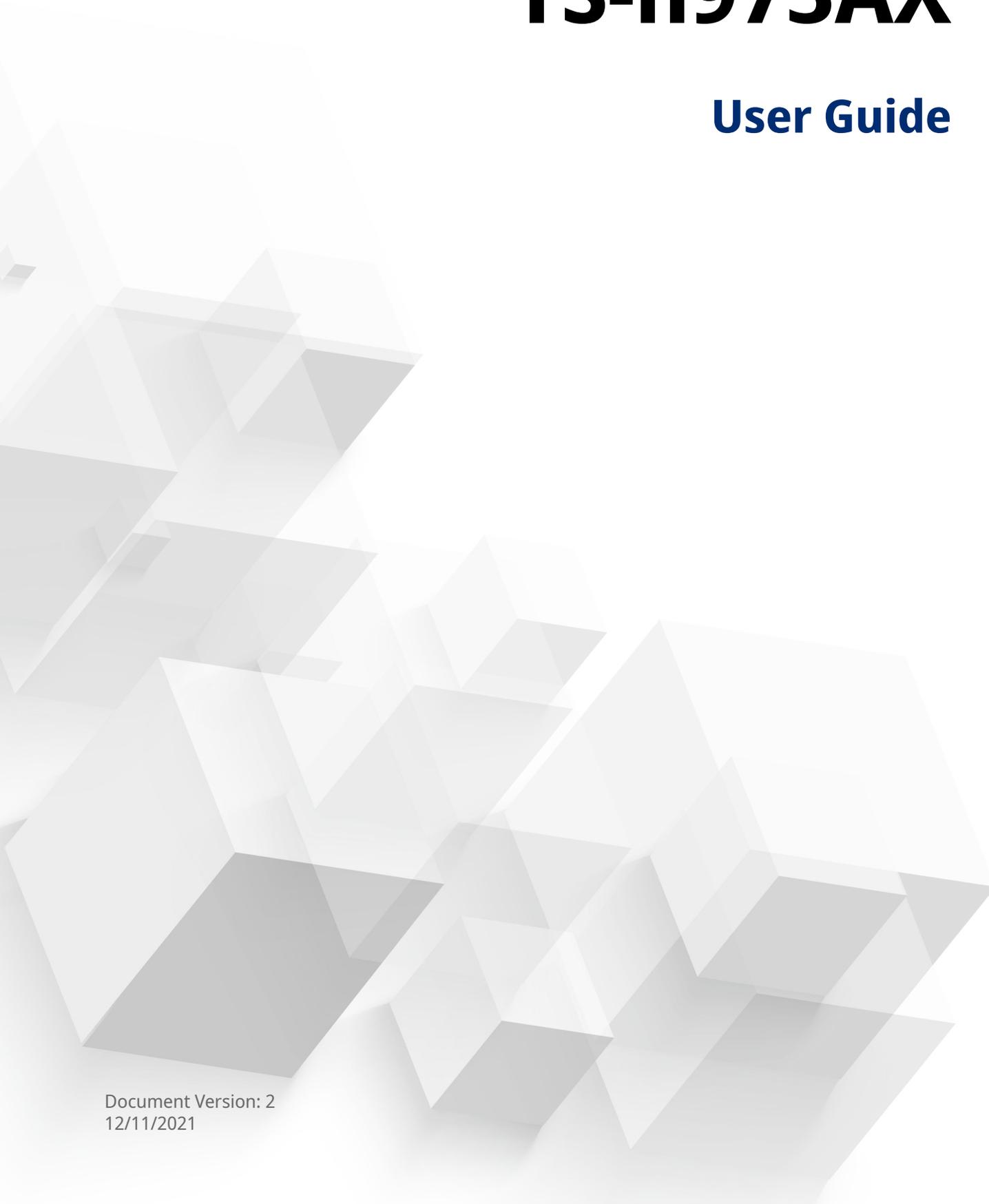




QNAP

TS-h973AX

User Guide



Document Version: 2
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1. Preface

About This Guide

This guide provides information about the device and step-by-step instructions on installing the hardware. It also provides instructions on basic operations and troubleshooting information.

Audience

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

Document Conventions

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

2. Product Overview

This chapter provides basic information about the QNAP device.

About the TS-h973AX

The TS-h973AX is designed for small and medium-sized businesses requiring cost-effective storage, backup, and data recovery. The NAS is equipped with one 10 Gigabit and two 2.5 Gigabit Ethernet ports, and houses nine drive bays, four of which support SATA drives that enable caching for boosting IOPS-intensive applications, and two of which support U.2 NVMe solid-state drives. The NAS runs on QNAP's QuTS hero operating system, along with a ZFS file system, up to 65536 snapshots, and real-time SnapSync. The TS-h973AX can accommodate a wide range of business applications and be expanded to fit future data storage requirements.

Hardware Specifications



Warning

- If your QNAP product has hardware defects, return the product to QNAP or a QNAP-authorized service center for maintenance or replacement. Any attempt to repair or perform maintenance procedures on the product by you or an unauthorized third party invalidates the warranty.
- QNAP is not responsible for any damage or data loss caused by unauthorized modifications and installation of unsupported third-party applications.
- For details, see the [QNAP Warranty Terms and Conditions](#).



Tip

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

Ordering P/N	CPU	Memory	Power supply
TS-h973AX-8G	AMD Ryzen™ Embedded V1500B	8 GB	Single
TS-h973AX-32G	AMD Ryzen™ Embedded V1500B	32 GB	Single

Component	TS-h973AX-8G	TS-h973AX-32G
Processor		
CPU	AMD Ryzen™ Embedded V1500B	
Frequency	4-core/8-thread 2.2 GHz	
Architecture	x86 64-bit	
Encryption engine	AES-NI	
Memory		
Pre-installed memory	8 GB RAM: 1 x 8 GB DDR4 non-ECC SODIMM	32 GB RAM: 2 x 16 GB DDR4 non-ECC SODIMM

Component	TS-h973AX-8G	TS-h973AX-32G
Memory slots	2 x DDR4 SODIMM  Important <ul style="list-style-type: none"> • 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.  Note This device supports ECC memory modules.	
Maximum memory	64 GB RAM: 2 x 32 GB	
Flash memory	5 GB (dual-boot OS protection)	
Storage		
Drive bays	<ul style="list-style-type: none"> • 5 x 3.5-inch SATA 6 Gbps • 2 x 2.5-inch U.2 NVMe/SATA 6 Gbps • 2 x 2.5-inch SATA 6 Gbps 	
Drive compatibility	3.5-inch bays: <ul style="list-style-type: none"> • 3.5-inch SATA hard disk drives • 2.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives 2.5-inch bays: <ul style="list-style-type: none"> • 2.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives • 2.5-inch U.2 NVMe solid-state drives  Warning Installing U.2 NVMe solid-state drives in incompatible bays will damage the drive connectors.	
Hot-swapping	Supported	
Network		
10 Gigabit Ethernet port	1 x 10GBASE-T RJ45 (10GbE/5GbE/2.5GbE/1GbE/100MbE)	
2.5 Gigabit Ethernet ports	2 x 2.5 GbE RJ45 (2.5GbE/1GbE/100MbE/10MbE)	
External I/O Ports & Expansion Slots		

Component	TS-h973AX-8G	TS-h973AX-32G
USB ports	Front: 1 x USB 3.2 Gen 2 Type-A  Note This USB port supports One Touch Copy. Rear: <ul style="list-style-type: none"> • 1 x USB 3.2 Gen 2 (10 Gbps) Type-C • 2 x USB 3.2 Gen 2 Type-A 	
Interface		
Buttons	<ul style="list-style-type: none"> • Power • Reset • USB One Touch Copy 	
Dimensions		
Form factor	Tower	
Dimensions (H x W x D)	182.65 x 224.6 x 224.1 mm (7.19 x 8.84 x 8.82 in)	
Net weight	3.52 kg (7.76 lbs)	
Others		
Power supply unit	120W, 100-240V AC, 50/60 Hz	
System battery	CR2032 lithium battery (3V, 225 mAh)	
Sound level	22.9 dB(A)	
Fan	System: 1 x 140 mm, 12V DC fan	
Operating temperature	0°C to 40°C (32°F to 104°F)	
Relative humidity	<ul style="list-style-type: none"> • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27°C (80.6°F) 	
Security slot	Kensington security slot	

**Tip**

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

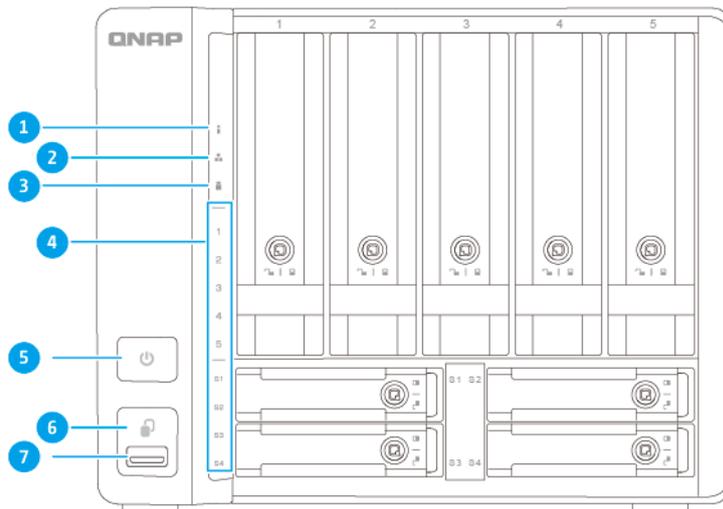
Package Contents

Item	Quantity
TS-h973AX	1
AC power adapter	1
Power cord	1
Ethernet cables	1 x Cat6a
Drive tray keys	2
Screws for 3.5-inch drives	20
Screws for 2.5-inch drives	12

Item	Quantity
Quick Installation Guide (QIG)	1

Components

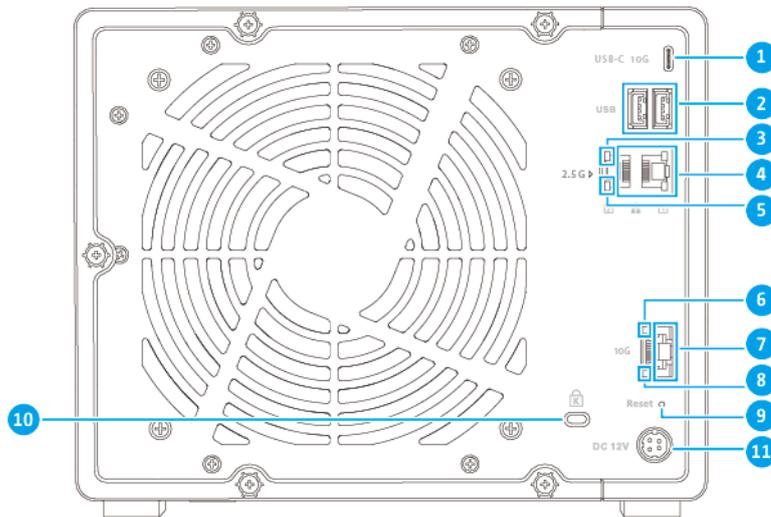
Front Panel



No.	Component	No.	Component
1	Status LED	5	Power button
2	LAN LED	6	USB One Touch Copy button
3	USB One Touch Copy LED	7	USB 3.2 Gen 2 One Touch Copy Type-A port
4	Drive LEDs	-	-

Important
 If the USB connection speed appears abnormal, replug the USB connector all the way in to the USB port in one smooth action.

Rear Panel



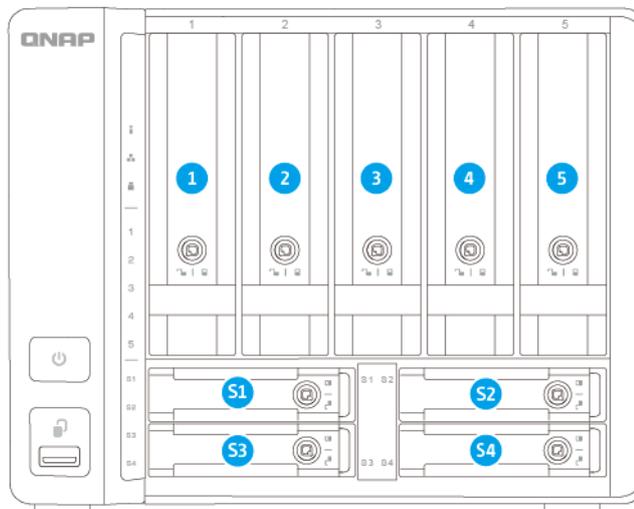
No.	Component	No.	Component
1	USB 3.2 Gen 2 (10Gbps) Type-C port	7	10 Gigabit Ethernet port
2	USB 3.2 Gen 2 (10Gbps) Type-A ports	8	10 Gigabit Ethernet speed LED
3	2.5 Gigabit Ethernet activity LED	9	Reset button
4	2.5 Gigabit Ethernet ports	10	Kensington security slot
5	2.5 Gigabit Ethernet speed LED	11	Power input
6	10 Gigabit Ethernet activity LED	-	-



Important

- QNAP USB expansion units only support connections to USB ports on the rear panel.
- If the USB connection speed appears abnormal, see the final optional step in [Connecting USB Expansion Units](#) for instructions on how to fix this problem.

Drive Numbering



Drive Label	Drive Type	Compatible Drives
1 to 5	3.5-inch SATA	<ul style="list-style-type: none"> 3.5-inch SATA hard disk drives 2.5-inch SATA hard disk drives 2.5-inch SATA solid-state drives
S1 to S2	2.5-inch U.2 NVMe and 2.5-inch SATA	<ul style="list-style-type: none"> 2.5-inch U.2 NVMe solid-state drives <p>Warning Installing U.2 NVMe solid-state drives in incompatible bays will damage the drive connectors.</p> <ul style="list-style-type: none"> 2.5-inch SATA hard disk drives 2.5-inch SATA solid-state drives
S3 to S4	2.5-inch SATA	<ul style="list-style-type: none"> 2.5-inch SATA hard disk drives 2.5-inch SATA solid-state drives

Safety Information

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

General Instructions

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

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

Power

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



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

System Battery

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

Moving Parts



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.

Installation Requirements

Category	Item
Environment	<ul style="list-style-type: none"> • Room temperature: 0°C to 40°C (32°F to 104°F) • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27°C (80.6°F) • Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals • Free from objects that may obstruct NAS ventilation or apply pressure to the NAS or power cord

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

Setting Up the NAS



Important

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

1. Place your NAS device in an environment that meets the requirements.
For details, see [Installation Requirements](#).
2. Install the drives.
For details, see the following topics:
 - [Installing 3.5-inch Hard Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Hard Drives or Solid-State Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Hard Drives or Solid-State Drives on 2.5-inch Trays](#)
3. Optional: Replace the memory modules.
For details, see [Replacing Memory Modules](#)
4. Optional: Connect the expansion units.
For details, see [Connecting USB Expansion Units](#)
5. Connect the power cord and all applicable cables.
6. Power on the NAS.
7. Install QuTS hero.
For details, see [QuTS hero Installation](#).
8. 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 drives, memory modules, and expansion units.

Drive Installation

The TS-h973AX is compatible with 3.5-inch hard drives, 2.5-inch hard drives, and 2.5-inch solid-state drives.

Installing 3.5-inch Hard Drives on 3.5-inch Trays



Warning

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

•



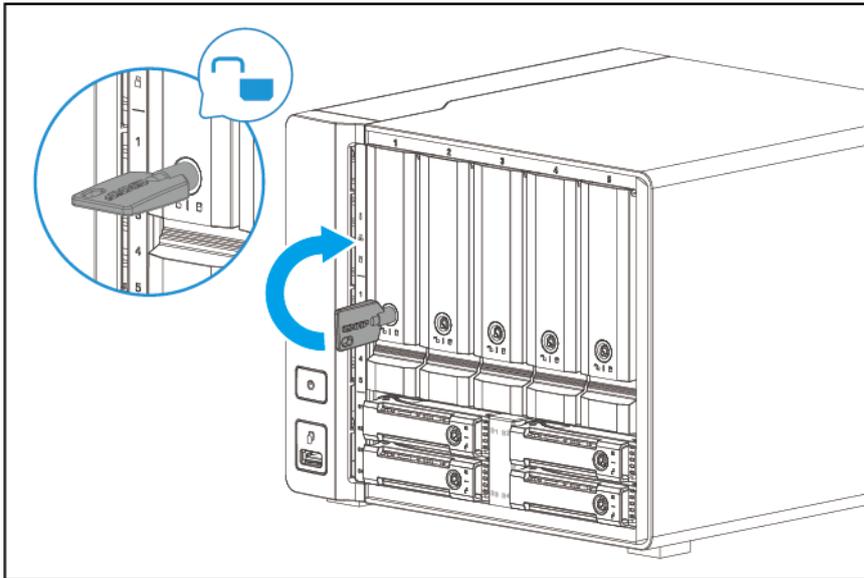
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

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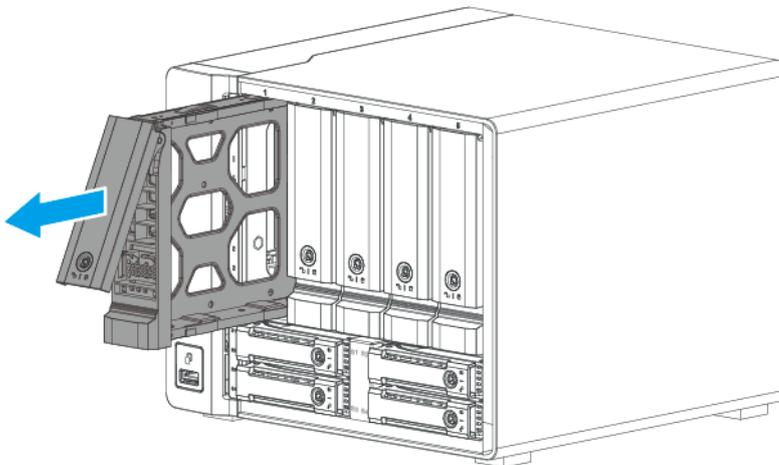


Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Optional: Unlock the tray.



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

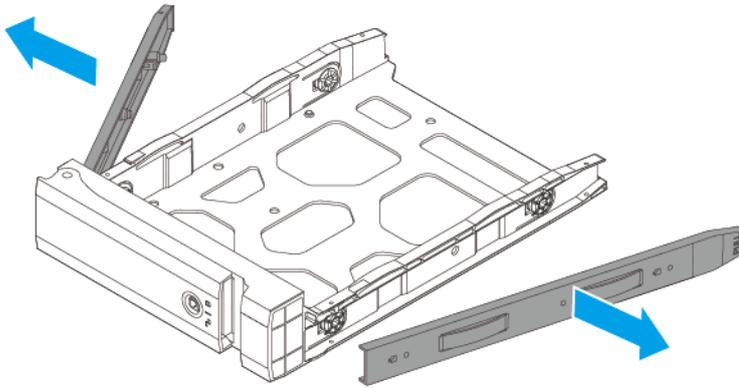
**Note**

The preinstalled drive trays come unlocked.

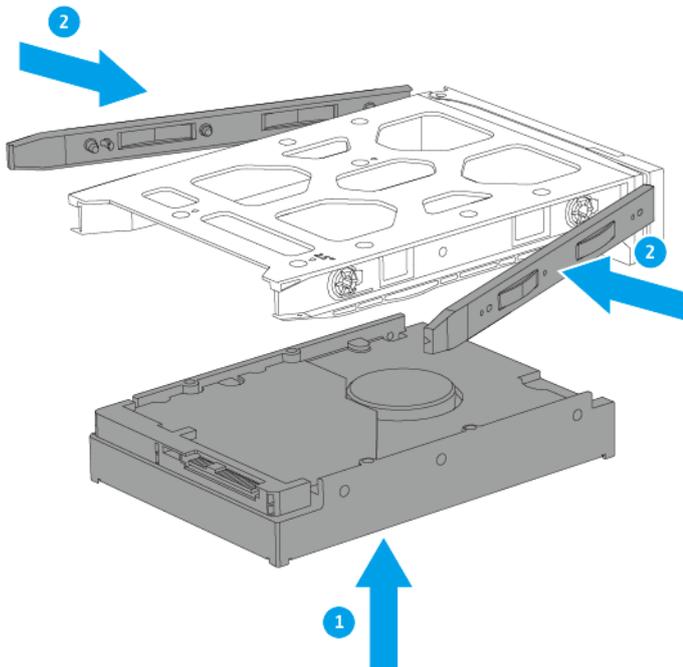
**Important**

Ensure the drive tray keys are stored in a safe place.

4. Install a drive on the tray.
 - a. Remove the fastening panels from the sides of the drive tray.



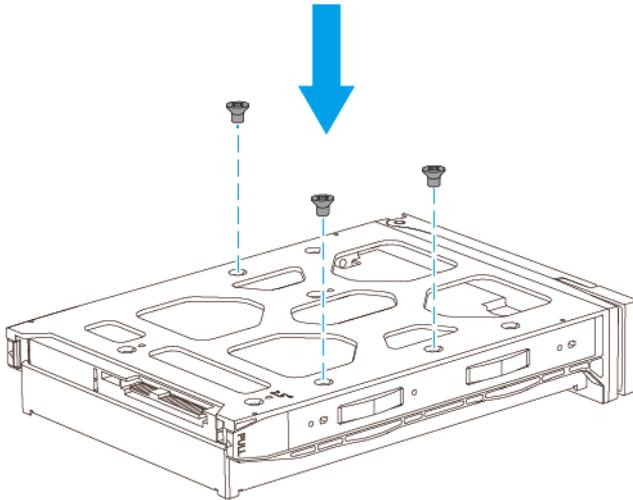
- b.** Place the drive on the tray so that the holes on the sides of the drive are aligned with the holes on the sides of the tray.
- c.** Attach the fastening panels to lock the drive to the tray.



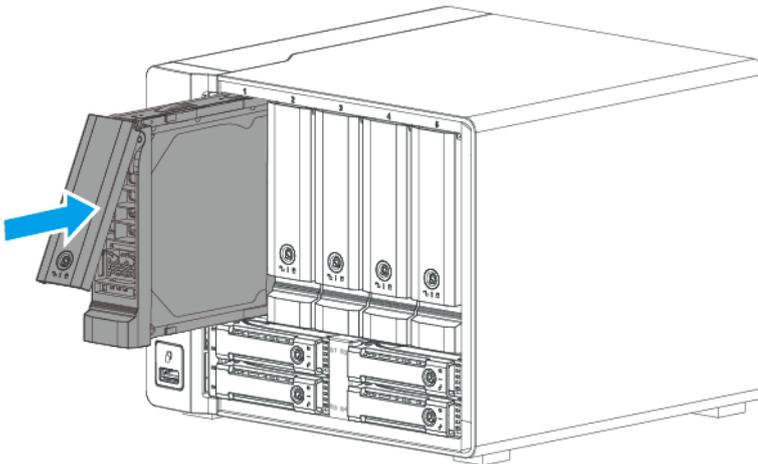
- d.** Optional: Attach the screws.

**Note**

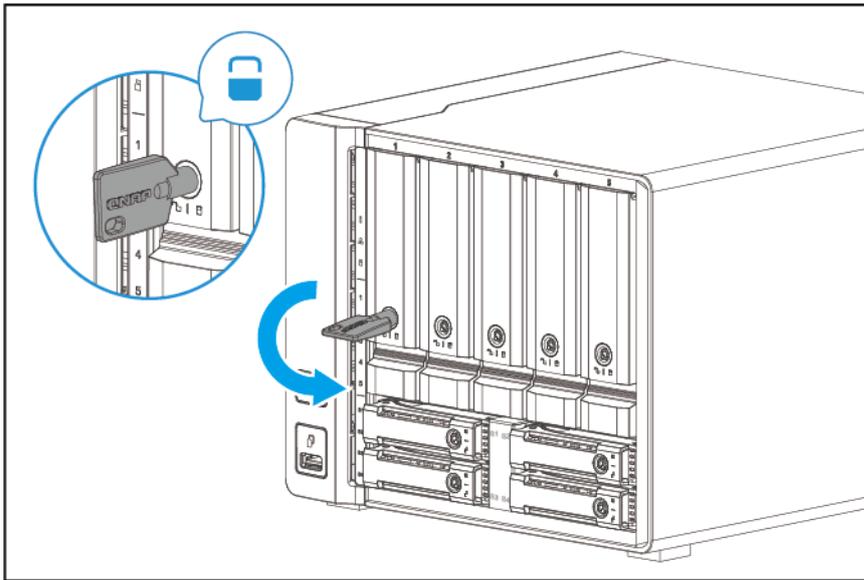
To protect drives from damage during transportation of the NAS, QNAP recommends attaching screws to secure the drives.



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



- c. Lock the tray.



6. Power on the NAS.

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



Warning

- Installing a drive deletes all data on the drive.
- Installing U.2 NVMe solid-state drives in incompatible bays will damage the drive connectors. Only install U.2 NVMe solid-state drives in bays S1 and S2. For details, see [Drive Numbering](#).
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

-



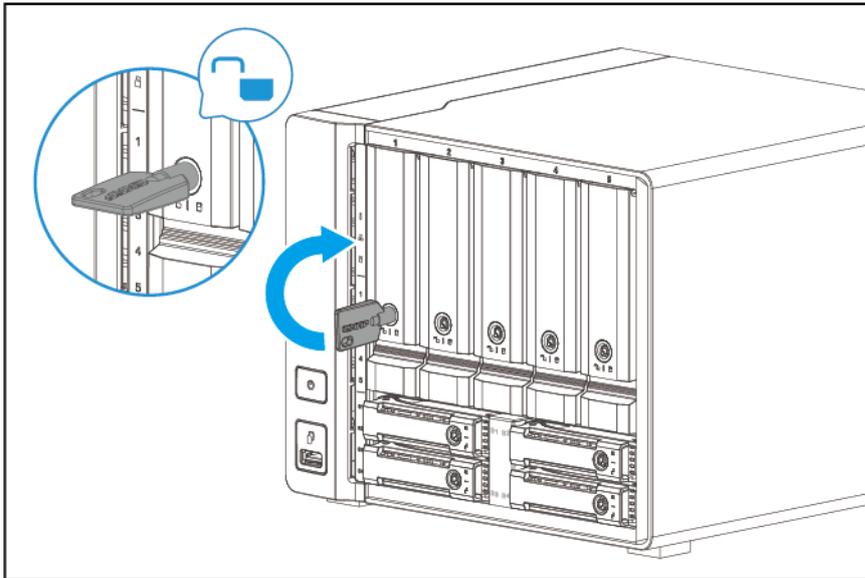
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

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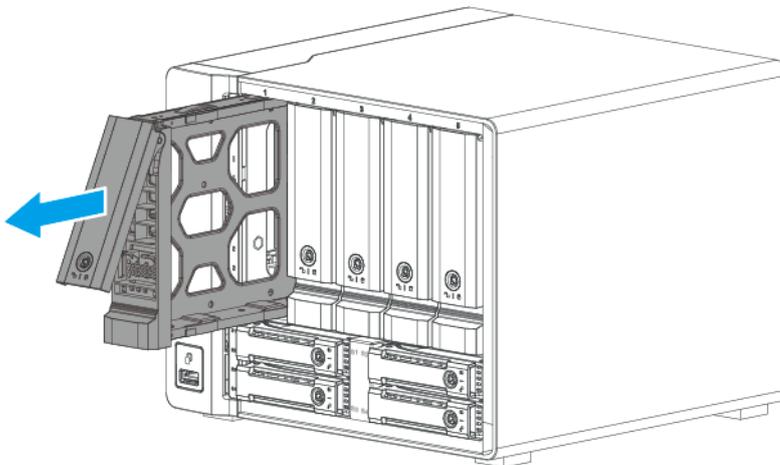


Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Optional: Unlock the tray.



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

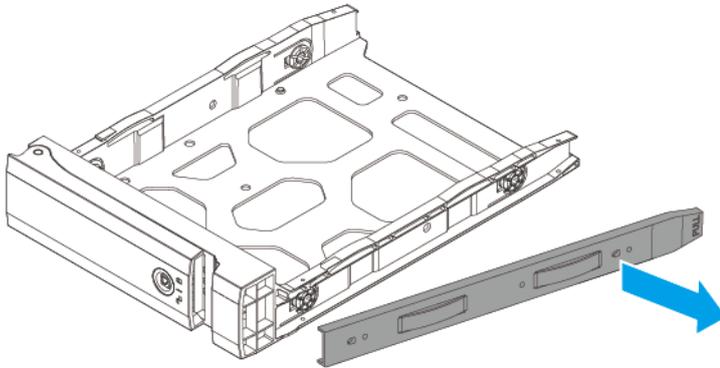
**Note**

The preinstalled drive trays come unlocked.

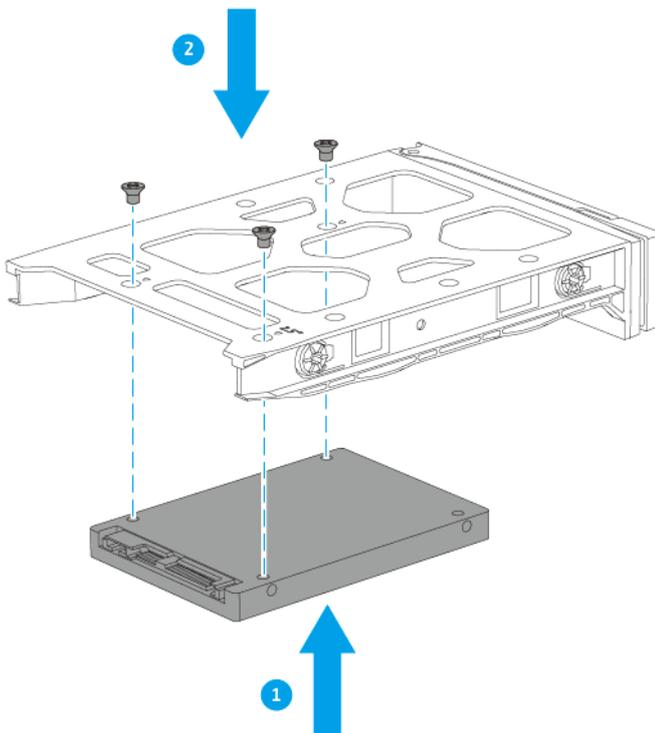
**Important**

Ensure the drive tray keys are stored in a safe place.

4. Install a drive on the tray.
 - a. Remove the right fastening panel from the drive tray.

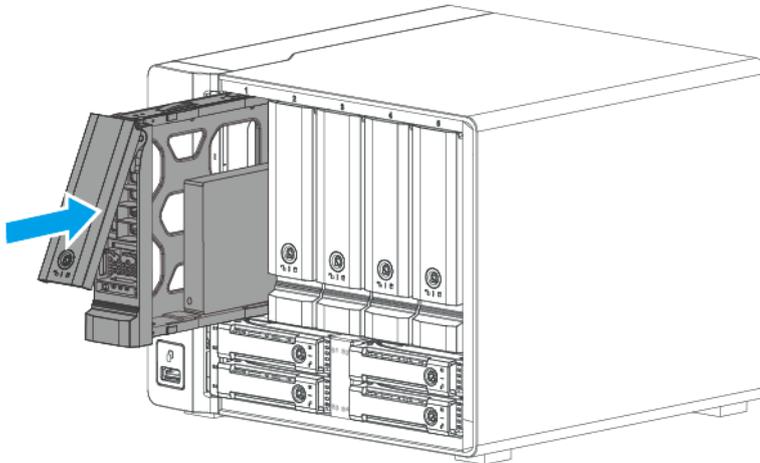


- b.** Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.
- c.** Attach the screws.

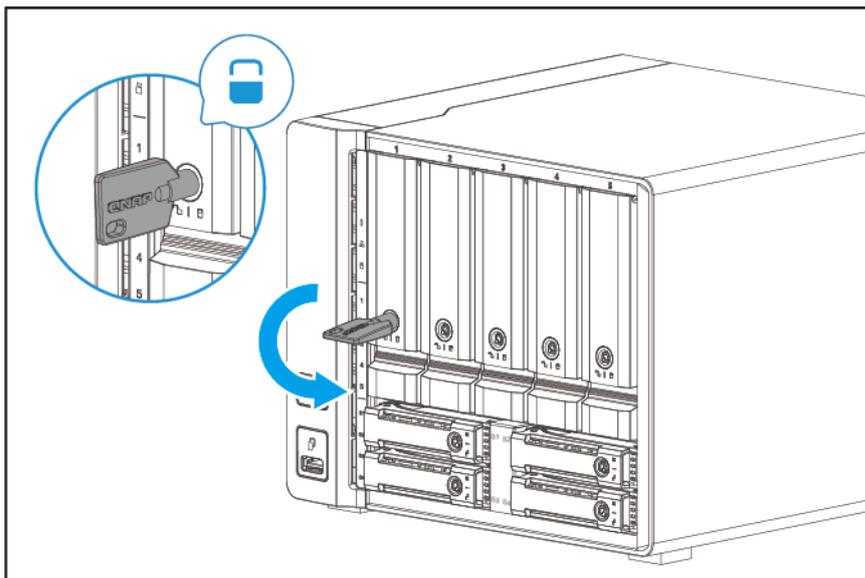


- 5.** Load the tray into the bay.
 - a.** Insert the tray into the bay.

- b. Push the handle.



- c. Lock the tray.



6. Power on the NAS.

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



Warning

- Installing a drive deletes all data on the drive.
- Installing U.2 NVMe solid-state drives in incompatible bays will damage the drive connectors.
Only install U.2 NVMe solid-state drives in bays S1 and S2. For details, see [Drive Numbering](#).

- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

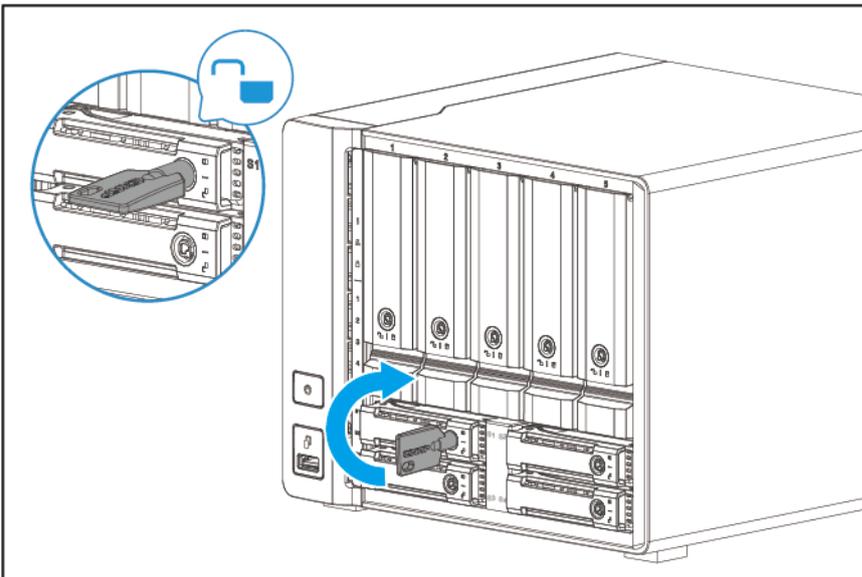


Moving fan blades: Keep your hands and other body parts away from moving fan blades.

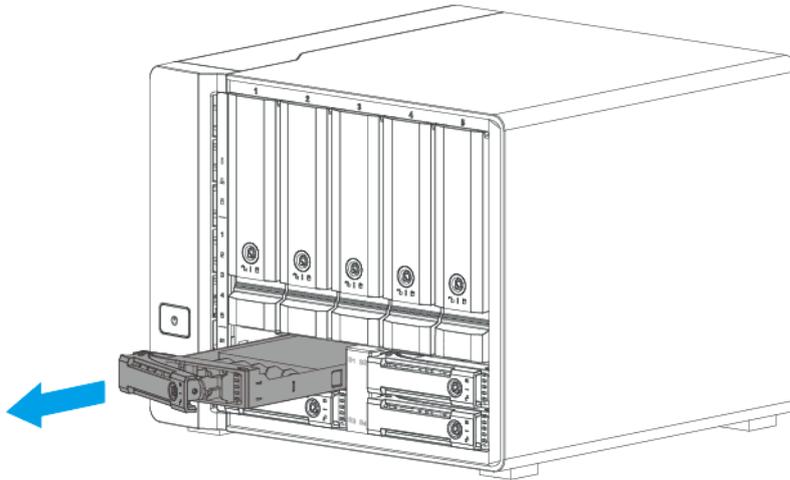


Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Optional: Unlock the tray.



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

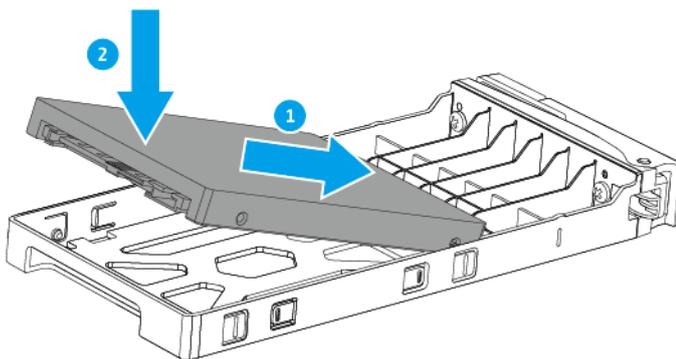
**Note**

The preinstalled drive trays come unlocked.

**Important**

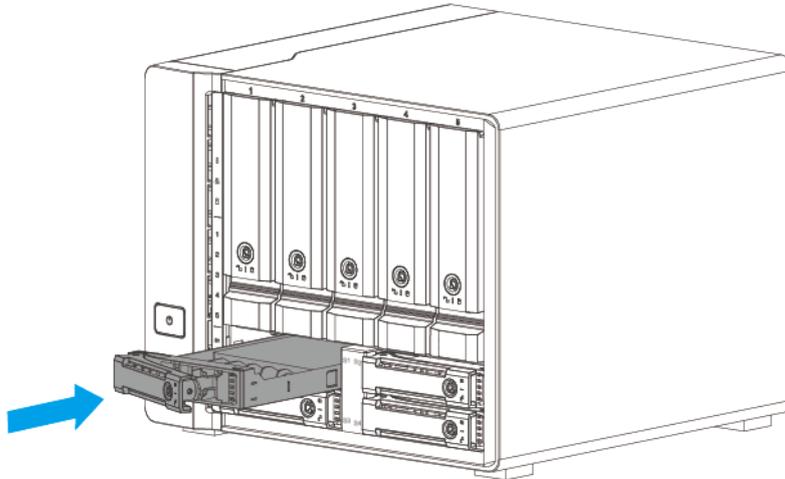
Ensure the drive tray keys are stored in a safe place.

4. Install a drive on the tray.
 - a. Align the connector on the drive with the opening at the end of the tray.
 - b. Place the drive on the tray.

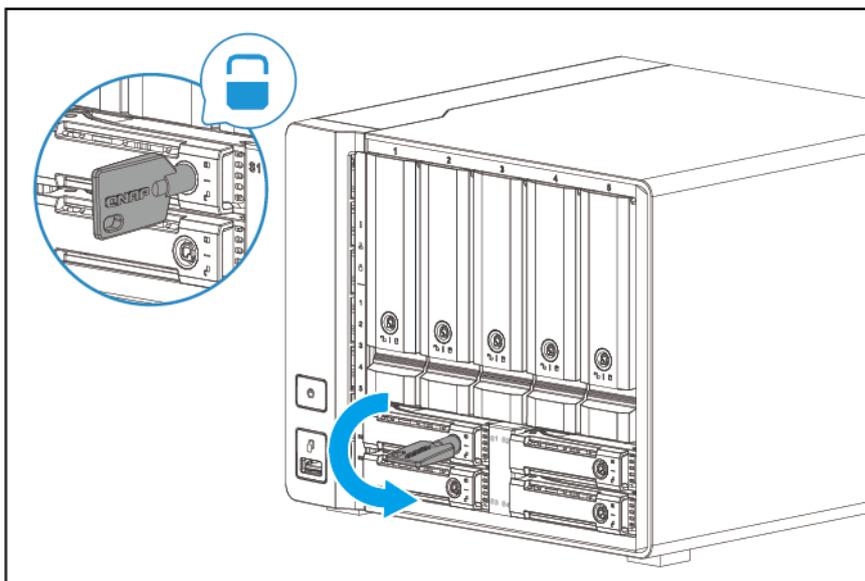


5. Load the tray into the bay.
 - a. Insert the tray into the bay.

- b. Push the handle.



- c. Lock the tray.



6. Power on the NAS.

Replacing Memory Modules

The TS-h973AX has two memory slots. You can increase the memory capacity of the NAS by upgrading memory modules. 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

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 each drive tray in bays 1 to 5.

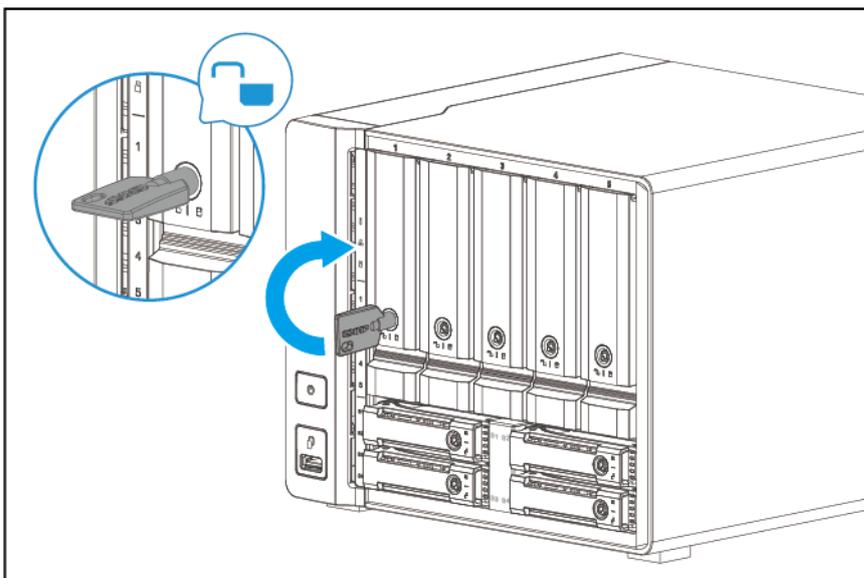


Important

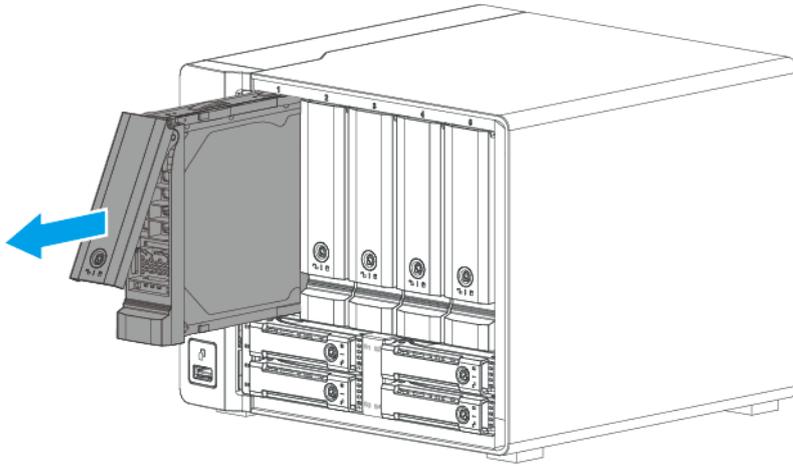
Remember the number of each drive. The drive trays will need to be returned to their original bays.

For details, see [Drive Numbering](#).

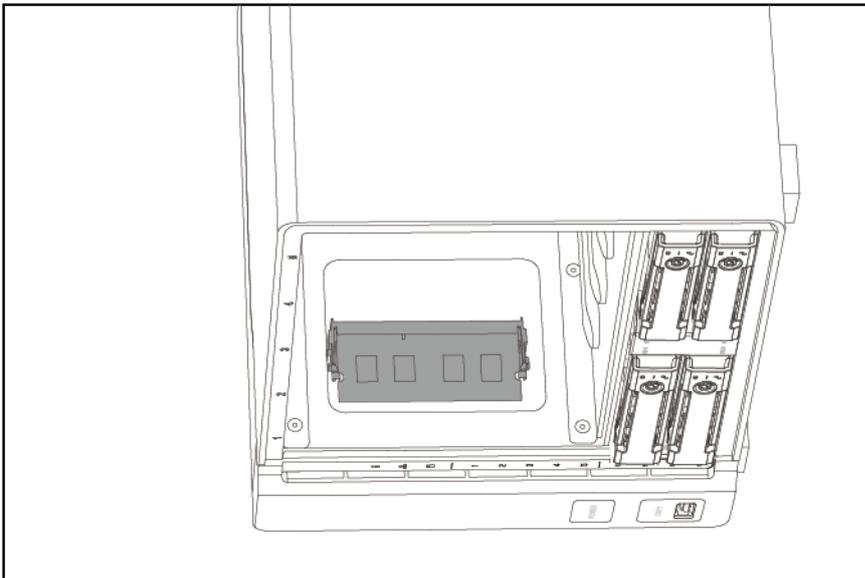
- a. Optional: Unlock the tray.



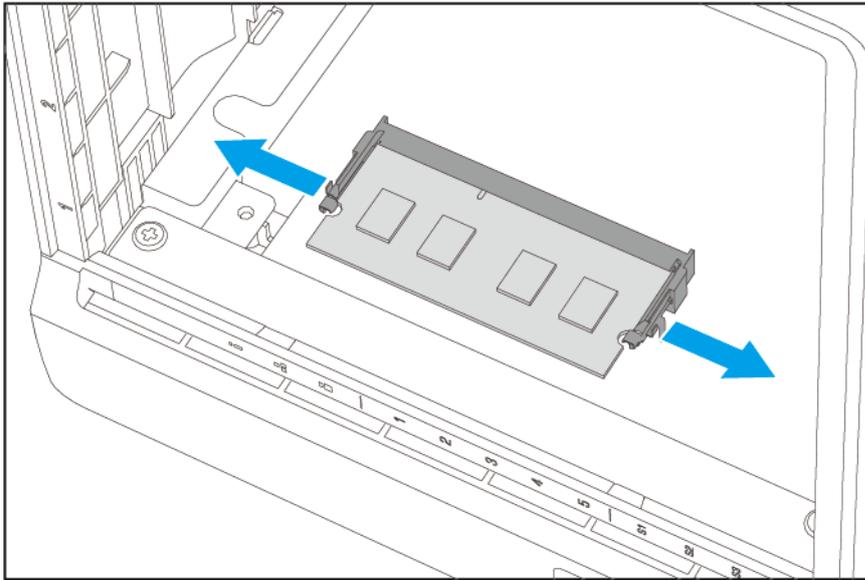
- b. Pull the tray handle outward.
- c. Pull the tray out.



- 5. Place the device on its left side.



- 6. Optional: Remove an existing module.
 - 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.

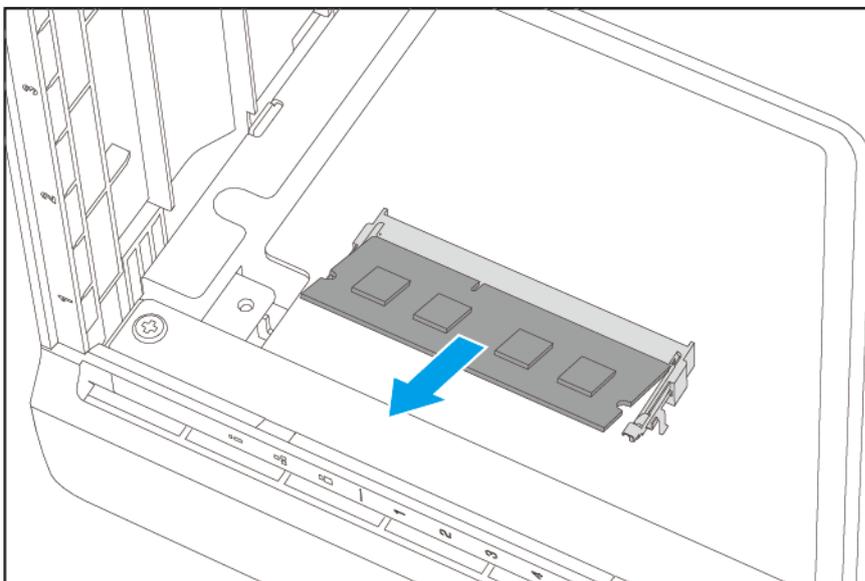


Warning

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

c. Hold the module by the edges.

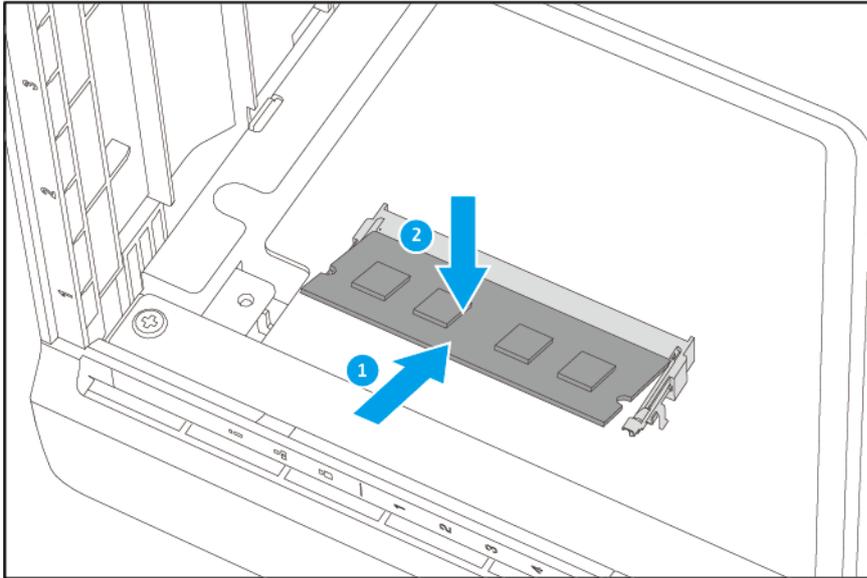
d. Carefully slide the module out of the slot.



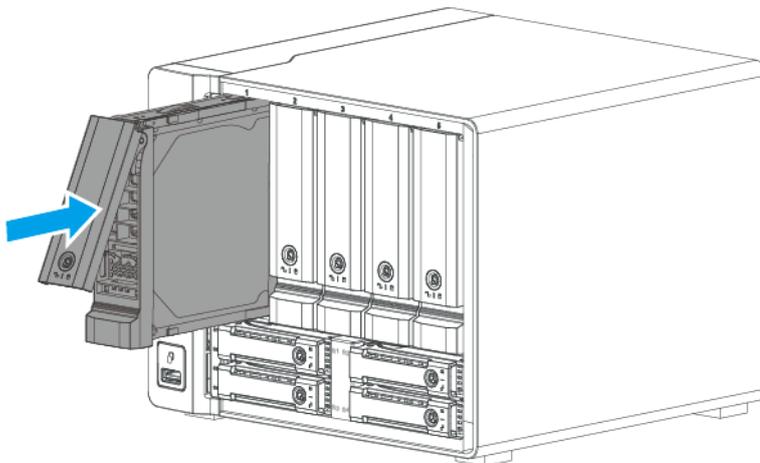
Warning

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

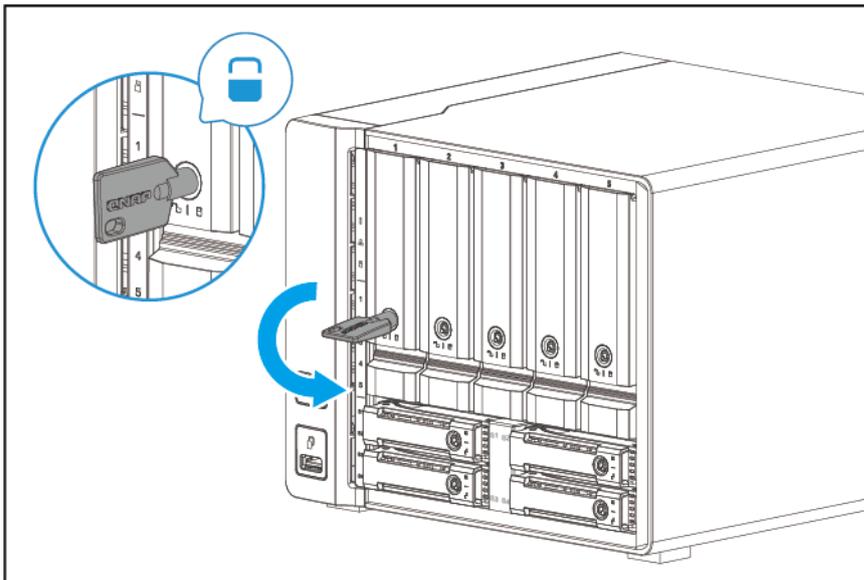
7. Install a new module.
 - a. Align the notch with the ridge in the slot.
 - b. Insert the module into the slot.
 - c. Verify that the metal connectors are completely inserted into the slot.
 - d. Carefully press down on the module until the retention clips lock the module into place.



8. Place the device in its normal upright position.
9. Return drive trays into their original bays.
 - a. Slide the drive tray into the drive bay.
 - b. Push in the handle.



- c. Lock the tray.



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

Connecting USB Expansion Units

The device supports USB expansion units. For details, please see table below.

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

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

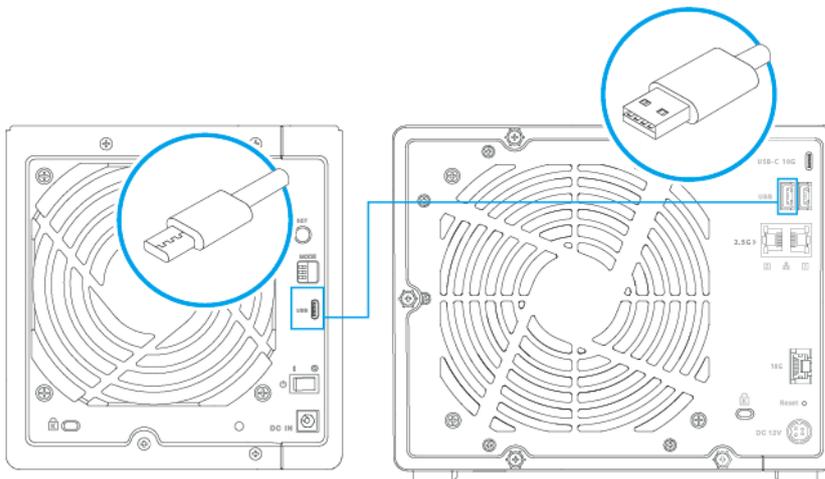
For the list of compatible expansion units and the maximum number of applicable expansion units, go to <http://www.qnap.com/go/compatibility-expansion>.

Expansion Unit Model	Description	Required Accessories
TR-002	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable
TR-004	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable

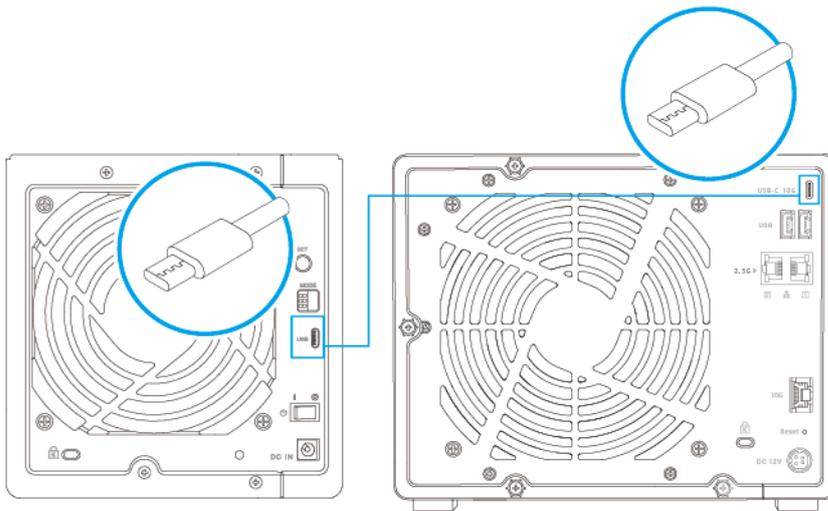
Expansion Unit Model	Description	Required Accessories
TR-004U	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA drives 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • USB 3.2 Gen 2 Type-C to Type-C cable • RAIL-B02

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

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 or USB Type-C port on the NAS.



Connecting to a USB 3.2 Gen 2 Type-A port on the NAS.



Connecting to the USB 3.2 Gen 2 Type-C 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 administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System** .
 - c. Verify that the expansion units are listed.
6. Optional: Troubleshoot abnormal USB connection speed.
 - a. Power off the NAS.
 - b. Power off the expansion units.
 - c. Disconnect all USB cables.
 - d. Wait 10 seconds.
 - e. Replug the USB connectors.



Important

- Plug each connector all the way in to its corresponding USB port in one smooth action.
- Follow the previous steps to reconnect the expansion units to the NAS.

QuTS hero Installation

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

Installing QuTS hero Using Qfinder Pro



Warning

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



Note

You can revert to QTS operating system anytime. For details, see QuTS hero user guide.

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. Click **Start Smart Installation Guide**. The **Install Firmware** window appears.
6. 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> a. Click Skip. Skips firmware installation.

7. Specify the following information

- **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

8. Click **Next**.

9. 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.

10. Click **Next**.

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

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

12. Click **Next**.

The **Cross-platform file transfer service** screen appears.

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

14. Click **Next**.

15. Review the settings.

16. Click **Apply**.

A confirmation message appears.



Warning

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

17. Click **Yes**.

- The **QuTS hero** installation progress bar appears.
- **QuTS hero** is installed.

**Note**

It may take a couple of minutes to complete QuTS hero installation.

- Optional: Click **Go to NAS Management**.

**Tip**

Click **Go to NAS Management** to set more advanced QuTS hero configurations and settings. For details, see QuTS hero User Guide.

Installing QuTS hero Using the Cloud Key

**Warning**

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

**Note**

You can revert to QTS operating system anytime. For details, see QuTS hero user guide.

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

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

- Locate the NAS in the list and then click **Initialize**.

**Note**

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

The installation wizard opens in the default web browser.

- Create an account or sign in to myQNAPcloud.

**Note**

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

- 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.

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

- 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**.

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	<p>a. Click Manual Installation. The Install Firmware window appears.</p> <p>b. Click Browse. The upload file window appears.</p> <p>c. Select file.</p> <p>d. Click Open. Starts firmware installation.</p>
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.
- **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**.
The **Cross-platform file transfer service** screen appears.

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

18. Click **Next**.

19. Review the settings.

20. Click **Apply**.

A confirmation message appears.

**Warning**

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

21. Click **Confirm**.
QuTS hero is installed.
22. Optional: Click **Go to NAS Management**.

**Tip**

Click **Go to NAS Management** to set more advanced QuTS hero configurations and settings. For details, see QuTS hero User Guide.

4. Basic Operations

This chapter describes basic NAS operations.

Power Button

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

Reset Button

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

USB One Touch Copy Button

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

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

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](#).

LED	Status	Description
System Status	Flashes green and red alternately every 0.5 seconds	<ul style="list-style-type: none"> The drive is being formatted. The 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. <p> Important When updating the firmware, do not remove the power cord or USB cable, and do not force-exit the application.</p>
	Red	<ul style="list-style-type: none"> The drive is invalid. The shared folder has reached its full capacity. The shared folder is about to reach its full capacity. The system fan is not functioning. An error occurred when accessing (read/write) the data. A bad sector is detected on the hard drive. The 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	<ul style="list-style-type: none"> The device is not configured. A drive is not formatted.
	Off	<ul style="list-style-type: none"> All drives are in standby mode. The device is powered off.
Drive	Flashes red	The data is being accessed and a read/write error occurs during the process.
	Red	A drive read/write error occurred.
	Flashes green	Data is being accessed.
	Green	The drive is ready.
	Off	No drive was detected.

LED	Status	Description
LAN	Orange	The network connection is operating.  Note 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.
10 Gigabit Ethernet (RJ45) speed	Green	A 10 GbE network connection has been established.
	Orange	The network connection is operating at below 10 Gbps.
	Off	There is no network connection.
10 Gigabit Ethernet (RJ45) activity	Orange	A network connection is established.
	Flashes orange	Data is being transmitted.
	Off	There is no network connection.
2.5 Gigabit Ethernet speed	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"> The network connection is operating at 10 Mbps. There is no network connection.
2.5 Gigabit Ethernet activity	Orange	A network connection has been established.
	Flashes orange	The device is being accessed from the network.
	Off	There is no network connection.
USB	Blue	A USB device connected to the USB One Touch Copy port is detected.
	Off	No USB expansion unit has been detected.

Audio Alert

Duration	Frequency	Description
Short beep (0.5 seconds)	1	<ul style="list-style-type: none"> The NAS is starting up. The NAS is shutting down. 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	<ul style="list-style-type: none"> The NAS data cannot be copied to the external storage device connected to the front USB port. The NAS has completed a firmware update.

Duration	Frequency	Description
Long beep (1.5 seconds)	3 (every 5 minutes)	The system fan is not functioning.
	2	<ul style="list-style-type: none"> • The shared folder is about to reach its full capacity. • The shared folder has reached its full capacity. • The hard drives on the NAS are in degraded mode. • The hard drives have started rebuilding. • A drive is plugged in or out.
	1	<ul style="list-style-type: none"> • The NAS was powered off by force shutdown (hardware shutdown). • The NAS was powered on successfully and is ready.

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.
Encrypted shared folders	<p>If the NAS does not support file system encryption, encrypted shared folders are not migrated.</p> <p> 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.</p>
Shared folders	<p>All shared folders and the downloaded files stored in them are retained.</p> <p> Warning To prevent data loss, back up and save encryption keys or passwords of encrypted shared folders in a safe place before migration.</p> <p> Important Folder permissions on the destination NAS must be reconfigured after migration.</p>

Data and Settings	After NAS 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 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	
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 hard drive with a capacity that is the same as or larger than the failed hard drive.
5. Remove the failed drive from the device.
6. Wait for 20 seconds or until the device beeps twice.
7. Remove the failed drive from the drive tray.
8. Insert the new drive into the drive tray.
9. Install the new drive.
The NAS beeps twice.

10. Go to **Main Menu > Storage & Snapshots > Storage Space** .
11. Locate the shared folder that contains the new drive and then verify that the status is `Rebuilding`.

Recovering Unintentionally Removed Healthy Drives

The NAS supports exclusive RAID recovery technology to recover failed RAID disk volumes from unintentional disconnection or removal of drives. Users can recover an inactive RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60, triple mirror, and RAID-TP volume from degraded mode.

Disk Volume	RAID Recovery Support	Number of Disks	Maximum Number of Removed Drives
RAID 0	Yes	≥ 2	N/A
RAID 1	Yes	2	1
RAID 5	Yes	≥ 3	1
RAID 6	Yes	≥ 4	2
RAID 10	No	≥ 4 (Must be an even number)	One or two member drives in two different pairs fail.
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/en/nas-migration
Expansion Unit Compatibility	http://www.qnap.com/go/compatibility-expansion
Service Portal	https://service.qnap.com
Product Support Status	https://www.qnap.com/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 Link

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

myQNAPcloud

Provides various remote access services such as DDNS and myQNAPcloud Link

Qfinder Pro

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

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

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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.

The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A “Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

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- 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

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END OF TERMS AND CONDITIONS

CE Notice



This QNAP NAS 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



R33B77
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
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