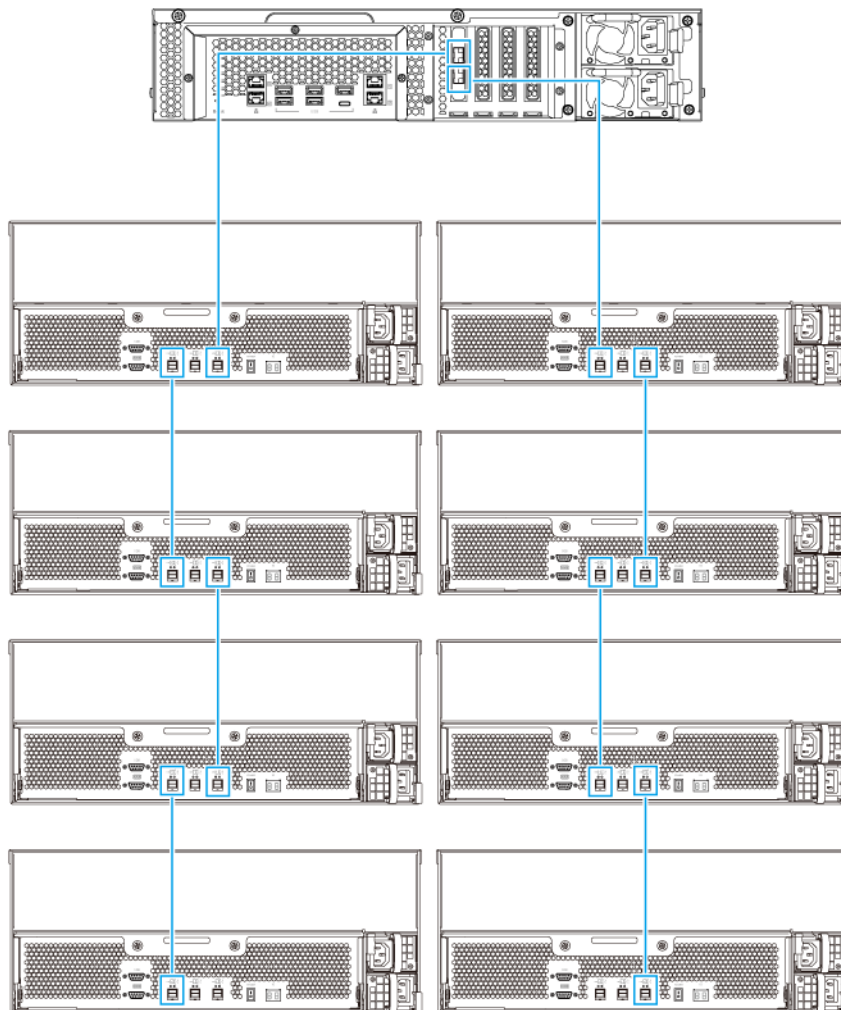
The TS-x77XU supports a maximum of eight SAS expansion units and is compatible with the following models:

- REXP-1210U-RP
- REXP-1220U-RP
- REXP-1610U-RP
- REXP-1620U-RP

To use SAS expansion units, an SAS-12G2E storage expansion card must be installed on the NAS and connected to the expansion units using mini-SAS SFF-8644 cables. You can purchase storage expansion accessories from QNAP or an authorized reseller.

For details, go to <https://shop.qnap.com/>.

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



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**.

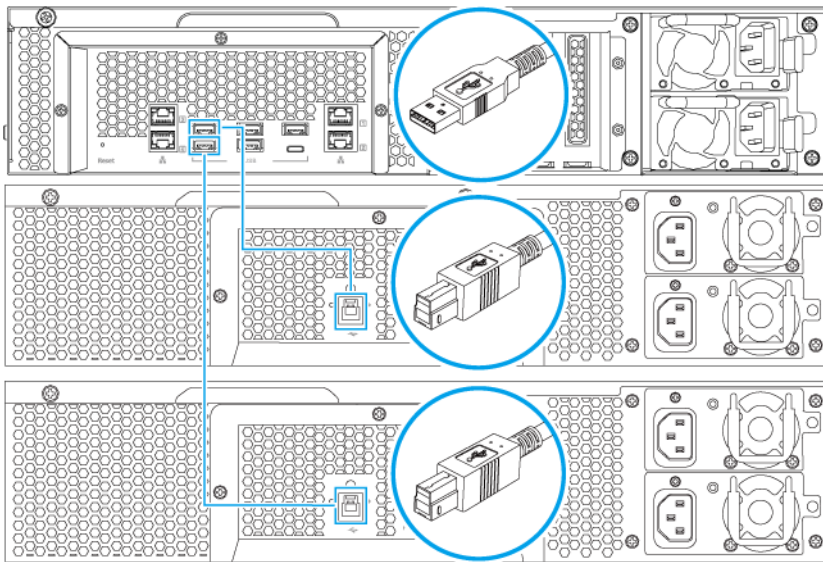
- c. Verify that the expansion units are listed.

Connecting USB Expansion Units

The TS-x77XU supports a maximum of two USB expansion units and is compatible with the following models:

- UX-800U-RP
- UX-1200U-RP

1. Connect the expansion unit to the NAS.
 - a. Connect the USB cable to the USB 3.0 Type-B port on the expansion unit.
 - b. Connect the USB cable to a USB 3.0 Type-A port on the NAS.

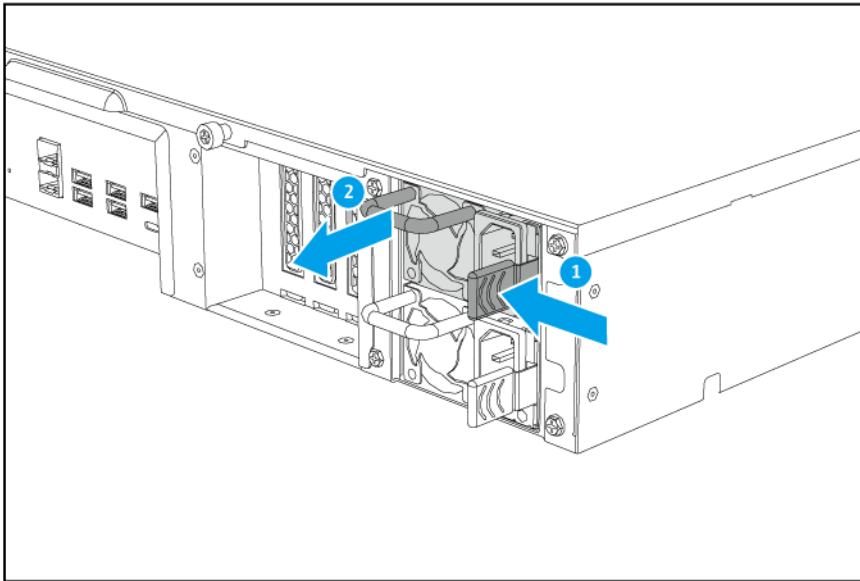


2. Power on the expansion units.
3. Verify that the expansion units are recognized by the NAS.
 - a. Log on to QTS as administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion units are listed.

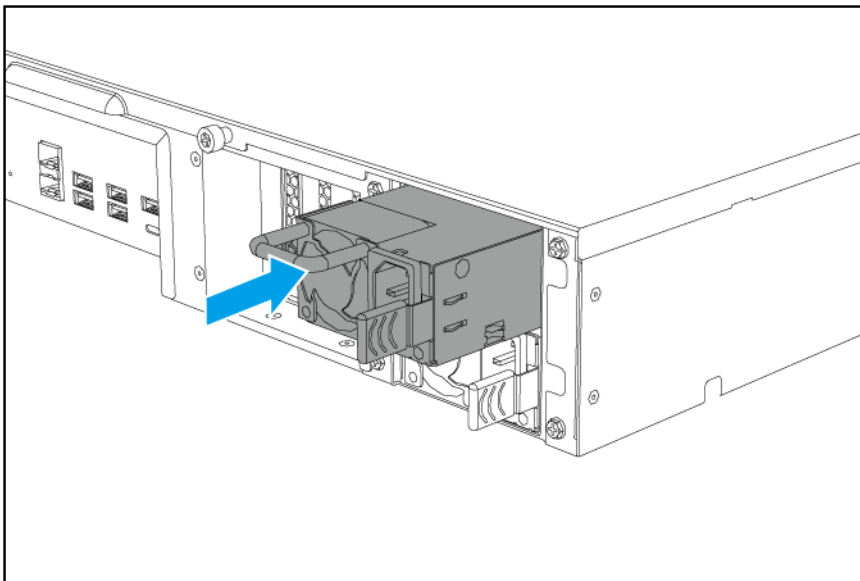
Hot-swapping Redundant Power Supply Units

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

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet and the 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 NAS.
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 Expansion Cards

The NAS 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 all QNAP NAS models.



Note

- Slot 1 will reduce its speed from x8 to x4 if an expansion card is installed in slot 2.
- Slot 3 will reduce its speed from x8 to x4 if an expansion card is installed in slot 4.

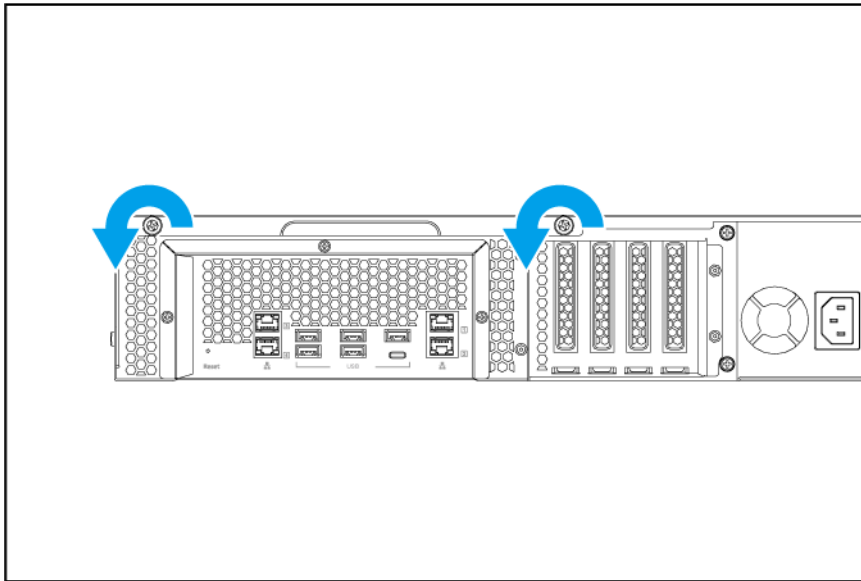
For details on slot numbering, see [System Board](#).



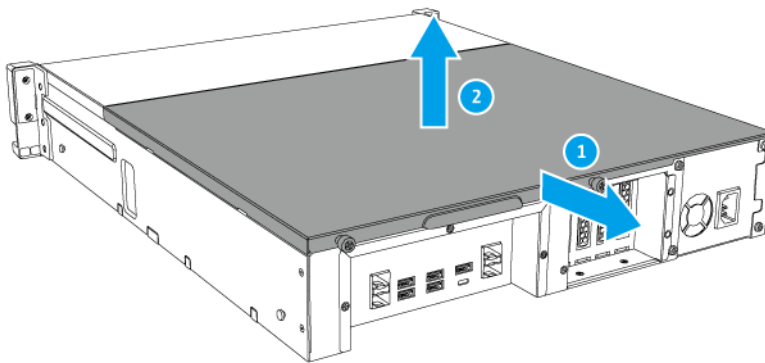
Warning

- 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.

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 NAS.
3. Disconnect the power cord from the electrical outlet.
4. Disconnect all cables and external attachments.
5. Remove the top cover.
 - a. Loosen the two screws on the back of the top cover.

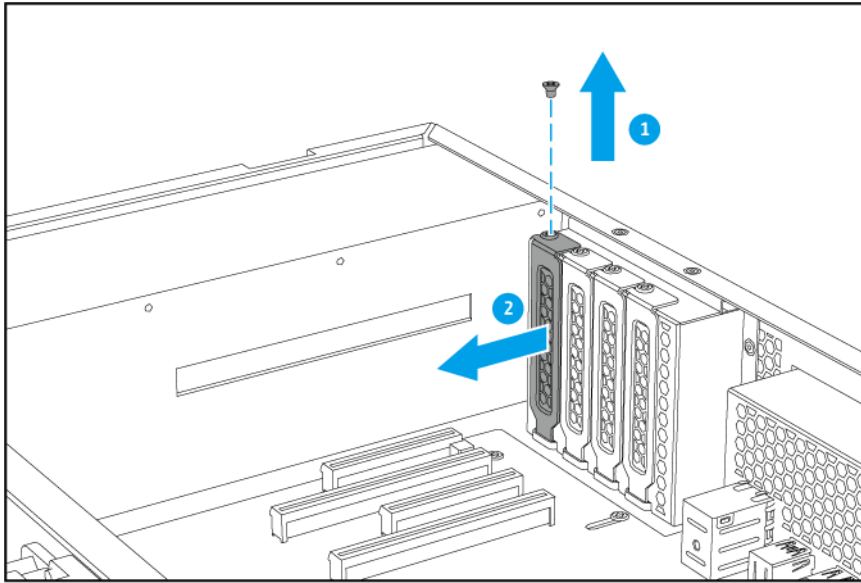


- b.** Slide the top cover back using the handle.
- c.** Lift the top cover up.



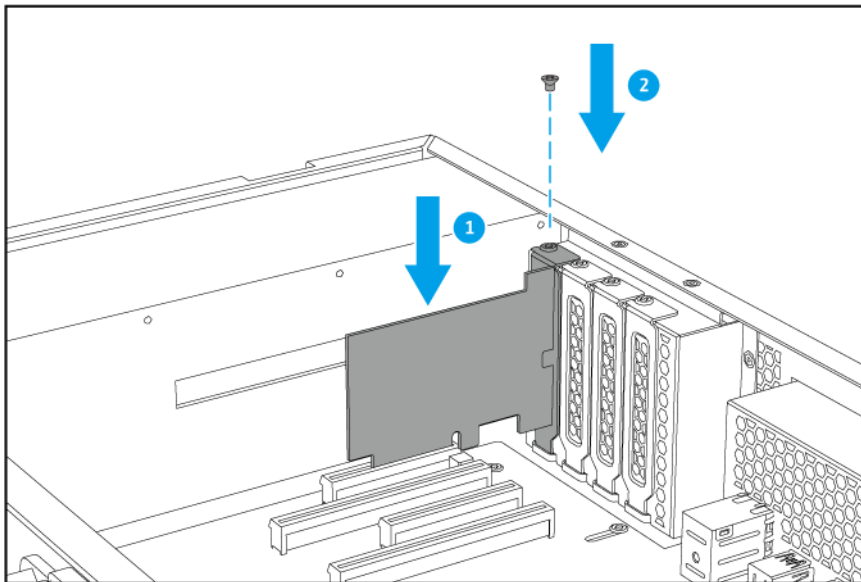
6. Remove the PCIe cover.

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



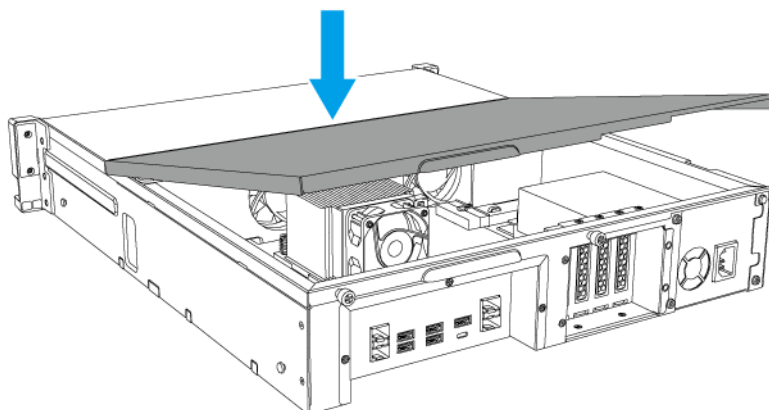
7. Install the expansion card.

- a. Hold the card by the edges.
- b. Insert the card into the slot.
- c. Attach the screw.

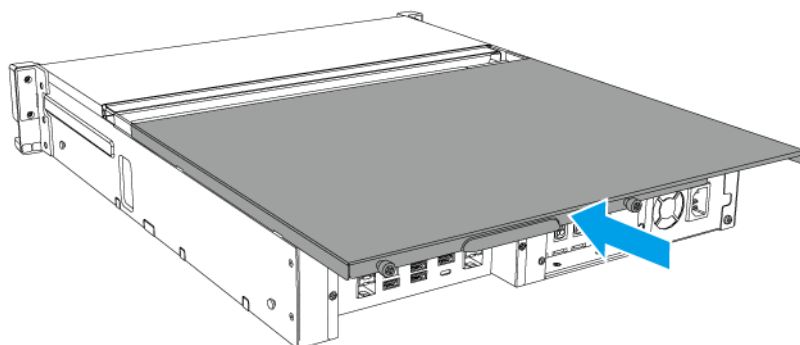


8. Attach the top cover.

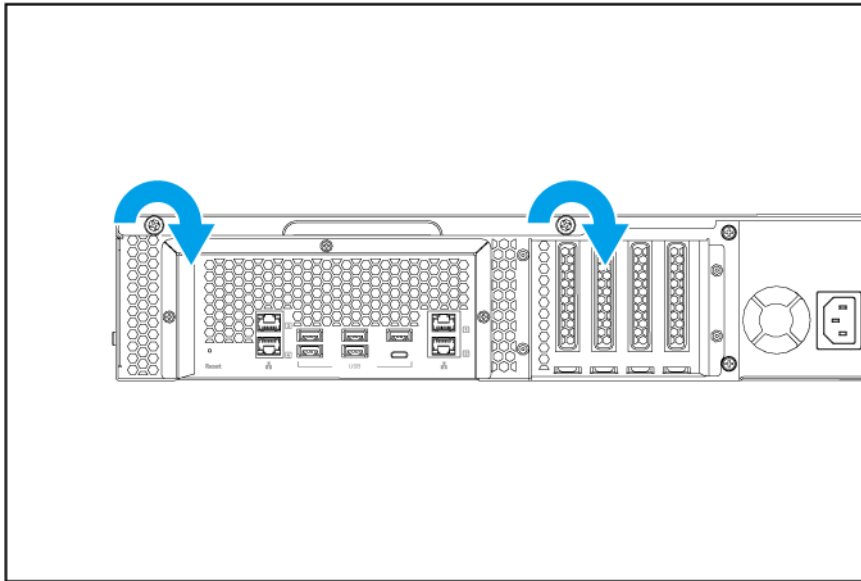
- a. Place the top cover on the NAS.



b. Slide the top cover forwards.



c. Tighten the screws.



9. Connect all cables and external attachments.
10. Connect the power cord to the electrical outlet.
11. 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
• TS-1677XU-RP	RAIL-A03-57

You can find installation information in the rail kit package.

Replacing Memory Modules

The NAS has four memory slots. You can increase the memory capacity of the NAS by upgrading the memory module.

Use only QNAP modules of the same type and capacity to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.



Important

Ensure the following when replacing memory modules:

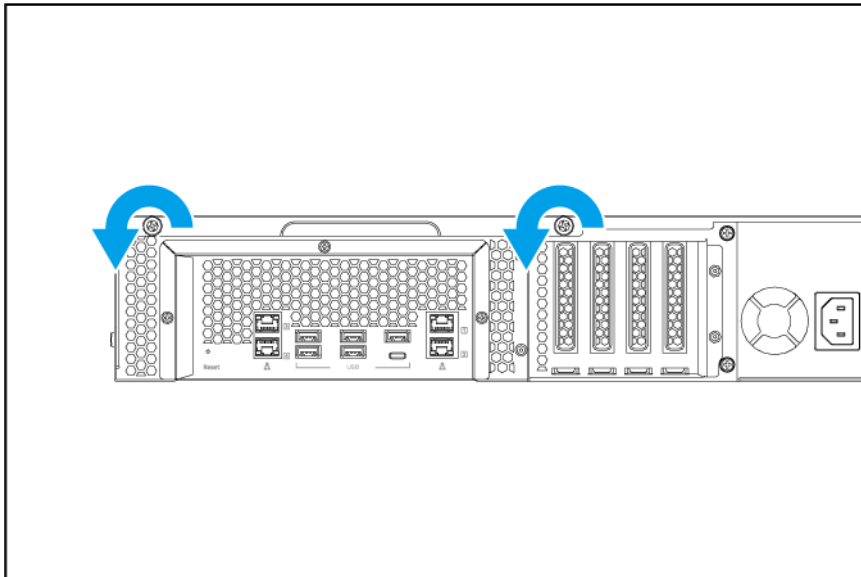
- When installing only one module, use slot 1.
- When installing two modules, use slots 1 and 3. Ensure that the modules are identical.
- When installing four modules, use slots 1 and 3 for the first pair, and slots 2 and 4 for the second pair. Ensure that each pair uses identical modules.

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

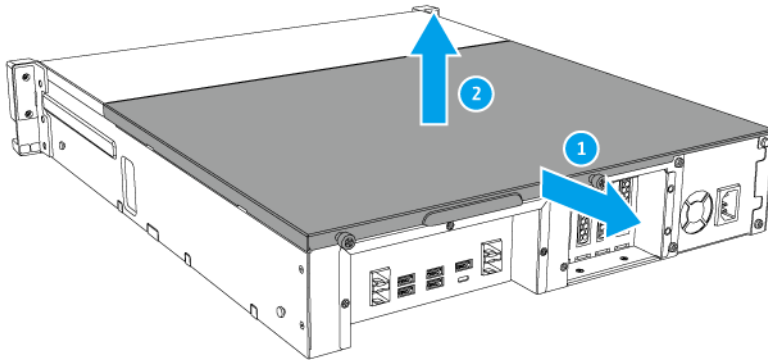
**Warning**

- 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.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the top cover.
 - a. Loosen the two screws on the back of the top cover.



- b. Slide the top cover back using the handle.
- c. Lift the top cover up.



5. Remove an existing module.

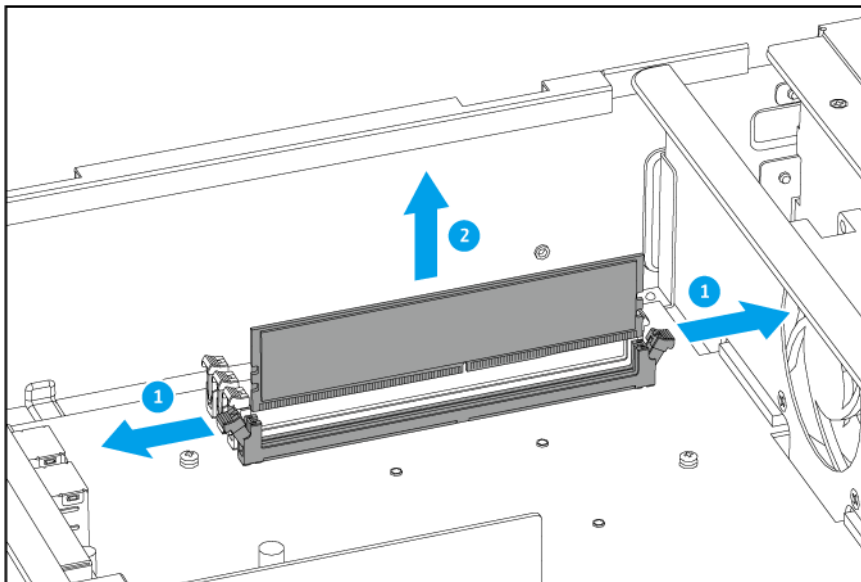
- a. Push the retention clips outward simultaneously to release the module.



Warning

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

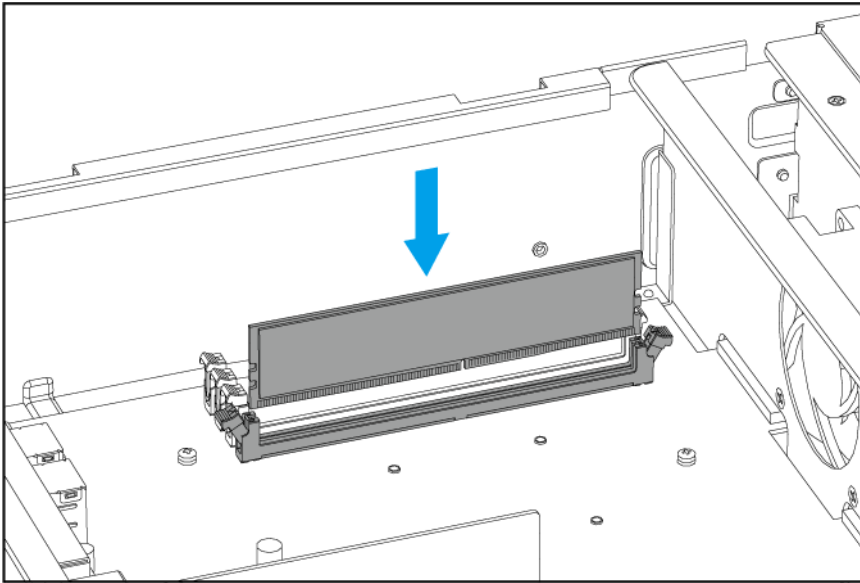
- b. Hold the module by the edges and then carefully slide it out of the slot.



6. Install a new module.

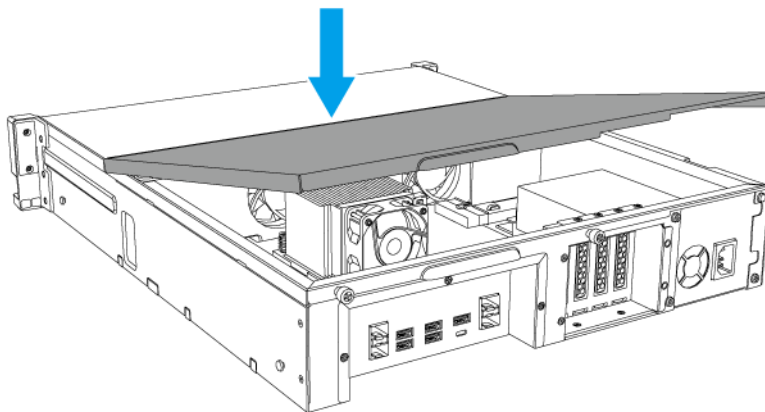
- a. Align the notch with the ridge in the slot.
- b. Insert the module into the slot.

- 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.

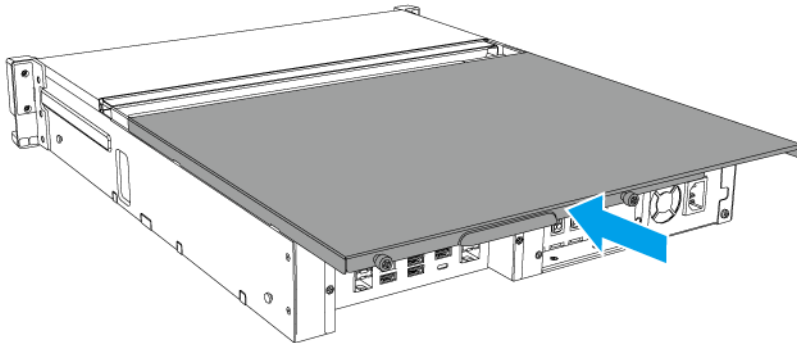


7. Attach the top cover.

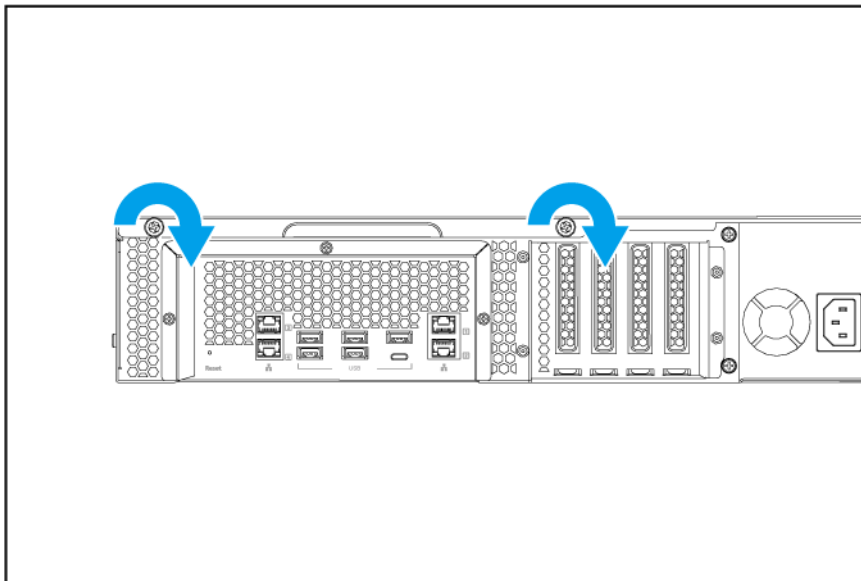
- a. Place the top cover on the NAS.



- b. Slide the top cover forwards.



c. Tighten the screws.



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

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)	If the NAS is connected to your local area network, you can do the following: • Locate the NAS using Qfinder Pro. • Complete the steps in the Smart Installation Guide wizard. For details, see Installing QTS Using Qfinder Pro.	• Computer • Network cable • Qfinder Pro installer
Cloud installation	If the NAS is connected to the internet, you can do the following: • Scan the QR code on the NAS. • Log into your myQNAPcloud account. • Use CloudLink to remotely access your NAS. • Complete the steps in the Smart Installation Guide wizard. For details, see Installing QTS Using the Cloud Key.	• Computer or mobile device • Network cable • myQNAPcloud account • CloudKey

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**.
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**.

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**.

10. Select **Obtain an IP address automatically (DHCP)**.

11. Click **Next**.

12. Select the types of devices that you will use to access shared folders on the NAS.

13. Click **Next**.

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 CloudLink remote connection service will be disabled on your NAS after initialization. You can enable it by connecting to QTS through LAN and then installing CloudLink.

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**.

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**.

13. Select **Obtain an IP address automatically (DHCP)**.

14. Click **Next**.

15. Select the types of devices that you will use to access shared folders on the NAS.

16. Click **Next**.

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 NAS powers on.
Power off	Press and hold the button for 1.5 seconds.	The NAS powers off.
Force power off	Press and hold the button for 5 seconds.	The NAS shuts down.  Important Use this method only when the NAS is unresponsive.

Reset Button

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	The following settings are reset to default: • System administrator password: admin • TCP/IP configuration: • 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.	The default factory settings are restored. • 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](#).

LED	Status	Description
System Status	Flashes green and red alternately every 0.5 seconds	• 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	• 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). • Hardware self-test error
	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	• 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.
Drive	Flashes red	The data is being accessed and a read/write error occurs during the process.
	Red	A drive read/write error occurred.
	Flashes green	The data is being accessed.
	Green	The drive can be accessed.

LED	Status	Description
USB	Flashes blue every 0.5 sec	- A USB device (connected to the front USB port) is detected. - A USB device (connected to the front USB port) is being removed from the NAS. - A USB device (connected to the front USB port of the NAS) is being accessed. - Data is being copied to or from a USB or eSATA device.
	Blue	A USB device is detected in the front USB port.
	Off	- No USB device is detected. - The NAS has finished copying data to or from the USB device connected to the front USB port.

Beep Alarm

Duration	Frequency	Description
Short beep (0.5 seconds)	1	- The NAS is starting up. - The NAS is shutting down (software shutdown). - The user pressed the Reset button. - The operating system was updated.
	3	The user tried to copy the NAS data to the external storage device from the front USB port, but the data cannot be copied.
Long beep (1.5 seconds)	3 (every 5 minutes)	The system fan is not functioning.
	2	- The disk volume is about to reach its full capacity. - The disk volume has reached its full capacity. - The drives are in degraded mode. - The user started the drive rebuilding process. - A drive is plugged in or out.
	1	- The NAS was powered off by force shutdown (hardware shutdown). - The NAS was powered on successfully and is ready.

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 1: One member drive fails
- RAID 5: One member drive fails
- RAID 6: One or two member drives fail

1. Log on to QTS.
2. Go to **Main Menu > Storage Manager > 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 NAS.
6. Wait for 20 seconds or until the NAS 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 Manager > Storage Space** .
11. Locate the volume that contains the new drive and then verify that the status is *Rebuilding*.

Recovering Unintentionally Removed Healthy Drives

The NAS supports exclusive RAID recovery technology to recover failed RAID disk volumes from unintentional disconnection or removal of drives. Users can recover an inactive RAID 1, RAID 5, or RAID 6 volume to degraded mode, or an inactive RAID 0 and JBOD configuration to normal.

Disk Volume	RAID Recovery Support	Maximum Number of Removed Drives
Single	No	N/A
JBOD	Yes	1
RAID 0	Yes	1
RAID 1	Yes	1
RAID 5	Yes	2
RAID 6	Yes	3
RAID 10	No	N/A

Support and Other Resources

QNAP provides the following resources:

Resource	URL
Documentation	http://docs.qnap.com
Helpdesk	http://helpdesk.qnap.com
Downloads	http://download.qnap.com
Community Forum	http://forum.qnap.com

6. Glossary

CloudKey

Unique 8-digit code assigned to each NAS device

CloudLink

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

myQNAPcloud

Provides various remote access services such as DDNS and CloudLink

myQNAPcloud ID

Email address that was used to register for a myQNAPcloud account

Qfinder Pro

Enables you to locate and access the QNAP NAS devices in your local area network

QTS

QNAP NAS operating system

7. Notices

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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.

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

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CE Notice



This QNAP NAS 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.

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Version 3, 29 June 2007

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