TS-h1277AFX

User Guide



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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.

⚠ WARNING



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

⚠ WARNING



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



To avoid serious injuries, a trained service technician must disconnect all PSU cords from the device before installing or replacing system components.

Moving Parts

⚠ WARNING



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



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

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

System Battery

⚠ WARNING



INGESTION HAZARD

- This product may contain a button battery.
- Keep batteries out of reach of children.
- If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.
- 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.

- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information.
- For information on the type and voltage of the button battery in your device, please see the hardware specification table.
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat, or incinerate. Doing so may result in injury due to venting, leakage, or explosion resulting in chemical burns.
- Ensure the batteries are installed correctly according to polarity (+ and -).
- Do not mix old and new batteries, or different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
- Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
- Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

Rail Kits

Rackmount models may require rail kits for installation onto a server rack or cabinet.

To ensure equipment and personal safety, please carefully read the installation instructions for your rail kit before you install the rail kit and mount your device.

To check if your device is a rackmount unit, see the hardware specification table.

⚠ WARNING

- When the rail kit is installed on the server rack, do not fully extend and unlatch the rails except when mounting or unmounting a device.
- Leaving the rails fully extended out and unlatched may cause heavy equipment to fall. This can cause equipment damage and severe or even fatal injuries.
- Before you prepare the rails for device mounting or unmounting, please carefully read and ensure you understand the installation instructions.
- Do not place any objects or add any extra load onto the device or rails when mounting or unmounting a device.
- When mounting a device, slide the device all the way into the server rack to fully latch the rails and secure the device to the server rack.

2. Product Overview

This chapter provides basic information about your QNAP device.

About the TS-h1277AFX

The all-flash TS-h1277AFX is a lightweight and quiet enterprise-grade desktop NAS optimized for fast collaborative video editing, file sharing, AI applications, and more. With an AMD Ryzen processor and twelve 2.5-inch SATA SSD drive trays, the TS-h1277AFX performs high-speed random read/write IOPS, making it ideal for 4K/8K video editing and other I/O intensive operations. The ZFS-based operating system guarantees data integrity while also supporting inline data deduplication and compression, over 65,000 snapshots, and real-time SnapSync. To further expand storage, the TS-h1277AFX provides support for connecting SAS, SATA, and USB JBOD enclosures.

Hardware specifications

Ordering P/N	CPU	Memory
TS-h1277AFX-R7-32G	AMD Ryzen 9000 Series	32 GB

Component	TS-h1277AFX-R7-32G
Processor	
Frequency	8-core/16-thread 3.8 GHz, boost up to 5.5 GHz
Architecture	x86 64-bit
Encryption engine	AES-NI
Graphics	AMD Radeon iGPU
Memory	
Pre-installed memory	32 GB RAM: 1 x 32 GB ECC DDR5 UDIMM

Component	TS-h1277AFX-R7-32G
Memory slots	4 x UDIMM DDR5 **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. • This device supports ECC memory modules.
Maximum memory	192 GB RAM: 4 x 48 GB
Flash memory	5 GB (dual-boot OS protection)
Storage	
Drive bays	12 x 2.5-inch SATA
Drive compatibility	2.5-inch SATA solid-state drives
SSD cache acceleration support	This device supports SSD cache acceleration for all drives.
Hot-swapping	This device supports hot-swapping for all drives.
Network	
2.5 Gigabit network interface	2 x 2.5 GbE (RJ45) **Note** The 2.5 Gigabit Ethernet RJ45 ports support the following network connectivity speeds: 2.5 GbE, 1 GbE, 100 Mbps, and 10 Mbps.
10 Gigabit network interface	2 x 10GBASE-T (RJ45) **Note** The 10GBASE-T RJ45 ports support the following network connectivity speeds: 10 GbE, 5 GbE, 2.5 GbE, 1 GbE, and 100 Mbps.
External I/O Ports & Expansion Slots	

Component	TS-h1277AFX-R7-32G
PCIe slots	• Slot 1: PCIe Gen 4.0 x8 **Note** The speed of this PCIe slot reduces from x8 to x4 when an expansion card is installed in PCIe slot 2. • Slot 2: PCIe Gen 4.0 x4 • Slot 3: PCIe Gen 4.0 x8 **Tip** For the list of compatible drive models and expansion cards, go to https://www.qnap.com/compatibility.
USB ports	• Rear panel: 1 x USB 3.1 Gen 1 Type-A 1 x USB 3.2 Gen 2 Type-C • Front panel: 1 x USB 3.1 Gen 1 Type-A
Interface	
Buttons	• Power • Reset • USB One Touch Copy • LCD enter • LCD select
Dimensions	
Form factor	Tower
Dimensions (H x W x D)	150 x 368 x 362 mm (5.9 x 14.49 x 14.25 in)
Net weight	8 kg (17.64 lbs)
Others	
Power supply unit	Minimum 500W, 100-240V

Component	TS-h1277AFX-R7-32G
System battery	CR2032 lithium battery (3V, 220-225 mAh) **Warning** • 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. • 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. **Important** Dispose of used batteries according to local regulations or the instructions of the battery manufacturer.
Fans	2 x 90 mm, 12V DC
Operating temperature	0˚C to 40˚C (32˚F 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.

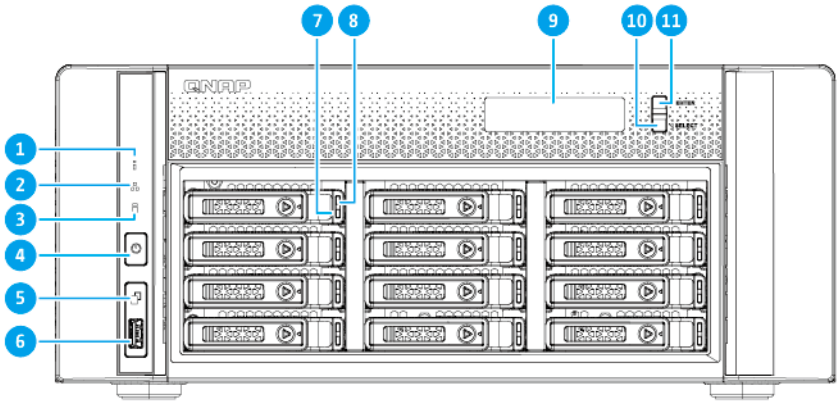
Package contents

Item	Quantity
TS-h1277AFX	1
Drive trays	12
Drive tray keys	2
Power cord	1
Ethernet cable	1 x Cat6a

Item	Quantity
Quick Installation Guide (QIG)	1

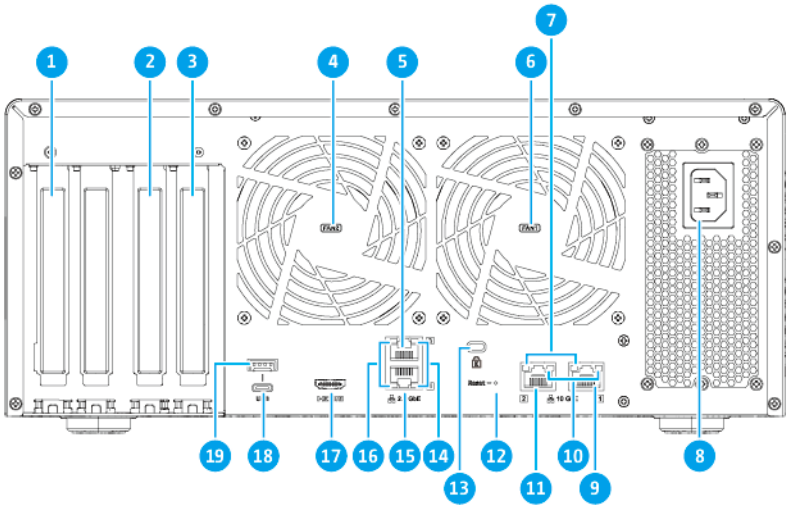
Components

Front panel



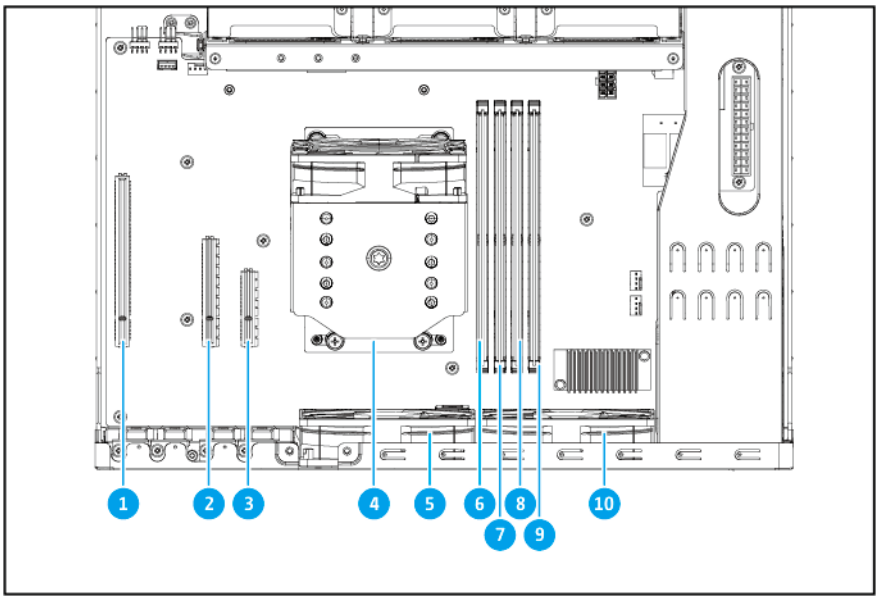
No.	Component	No.	Component
1	System status LED	7	Drive activity LED
2	LAN LED	8	Drive status LED
3	Expansion unit LED	9	LCD panel
4	Power button	10	LCD enter button
5	USB One Touch Copy button	11	LCD select button
6	USB 3.2 Gen 1 One Touch Copy Type-A port	-	-

Rear panel



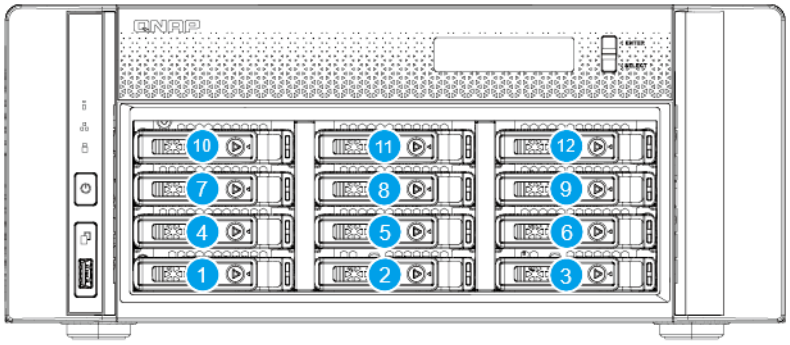
No.	Component	No.	Component
1	PCIe slot 3 cover	11	10GBASE-T port 2 (RJ45)
2	PCIe slot 2 cover	12	Reset button
3	PCIe slot 1 cover	13	Kensington security slot
4	System fan 2	14	2.5 Gigabit Ethernet activity LEDs
5	2.5 Gigabit Ethernet port 1 (RJ45)	15	2.5 Gigabit Ethernet port 2 (RJ45)
6	System fan 1	16	2.5 Gigabit Ethernet speed LEDs
7	10 Gigabit Ethernet speed LEDs	17	HDMI port
8	Power input	18	USB 3.2 Gen 2x2 Type-C port
9	10GBASE-T port 1 (RJ45)	19	USB 3.2 Gen 2x2 Type-A port
10	10 Gigabit Ethernet activity LEDs	-	

System board



No.	Component	No.	Component
1	PCIe slot 3 (PCIe 4.0 x8)	6	Memory slot 1 (Channel A, DIMM 1, black)
2	PCIe slot 2 (PCIe 4.0 x4)	7	Memory slot 2 (Channel A, DIMM 2, blue)
3	PCIe slot 1 (PCIe 4.0 x8) **Note** The speed of this PCIe slot reduces from x8 to x4 when an expansion card is installed in PCIe slot 2.	8	Memory slot 3 (Channel B, DIMM 1, black)
4	CPU heatsink	9	Memory slot 4 (Channel B, DIMM 2, blue)
5	System fan 2	10	System fan 1

Drive numbering



Installation requirements

Category	Item
Environment	• Room temperature: 0˚C to 40˚C (32˚F to 104˚F) • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27˚C (80.6˚F) • Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals • Free from objects that may obstruct device ventilation or apply pressure to the device or power cord
Hardware and peripherals	• Storage drives For the list of compatible drive models, go to https://www.qnap.com/compatibility. • Network cable
Tools	• Phillips #1 or #2 screwdriver • Anti-static wrist strap

Setting up the NAS

Important

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

1. Place your NAS device in an environment that meets the requirements.
   For details, see Installation requirements.
2. Install drives.
   For details, see Installing 2.5-inch drives:

   Tip

   For the list of compatible drive models, go to https://www.qnap.com/compatibility.
3. Install expansion cards.
   For details, see Installing expansion cards.
4. Connect expansion units.
   For details, see Expansion unit installation.
5. Connect the power cord and all applicable cables.
6. Power on the NAS.
   For details, see Power button.
7. Install QuTS hero.
   For details, see QuTS hero installation.
8. Log on to QuTS hero.
   If QuTS hero finds unused disks in your NAS, it will ask you to initialize these disks. Click **Initialize** to start the process.

3. Installation and Configuration

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

Hardware installation

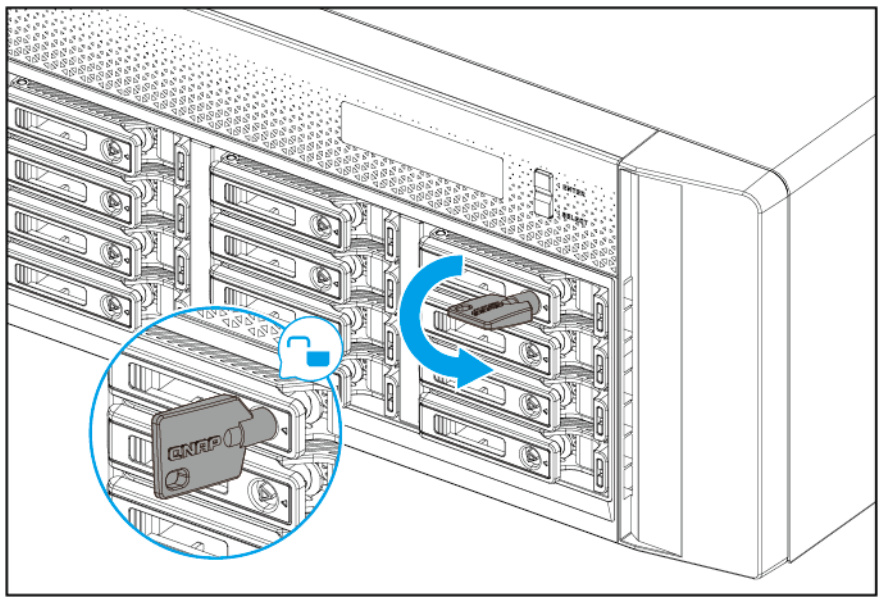
This section provides information on installing or replacing drives, expansion cards, memory modules, system fans, and expansion units.

Installing 2.5-inch drives

Warning

- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 
  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Remove the drive tray.
   a. Optional: Unlock the tray.

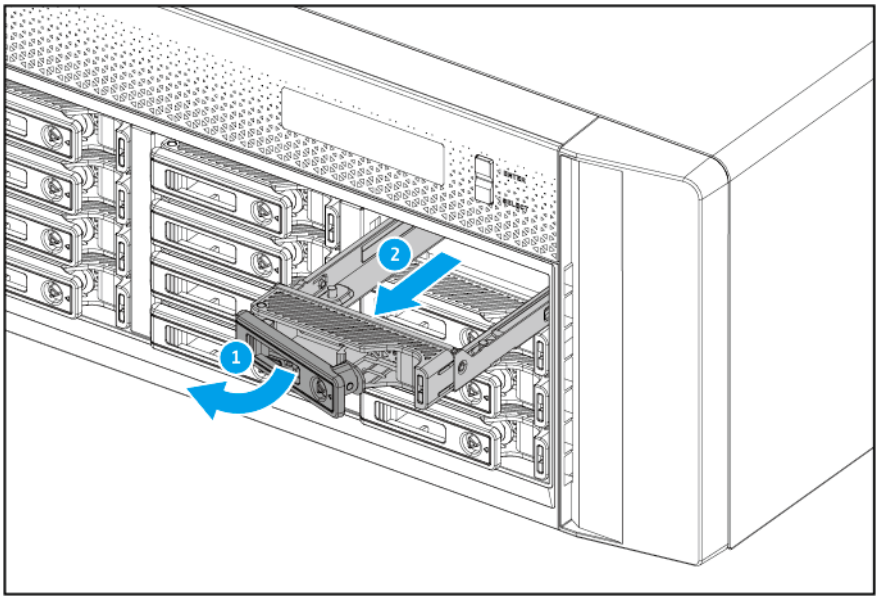


Note

- The preinstalled drive trays come unlocked.
- Ensure the drive tray keys are stored in a safe place.

b. Pull the handle to release the tray.

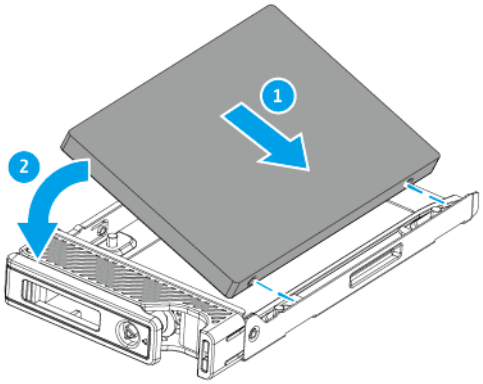
c. Pull the tray out.



3. Install a drive on the tray.

a. Place the drive on the tray so that the nodules on the sides of the drive are aligned with the indentations on the sides of the tray.

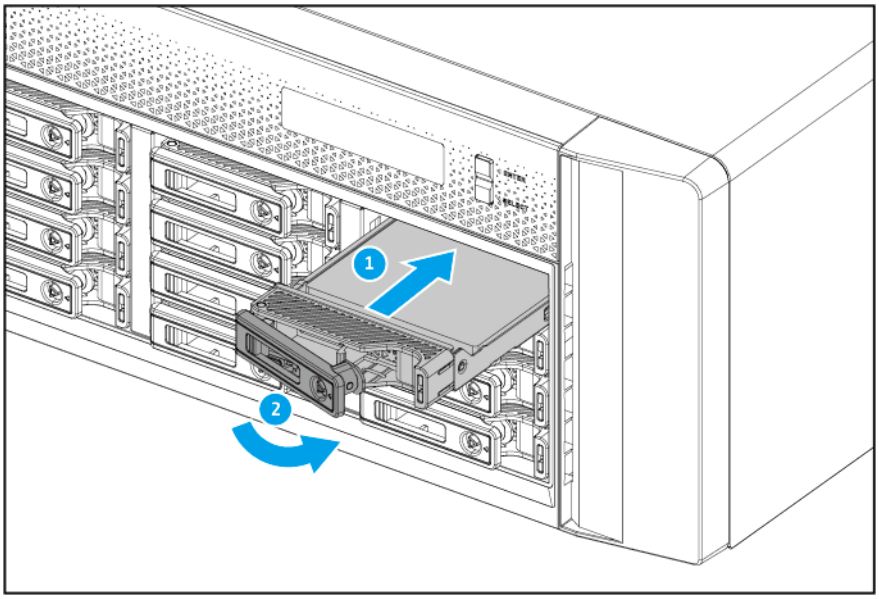
b. Push the drive down firmly to secure it to the drive tray.



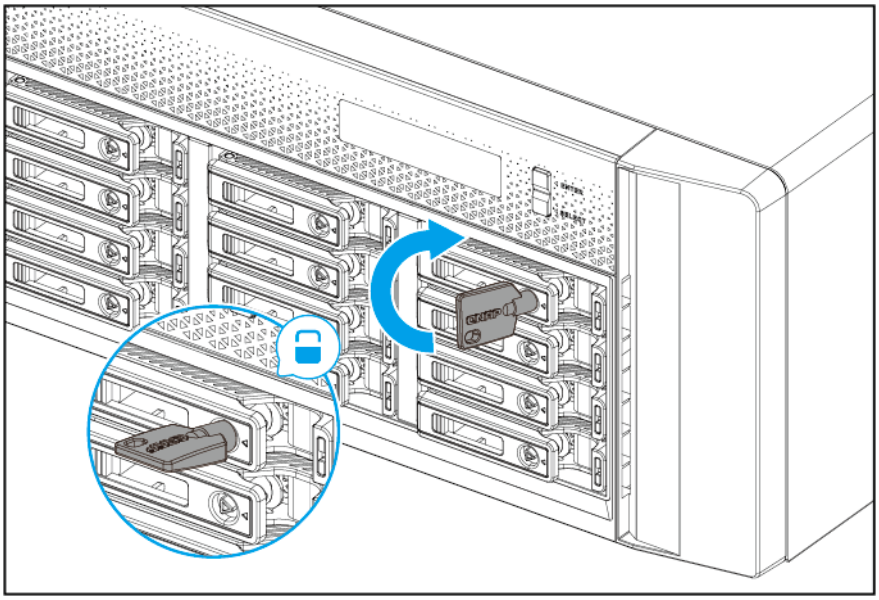
4. Load the tray into the bay.

   a. Insert the tray into the bay.

   b. Push the handle.



   c. Optional: Lock the tray.



5. Power on the NAS.

Replacing memory modules

The TS-h1277AFX has four memory slots. You can increase the memory capacity of the NAS by upgrading memory modules. For optimal quad-channel performance, replace memory modules in all four slots at the same time.

This NAS also comes with one or two ECC memory modules. ECC memory modules provide extra protection from undetected data corruption.

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

Important

- QNAP recommends installing modules in groups of four. Ensure that all four modules are identical.
- When installing only one memory module, use slot 2. Whenever in doubt, choose the slot where the original memory module is pre-installed. Always prioritize a blue slot over a black slot. If you install a single memory module in a black slot such as slot 1, the NAS may not be able to boot up.
- When installing two memory modules, use slots 2 and 4 (blue slots). Ensure that the modules are identical.
- When installing four memory modules, use slots 1 and 2 for the first pair, and use slots 3 and 4 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.

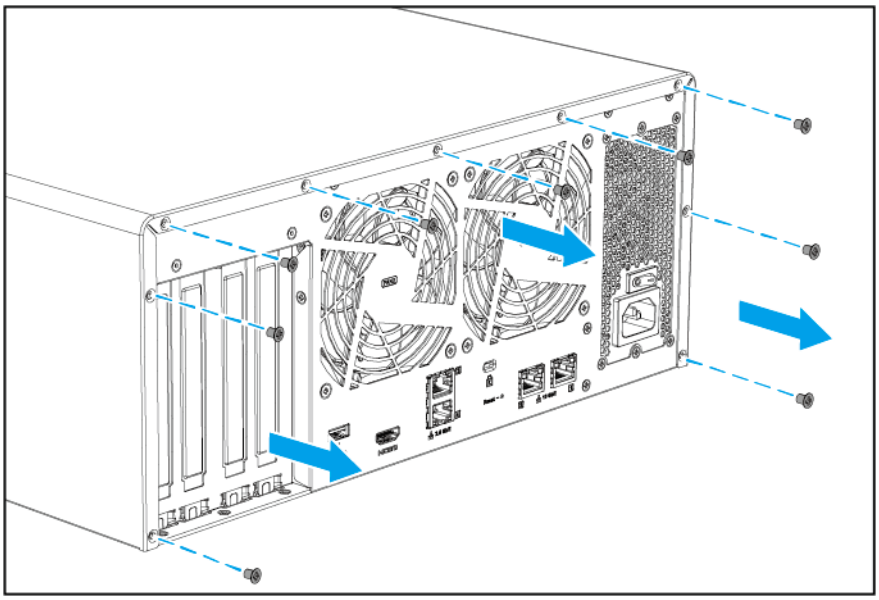
Warning

- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 
  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.

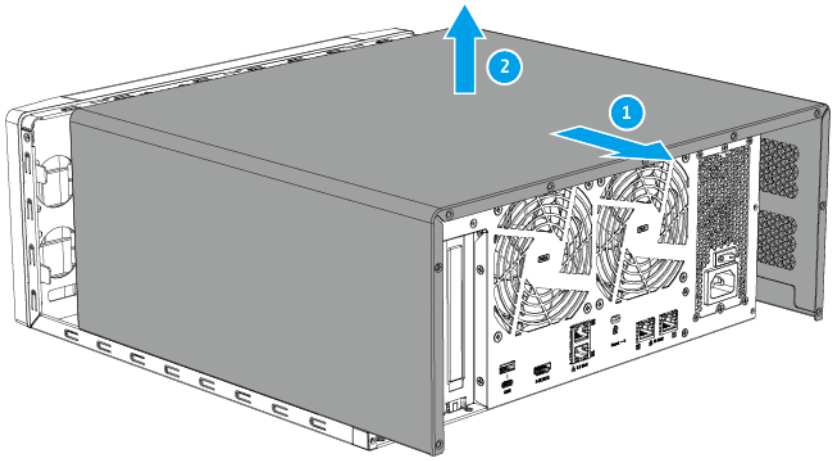
4. Remove the case cover.

   a. Remove the screws that secure the cover to the chassis.



   b. Slide the cover back.

   c. Lift the cover off the device.



5. Remove an existing module.

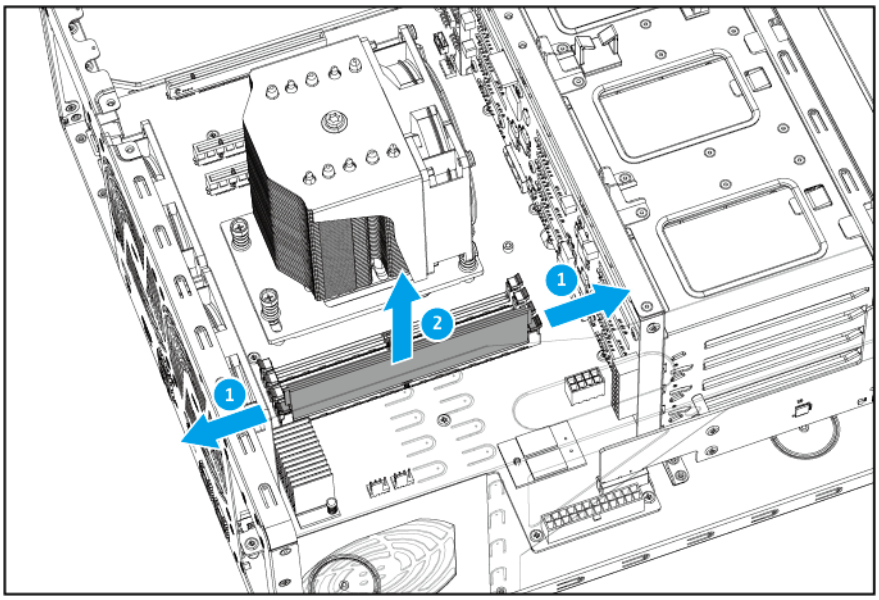
   a. Push the retention clips outward simultaneously to release the module.

   b. Verify that the module 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.



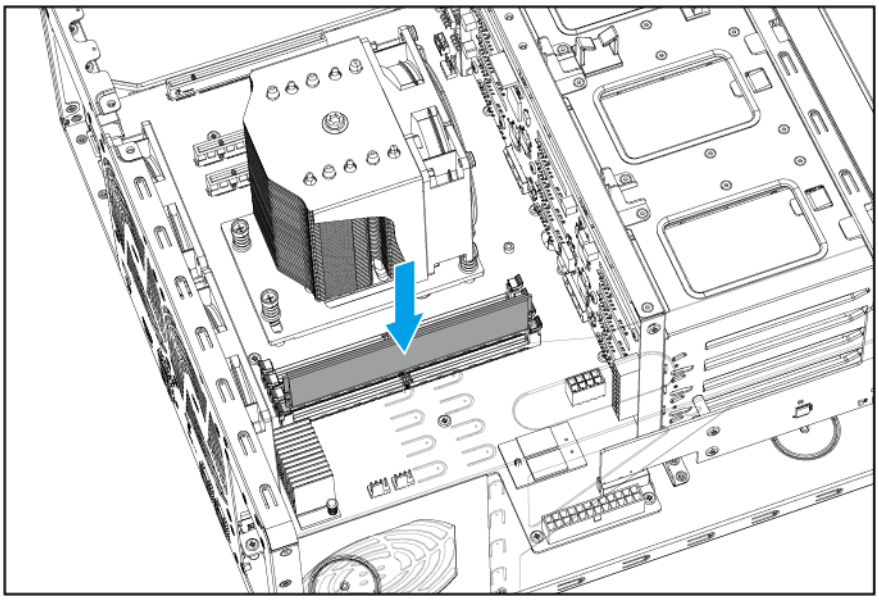
Warning

- 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.

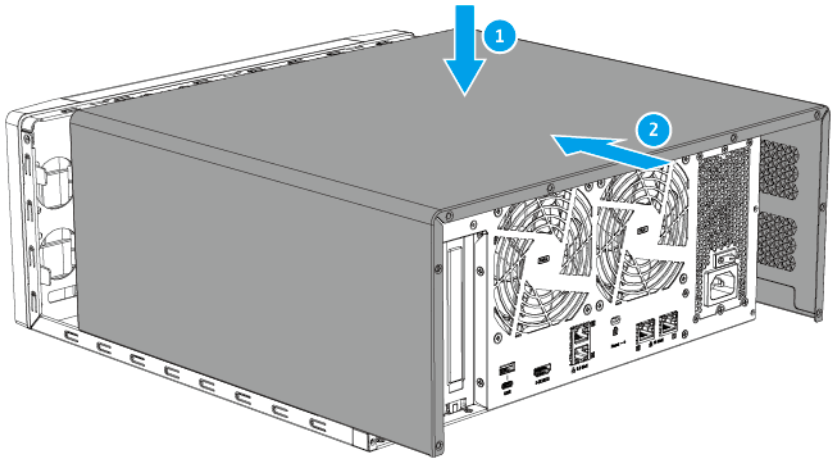


c. Verify that the metal connectors are completely inserted into the slot.

d. Carefully press down on the module until the retention clips lock the module into place.

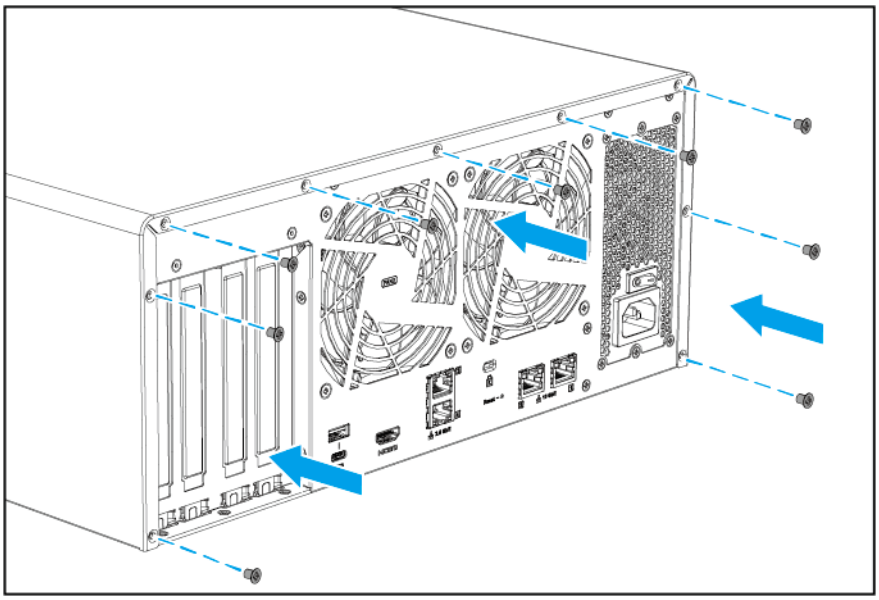
7. Attach the case cover.

a. Place the cover on the device.



b. Slide the cover forward.

c. Attach the screws that secure the cover to the chassis.



8. Connect all cables and external attachments.

9. Power on the device.

10. Verify that the module is recognized by the device.

a. Log on to 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-h1277AFX series supports selected expansion cards. QNAP-branded expansion cards purchased from the company website are shipped with the brackets necessary to fit the TS-h1277AFX series.

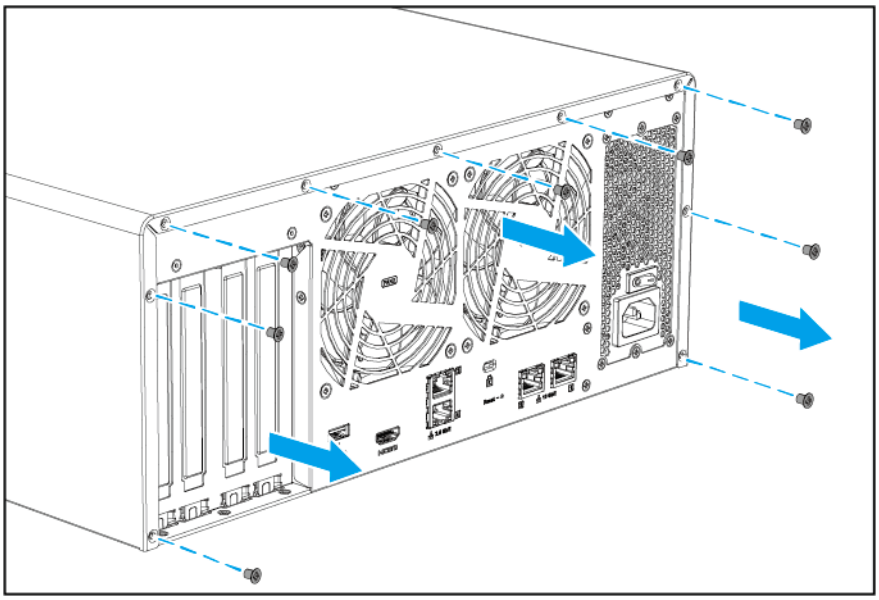
Warning

- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.
- 
  Moving fan blades: Keep your hands and other body parts away from moving fan blades.
- 
  Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.

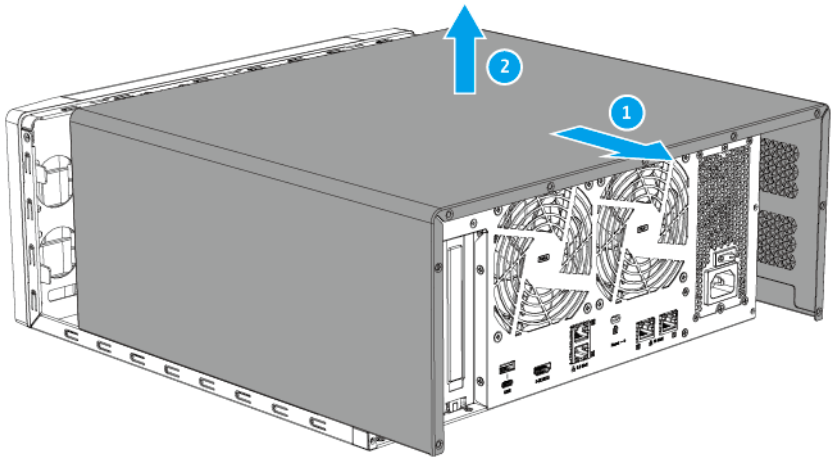
4. Remove the case cover.

   a. Remove the screws that secure the cover to the chassis.



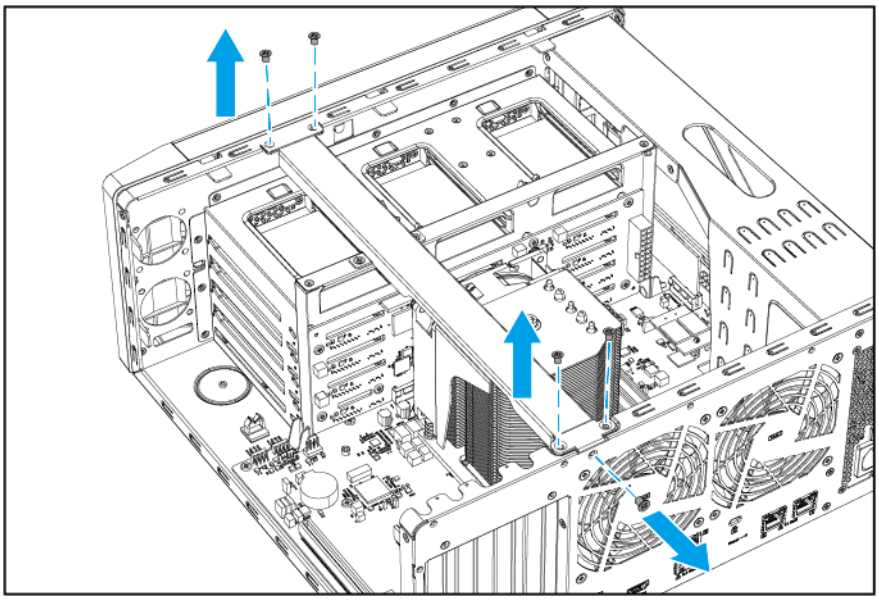
   b. Slide the cover back.

   c. Lift the cover off the device.

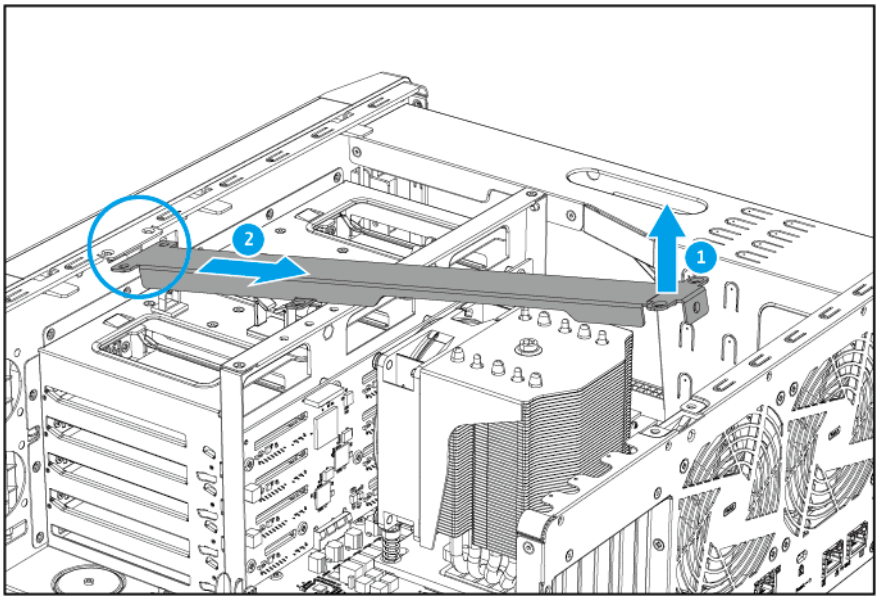


5. Remove the chassis support bar.

   a. Remove the screws that secure the support bar to the chassis and rear panel.



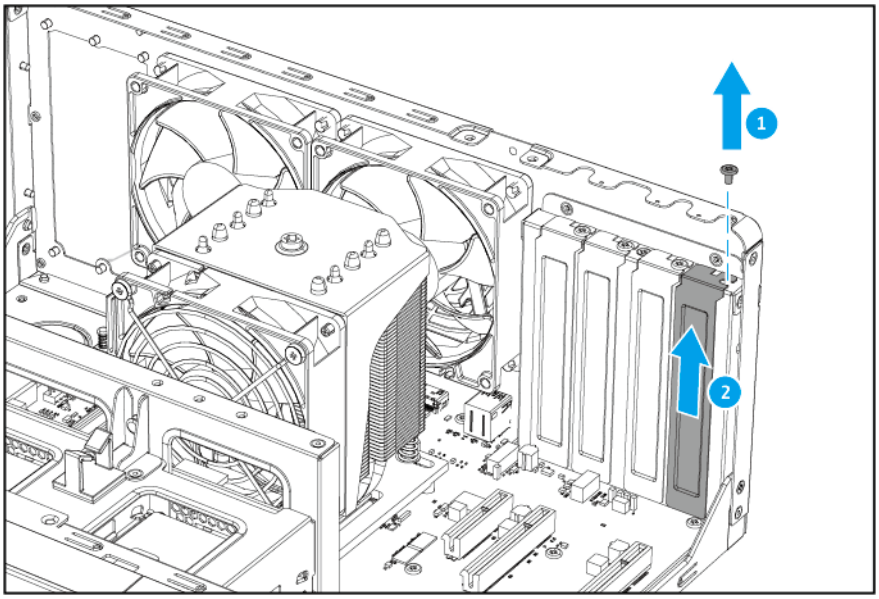
   b. Remove the support bar.



6. Remove the PCIe cover.

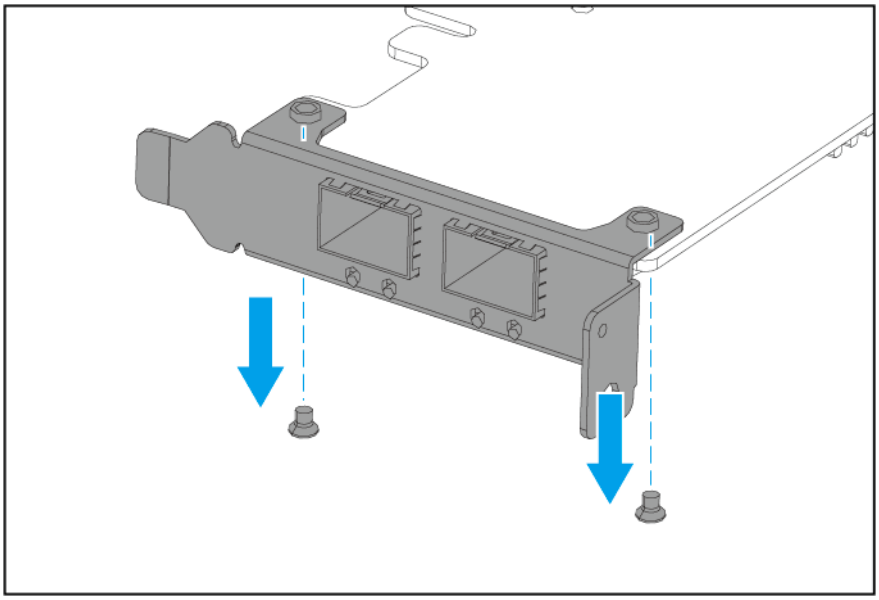
   a. Remove the screw that secures the cover to the bracket.

b. Pull the cover away from the slot.



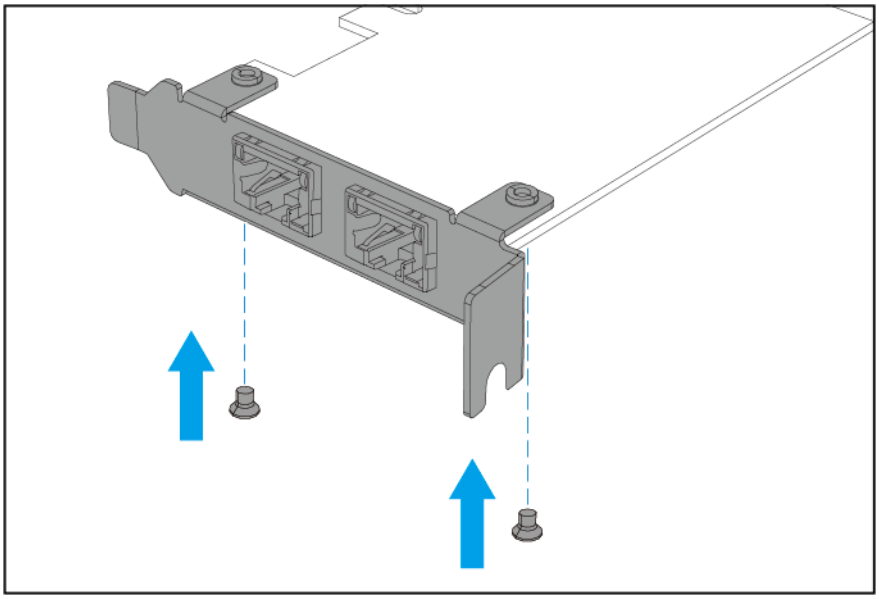
7. Optional: Attach the full-height bracket to the expansion card.

a. Remove all screws of the existing bracket.



b. Carefully pull the bracket away from the card.

c. Attach the full-height bracket to the card using the same screws.



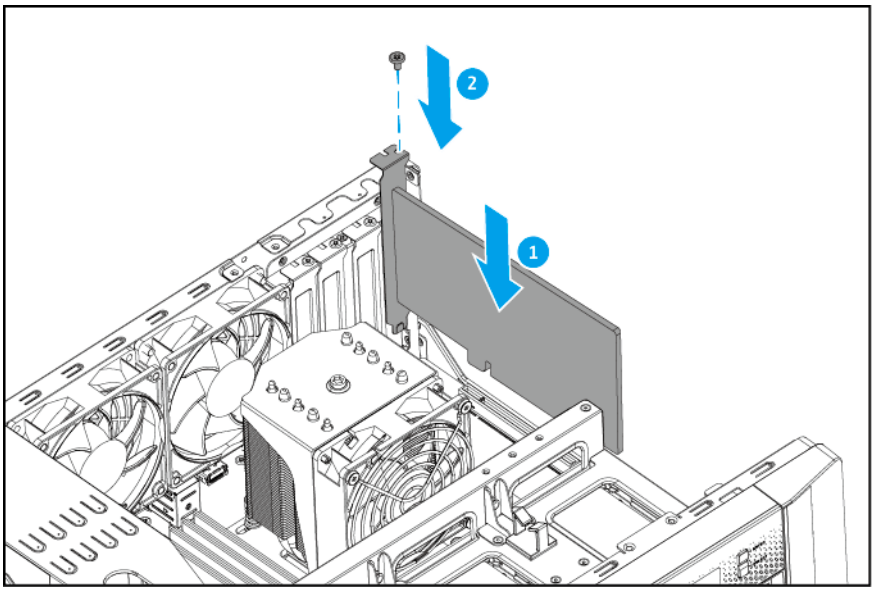
d. Verify that the bracket is secured to the card.

8. Install the expansion card.

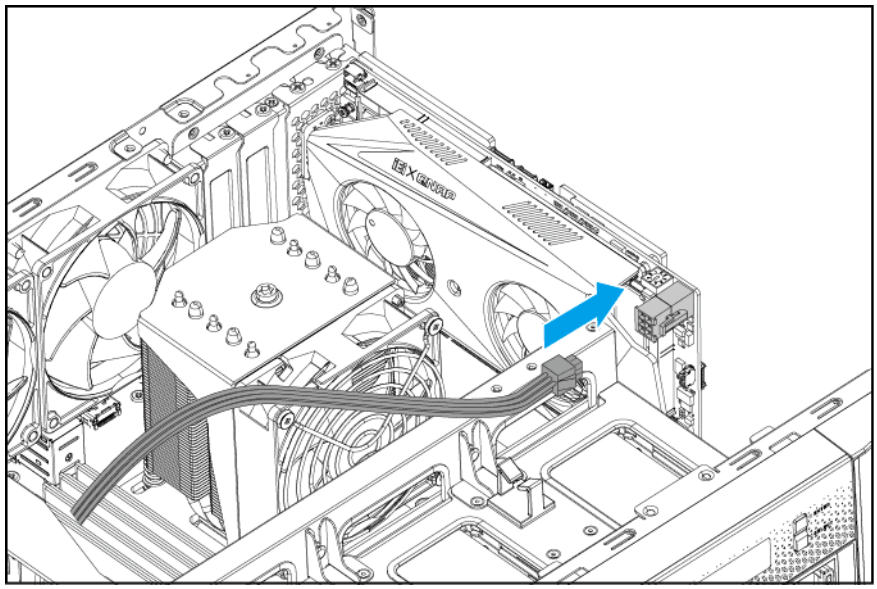
a. Hold the card by the edges.

b. Insert the card into the slot.

c. Attach the screw.



d. Optional: Attach the PCIe power connector to the expansion card.

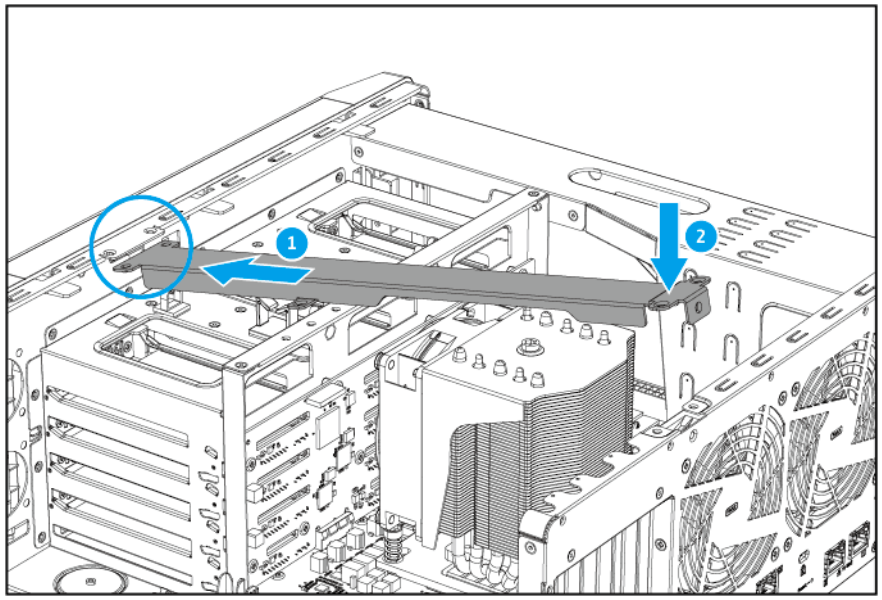


Note

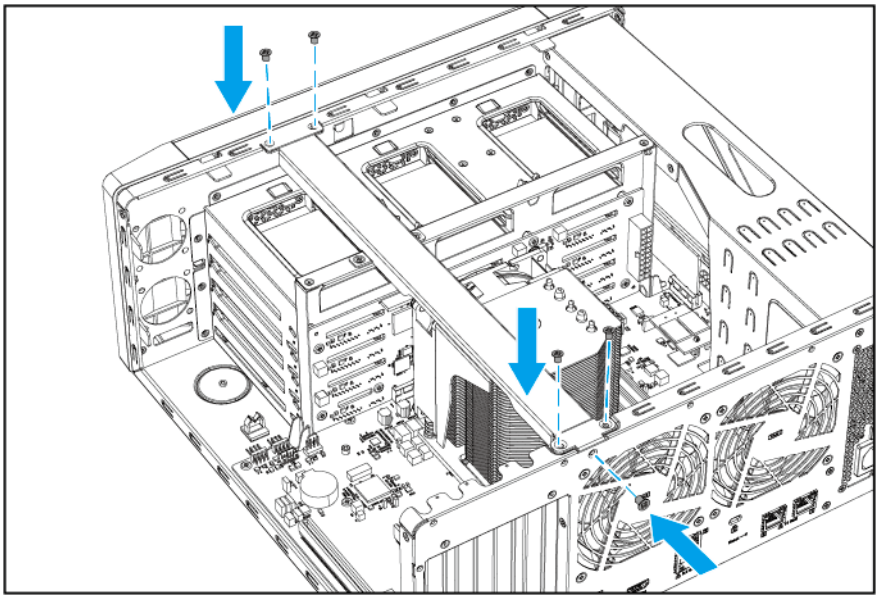
Larger expansion cards may require you to attach the PCIe power connector before inserting the card into the slot.

9. Attach the chassis support bar.

a. Insert the support bar into the chassis so that the screw holes of the support bar are aligned with the screw holes of the chassis and rear panel.

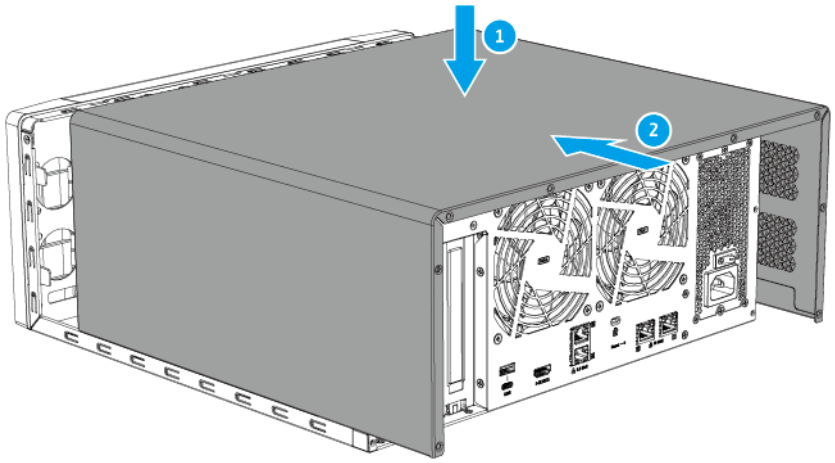


b. Attach the screws that secure the support bar to the chassis and rear panel.



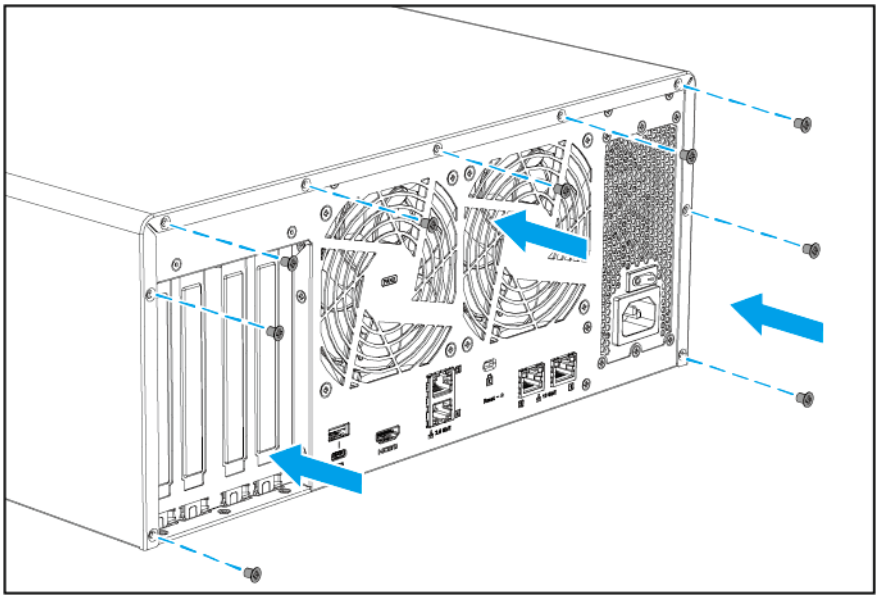
10. Attach the case cover.

a. Place the cover on the device.



b. Slide the cover forward.

c. Attach the screws that secure the cover to the chassis.



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

Replacing system fans

Warning

- 

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

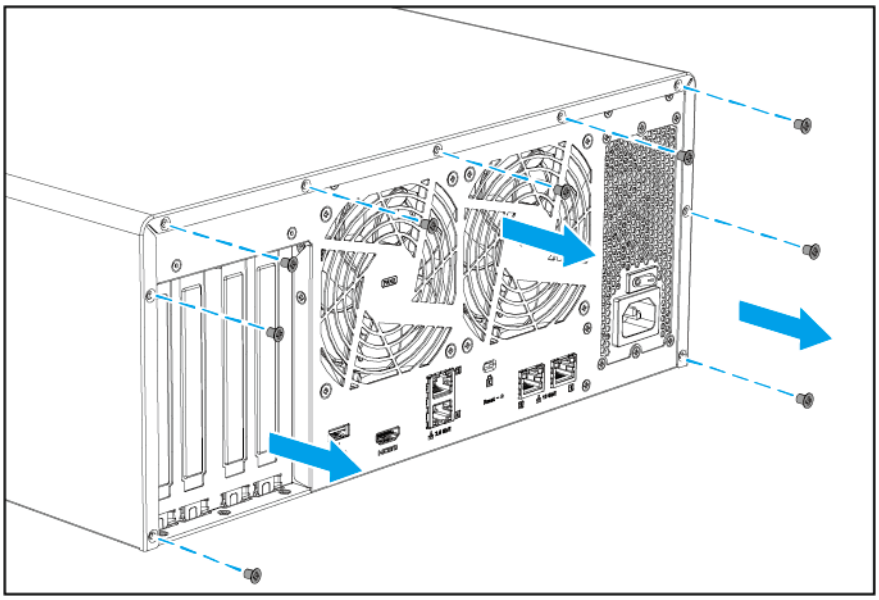
- 

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

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.

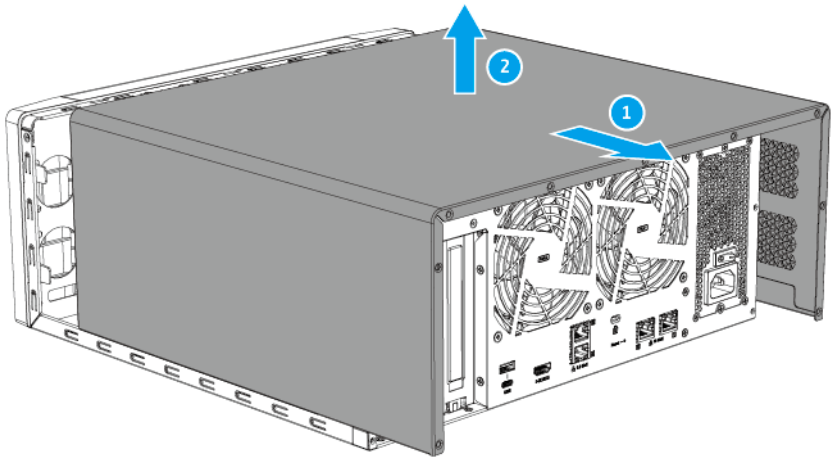
4. Remove the case cover.

   a. Remove the screws that secure the cover to the chassis.



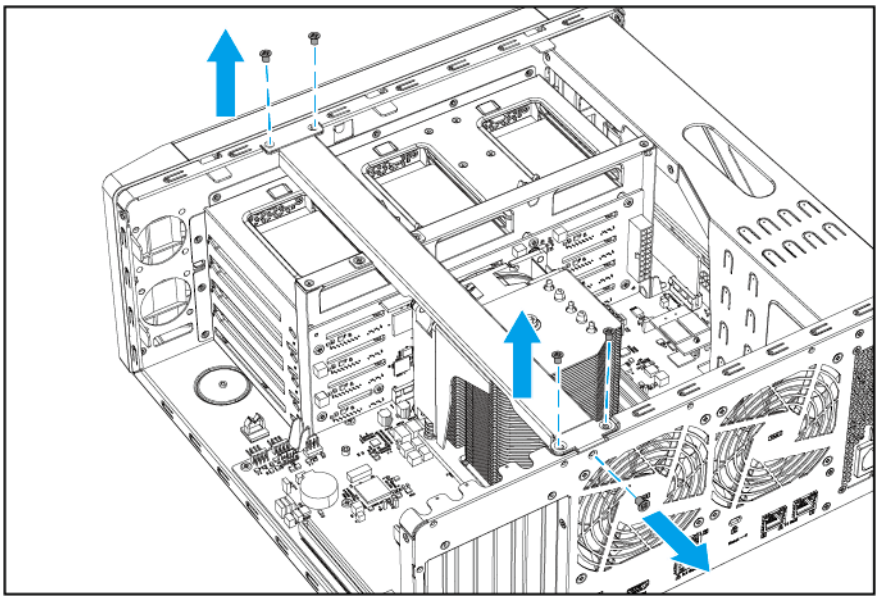
   b. Slide the cover back.

   c. Lift the cover off the device.

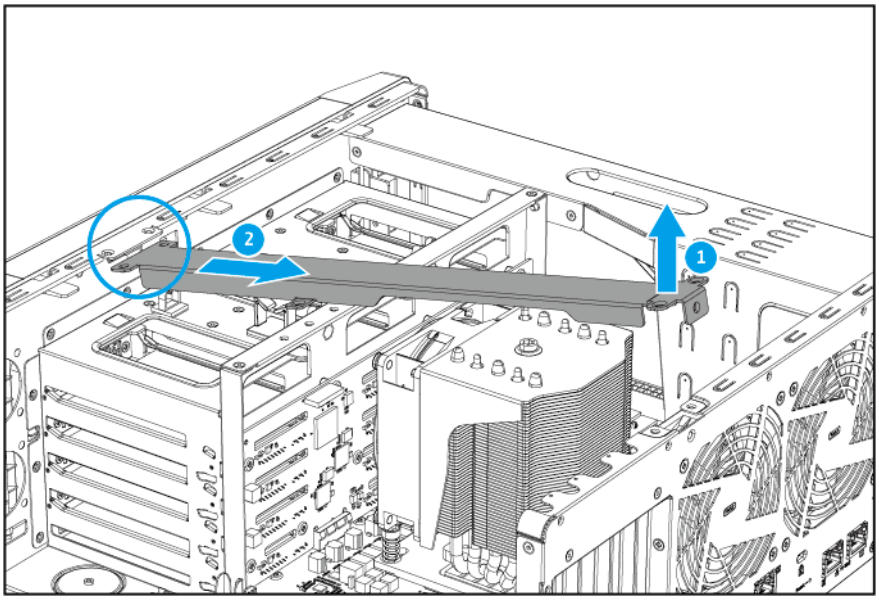


5. Remove the chassis support bar.

   a. Remove the screws that secure the support bar to the chassis and rear panel.

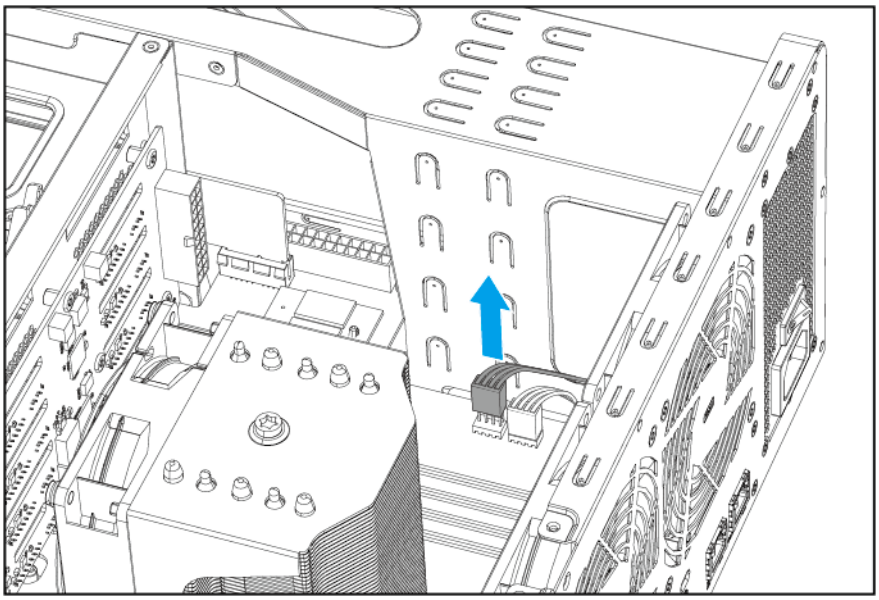


   b. Remove the support bar.

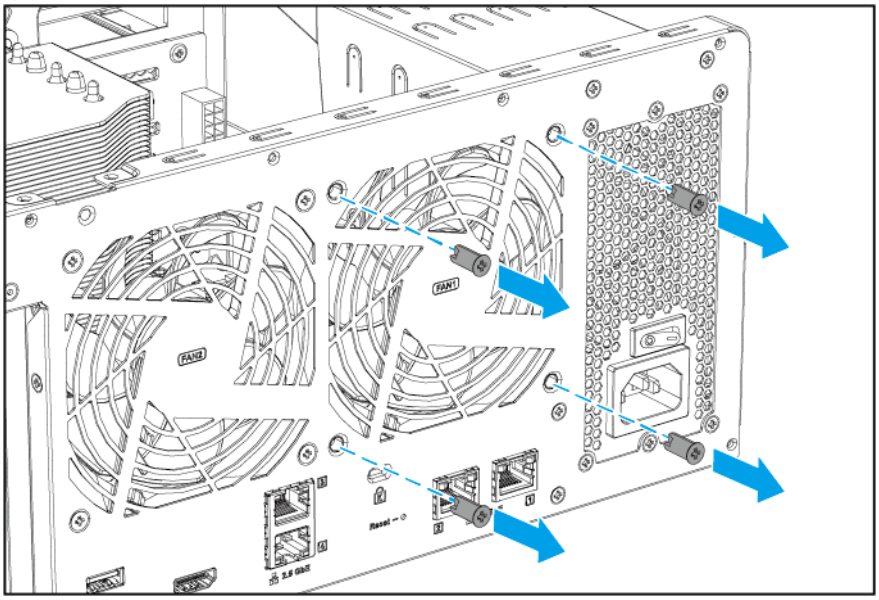


6. Remove a fan.

   a. Disconnect the fan cable from the system board.



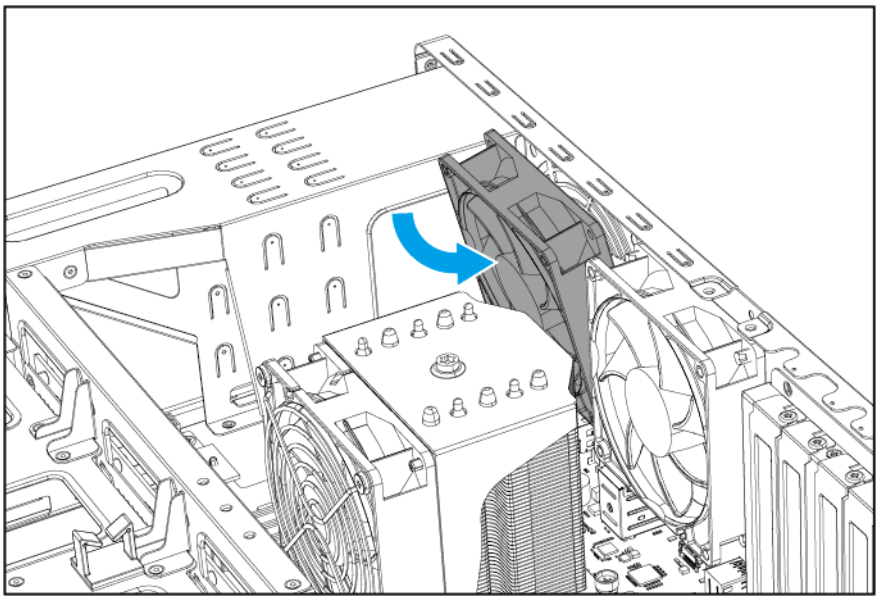
   b. Remove the screws that secure the fan to the rear panel.



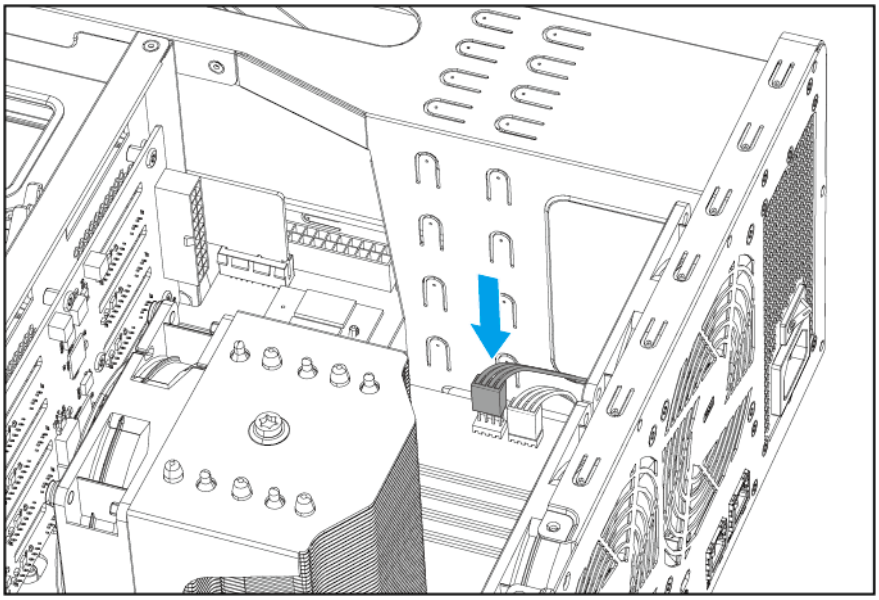
   c. Carefully pull the fan out.

7. Install a new fan.

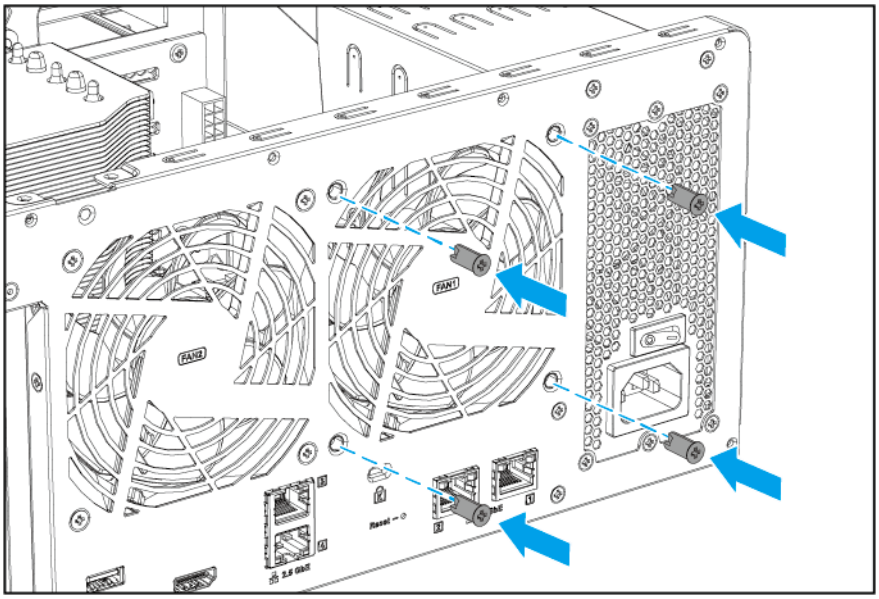
   a. Insert the fan into the chassis.



   b. Connect the fan cable to the system board.



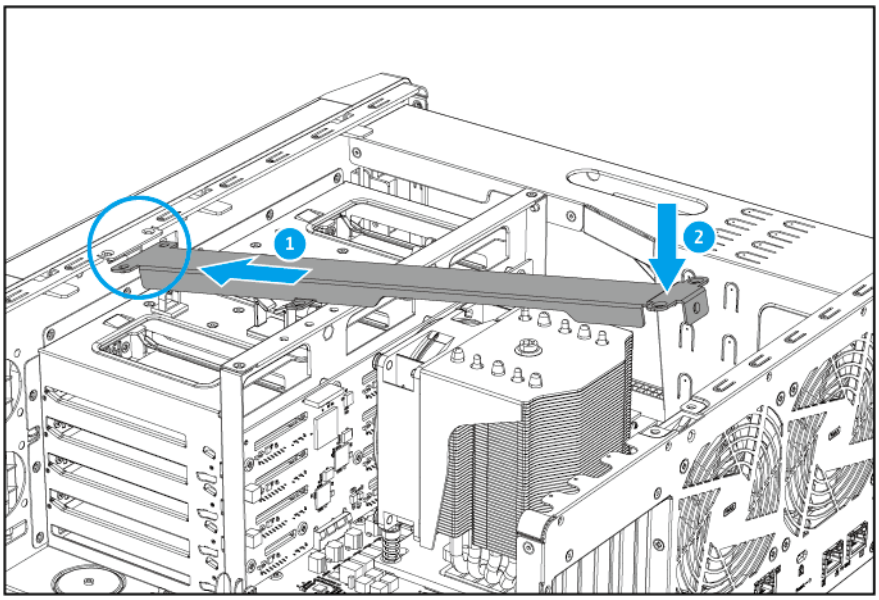
c. Attach the screws that secure the fan to the rear panel.



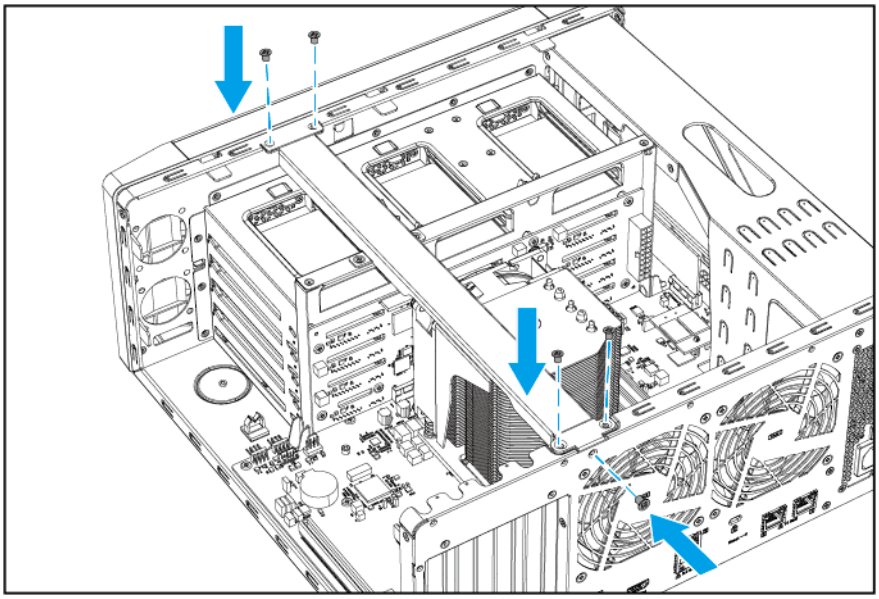
8. Optional: Replace another fan.

9. Attach the chassis support bar.

a. Insert the support bar into the chassis so that the screw holes of the support bar are aligned with the screw holes of the chassis and rear panel.

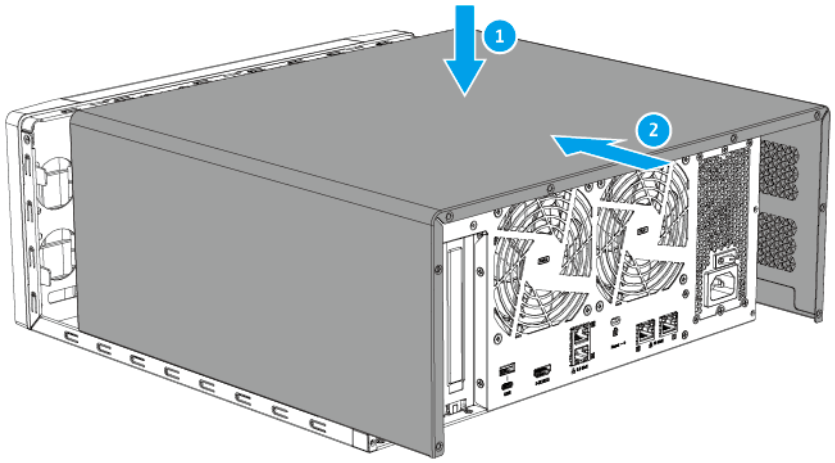


b. Attach the screws that secure the support bar to the chassis and rear panel.



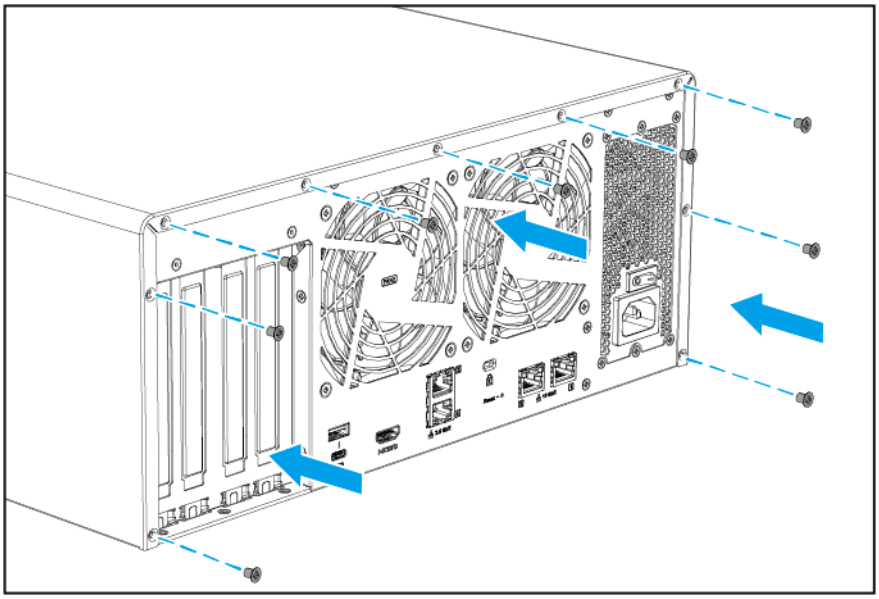
10. Attach the case cover.

a. Place the cover on the device.



b. Slide the cover forward.

c. Attach the screws that secure the cover to the chassis.



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

Expansion unit installation

The TS-h1277AFX supports 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
SAS expansion units		

TL-R1620Sep-RP	• Uses a SAS 12 Gbps (SFF-8644) interface
	• Supports SAS/SATA HDD/SSD
		• One of the following storage expansion cards:
		  • QXP-820S-B3408
		  • QXP-1620S-B3616W
		• mini-SAS SFF-8644 cable
		• RAIL-A03-57

Expansion Unit Model	Description	Required Accessories

TL-R1220Sep-RP	• Uses a SAS 12 Gbps (SFF-8644) interface
	• Supports SAS/SATA HDD/SSD
		• One of the following storage expansion cards:
		  • QXP-820S-B3408
		  • QXP-1620S-B3616W
		• mini-SAS SFF-8644 cable
		• RAIL-A03-57

USB expansion units		
TR-002	• Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA HDD/SSD	• USB 3.2 Gen 2 Type-A to Type-C cable
TR-004	• Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA HDD/SSD	• USB 3.2 Gen 1 Type-A to Type-C cable
TL-D800C	• Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA HDD/SSD	• USB 3.2 Gen 2 Type-A to Type-C cable
TL-R1200C-RP	• Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA HDD/SSD	• USB 3.2 Gen 2 Type-A to Type-C cable • RAIL-B02
SATA expansion units		
TL-D400S	• Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD	• 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter
TL-D800S	• Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD	• 2 x SFF-8088 connector cables • QXP-800eS-A1164 host bus adapter
TL-D1600S	• Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD	• 4 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS-A1164 host bus adapter

Expansion Unit Model	Description	Required Accessories
TL-R1200S-RP	• Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD	• 3 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS-A1164 host bus adapter • RAIL-B02
TL-R400S	• Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD	• 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter • RAIL-B02

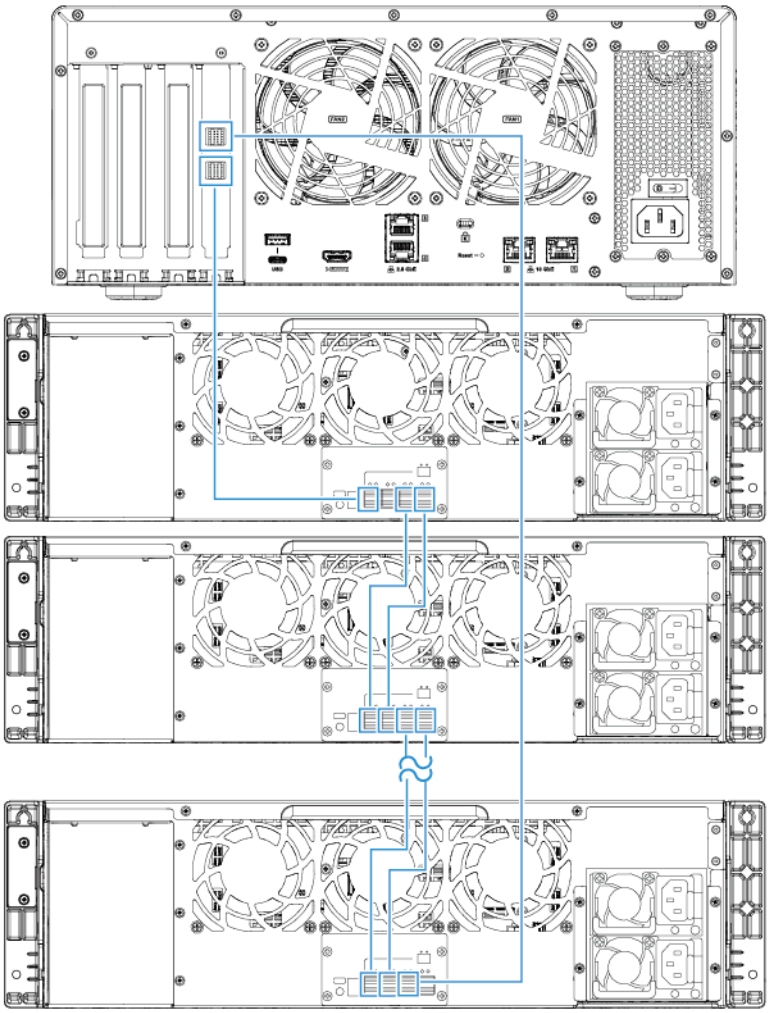
Connecting SAS expansion units

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

For required accessories details, see Expansion unit installation.

1. Power off the NAS.
2. Install a storage expansion card on the PCIe slot.
   For details, see Installing expansion cards.

3. Connect the expansion units to the device using the following topology.



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.

4. Power on the NAS.
5. Power on the expansion units.
6. Verify that the expansion units are recognized by the device.
   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.

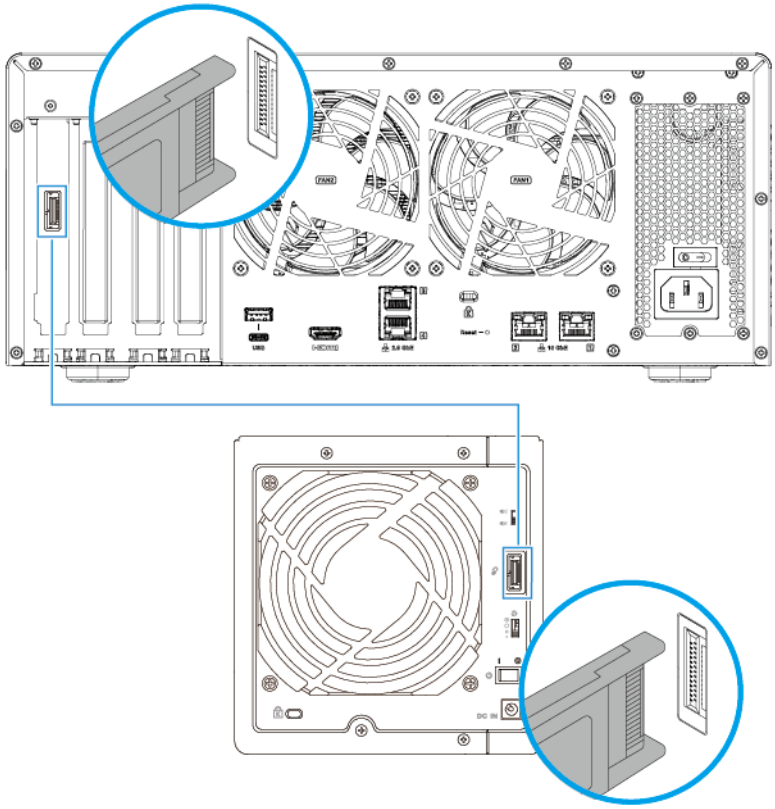
Connecting SATA expansion units

The TS-h1277AFX series supports connecting one SATA expansion unit. 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

   Note
   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 units to the NAS using the following topology.

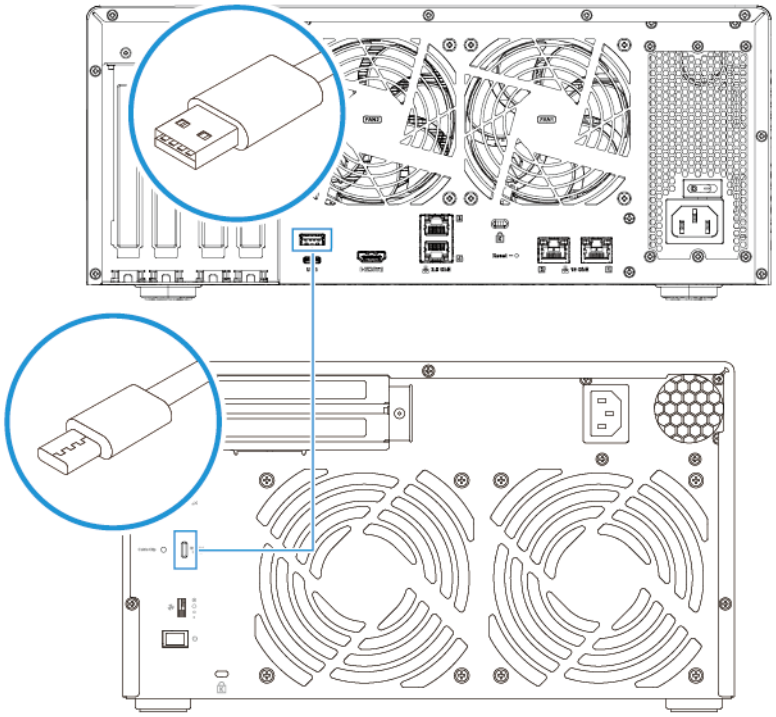


4. Power on the expansion unit.
5. Power on the NAS.
6. Verify that the expansion unit is recognized by the NAS.
   a. Log on to QuTS hero as an administrator.
   b. Go to **Main Menu** > **Storage & Snapshots** > **Overview** > **System**.
   c. Verify that the expansion unit is listed.

Connecting USB expansion units

To connect the TS-h1277AFX to USB expansion units, a USB Type-A to USB Type-C cable is required. For required accessories details, see Expansion unit installation.

1. 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 3.1 Gen 1 Type-A port on the NAS.



2. Power on the expansion unit.
3. 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.

QuTS hero installation

The TS-h1277AFX uses the QNAP QuTS hero operating system. You can install QuTS hero 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 Initializing QuTS hero 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 myQNAPcloud Link to remotely access your NAS. • Complete the steps in the Smart Installation Guide wizard. For details, see Initializing QuTS hero using the cloud installation website.	• Computer or mobile device • Network cable • myQNAPcloud account • Cloud Key

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.

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 **Start**. Automatically searches for available firmware updates and installs firmware.
Manual installation	**a.** Click **Manual Installation**. The **Install Firmware** window appears. **b.** Click **Browse**. The upload file window appears. **c.** Select file. **d.** Click **Open**. Starts firmware installation.
Skip	Click **Skip**. 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.

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 **Start**. Automatically searches for available firmware updates and installs firmware.
Manual installation	**a.** Click **Manual Installation**. The **Install Firmware** window appears. **b.** Click **Browse**. The upload file window appears. **c.** Select file. **d.** Click **Open**. Starts firmware installation.
Skip	Click **Skip**. 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.

4. Basic Operations

This chapter describes basic NAS operations.

Power button

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

Reset button

Important

To protect your device from brute force attacks, QNAP recommends disabling the default `admin` account after a system reset. To disable the default `admin` account, you must first create a new administrator account, log out of the `admin` account, and then log in with the new account.

Operation	User Action	Result

Basic system reset	Press and hold the button for 3 seconds.	The following settings are reset to default:
		• The `admin` account is automatically enabled.
		• System administrator password: For details on the default password, see this FAQ.
		• 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 10 seconds.	The default factory settings are restored. • To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

USB One Touch Copy button

The USB One Touch Copy button allows you to copy data backups from a USB device to the QNAP device or from the QNAP device to a USB device.

This feature supports incremental backups. The QNAP device only copies files that were modified or added after the last backup.

To configure the behavior of the button when an external device is connected to the button's USB port, install and use Hybrid Backup Sync on your QNAP operating system. For details, see the Hybrid Backup Sync documentation.

LCD panel

The LCD panel allows you to perform the following operations:

- Restart and power off the device
- Configure or change the LCD panel password
- View and configure network settings

- View information on the system, physical disks, and shared folders

LCD panel buttons

Button	Usage
Enter	• Display a configuration screen. • Move to the next item on the configuration screen.
Select	• Move to the next item on a menu. • Modify a value on a configuration screen.

Viewing TCP/IP settings

You can view the following settings for each network adapter on the NAS.

- IP address
- Subnet mask
- Default gateway
- Primary DNS
- Secondary DNS

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press and hold **Enter**.
   The panel displays the IP address of the first network adapter.
4. Press and hold **Select** to view the next TCP/IP screen.
   Repeat this step as necessary.

Configuring TCP/IP settings

You can configure the following settings for each network adapter on the device:

- IP address
- Subnet mask
- Default gateway
- Primary DNS
- Secondary DNS

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press and hold **Enter**.
   The panel displays the IP address of the first network adapter.
4. Press **Select** repeatedly until the panel displays `Enter Network Settings`.
5. Press and hold **Enter**.
   The panel displays the configurable network settings.
6. Press **Select** and then **Enter** to configure the settings.

Button	Usage
Enter	• Display a configuration screen. • Move to the next item on a configuration screen.
Select	• Move to the next item on a menu. • Modify a value on a configuration screen.

7. After configuring the settings, press **Select** repeatedly until the panel displays `Network Restart`.

   Important
   If you do not see `Network Restart`, the system will not save the configured settings.

The system saves the settings.

Viewing drive information

The LCD panel can display the temperature and capacity of each drive installed in the NAS.

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 2. Physical disk`.
4. Press and hold **Enter**.
   The panel displays the temperature and capacity of the drive in bay 1.
5. Press and hold **Select**.
   Repeat this step as necessary.
   The panel displays the temperature and capacity of the next drive.

Viewing shared folder information

The LCD panel can display the name and capacity of each shared folder.

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 3. Shared Folders`.
4. Press and hold **Enter**.
   The panel displays the name and capacity of the first shared folder.
5. Press and hold **Select**.
   Repeat this step as necessary.
   The panel displays the name and capacity of the next shared folder.

Viewing system information

The LCD panel can display the CPU temperature, system temperature, and system fan speed.

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 4. System`.
4. Press and hold **Enter**.
   The panel displays the CPU and system temperature.
5. Press and hold **Select**.
   The panel displays the system fan speed.

Powering off the NAS

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 5. Shut down`.
4. Press and hold **Enter**.
   The NAS powers off.

Restarting the NAS

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 6. Reboot`.
4. Press and hold **Enter**.
   The NAS restarts.

Changing the LCD password

Specifying a password for the LCD panel prevents unauthorized access.

1. Press **Enter** or **Select**.
   The panel displays the NAS name and QuTS hero version.
2. Press and hold **Enter** for two seconds.
   The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 7. Password`.
4. Press and hold **Enter**.
   The `Change Password` screen appears.
5. Select **Yes** by pressing and holding **Enter**.
   The `New Password` screen appears.
6. Press **Select** and **Enter** to specify a new password.
   - Specify a password.
     - Length: 1-8 characters
     - Valid characters: 0-9
   - To delete a password, leave the password field blank.

Button	Usage
Enter	Move to the next item in the `New Password` screen.
Select	Change a character in the `New Password` and `Verify Password` screens.

7. Press **Enter**.
   The NAS saves the password.

LCD error messages

System Message	Description
Sys. Fan Failed	System fan has failed.
Sys. Overheat	System has overheated.
HDD Overheat	Drive has overheated.
CPU Overheat	CPU has overheated.
Network Lost	LAN 1 and LAN 2 disconnected in failover or load-balancing mode.
LAN [number] Lost	LAN [number] has disconnected.
HDD Failure	Drive has failed.
Shared Folder [number] Full	Shared folder is full.
HDD Ejected	Drive has ejected.
Shared Folder [number] Degraded	Shared folder [number] is in degrade mode.
Shared Folder [number] Unmounted	Shared folder [number] has unmounted.
Shared Folder [number] Inactive	Shared folder [number] is inactive.

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 Status LED

Status	Description
Flashes green and red alternately every 0.5 seconds	• A drive is being formatted. • The device 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. • The firmware is being updated. **Important** When updating the firmware, do not remove the power cord or USB cable, and do not force-exit the application.
Red	• A drive is invalid. • A shared folder has reached its full capacity. • A shared folder is about to reach its full capacity. • A system fan is not functioning. • An error occurred when accessing (read/write) the data. • A bad sector is detected on a drive. • 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). • A hardware self-test error occurred.
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	• The device is not configured. • A drive is not formatted.
Off	• All drives are in standby mode. • The device is powered off.

LAN LED

Status	Description
Orange	The network connection is operating.
Flashes orange	The device is being accessed from the network.
Off	The device is not connected to a network.

Drive Activity LED

Status	Description
Flashes red	Data is being accessed, and during the process a drive read/write error occurred.
Red	A drive read/write error occurred.
Flashes green	Data is being accessed.
Green	The drive is ready.
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.

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.

Status	Description
Off	• The network connection is operating at 10 Mbps. • There is no network connection.

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.

10 Gigabit Ethernet (RJ45) Speed LED

Status	Description
Green	A 10 GbE network connection has been established.
Orange	The network connection is operating below 10 Gbps.
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.

Expansion LED

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

Audio alert

Duration	Frequency	Description
Short beep (0.5 seconds)	1	• The NAS is starting up. • When the reset button is pressed for 3 seconds, the NAS resets configurations. • When the reset button is pressed for 10 seconds, the NAS resets configurations and reboots.
	3	• The NAS data cannot be copied to the external storage device connected to the USB One Touch Copy port. • The operating system was updated.
Long beep (1.5 seconds)	3 (every 5 minutes)	• A system fan is not functioning. • A fan module has been removed.
	2	• A storage pool is about to reach full capacity. • A storage pool has reached full capacity. • A storage pool status error occurred. • A shared folder is about to reach its full capacity. • A shared folder has reached its full capacity. • A shared folder status error occurred. • A drive is plugged in or out.
	1	• The NAS is powering off. • The NAS was powered on successfully and is ready.
Long and short beeps	1 long and 2 short beeps	The JBOD expansion unit has been removed.

5. 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.

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	If the NAS does not support file system encryption, encrypted shared folders are not migrated. **Warning** 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.
Shared folders	All shared folders and the downloaded files stored in them are retained. **Warning** To prevent data loss, back up and save encryption keys or passwords of encrypted shared folders in a safe place before migration. **Important** Folder permissions on the destination NAS must be reconfigured after migration.
Network	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.
Windows AD configuration	Windows AD configurations must be reconfigured.
Licenses	Licenses are not migrated. **Warning** To prevent losing all your software licenses, QNAP recommends deactivating licenses on the source NAS before data migration.
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 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	≥ 3	One member drive fails.
RAID 6	≥ 4	One or two member drives fail.
RAID 10	≥ 4 (Must be an even number)	One or two member drives in two different pairs fail.
RAID 50	≥ 6	One disk per subgroup fails.
RAID 60	≥ 8	Two disks per subgroup fail.
Triple Mirror	Multiple of 3. (For example, 3, 6, 9, 12 disks and so forth.)	One or two member drives fail.
RAID-TP	≥ 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	≥ 2	N/A
RAID 1	Yes	2	1
RAID 5	Yes	≥ 3	1
RAID 6	Yes	≥ 4	2
RAID 10	Yes	≥ 4 (Must be an even number)	One disk per subgroup fails.
RAID 50	Yes	≥ 6	One disk per subgroup fails.
RAID 60	Yes	≥ 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	≥ 5	3

Support and other resources

QNAP provides the following resources:

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

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

QuTS hero

QNAP NAS operating system featuring ZFS file system

8. Notices

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Version 3, 29 June 2007

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   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.
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c. Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d. Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.
A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.
A “User Product” is either (1) a “consumer product”, which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, “normally used” refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.
“Installation Information” for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.
If you convey an object code work under this section in, or with, or specifically for use in, a User Product, and the conveying occurs as part of a transaction in which the right of possession and use of the User Product is transferred to the recipient in perpetuity or for a fixed term (regardless of how the transaction is characterized), the Corresponding Source conveyed under this section must be accompanied by the Installation Information. But this requirement does not apply if neither you nor any third party retains the ability to install modified object code on the User Product (for example, the work has been installed in ROM).
The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates for a work that has been modified or installed by the recipient, or for the User Product in which it has been modified or installed. Access to a network may be denied when the modification itself materially and adversely affects the operation of the network or violates the rules and protocols for communication across the network.

Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

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END OF TERMS AND CONDITIONS

CE notice


This device complies with CE Compliance Class B.

UKCA notice


This device complies with the UKCA requirements for products sold in Great Britain.

FCC notice

FCC Class B 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 B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

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.

VCCI notice

VCCI–B

BSMI notice

D33B77
RoHS

SJ/T 11364-2006



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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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