

The QNAP logo is located in the top-left corner of the page. It consists of the letters "QNAP" in a bold, white, sans-serif font, set against a solid blue square background.

**QNAP**

# **TS-h3077AFU**

## **User Guide**

The background of the page features a complex, abstract geometric pattern of overlapping, semi-transparent white and light gray polygons, creating a sense of depth and movement. This pattern is most prominent in the lower-left and bottom-center areas.

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# 1. Important Information

## Original Packaging

Please keep the original packaging and packaging materials. If you want to return the product or send it for repairs, please use the original packaging to avoid damage.

QNAP reserves the right not to provide a refund or warranty service for products that are damaged due to improper packaging.

## Hardware Defects

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](#).

## Safety information

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

### 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

- This product contains a button battery.
- If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.

- Keep batteries out of reach of children.
- If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.
- 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

- 



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

- 



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

- The device is not suitable for use in locations where children are likely to be present.

## 2. Product Overview

This chapter provides basic information about your QNAP device.

### About the TS-h3077AFU



Powered by an AMD Ryzen™ 5 7000 series or AMD Ryzen™ 7 7000 series processor, the TS-h3077AFU is designed to deliver a scalable platform for enterprise-level solutions. Featuring thirty 2.5-inch SATA drive bays, this ZFS NAS supports inline data deduplication and compression, 65536 snapshots, and real-time SnapSync, a disaster recovery solution that enables you to automatically back up data from one NAS to another. The TS-h3077AFU is ideal for I/O-intensive and latency-sensitive applications, satisfying the performance demands of virtualization, data centers, and mission-critical tasks.






### Hardware specifications






#### Tip

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

Component	TS-h3077AFU-R5-32G	TS-h3077AFU-R7-64G
Processor		
CPU	AMD Ryzen™ 5 7000 series	AMD Ryzen™ 7 7000 series
	The processor comes with built-in AMD Radeon™ Graphics.	
Frequency	6-core/12-thread 3.8 GHz base/5.1 GHz boost	8-core/16-thread 3.8 GHz base/5.3 GHz boost
Architecture	x86 64-bit	
Encryption engine	AES-NI	
Memory		
Pre-installed memory	32 GB RAM: 1 x 32 GB DDR5 UDIMM	64 GB RAM: 2 x 32 GB DDR5 UDIMM
Memory slots	4 x DDR5 UDIMM	
	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p><b>Important</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting.</li> </ul> </div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;">  </div> <div> <p><b>Note</b></p> <p>This device supports ECC memory modules.</p> </div> </div> </div>	
Maximum memory	128 GB RAM: 4 x 32 GB	
Flash memory	5 GB (dual-boot OS protection)	
Storage		

Component	TS-h3077AFU-R5-32G	TS-h3077AFU-R7-64G
Drive bays	30 x 2.5-inch SATA 6 Gbps   <b>Tip</b> The drive bays are backward compatible with SATA 3 Gbps drives.	
Drive compatibility	2.5-inch SATA solid-state drives   <b>Important</b> For the list of compatible drive models, go to <a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a> .	
SSD cache acceleration support	This device supports SSD cache acceleration for all drives.	
Hot-swapping	The device supports hot-swapping drives except for the following: SSD cache drives	
Network		
10 Gigabit network interface	2 x 10GBASE-T RJ45   <b>Note</b> The 10GBASE-T RJ45 ports support the following network connectivity speeds: 10 Gbps, 5 Gbps, 2.5 Gbps, 1 Gbps, and 100 Mbps.	
2.5 Gigabit network interface	2 x 2.5 GbE RJ45   <b>Note</b> The 2.5 Gigabit Ethernet RJ45 ports support the following network connectivity speeds: 2.5 GbE, 1 GbE, 100 Mbps, and 10 Mbps.	
External I/O Ports & Expansion Slots		
PCIe slots	<ul style="list-style-type: none"> <li>Slot 1: PCIe 4.0 x4</li> <li>Slot 2: PCIe 4.0 x8</li> <li>Slot 3: PCIe 4.0 x4</li> </ul>  <b>Important</b> Slot 2 speed reduces from x8 to x4 when an expansion card is installed in slot 1. For details, see <a href="#">System board</a> .	
USB ports	2 x USB 3.2 Gen 2 Type-A	
Interface		
Buttons	<ul style="list-style-type: none"> <li>Power</li> <li>Reset</li> </ul>	
LEDs		

Component	TS-h3077AFU-R5-32G	TS-h3077AFU-R7-64G
System	<ul style="list-style-type: none"> <li>• Power</li> <li>• System status</li> <li>• LAN</li> <li>• Expansion unit</li> <li>• Drive LEDs</li> </ul>	
Ports	<ul style="list-style-type: none"> <li>• Speed</li> <li>• Activity</li> </ul>	
Dimensions		
Form factor	2U Rackmount	
Dimensions (H x W x D)	88.3 x 482 x 549.7 mm (3.48 x 18.98 x 21.64 in)	
Net weight	12.73 kg (28.06 lbs)	
Others		
Rail compatibility	RAIL-A03-57   <b>Note</b> <ul style="list-style-type: none"> <li>• Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to <a href="https://shop.qnap.com">https://shop.qnap.com</a>.</li> <li>• Information on rail kit installation can be found in the installation guide included in the rail kit package.</li> </ul>	
Power supply unit	2 x 550W, 100-240V AC, 50/60 Hz	
System battery	CR2032 lithium battery (3V, 225 mAh)   <b>Warning</b> <ul style="list-style-type: none"> <li>• This battery is a button battery. If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours. Keep batteries out of reach of children.</li> <li>• 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.</li> </ul>  <b>Important</b> Dispose of used batteries according to local regulations or the instructions of the battery manufacturer.	
Fans	System: 4 x 60 mm, 12V DC fans	
Operating temperature	0°C to 40°C (32°F to 104°F)	
Relative humidity	<ul style="list-style-type: none"> <li>• Non-condensing relative humidity: 5% to 95%</li> <li>• Wet-bulb temperature: 27°C (80.6°F)</li> </ul>	

**Tip**



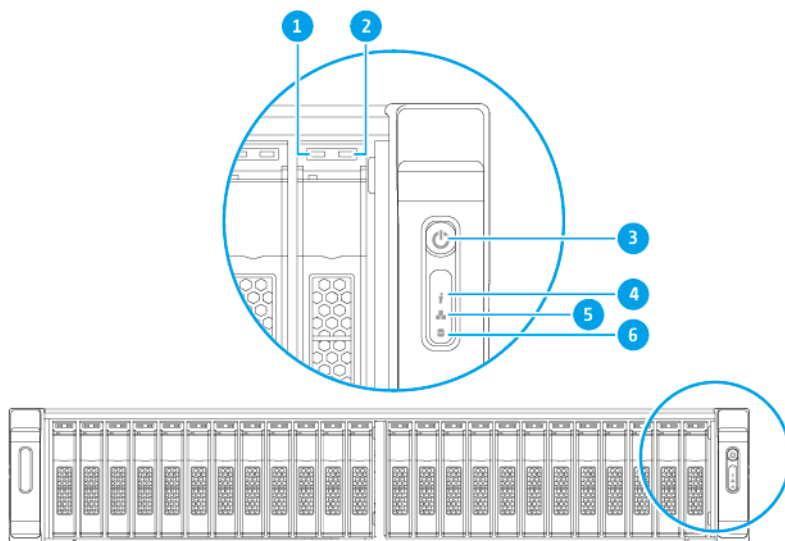
For the list of compatible drive models and expansion cards, go to <https://www.qnap.com/compatibility>.

## Package contents

Item	Quantity
TS-h3077AFU	1
Power cords	2
Cat6a Ethernet cable	1
Screws for 2.5-inch drives	120
Quick Installation Guide (QIG)	1

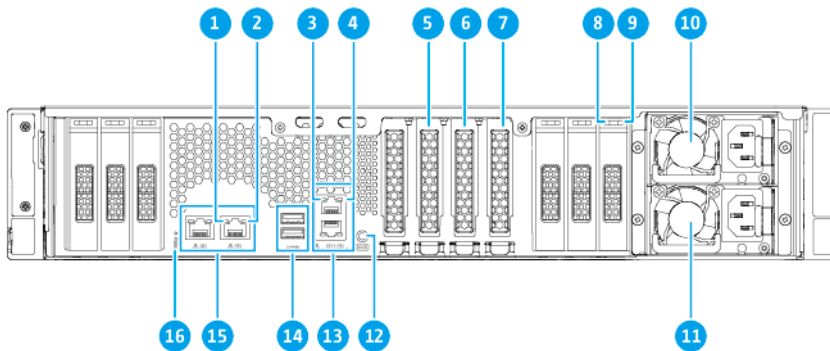
## Components


### Front panel



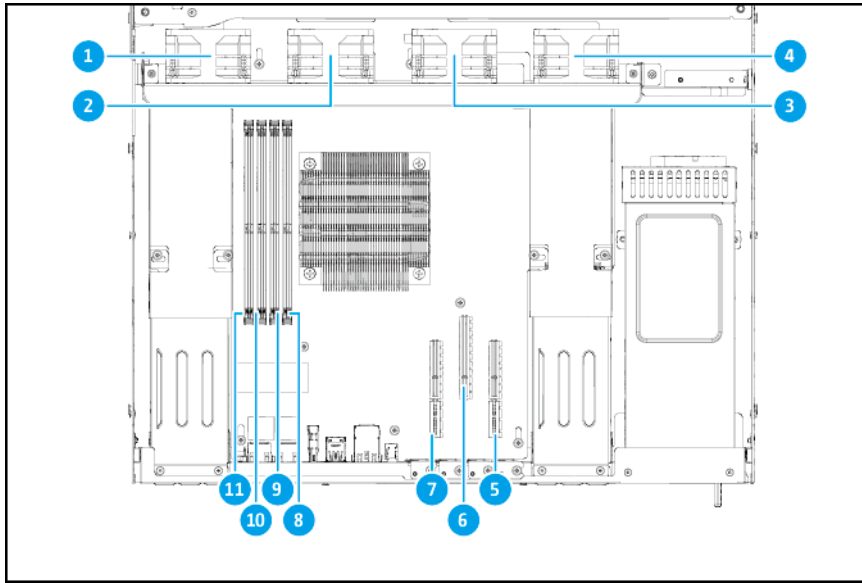
No.	Component	No.	Component
1	Drive activity LED	4	System status LED
2	Drive status LED	5	LAN LED
3	Power button	6	Expansion unit LED

## Rear panel




No.	Component	No.	Component
1	2.5 Gigabit Ethernet speed LED	9	Drive status LED
2	2.5 Gigabit Ethernet activity LED	10	Power supply unit 1
3	10 Gigabit Ethernet speed LED	11	Power supply unit 2
4	10 Gigabit Ethernet activity LED	12	Management port
			 <b>Note</b> This port is only for engineering purposes.
5	PCIe slot 3 low-profile cover	13	10 GBASE-T ports (RJ45)
6	PCIe slot 2 low-profile cover	14	USB 3.2 Gen 2 Type-A ports
7	PCIe slot 1 low-profile cover	15	2.5 Gigabit Ethernet ports (RJ45)
8	Drive activity LED	16	Reset button

## System board

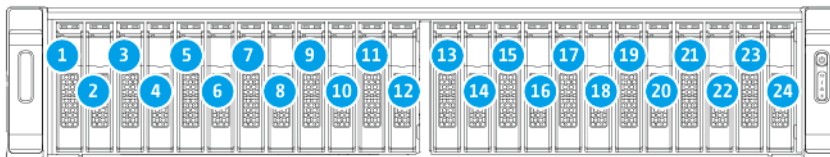


No.	Component	No.	Component
1	System fan 4	7	PCIe slot 3 (PCIe 4.0 x4)
2	System fan 3	8	Memory slot 1 (Channel A, DIMM 0, black)
3	System fan 2	9	Memory slot 2 (Channel A, DIMM 1, blue)
4	System fan 1	10	Memory slot 3 (Channel B, DIMM 0, black)
5	PCIe slot 1 (PCIe 4.0 x4)	11	Memory slot 4 (Channel B, DIMM 1, blue)
6	PCIe slot 2 (PCIe 4.0 x8)	-	-

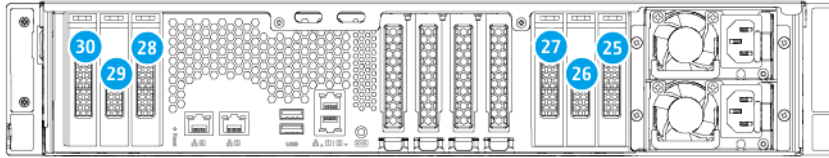
 **Note**  
Slot 2 speed reduces from x8 to x4 when an expansion card is installed in slot 1.

## Drive numbering

### Front Drive Numbering



## Rear Drive Numbering



## Installation requirements

Category	Item
Environment	<ul style="list-style-type: none"> <li>Room temperature: 0°C to 40°C (32°F to 104°F)</li> <li>Non-condensing relative humidity: 5% to 95%</li> <li>Wet-bulb temperature: 27°C (80.6°F)</li> <li>Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals</li> <li>Free from objects that may obstruct device ventilation or apply pressure to the device or power cord</li> <li>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.</li> <li>Only qualified, trained, and authorized device administrators with knowledge of all restrictions, safety precautions, and installation and maintenance procedures should have physical access to the device.</li> </ul>
Hardware and peripherals	<ul style="list-style-type: none"> <li>Storage drives For the list of compatible drive models, go to <a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a>.</li> <li>Network cable</li> <li>Qfinder Pro installer</li> <li>Computer</li> </ul>
Tools	<ul style="list-style-type: none"> <li>Phillips #1 or #2 screwdriver</li> <li>Anti-static wrist strap</li> </ul>

## 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 NAS on a rack.

- 3.** Install drives.  
For details, see [Installing 2.5-inch solid-state drives](#).
- 4.** Optional: Replace or install additional memory modules.  
For details, see [Replacing memory modules](#)
- 5.** Optional: Install expansion cards.  
For details, see [Installing expansion cards](#).
- 6.** Optional: Connect expansion units.  
For details, see [Expansion unit installation](#).
- 7.** Connect the power cord and all applicable cables.
- 8.** Power on the NAS.
- 9.** Connect the device to a computer or network.
- 10.** Install QuTS hero.  
For details, see [QuTS hero installation](#).
- 11.** Log on to QuTS hero.

## 3. Installation and Configuration

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

### Hardware installation

This section provides information on installing or replacing drives, memory modules, expansion cards, expansion units, redundant power supply units, system fans, and rail kits.

### Removing the case covers

The device has two top covers. You must remove the rear top cover before you can remove the front top cover.



#### 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.

- 



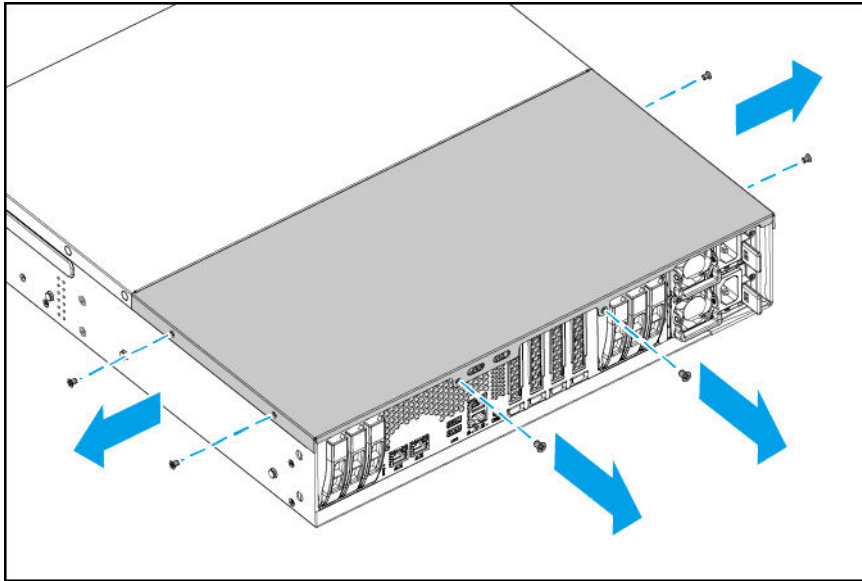
**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

- 

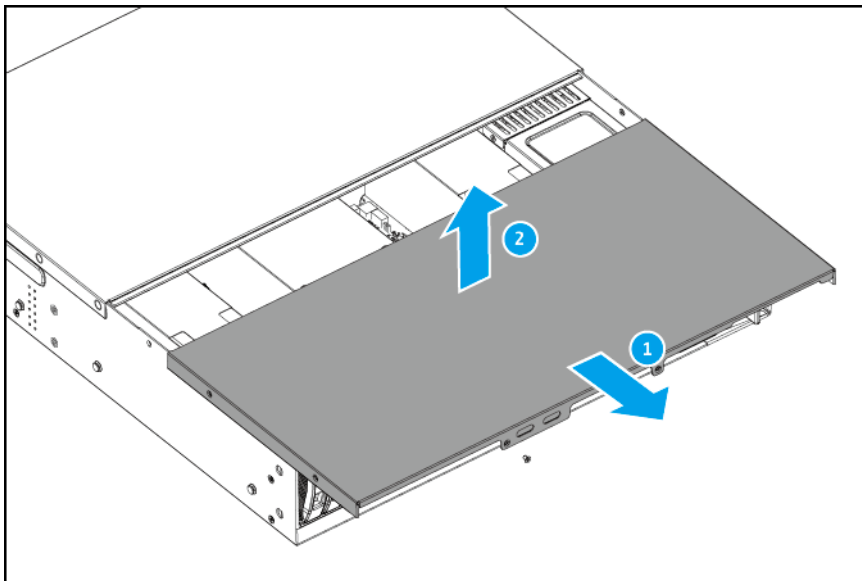


**Other moving components:** Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cords from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the rear top cover.
  - a. Remove the screws that secure the rear top cover to the chassis.



- b.** Slide the rear top cover back.
- c.** Lift the rear top cover off the device.



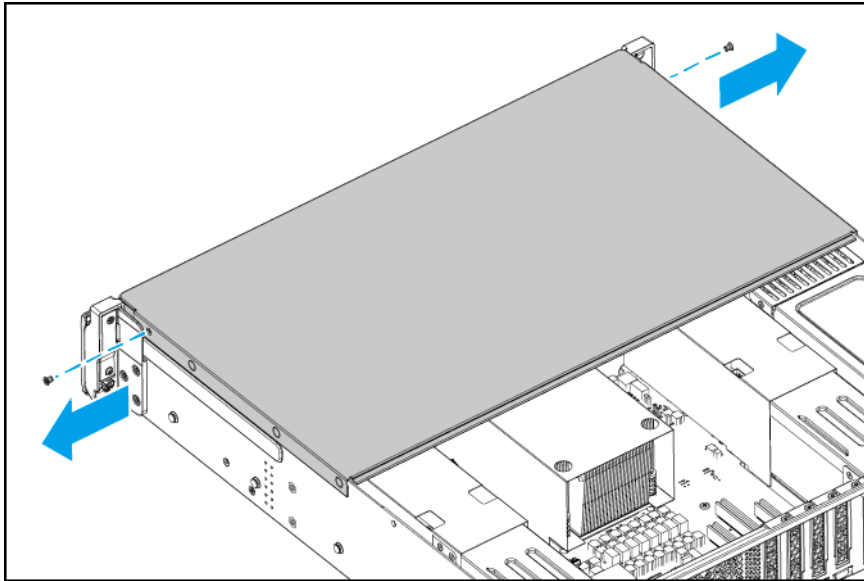
- 5.** Remove the front top cover.



**Note**

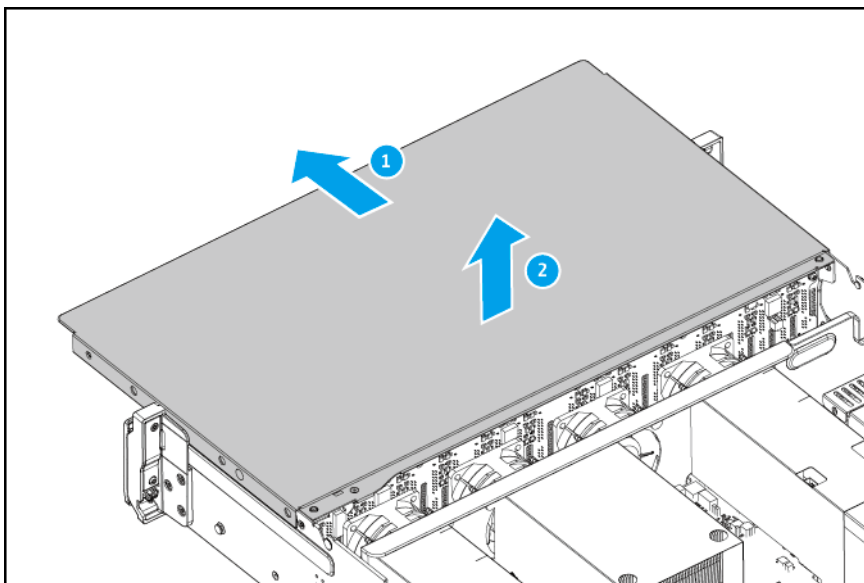
This step is necessary for replacing memory modules and system fans. You can skip this step if you are installing expansion cards only.

- a.** Remove the screws that secure the front top cover to the chassis.



**b.** Slide the front top cover forward.

**c.** Lift the front top cover off the device.



## Attaching the case covers

The device has two top covers. If both covers are removed, you must attach the front top cover before you can attach the rear top cover.



### 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.



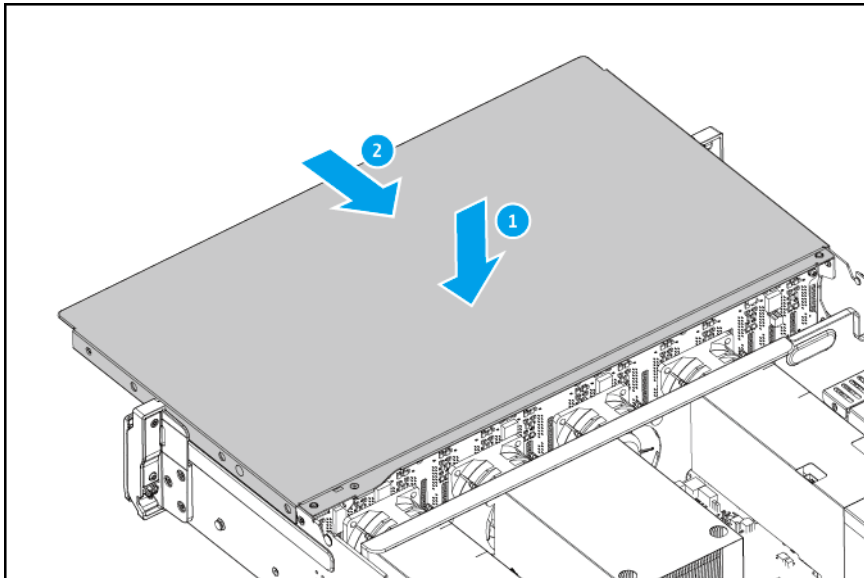


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

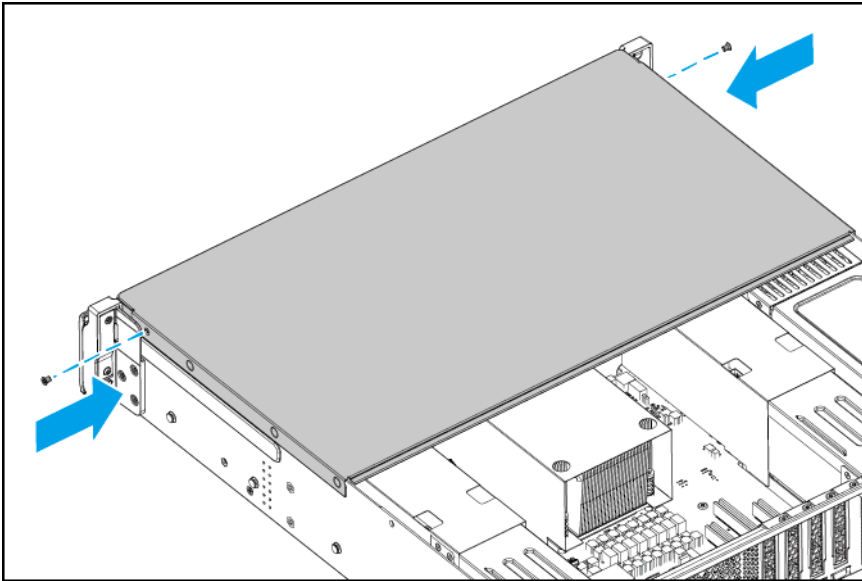


**Other moving components:** Keep your hands and other body parts away from other moving components.

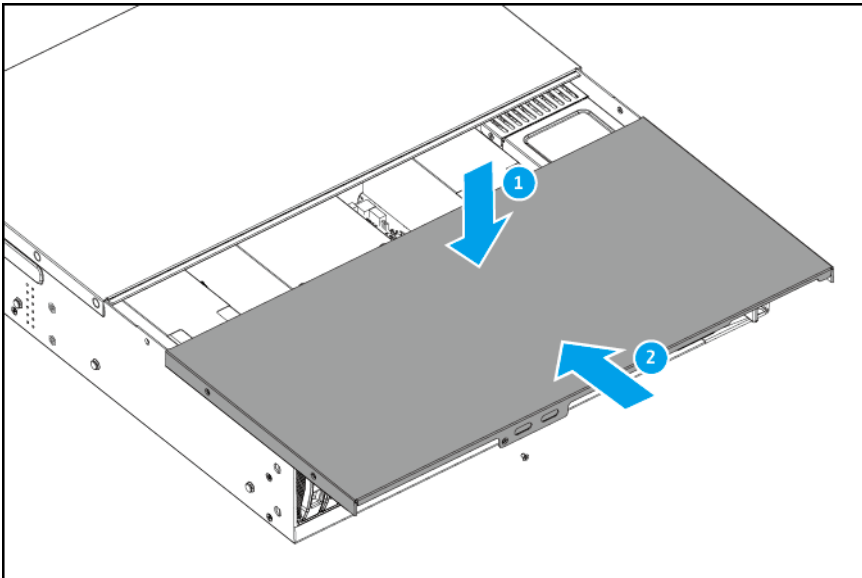
1. Attach the front top cover.  
Skip this step if you did not remove the front top cover.
  - a. Place the front top cover on the device.
  - b. Slide the front top cover back.



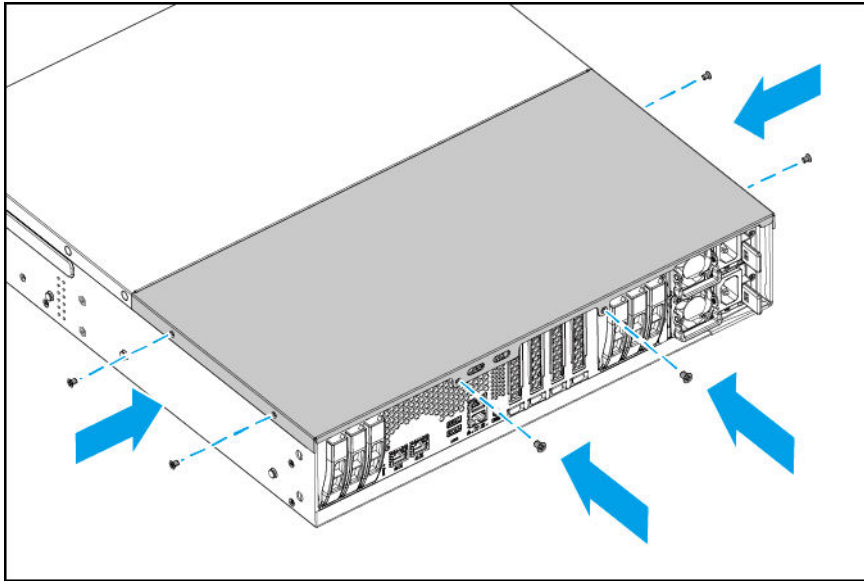
- c. Attach the screws that secure the front top cover to the chassis.



2. Attach the rear top cover.
  - a. Place the rear top cover on the device.
  - b. Slide the rear top cover forward.



- c. Attach the screws that secure the rear top cover to the chassis.



## Installing 2.5-inch solid-state drives

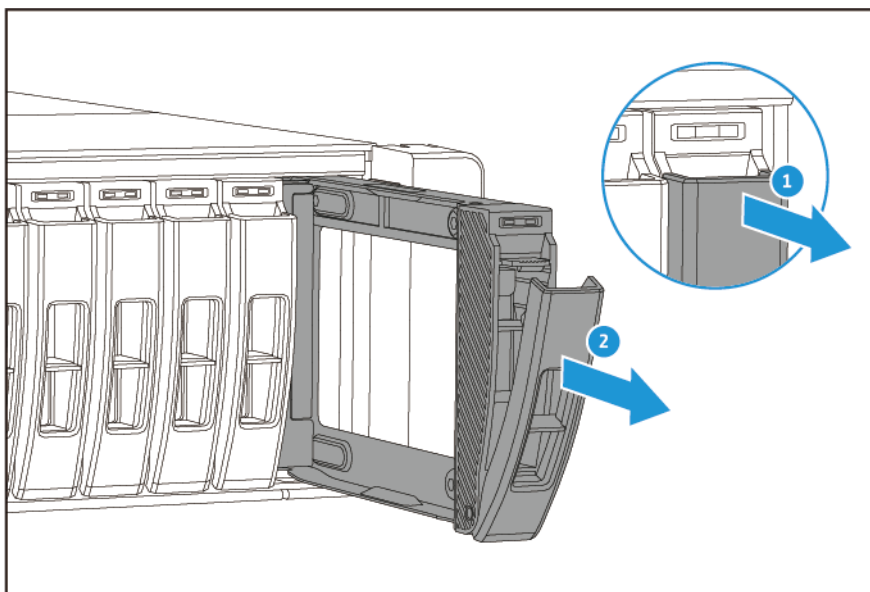
For the list of compatible drive models, go to <https://www.qnap.com/compatibility>.



### Warning

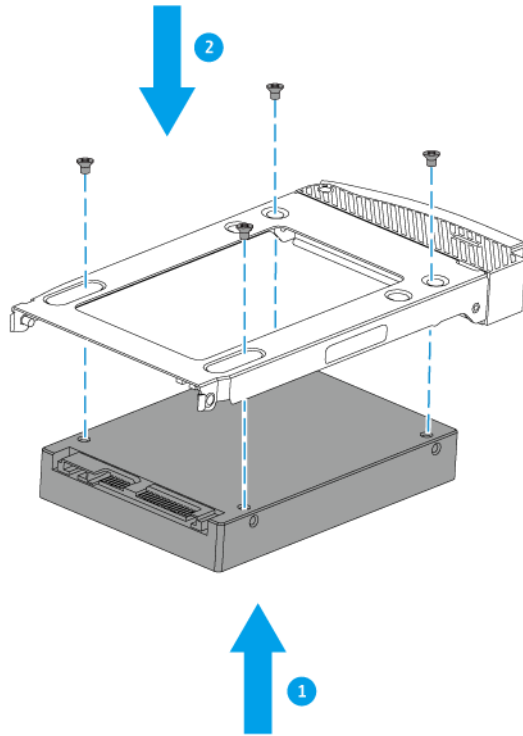
- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Remove the drive tray.
  - a. Pull the handle to release the tray.
  - b. Pull the tray out.



**2. Install a drive on the tray.**

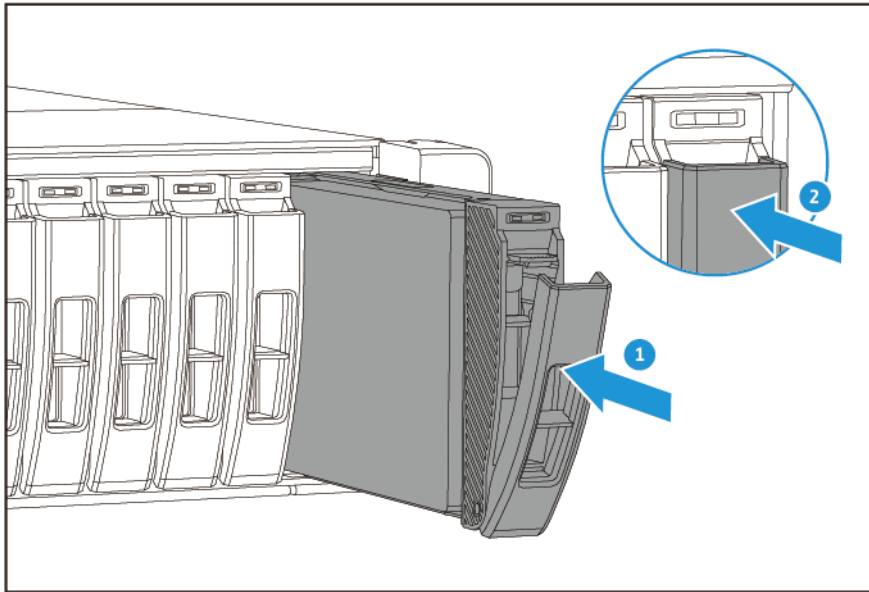
- a.** Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.



- b.** Attach the screws.

**3. Load the tray into the bay.**

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



- b. Push the handle to secure the tray in place.

## Replacing memory modules

The TS-h3077AFU has 4 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.

This NAS also comes preinstalled with one or two non-ECC memory modules. To provide extra protection from undetected data corruption, you can upgrade to ECC memory modules.

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



### Important

- When installing only one module, use slot 4.
- When installing two modules, use slots 2 and 4. Ensure that the modules are identical.
- When installing four modules, use slots 2 and 4 for the first pair, and slots 1 and 3 for the second pair. Ensure that each pair uses identical modules.
- Use only all ECC memory modules, or all non-ECC memory modules. Installing both types of memory modules will cause the ECC modules to perform as non-ECC 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.



**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 covers.  
For details, see [Removing the case covers](#).
5. Remove an existing module.

**Warning**

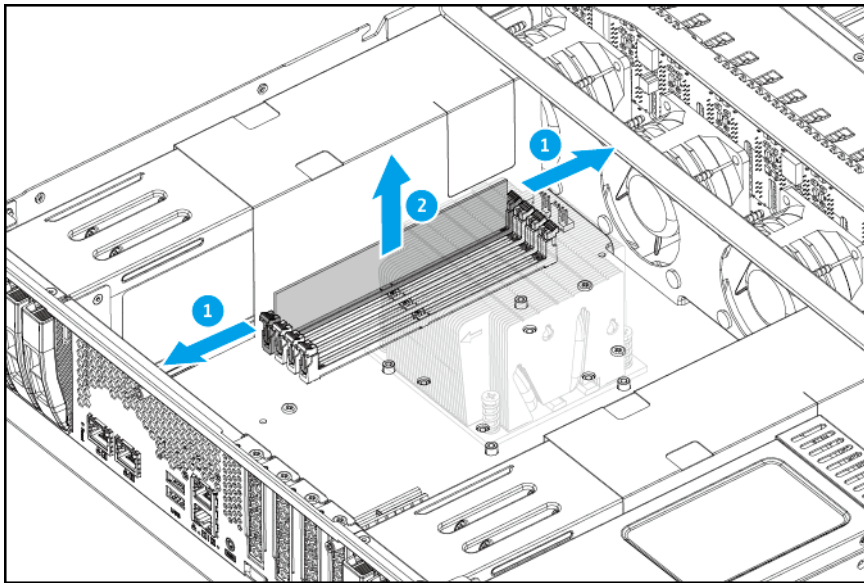
To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.

- a. Push the retention clips outward simultaneously to release the module.
- b. Verify that the module has tilted upward and is completely released from the slot.

**Warning**

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

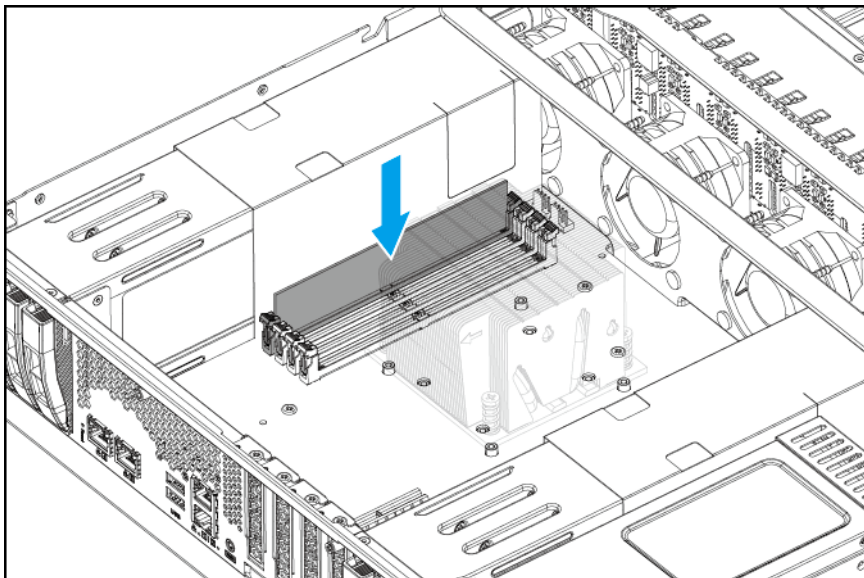
- c. Hold the module by the edges.
- d. Carefully slide the module out of the slot.



### Warning

- Do not touch the internal components, particularly the metal connectors.
- Do not bend the module.

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 covers.  
For details, see [Attaching the case covers](#).
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 QuTS hero as an administrator.
  - b. Go to **Control Panel > System > System Status > Hardware Information**.
  - c. Check the value for **Total memory**.

## Installing expansion cards

The TS-h3077AFU 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 TS-h3077AFU.



### Important

- PCIe slot 2 will reduce its speed from x8 to x4 if an expansion card is installed on slot 1.
- For PCIe 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. Check the expansion cards and brackets supported by your model on the QNAP website.
  - a. Go to [www.qnap.com/compatibility](http://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.

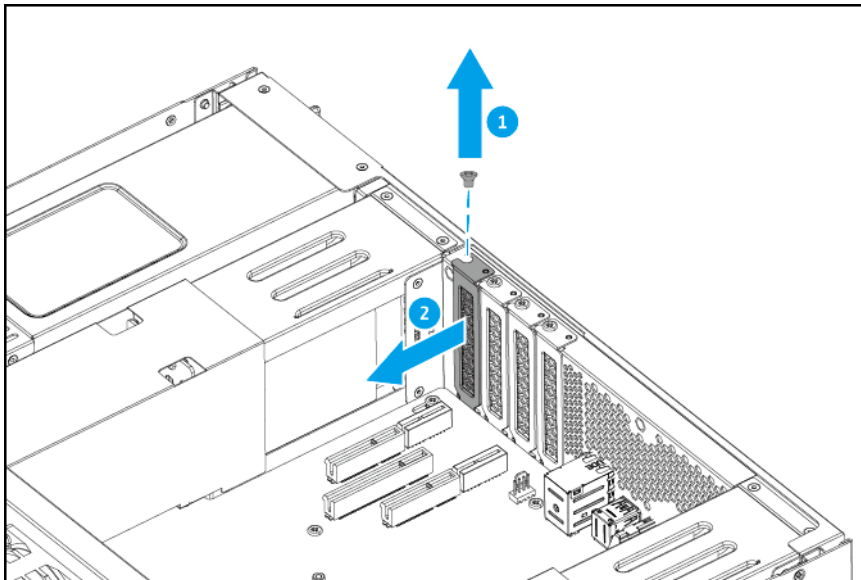


- f.** Optional: Click the corresponding **Note** icon to view more information.
- 2.** Power off the device.
- 3.** Disconnect the power cord from the electrical outlet.
- 4.** Disconnect all cables and external attachments.
- 5.** Remove the rear top cover.  
For details, see [Removing the case covers](#).
- 6.** Remove the PCIe cover.

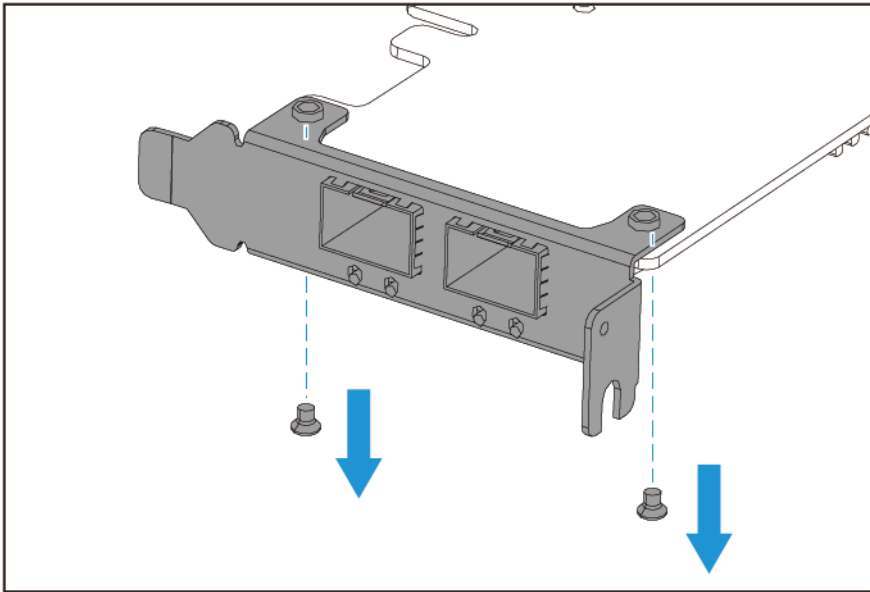
**Warning**

To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.

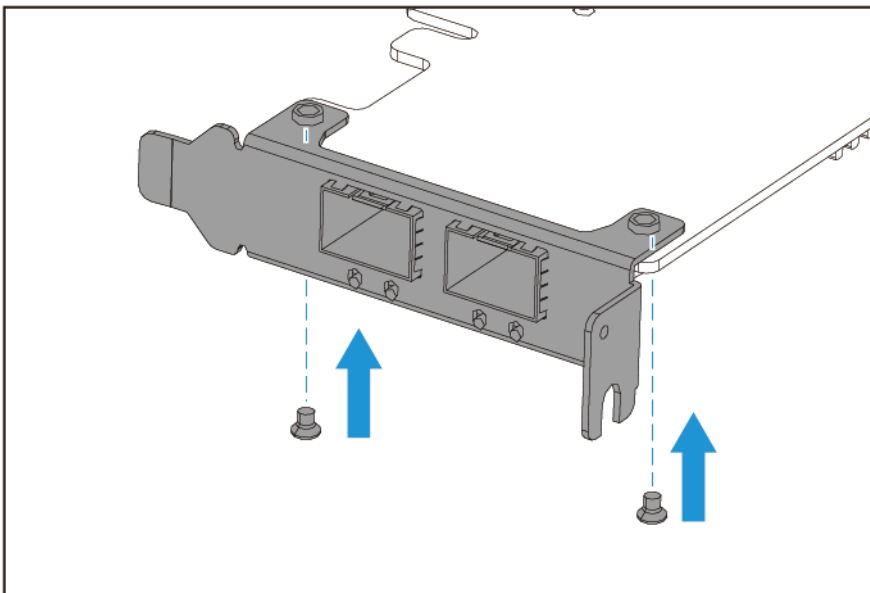
- a.** Remove the screw that secures the cover to the bracket.
- b.** Pull the cover away from the slot.



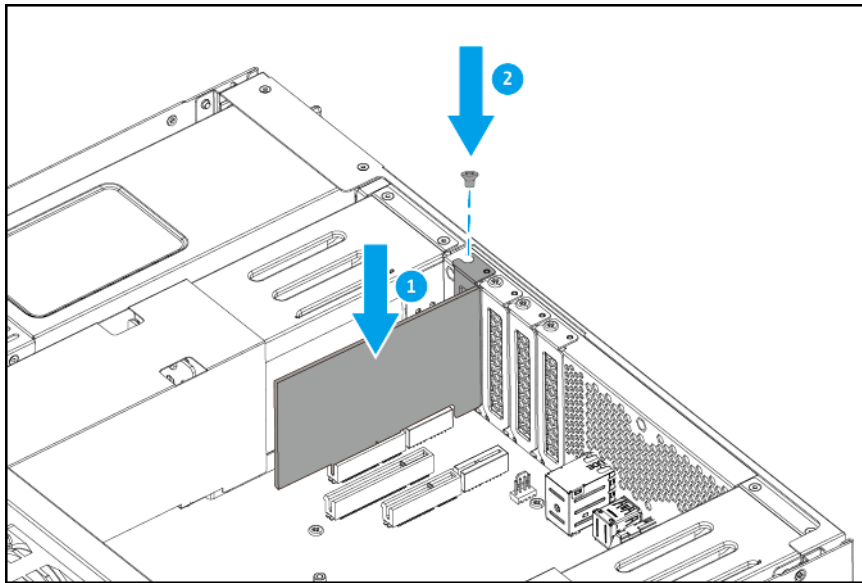
- 7.** Optional: Attach the QNAP bracket to the expansion card.
  - a.** Remove all screws of the existing bracket.



- b.** Carefully pull the bracket away from the card.
- c.** Attach the QNAP bracket to the card using the same screws.



- d.** Verify that the bracket is secured to the card.
- 8.** Install the expansion card.
- a.** Hold the card by the edges.
  - b.** Insert the card into the slot.
  - c.** Attach the screw.



9. Attach the rear top cover.  
For details, see [Attaching the case covers](#).
10. Connect all cables and external attachments.
11. Connect the power cord to the electrical outlet.
12. Power on the NAS.

### Expansion unit installation

The TS-h3077AFU supports PCIe, SAS, SATA, and USB expansion units. For details, see the table below.

You can purchase storage expansion accessories from QNAP or an authorized reseller.

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

For the list of compatible expansion units and the maximum number of applicable expansion units, go to <https://www.qnap.com/go/compatibility-expansion>.

Expansion Unit Model	Description	Required Accessories
PCIe expansion units		
TL-R1200PES-RP TL-R1600PES-RP	<ul style="list-style-type: none"> <li>• Uses a PCIe 32 Gbps or 64 Gbps (SFF-8644) interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• One of the following host bus adapter and cable pairings:                             <ul style="list-style-type: none"> <li>• Adapter: QXP-3X4PES Cable: CAB-PCIE10M-8644-4X</li> <li>• Adapter: QXP-3X8PES Cable: CAB-PCIE10M-8644-8X</li> </ul> </li> <li>• RAIL-B02</li> </ul>

Expansion Unit Model	Description	Required Accessories
TL-R2400PES-RP	<ul style="list-style-type: none"> <li>• Uses a PCIe 32 Gbps or 64 Gbps (SFF-8644) interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• One of the following host bus adapter and cable pairings: <ul style="list-style-type: none"> <li>• Adapter: QXP-3X4PES Cable: CAB-PCIE10M-8644-4X</li> <li>• Adapter: QXP-3X8PES Cable: CAB-PCIE10M-8644-8X</li> </ul> </li> <li>• RAIL-A02-90</li> </ul>
SAS expansion units		
REXP-1620U-RP	<ul style="list-style-type: none"> <li>• Uses a SAS 12 Gbps (SFF-8644) interface</li> <li>• Supports SAS/SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• SAS-12G2E storage expansion card</li> <li>• mini-SAS SFF-8644 cable</li> <li>• RAIL-A03-57</li> </ul>
REXP-1220U-RP		
REXP-1610U-RP	<ul style="list-style-type: none"> <li>• Uses a SAS 6 Gbps (SFF-8644) interface</li> <li>• Supports SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• SAS-12G2E storage expansion card</li> <li>• mini-SAS SFF-8644 cable</li> <li>• RAIL-A03-57</li> </ul>
REXP-1210U-RP		
TL-R1620Sep-RP	<ul style="list-style-type: none"> <li>• Uses a SAS 12 Gbps (SFF-8644) interface</li> <li>• Supports SAS/SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• One of the following storage expansion cards: <ul style="list-style-type: none"> <li>• QXP-820S-B3408</li> <li>• QXP-1620S-B3616W</li> </ul> </li> <li>• mini-SAS SFF-8644 cable</li> <li>• RAIL-A03-57</li> </ul>
TL-R1220Sep-RP		
SATA expansion units		
TL-D400S	<ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• 1 x SFF-8088 connector cable</li> <li>• QXP-400eS-A1164 host bus adapter</li> </ul>
TL-D800S	<ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• 2 x SFF-8088 connector cables</li> <li>• QXP-800eS-A1164 host bus adapter</li> </ul>
TL-D1600S	<ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• 4 x SFF-8088 to SFF-8644 connector cables</li> <li>• QXP-1600eS-A1164 host bus adapter</li> </ul>
TL-R400S	<ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• 1 x SFF-8088 connector cable</li> <li>• QXP-400eS-A1164 host bus adapter</li> <li>• RAIL-B02</li> </ul>
TL-R1200S-RP	<ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>• 3 x SFF-8088 to SFF-8644 connector cables</li> <li>• QXP-1600eS-A1164 host bus adapter</li> <li>• RAIL-B02</li> </ul>

Expansion Unit Model	Description	Required Accessories
USB expansion units		
TR-002	<ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 2 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> </ul>
TR-004	<ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 1 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> </ul>
TR-004U	<ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 1 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> <li>• RAIL-B02</li> </ul>
TL-D800C	<ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 2 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> </ul>
TL-R1200C-RP	<ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 2 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>	<ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> <li>• RAIL-B02</li> </ul>

## Connecting PCIe expansion units

To connect PCIe expansion units, a host bus adapter must be installed on the NAS.

For required accessories details, see [Expansion unit installation](#).

1. Install a host bus adapter on the PCIe slot.  
For details, see [Installing expansion cards](#).



### Important

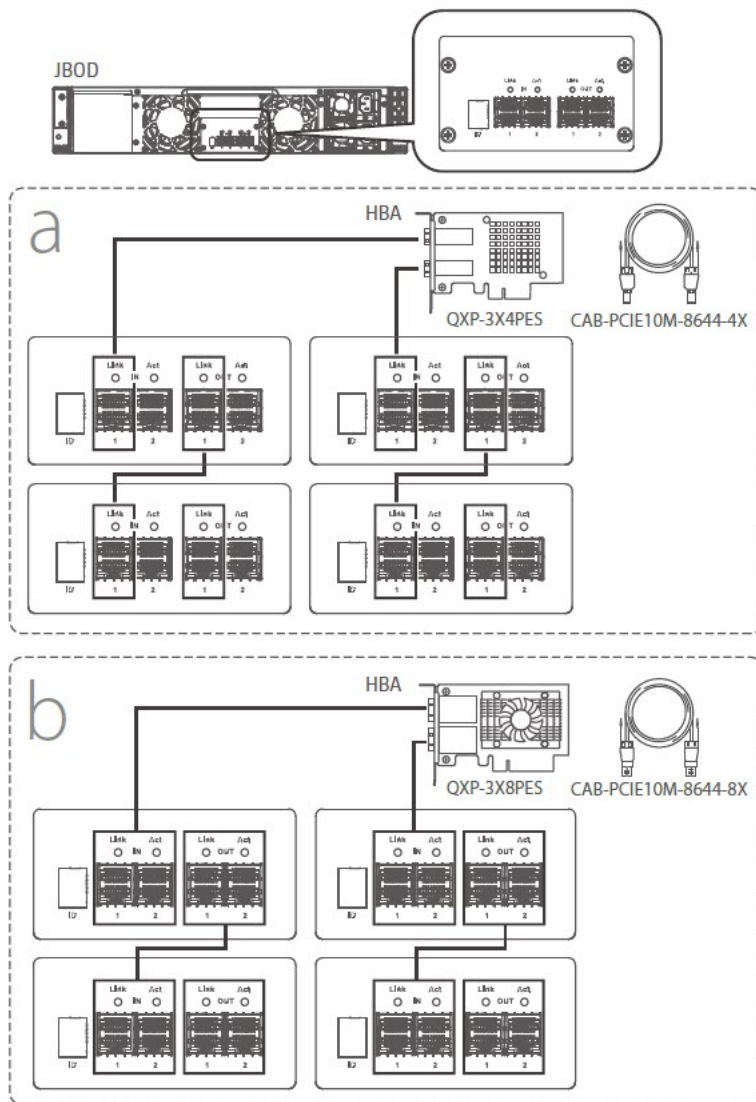
A QNAP QXP host bus adapter is required for connecting PCIe expansion units to a host device. Third-party host bus adapters are not compatible with QNAP expansion units.

2. Connect one or more PCIe expansion units to the NAS.  
Use one of the following topologies according to the host bus adapter (HBA) model installed on the NAS.



### Important

- Ensure you use compatible cables for your host bus adapter model.
- If you use the CAB-PCIE10M-8644-4X cable, you must connect the cable to the left side of the port for both upstream and downstream ports.
- For details, see the hardware user guide for your expansion unit model.



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

### Connecting SAS expansion units

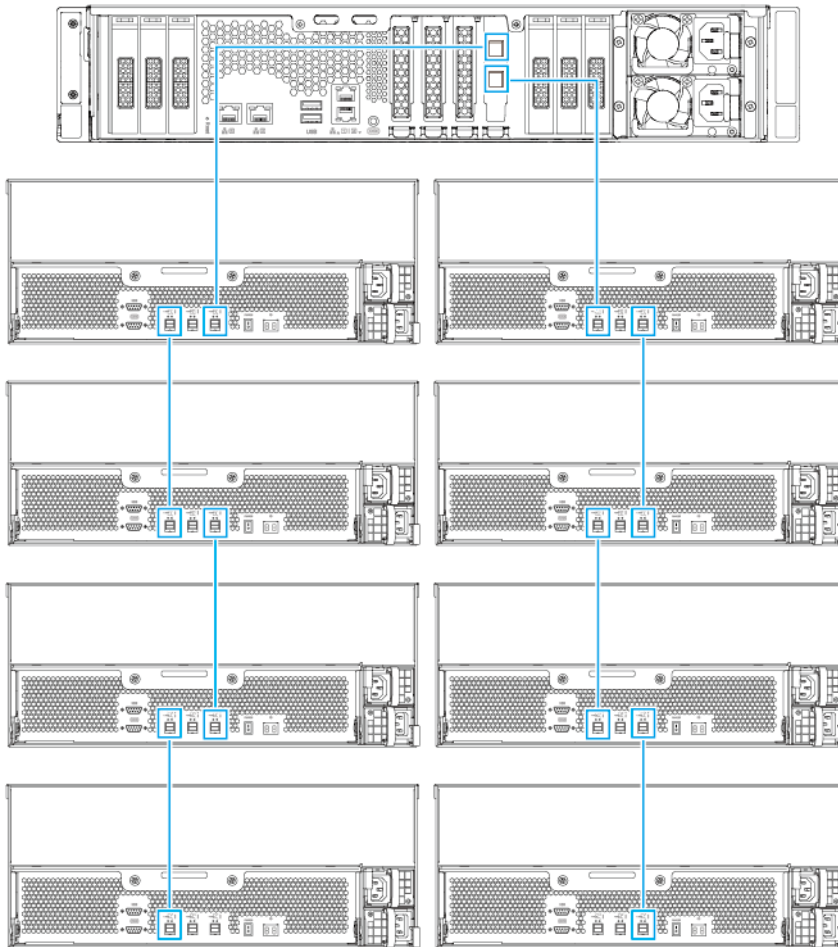
To connect the NAS to SAS expansion units, a storage expansion card must be installed on the NAS.

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 NAS using the following topology.



### Important

QNAP recommends always using dual-path configuration to prevent storage downtime due to expansion unit failure or cable disconnection. Single-path configuration should be used only in a situation where it is not possible to use dual-path configuration.

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

### Connecting SATA expansion units

To connect the NAS to SATA expansion units, a host bus adapter must be installed on the NAS.

For required accessories details, see [Expansion unit installation](#).

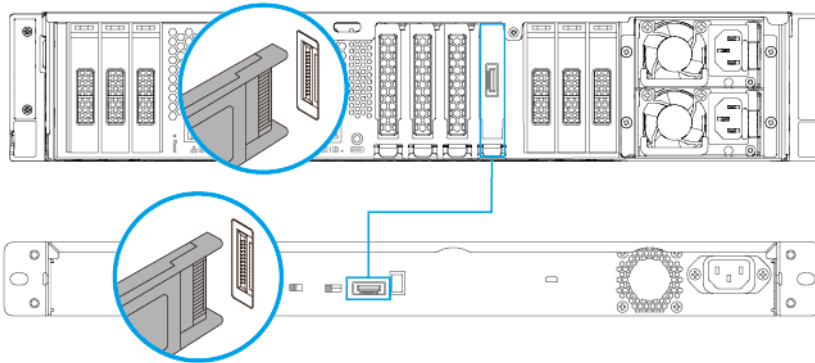
1. Power off the NAS.
2. Install a host bus adapter on the PCIe slot.  
For details, see [Installing expansion cards](#).



### Important

A QNAP QXP host bus adapter is required for connecting SATA expansion units to a host device. Third-party host bus adapters are not compatible with QNAP expansion units.

3. Connect the expansion unit to the NAS.



4. Power on the expansion unit.
5. Power on the NAS.
6. Verify that the expansion unit is recognized by the NAS.
  - a. Log on to QuTS hero as an administrator.
  - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
  - c. Verify that the expansion unit is listed.

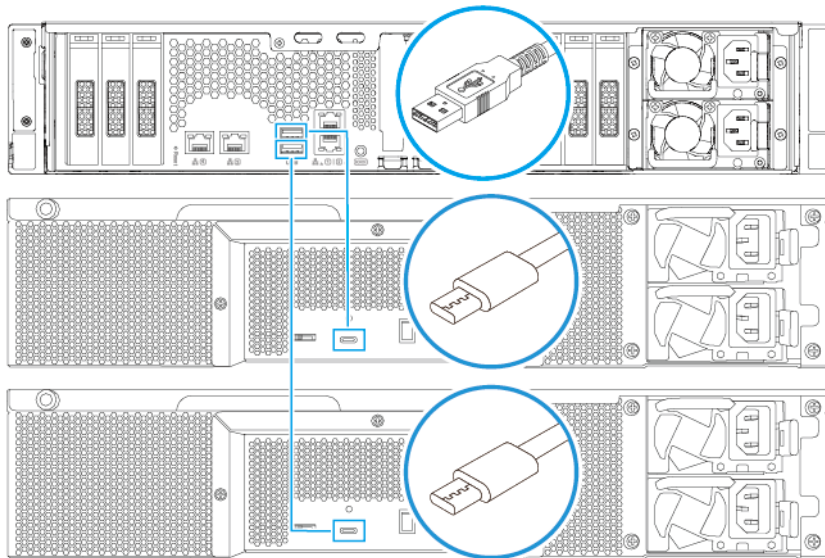
## Connecting USB expansion units

To connect the NAS to a USB expansion unit, a USB Type-A to USB Type-C cable is 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 the USB Type-C port on the expansion unit.
  - b. Connect the USB cable to a USB 3.2 Gen 2 Type-A port on the NAS.





3. Power on the expansion units.
4. Power on the NAS.
5. Verify that the expansion units are recognized by the NAS.
  - a. Log on to QuTS hero as an 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.



### Warning

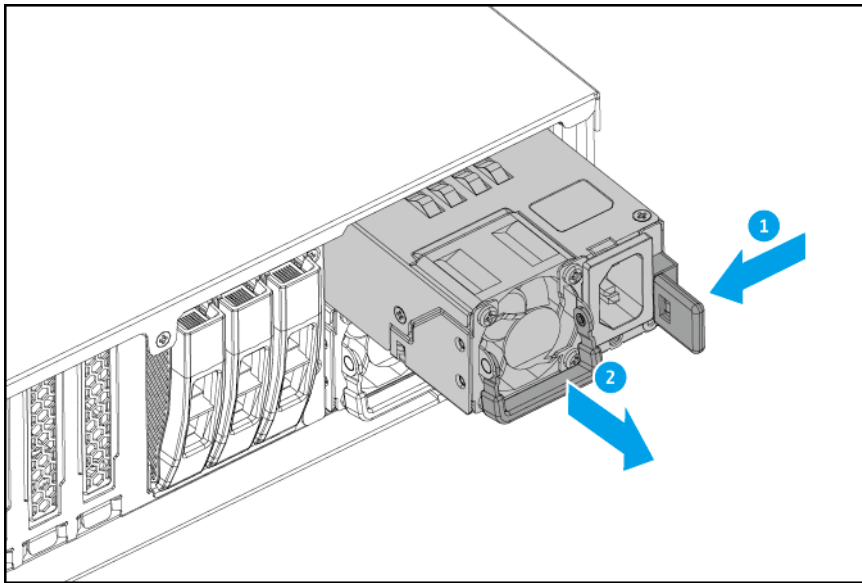
Electric shock hazard.



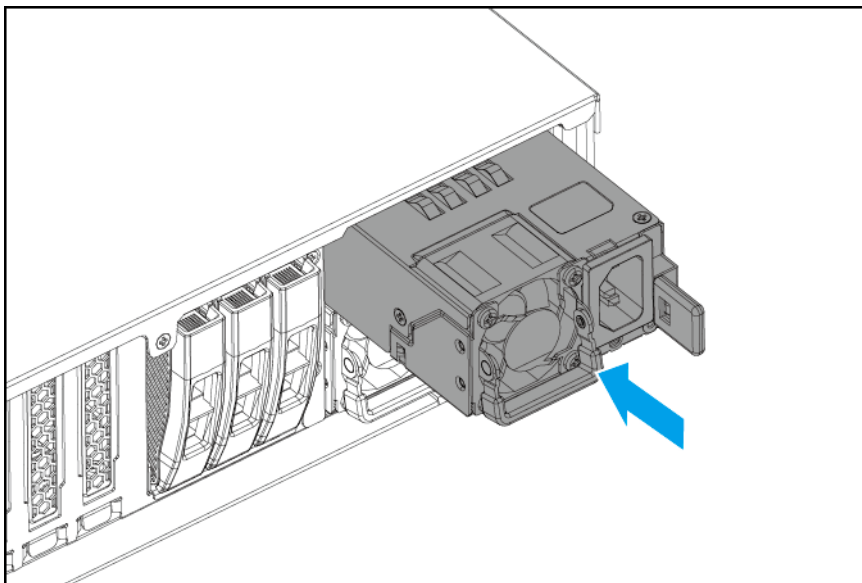
### Tip

By default, the NAS issues audio alerts and desktop notifications in case of redundant PSU failures. Redundant PSU failures include when the NAS is operating on a single healthy PSU only. In this case, if you want to stop receiving redundant PSU failure alerts and notifications, go to **Control Panel > System > Hardware > General** and deselect **Enable redundant power supply mode**.

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



3. Insert the new PSU.



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

## Replacing system fans

The fan unit of the device contains four system fans to ensure adequate cooling.



### 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.

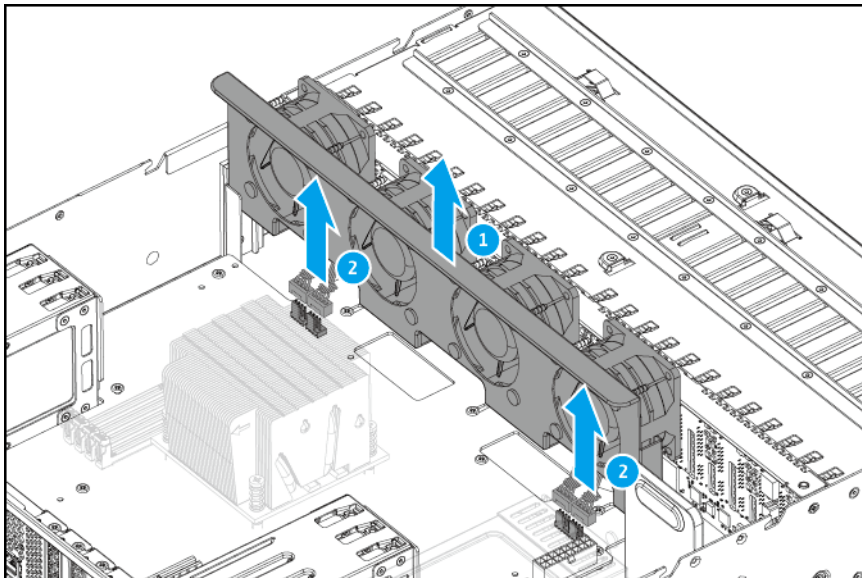
1. Power off the device.
2. Disconnect the power cords from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case covers.  
For details, see [Removing the case covers](#).
5. Remove the fan unit from the chassis.



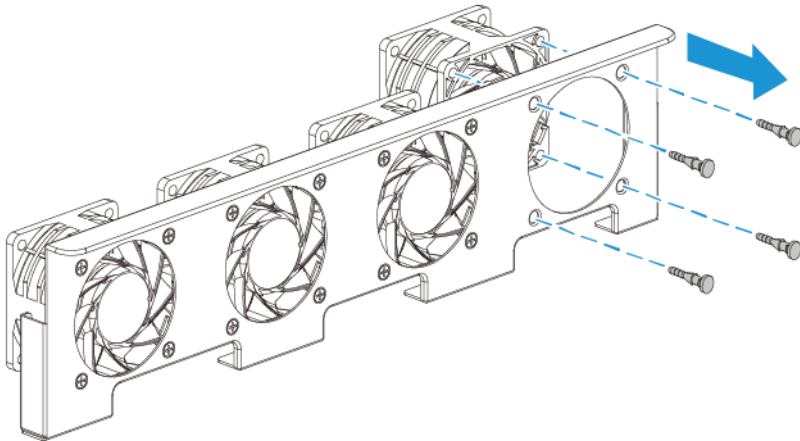
### Warning

To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.

- a. Lift the fan unit up.
- b. Disconnect the power connectors of all fans from the system board.

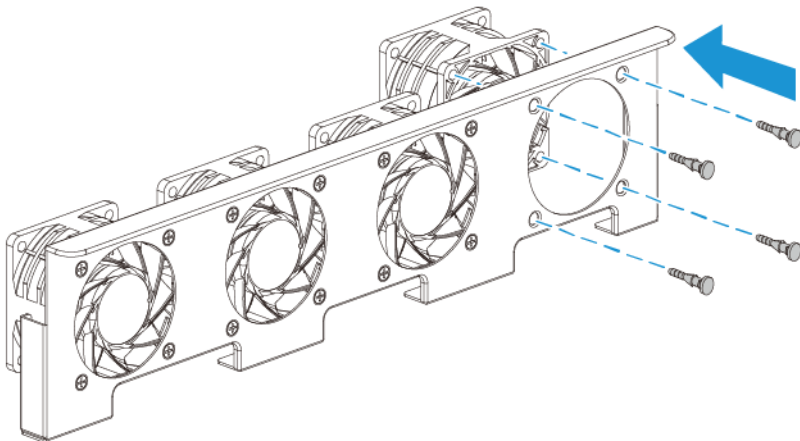


- c. Lift the fan unit out of the chassis.
6. Remove the fan.
    - a. Remove the rubber pins that secure the fan to the fan unit.



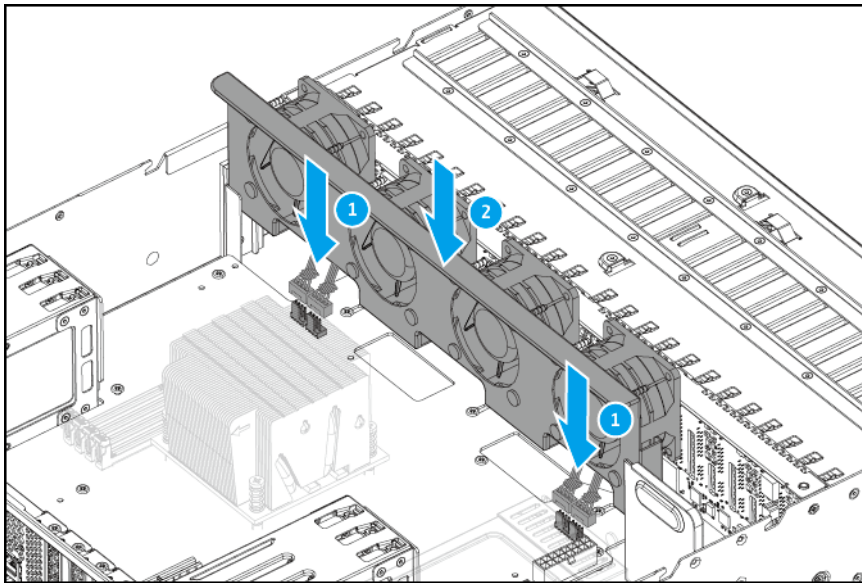
**7.** Install a new fan.

- a.** Align the fan to the screw holes on the fan unit.
- b.** Attach the rubber pins that secure the fan to the fan unit.



**8.** Install the fan unit.

- a.** Connect the power connectors of all fans to the system board.
- b.** Insert the fan unit.



9. Attach the case covers.  
For details, see [Attaching the case covers](#).
10. Connect all cables and external attachments.
11. Connect the power cords to the electrical outlet.
12. Power on the device.

## Rail kits

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

The TS-h3077AFU is compatible with the following rail kit model:

Model	Compatible Rail Kit
TS-h3077AFU	RAIL-A03-57

You can find installation information in the rail kit package.

## QuTS hero installation

The TS-h3077AFU uses the QNAP QuTS hero operating system. You can install QuTS hero using any of the following methods.

You can also install the QNAP QTS operating system. If your NAS is connected to the internet, the option to install QTS will appear in the Smart Installation Guide wizard using any of the methods in the table. You can also manually download the QTS firmware from <https://download.qnap.com>.



### Warning

QTS and QuTS hero use different file systems. Switching operating systems will reset the NAS and delete all data.

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"> <li>• Locate the NAS using Qfinder Pro.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul> <p>For details, see <a href="#">Initializing QuTS hero using Qfinder Pro</a>.</p>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Network cable</li> <li>• Qfinder Pro installer</li> </ul>
Cloud installation	<p>If the NAS is connected to the internet, you can do the following:</p> <ul style="list-style-type: none"> <li>• Scan the QR code on the NAS.</li> <li>• Log into your myQNAPcloud account.</li> <li>• Use myQNAPcloud Link to remotely access your NAS.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul> <p>For details, see <a href="#">Initializing QuTS hero using the cloud installation website</a>.</p>	<ul style="list-style-type: none"> <li>• Computer or mobile device</li> <li>• Network cable</li> <li>• myQNAPcloud account</li> <li>• Cloud Key</li> </ul>

## Initializing QuTS hero using Qfinder Pro

You can initialize QuTS hero using Qfinder Pro, which is a utility designed to help you locate and manage QNAP devices on your network.



### Warning

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

1. Power on the device.
2. Connect the device 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. If the screen shows a different operating system, click **QuTS hero**.



### Note

This step is only required if the NAS supports installing more than one operating system and the default operating system for installation is not QuTS hero.

The NAS restarts and the smart installation screen shows QuTS hero as the operating system to install.

6. Click **Start Smart Installation Guide**. The **Install Firmware** window appears.

7. Install firmware using any of the following methods:

Installation methods	Steps
Automatic	Click <b>Start</b> . Automatically searches for available firmware updates and installs firmware.
Manual installation	<p><b>a.</b> Click <b>Manual Installation</b>. The <b>Install Firmware</b> window appears.</p> <p><b>b.</b> Click <b>Browse</b>. The upload file window appears.</p> <p><b>c.</b> Select file.</p> <p><b>d.</b> Click <b>Open</b>. Starts firmware installation.</p>
Skip	Click <b>Skip</b> . Skips firmware installation.

8. 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.
- **Username:** Specify an administrator username that contains 1 to 32 characters. The name can contain letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), multi-byte Chinese, Japanese, Korean, and Russian characters.  
The username cannot contain the following special characters: grave accent (`), asterisk (\*), equal sign (=), plus sign (+), square brackets ([ ]), curly brackets ({}), slash (\), vertical bar (|), semicolon (;), colon (:), apostrophe ('), quotation mark ("), comma (,), less than sign (<), greater than sign (>), backslash (/), question mark (?), percent sign (%), dollar sign (\$), and the space character.



**Important**

To protect your NAS from brute force attacks, create a new system administrator account during QUTS hero initialization to disable the default "admin" account.

- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

9. Click **Next**.

10. 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.

11. Click **Next**.

The **Configure the network settings** screen appears.

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

13. Click **Next**.

14. Review the settings.

15. Click **Apply**.

A confirmation message appears.

**Warning**

Clicking **Initialize** deletes all data on the drive before installing QuTS hero.

**16. Click Initialize.**

QuTS hero initialization starts. It may take a few minutes to complete the process.

After the initialization, you can click **Go to NAS Management** to start using QuTS hero and configuring other settings.

## Initializing QuTS hero using the cloud installation website

You can initialize QuTS hero on the cloud installation website, which is designed to help you set up QNAP devices.

**Warning**

Initializing QuTS hero deletes all data on the drives. Back up your data before proceeding.

1. Power on the device.
2. Connect the device to the internet.
3. Go to the QNAP Cloud Installation website using one of the following methods:
  - On your computer, go to the website dedicated to your region.
    - Global: <https://install.qnap.com>
    - China: <https://install.qnap.com.cn>
  - Or 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**.

**Tip**

If your NAS is connected to the Internet, you can also go to <https://install.qnap.com/set> to enter the Cloud Key printed on the NAS. This allows you to initialize the NAS even if your NAS and your computer are not on the same network.

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 QuTS hero through LAN and then installing myQNAPcloud Link.

7. Click **Next**.

The **Smart Installation Guide** opens in the default web browser.



8. Perform any of the following actions.

- To check for the latest available version, click **Start**.  
The wizard downloads the latest available version, and then the NAS restarts after the download is complete. If a newer version is not available, the wizard automatically displays the **Smart Installation Guide**.
- To install the out-of-the-box version, click **Skip**.
- If the screen shows a different operating system, click **QuTS hero**.  
The NAS restarts and the smart installation screen shows QuTS hero as the operating system to install.

9. Click **Start Smart Installation Guide**.

The **Install Firmware** window appears.

10. Install firmware using any of the following methods:

Installation methods	Steps
Automatic	Click <b>Start</b> . Automatically searches for available firmware updates and installs firmware.
Manual installation	<p><b>a.</b> Click <b>Manual Installation</b>. The <b>Install Firmware</b> window appears.</p> <p><b>b.</b> Click <b>Browse</b>. The upload file window appears.</p> <p><b>c.</b> Select file.</p> <p><b>d.</b> Click <b>Open</b>. Starts firmware installation.</p>
Skip	Click <b>Skip</b> . Skips firmware installation.

11. 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.
- **Username:** Specify an administrator username that contains 1 to 32 characters. The name can contain letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), multi-byte Chinese, Japanese, Korean, and Russian characters.  
The username cannot contain the following special characters: grave accent (`), asterisk (\*), equal sign (=), plus sign (+), square brackets ([ ]), curly brackets ({}), slash (/), vertical bar (|), semicolon (;), colon (:), apostrophe ('), quotation mark ("), comma (,), less than sign (< ), greater than sign (>), backslash (/), question mark (?), percent sign (%), dollar sign (\$), and the space character.



**Important**

To protect your NAS from brute force attacks, create a new system administrator account during QuTS hero initialization to disable the default "admin" account.

- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

12. Click **Next**.

13. 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.

14. Click **Next**.  
The **Configure the network settings** screen appears.
15. Select **Obtain an IP address automatically (DHCP)**.
16. Click **Next**.
17. Review the settings.
18. Click **Apply**.  
A confirmation message appears.

**Warning**


Clicking **Initialize** deletes all data on the drive before installing QuTS hero.

19. Click **Initialize**.  
QuTS hero initialization starts. It may take a few minutes to complete the process.  
After the initialization, you can click **Go to NAS Management** to start using QuTS hero and configuring other settings.


## 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.   <b>Important</b> 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"> <li>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 would be 00089BF61575.</li> </ul> <p> <b>Note</b> You can find the first MAC address with Qfinder Pro or attached to a label on the device listed as MAC1.</p> <ul style="list-style-type: none"> <li>TCP/IP configuration: <ul style="list-style-type: none"> <li>Obtain IP address settings automatically via DHCP</li> <li>Disable jumbo frames</li> <li>If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to "Active Backup (Failover)".</li> </ul> </li> <li>System port: 8080 (system service port)</li> <li>Security level: Low (Allow all connections)</li> <li>LCD panel password: (blank)</li> <li>VLAN: Disabled</li> </ul>
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"> <li>To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.</li> </ul>

## LEDs

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

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


### System Power LED

Status	Description
Blue	The device is powered on.
Flashes blue	Errors or warnings are detected (for example, fan error, one or more power supply units are not detected).
Off	The device is powered off.

### System Status LED

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

**LAN LED**

Status	Description
Orange	The device is connected to the network.   <b>Note</b> The LAN LED can only detect the device's in-built Ethernet port connections. It cannot detect network expansion cards' Ethernet port connection status.
Flashes orange	The device is being accessed from the network.
Off	The device is not connected to a network.

**Expansion LED**

Status	Description
Orange	An expansion unit is connected.
Off	No expansion unit has been detected.

**Drive Activity LED**

Status	Description
Green	The drive is ready.
Flashes green	The drive is being accessed.
Off	No drive was detected.

**Drive Status LED**

Status	Description
Green	The drive is ready.
Red	A drive read/write error occurred.
Flashes red 5 times per second	The drive is being located in the operating system.
Off	No drive was detected.

**10 Gigabit Ethernet (RJ45) Speed LED**

Status	Description
Green	The network connection is operating at 10 Gbps.
Orange	The network connection is operating at 5 Gbps, 2.5 Gbps, 1 Gbps, or 100 Mbps.
Off	There is no network connection.

**10 Gigabit Ethernet (RJ45) Activity LED**

Status	Description
Orange	A network connection is established.
Flashes orange	Data is being transmitted.
Off	There is no network connection.

## 2.5 Gigabit Ethernet Speed LED

Status	Description
Green	The network connection is operating at 2.5 Gbps.
Orange	The network connection is operating at 1 Gbps or 100 Mbps.
Off	<ul style="list-style-type: none"> <li>The network connection is operating at 10 Mbps.</li> <li>There is no network connection.</li> </ul>

## 2.5 Gigabit Ethernet Activity LED

Status	Description
Orange	A network connection has been established.
Flashes orange	The device is being accessed from the network.
Off	There is no network connection.

## Audio alert

Duration	Frequency	Description
Short beep (0.5 seconds)	1	<ul style="list-style-type: none"> <li>The NAS is starting up.</li> <li>The NAS is shutting down (software shutdown).</li> <li>When the reset button is pressed for 3 seconds, the NAS resets configurations.</li> <li>When the reset button is pressed for 10 seconds, the NAS resets configurations and reboots.</li> <li>The operating system was updated.</li> </ul>
	3	The firmware was updated.
Long beep (1.5 seconds)	3 (every 5 minutes)	A system fan is not functioning.
	2	<ul style="list-style-type: none"> <li>A storage pool is about to reach full capacity.</li> <li>A storage pool has reached full capacity.</li> <li>A shared folder is about to reach its full capacity.</li> <li>A shared folder has reached its full capacity.</li> <li>The drives are in degraded mode.</li> <li>A drive is rebuilding.</li> <li>A drive is plugged in or out.</li> </ul>
	1	<ul style="list-style-type: none"> <li>The NAS was powered off by force shutdown (hardware shutdown).</li> <li>The NAS was powered on successfully and is ready.</li> </ul>

## 5. NAS Migration

You can migrate data and settings from your current NAS to another NAS model with minimal disruptions by installing all the hard drives from the source NAS to the destination NAS. RAID configuration and other settings are retained on the destination NAS after migration.

### QTS NAS migration

#### NAS migration requirements

You can only migrate drives to specific NAS models, depending on your source NAS. For the list of NAS models compatible with direct NAS migration, see <https://www.qnap.com/go/nas-migration>.

Your device must meet the following requirements:

- QTS NAS supports several types of NAS migration:
  - ARM NAS to an ARM NAS
  - x86 NAS to an x86 NAS
  - ARM NAS to an x86 NAS



#### Note

You cannot migrate from an x86 NAS to an ARM NAS.

- The destination NAS must run on the same QTS version as the source NAS (or later).



#### Important

Due to incompatibilities in file system, system migration between QTS NAS and QuTS hero NAS is not supported.



#### Warning


Migrating drives between QTS NAS and QuTS hero NAS can cause data corruption.




- The destination NAS must have sufficient free drive bays to accommodate all the drives that you are migrating from the source NAS.

For NAS models that do not support NAS migration, you can migrate existing data using HBS 3. For details, see [Migrating NAS data using HBS 3](#).

### Status and setting changes after NAS migration

The status of NAS data and settings varies after migration.

Data and Settings	After NAS Migration
Registered myQNAPcloud name	Your registered myQNAPcloud name is not migrated.
Encrypted disk volumes	<p>If the NAS does not support file system encryption, encrypted disk volumes are not migrated.</p> <p> <b>Warning</b> To prevent data loss, back up and save the encryption keys of encrypted disk volumes in a safe place. You can also choose to decrypt disk volumes before migration.</p>

Data and Settings	After NAS Migration
Shared folders	<p>All shared folders and the downloaded files stored in them are retained.</p> <p> <b>Warning</b> To prevent data loss, back up and save encryption keys or passwords of encrypted shared folders in a safe place before migration.</p> <p> <b>Important</b> Folder permissions on the destination NAS must be reconfigured after migration.</p>
Network	<ul style="list-style-type: none"> <li>• If the number of network ports or network port specifications on the destination NAS is different from the source NAS, the following network and virtual settings may change and require reconfiguration: port trunking, virtual machines, Thunderbolt, USB QuickAccess, and more.</li> <li>• You must reconfigure network settings when the source NAS is running on QTS 4.3.5 or earlier versions.</li> </ul>
Windows AD configuration	Windows AD configurations must be reconfigured.
Licenses	<p>Licenses are not migrated.</p> <p> <b>Warning</b> To prevent losing all your software licenses, QNAP recommends deactivating licenses on the source NAS before data migration.</p>
Applications	If the destination NAS has less RAM than the source NAS, the following features and applications might not function: Virtualization Station, Qsirch, and Snapshots.
Services	Only services supported by the destination NAS are available.
Multimedia features	Some multimedia features are disabled by default.

## Migrating a NAS



### Important

Before performing NAS migration, ensure that you understand all requirements and possible changes after migration.

For details see the following topics:

- [NAS migration requirements](#)
- [Status and setting changes after NAS migration](#)

1. Power off the source NAS and the destination NAS.
2. Remove the drives.



### Important

QNAP recommends following the source NAS drive order when installing the drives. Take note of the drive tray order when removing the drives.

- a. Remove the drives from the source NAS.



- b. Remove the drive trays from the destination NAS.
3. Install the drives.
  - a. Install source NAS drives onto the destination NAS drive trays.
  - b. Insert the drive trays into the destination NAS.
4. Power on the destination NAS.
5. Log on to QTS as an administrator on the destination NAS.  
The destination NAS automatically checks for the latest firmware update.

## Migrating NAS data using HBS 3

For NAS models that do not support direct migration, you can initialize the destination NAS then copy data from the source NAS to the destination NAS using HBS 3.

### Preparing the destination NAS



1. Log on to QTS.
2. Create one or more storage pools.  
For details, see the [Creating a Storage Pool](#) topic in the QTS user guide.
3. Create one or more volumes.  
For details, see the [Volume Creation](#) topic in the QTS user guide.
4. Create shared folders on the destination NAS.  
For details, see the [Creating a Shared Folder](#) topic in the QTS user guide.
5. Install HBS 3 onto the destination NAS.
  - a. Go to **App Center**.
  - b. Search for HBS 3.
  - c. Click **Install**.  
HBS 3 is installed on the destination NAS.
6. Enable the remote server settings on the destination NAS.
  - a. Go to **App Center > HBS 3 > Services > RTRR Server**.
  - b. Click **Enable RTRR Server**.  
The RTRR server settings window appears.
  - c. Specify the **RTRR Server** settings.

Setting	Description
Password	Specify a password that contains 1 to 16 characters from any of the following groups: <ul style="list-style-type: none"> <li>• Letters: A to Z, a to z</li> <li>• Numbers: 0 to 9</li> <li>• Special characters: . - _ ~ ! @ # \$ % ^ &amp; ( ) { }</li> <li>• Does not start or end with a space.</li> </ul>
Port	Specify a port number to access the RTRR server.

7. Click **Apply**.  
A confirmation window appears.
8. Click **OK**.  
The remote server settings are completed.

### Creating a one-way sync job

1. On the source NAS, go to **App Center > HBS 3 > Sync** .
2. Click **Sync Now**.
3. Select **One-way Sync Job**.  
The **Create a Sync Job** window appears.
4. Click **Remote NAS**.
5. Click **Add New Account**.  
The **Create a Storage Space** window appears.
6. Select the destination NAS as the destination storage space and specify the following:

Setting	Description
<b>Name</b>	The name used to identify the storage space.
<b>IP address / Host name</b>	The IP address or hostname used to access the storage space.   <b>Tip</b> Click  to scan for available devices.
<b>Port</b>	The port number used to access the storage space. This value must be between 1 to 65535.
<b>Password</b>	The password used to access the storage space.
<b>Use SSL connection</b>	Requires SSL connection when accessing the remote NAS.

7. Optional: Test the connection.

Test	Description
<b>Detect Server</b>	Tests the accessibility of the selected storage space.
<b>Speed Test</b>	Tests the network connection speed of the selected storage space.

8. Click **Create**.
9. Click **Select**.

10. Select the paired folders.



### Important

- All subfolders and files in the selected folder are selected.
- You can only sync up to 16 paired folders per job.

- a. Under the source, click **+**.  
A dialog box opens.
- b. Select a folder.
- c. Click **OK**.  
The dialog box closes.
- d. Under the destination, click **+**.  
A dialog box opens.
- e. Select a folder.
- f. Click **OK**.
- g. Optional: Add more paired folders if necessary.

11. Click **Next**.  
The **Schedule** screen appears.

12. Select **Sync now**.

13. Click **Next**.  
The **Rules** screen appears.

14. Optional: Configure job rules.

15. Click **Next**.  
The **Summary** screen appears.

16. Review the job summary.

17. Click **Create**.  
The source NAS runs the created one-way sync job.



### Note

It may take several minutes to migrate shared folders from the source NAS to the destination NAS.

## Importing local users or group settings to the destination NAS

1. Power on the source NAS.
2. Back up the users or group settings from the source NAS.
  - a. Log on to QTS.
  - b. Go to **Control Panel > Privilege > Users**.
  - c. Click **Create**, and then click **Import/Export Users**.  
The **Import/Export Users** window appears.

- d. Select **Export user and user group settings**.
  - e. Click **Next**.  
The NAS user and user group settings are exported as a file and downloaded onto your computer.
3. Import user settings on the source NAS to the destination NAS.
    - a. On the destination NAS, log on to QTS.
    - b. Go to **Control Panel > Privilege > Users**.
    - c. Click **Create**, and then click **Import/Export Users**.
    - d. Select **Import user and user group settings**.



#### Note

You can select whether to send a notification mail to newly created users or overwrite duplicate users.

- e. On your computer, select the user settings file exported from the source NAS.  
The source NAS user settings file is imported to the destination NAS.

## QuTS hero NAS migration

### NAS migration requirements

You can only migrate drives and system settings to specific NAS models, depending on your source NAS. For the list of NAS models compatible with direct NAS migration, see <https://www.qnap.com/en/nas-migration>.

Your device must meet the following requirements:

- The destination NAS must run on the same QuTS hero version as the source NAS (or later).



#### Important

Due to incompatibilities in file system, system migration between QTS NAS and QuTS hero NAS is not supported.



#### Warning

Migrating drives between QTS NAS and QuTS hero NAS can cause data corruption.





- The destination NAS must have sufficient free drive bays to accommodate all the drives that you are migrating from the source NAS.

For NAS models that do not support NAS migration, see [How to Migrate Data and Folder Permissions between QTS and QuTS hero with HBS3](#).

### Status and setting changes after NAS migration

The status of NAS data and settings varies after migration.

Data and Settings	After NAS Migration
Registered myQNAPcloud name	Your registered myQNAPcloud name is not migrated.

Data and Settings	After NAS Migration
Encrypted shared folders	<p>If the NAS does not support file system encryption, encrypted shared folders are not migrated.</p> <p> <b>Warning</b> To prevent data loss, back up and save the encryption keys of encrypted shared folders in a safe place. You can also choose to decrypt shared folders before migration.</p>
Shared folders	<p>All shared folders and the downloaded files stored in them are retained.</p> <p> <b>Warning</b> To prevent data loss, back up and save encryption keys or passwords of encrypted shared folders in a safe place before migration.</p> <p> <b>Important</b> Folder permissions on the destination NAS must be reconfigured after migration.</p>
Network	<p>If the number of network ports or network port specifications on the destination NAS is different from the source NAS, the following network and virtual settings may change and require reconfiguration: port trunking, virtual machines, Thunderbolt, and more.</p>
Windows AD configuration	<p>Windows AD configurations must be reconfigured.</p>
Licenses	<p>Licenses are not migrated.</p> <p> <b>Warning</b> To prevent losing all your software licenses, QNAP recommends deactivating licenses on the source NAS before data migration.</p>
Applications	<p>If the destination NAS has less RAM than the source NAS, the following features and applications might not function: Virtualization Station, Qsirch, and Snapshots.</p>
Services	<p>Only services supported by the destination NAS are available.</p>
Multimedia features	<p>Some multimedia features are disabled by default.</p>

## Migrating a NAS



### Important

Before performing NAS migration, ensure that you understand all requirements and possible changes after migration. For details see the following topics:

- [NAS migration requirements](#)
- [Status and setting changes after NAS migration](#)

1. Power off the source NAS and the destination NAS.
2. Remove the drives.

**Important**

QNAP recommends following the source NAS drive order when installing the drives. Take note of the drive tray order when removing the drives.

- a. Remove the drives from the source NAS.
  - b. Remove the drive trays from the destination NAS.
3. Install the drives.
  - a. Install source NAS drives onto the destination NAS drive trays.
  - b. Insert the drive trays into the destination NAS.
4. Power on the destination NAS.
5. Log on to QuTS hero as an administrator on the destination NAS.  
The destination NAS automatically checks for the latest firmware update.

## 6. 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 QuTS hero 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 QuTS hero 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	$\geq 3$	One member drive fails.
RAID 6	$\geq 4$	One or two member drives fail.
RAID 10	$\geq 4$ (Must be an even number)	One or two member drives in two different pairs fail.
RAID 50	$\geq 6$	One disk per subgroup fails.
RAID 60	$\geq 8$	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	$\geq 5$	One, two, or three member drives fail.

1. Log on to QuTS hero.
2. Go to **Main Menu > Storage & Snapshots > Storage > Disks/VJBOD** .
3. Locate the failed drive.
4. Prepare a new drive with a capacity that is the same as or larger than the failed 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 > Storage/Snapshots** .
11. Locate the storage pool 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 groups from unintentional disconnection or removal of drives. Users can recover an inactive RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60, Triple Mirror, or RAID-TP group from degraded mode.

RAID Type	RAID Recovery Support	Number of Disks	Disk Failure Tolerance
RAID 0	Yes	$\geq 2$	N/A
RAID 1	Yes	2	1
RAID 5	Yes	$\geq 3$	1
RAID 6	Yes	$\geq 4$	2
RAID 10	Yes	$\geq 4$ (Must be an even number)	One disk per subgroup fails.
RAID 50	Yes	$\geq 6$	One disk per subgroup fails.
RAID 60	Yes	$\geq 8$	Two disks per subgroup fail.
Triple Mirror	Yes	Multiple of 3. (For example, 3, 6, 9, 12 disks and so forth.)	2
RAID-TP	Yes	$\geq 5$	3

## Support and other resources

QNAP provides the following resources:

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



## 7. 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

### **Qfinder Pro**

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

### **QTS**

QNAP NAS operating system

### **QuTS hero**

QNAP NAS operating system featuring ZFS file system

## 8. Notices

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

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Version 3, 29 June 2007

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## 2. Source Code.

The “source code” for a work means the preferred form of the work for making modifications to it.

“Object code” means any non-source form of a work.

A “Standard Interface” means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

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显示	0	0	0	0	0	0
印刷电路板	0	0	0	0	0	0
金属螺帽	0	0	0	0	0	0
电缆组装	0	0	0	0	0	0
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