



**QNAP**

# **TS-x77**

**TS-677**

**TS-877**

**TS-1277**

## **User Guide**

# Contents

## 1. Preface

About This Guide.....	3
Audience.....	3
Document Conventions.....	3

## 2. Product Overview

About the TS-x77.....	4
Hardware Specifications.....	4
Package Contents.....	7
Components.....	8
Front Panel.....	8
Rear Panel.....	9
Right Panel.....	10
Left Panel.....	11
Front Drive Numbering.....	11
Installation Requirements.....	12
Setting Up the NAS.....	13

## 3. Installation and Configuration

Hardware Installation.....	14
Drive Installation.....	14
Installing Expansion Cards.....	29
Replacing Memory Modules.....	34
Replacing CPU Fans.....	39
QTS Installation.....	44
Installing QTS Using Qfinder Pro.....	45
Installing QTS Using the Cloud Key.....	46

## 4. Basic Operations

Power Button.....	49
Reset Button.....	49
USB One Touch Copy Button.....	49
LCD Panel.....	50
Viewing TCP/IP Settings.....	50
Configuring TCP/IP Settings.....	50
Viewing Drive Information.....	51
Viewing Volume Information.....	51
Viewing System Information.....	52
Powering Off the NAS.....	52
Restarting the NAS.....	52
Changing the LCD Password.....	52
LCD Error Messages.....	53
LEDs.....	53
Beep Alarm.....	55

## 5. Troubleshooting

Forcing Qfinder Pro or myQNAPcloud to Locate the NAS.....	56
Hot-swapping Failed Drives.....	56
Recovering Unintentionally Removed Healthy Drives.....	57
Support and Other Resources.....	57

## 6. Glossary

CloudKey.....	58
CloudLink.....	58
myQNAPcloud.....	58
myQNAPcloud ID.....	58
Qfinder Pro.....	58
QTS.....	58

## 7. Notices

Limited Warranty.....	59
Disclaimer.....	59
GNU Public License.....	59
FCC Notice.....	67
CE Notice.....	67
SJ/T 11364-2006.....	68

# 1. Preface





## About This Guide

This guide provides information on the QNAP TS-x77 NAS and step-by-step instructions on installing the hardware. It also provides instructions on basic operations and troubleshooting information.

## Audience

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

## Document Conventions

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

## 2. Product Overview

This chapter provides basic information about the QNAP TS-x77 NAS.

### About the TS-x77

The TS-x77 is the first QNAP NAS series to feature the new AMD Ryzen processors. Powered by Ryzen processors with up to eight cores, 16 threads, and clock speeds of up to 3.7 GHz, the TS-x77 is well-suited for lightning-fast storage, video editing, and other high-demand multi-threaded applications. Designed for infrastructure scalability, the TS-x77 has four DDR4 UDIMM slots that support up to 64 GB of memory, two M.2 SATA SSD slots, two USB 3.1 10 Gbps ports, and three PCIe slots.

### Hardware Specifications







#### Important



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

Ordering P/N	Drive Bays	CPU	Memory
TS-677			
TS-677-1600-8G	6	Ryzen 5 1600	8 GB
TS-877			
TS-877-1600-8G	8	Ryzen 5 1600	8 GB
TS-877-1700-16G		Ryzen 7 1700	16 GB
TS-1277			
TS-1277-1600-8G	12	Ryzen 5 1600	8 GB
TS-1277-1700-16G		Ryzen 7 1700	16 GB
TS-1277-1700-64G		Ryzen 7 1700	64 GB

Component	TS-677	TS-877	TS-1277
Processor			
CPU	<ul style="list-style-type: none"> <li>AMD® Ryzen™ 5 1600: 6-core/12-thread 3.2 GHz processor, Turbo Core 3.6 GHz</li> <li>AMD® Ryzen™ 7 1700: 8-core/16-thread 3.0 GHz processor, Turbo Core 3.7 GHz</li> </ul>		
Architecture	64-bit		
Graphics	Optional: PCIe expansion card		
Encryption engine	AES-NI		
Memory			

Component	TS-677	TS-877	TS-1277
Pre-installed memory	<ul style="list-style-type: none"> <li>• 8 GB RAM: 2 x 4 GB DDR4</li> <li>• 16 GB RAM: 2 x 8 GB DDR4</li> <li>• 64 GB RAM: 4 x 16 GB DDR4</li> </ul> <p>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.</p> <p> <b>Note</b> Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting.</p>		
Total memory slots	4 x UDIMM DDR4		
Maximum memory	64 GB (4 x 16 GB)		
Storage			
Drive bays	<ul style="list-style-type: none"> <li>• 4 x 3.5-inch SATA 6 Gbps bays</li> <li>• 2 x 2.5-inch SATA 6 Gbps bays</li> </ul>	<ul style="list-style-type: none"> <li>• 6 x 3.5-inch SATA 6 Gbps bays</li> <li>• 2 x 2.5-inch SATA 6 Gbps bays</li> </ul>	<ul style="list-style-type: none"> <li>• 8 x 3.5-inch SATA 6 Gbps bays</li> <li>• 4 x 2.5-inch SATA 6 Gbps bays</li> </ul>
Drive compatibility	<ul style="list-style-type: none"> <li>• 3.5-inch bays: <ul style="list-style-type: none"> <li>• 3.5-inch SATA hard disk drives</li> <li>• 2.5-inch SATA hard disk drives</li> <li>• 2.5-inch SATA solid state drives</li> </ul> </li> <li>• 2.5-inch bays: <ul style="list-style-type: none"> <li>• 2.5-inch solid state drives</li> </ul> </li> </ul>		
M.2 SSD type	2 x M.2 SSD SATA 6 Gbps		
M.2 SSD form factor	<ul style="list-style-type: none"> <li>• 2242</li> <li>• 2260</li> <li>• 2280</li> <li>• 22110</li> </ul>		
SSD cache acceleration support	<ul style="list-style-type: none"> <li>• 3.5-inch drive bays 1 to 4</li> <li>• 2.5-inch drive bays 1 to 2</li> <li>• M.2 slots 1 to 2</li> <li>• Optional: SSD using PCIe expansion slot</li> </ul>	<ul style="list-style-type: none"> <li>• 3.5-inch drive bays 1 to 6</li> <li>• 2.5-inch drive bays 1 to 2</li> <li>• M.2 slots 1 to 2</li> <li>• Optional: SSD using PCIe expansion slot</li> </ul>	<ul style="list-style-type: none"> <li>• 3.5-inch drive bays 1 to 8</li> <li>• 2.5-inch drive bays 1 to 4</li> <li>• M.2 slots 1 to 2</li> <li>• Optional: SSD using PCIe expansion slot</li> </ul>

Component	TS-677	TS-877	TS-1277
Hot-swappable	Yes   <b>Note</b> The following are not hot-swappable: <ul style="list-style-type: none"> <li>• M.2 SSDs</li> <li>• SSD cache drives</li> <li>• SSDs using PCIe expansion slots</li> </ul>		
Network			
10 gigabit Ethernet ports	Optional: PCIe expansion card		
Gigabit Ethernet ports	4 x RJ45		
External I/O Ports & Expansion Slots			
PCIe slots	<ul style="list-style-type: none"> <li>• 1 x PCIe 3.0 x8</li> <li>• 1 x PCIe 3.0 x4</li> <li>• 1 x PCIe 2.0 x4</li> </ul>		
USB ports	<ul style="list-style-type: none"> <li>• 2 x USB 3.1 Gen 2 10 Gbps               <ul style="list-style-type: none"> <li>• Back: 1 x USB 3.1 Gen 2 10 Gbps Type-C</li> <li>• Back: 1 x USB 3.1 Gen 2 10 Gbps Type-A</li> </ul> </li> <li>• 6 x USB 3.0               <ul style="list-style-type: none"> <li>• Front: 1 x USB 3.0 Type-A</li> </ul> </li> </ul>  <b>Note</b> You can use the One-Touch Copy button with this port. <ul style="list-style-type: none"> <li>• Back: 5 x USB 3.0 Type-A</li> </ul>		
HDMI outputs	Optional: PCIe expansion card		
Audio	<ul style="list-style-type: none"> <li>• 2 x 3.5 mm dynamic microphone jacks</li> <li>• 1 x 3.5 mm line-out jack</li> <li>• 2 x speakers</li> </ul>  <b>Note</b> You cannot use the speakers and the line-out jack simultaneously.		
Interface			
Display panel	Monochrome backlit LCD display with Enter and Select buttons		
USB One Touch Copy	Front: USB 3.0 Type-A		
Dimensions			
Form factor	Tower		

Component	TS-677	TS-877	TS-1277
Dimensions (H x W x D)	231.9 x 224.9 x 319.8 mm 9.1 x 8.9 x 12.6 in	231.9 x 292.8 x 319.8 mm 9.13 x 11.53 x 12.59 in	234.6 x 369.9 x 319.8 mm 9.23 x 14.56 x 12.59 in
Net weight	7.7 kg (16.96 lbs)	9.05 kg (19.95 lbs)	11.55 kg (25.46 lbs)
Other			
Power supply unit	250W, 100-240V AC, 50/60Hz	450W, 100-240V AC, 50/60Hz	550W, 100-240V AC, 50/60Hz
Fans	<ul style="list-style-type: none"> <li>• System: 1 x 80 mm</li> <li>• CPU: 2 x 90 mm</li> </ul>	<ul style="list-style-type: none"> <li>• System: 2 x 80 mm</li> <li>• CPU: 2 x 90 mm</li> </ul>	<ul style="list-style-type: none"> <li>• System: 3 x 80 mm</li> <li>• CPU: 2 x 90 mm</li> </ul>
	 <b>Warning</b> To avoid serious injuries, do not touch the fans while the NAS is connected to a power source.		
Sound level	35.1 dBA	34.2 dBA	37.8 dBA
Operating temperature	0 to 40°C (32 to 104°F)		
Relative humidity	<ul style="list-style-type: none"> <li>• Non-condensing relative humidity: 5 to 95%</li> <li>• Wet-bulb temperature: 27°C (80.6°F)</li> </ul>		
Drive tray type	Lock		
Security slot	Kensington security slot		
System battery	CR2032 Lithium battery (3V, 225mAh)		
	 <b>Warning</b> When replacing the system battery, only use the same battery type as the existing one to avoid explosions.		

**Note**

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

## Package Contents

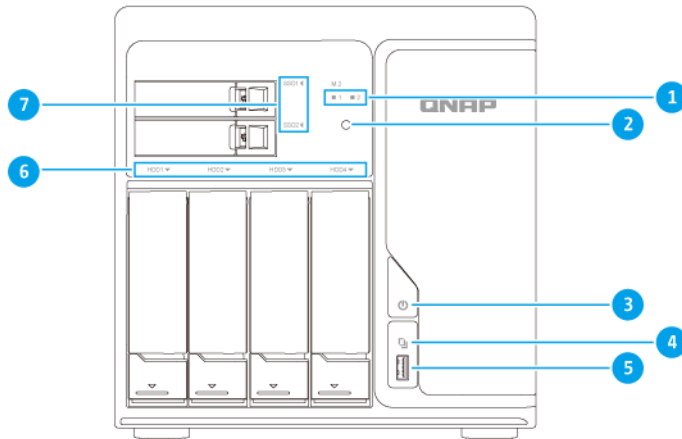
Item	Quantity
TS-x77 NAS	1
Power cord	1
Ethernet cables	2
Screws for 3.5-inch drives	<ul style="list-style-type: none"> <li>• TS-677: 12</li> <li>• TS-877: 18</li> <li>• TS-1277: 24</li> </ul>
Screws for 2.5-inch drives	<ul style="list-style-type: none"> <li>• TS-677: 18</li> <li>• TS-877: 24</li> <li>• TS-1277: 36</li> </ul>
Screws for M.2 solid state drives	<ul style="list-style-type: none"> <li>• 2 x flat head screws</li> <li>• 2 x riser screws</li> </ul>



Item	Quantity
M.2 SSD cooling module	2
Quick Installation Guide (QIG)	1

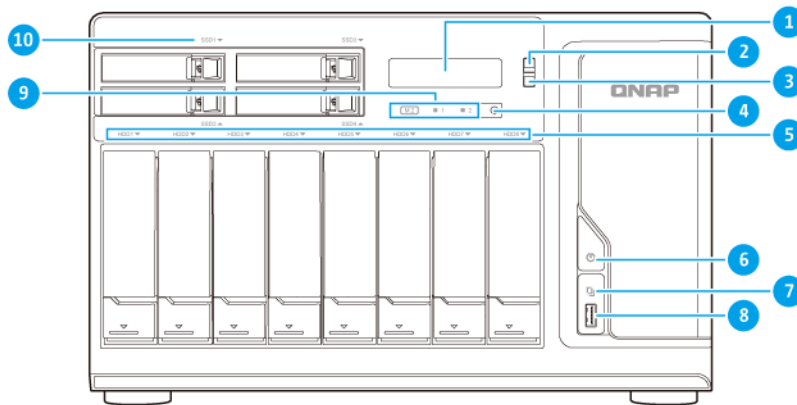
## Components

### Front Panel



### TS-677

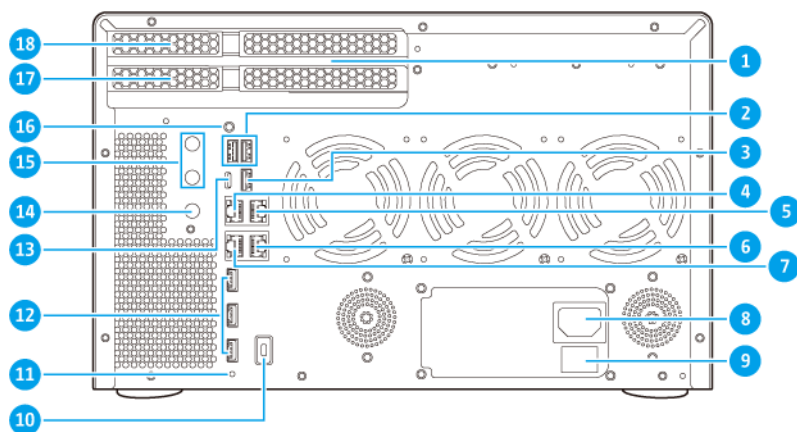
No.	Component	No.	Component
1	M.2 SSD LEDs	5	USB 3.0 One-Touch Copy port
2	Infrared (IR) receiver	6	Drive LEDs
3	Power button	7	SSD LEDs
4	USB One-Touch Copy button	-	-



**TS-877 and TS-1277**

No.	Component	No.	Component
1	LCD panel	6	Power button
2	Enter button	7	USB One-Touch Copy button
3	Select button	8	USB 3.0 One-Touch Copy port
4	Infrared (IR) receiver	9	SSD LEDs
5	Drive LEDs	10	M.2 SSD LEDs

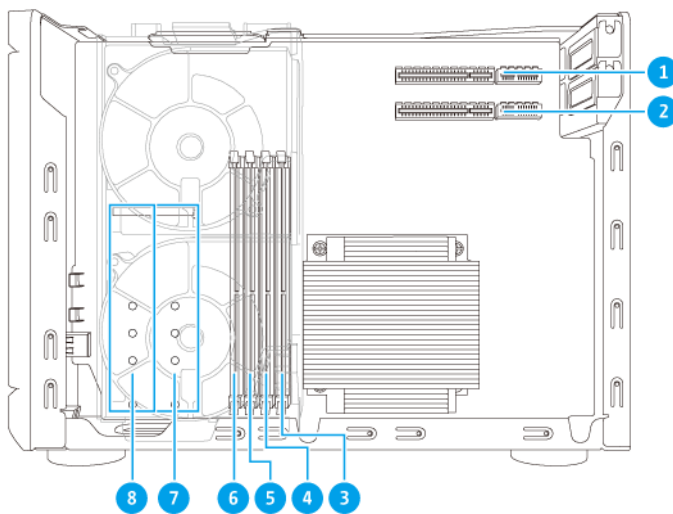
**Rear Panel**



No.	Component	No.	Component
1	PCIe slot 1 cover	10	Kensington security slot

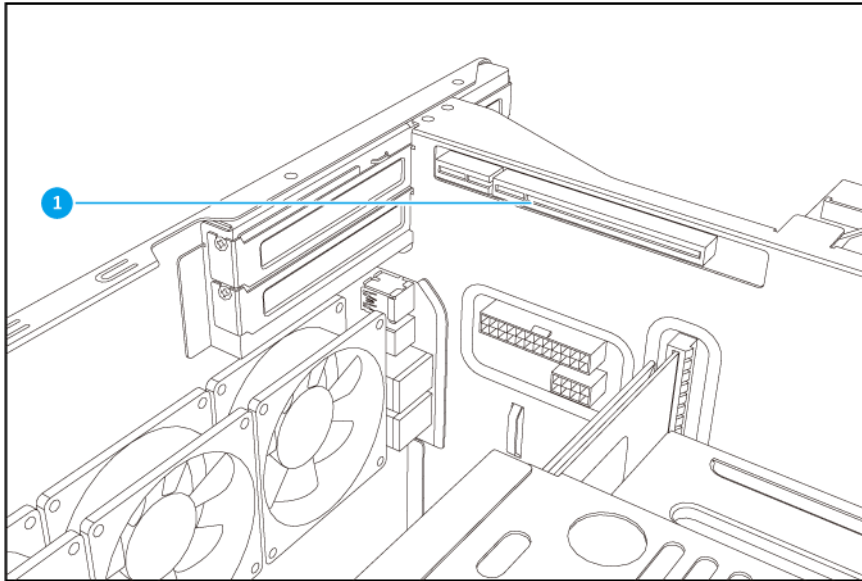
No.	Component	No.	Component
2	USB 3.0 ports	11	Reset button
3	USB 3.1 Gen 2 10Gbps Type-A port	12	USB 3.0 ports
4	Gigabit Ethernet (RJ45) port 2	13	USB 3.1 Gen 2 10Gbps Type-C port
5	Gigabit Ethernet (RJ45) port 1	14	3.5 mm line-out jack
6	Gigabit Ethernet (RJ45) port 3	15	3.5 mm dynamic microphone jacks
7	Gigabit Ethernet (RJ45) port 4	16	Console port
8	Power input	17	PCIe slot 3 cover
9	Power switch	18	PCIe slot 2 cover

## Right Panel



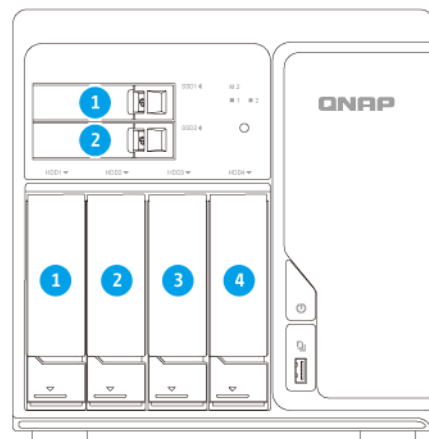
No.	Component	No.	Component
1	PCIe slot 2 (PCIe 3.0 x4)	5	Memory slot 3
2	PCIe slot 3 (PCIe 2.0 x4)	6	Memory slot 4
3	Memory slot 1	7	M.2 SSD slot 1
4	Memory slot 2	8	M.2 SSD slot 2

## Left Panel

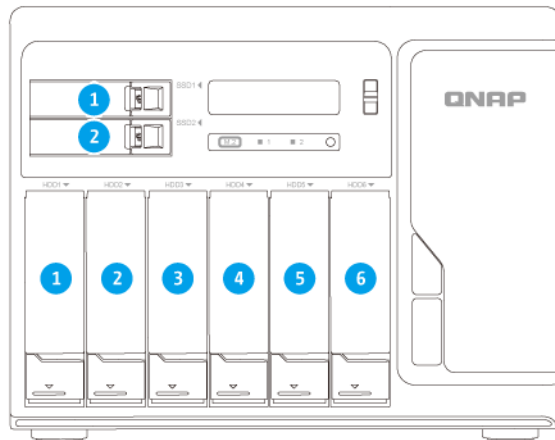


No.	Component	No.	Component
1	PCIe slot 1 (PCIe 3.0 x8)	-	-

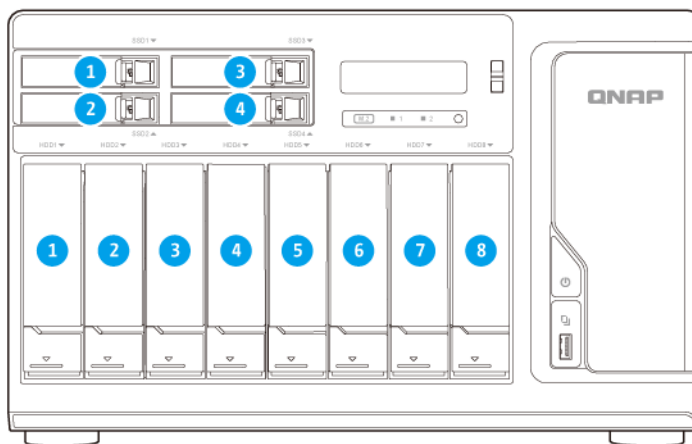
## Front Drive Numbering



TS-677



**TS-877**



**TS-1277**

## Installation Requirements

Category	Item
Environment	<ul style="list-style-type: none"> <li>• Room temperature: 0 to 40°C (32 to 104°F)</li> <li>• Non-condensing relative humidity: 5 to 95%</li> <li>• Wet-bulb temperature: 27°C (80.6°F)</li> <li>• Flat, anti-static surface with no exposure to direct sunlight, liquids, and chemicals</li> </ul>

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

## Setting Up the NAS

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 Solid State Drives on Solid State Drive Trays](#)
  - [Installing M.2 Solid State Drives](#)
3. Connect the power cord and all applicable cables.
4. Power on the NAS.
5. Install QTS.  
For details, see [QTS Installation](#).
6. Log on to QTS.

## 3. Installation and Configuration

This chapter provides specific hardware and operating system installation and configuration steps.

### Hardware Installation

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

### Drive Installation

The TS-x77 is compatible with 3.5-inch and 2.5-inch hard drives, 2.5-inch solid state drives, and M.2 solid state drives.

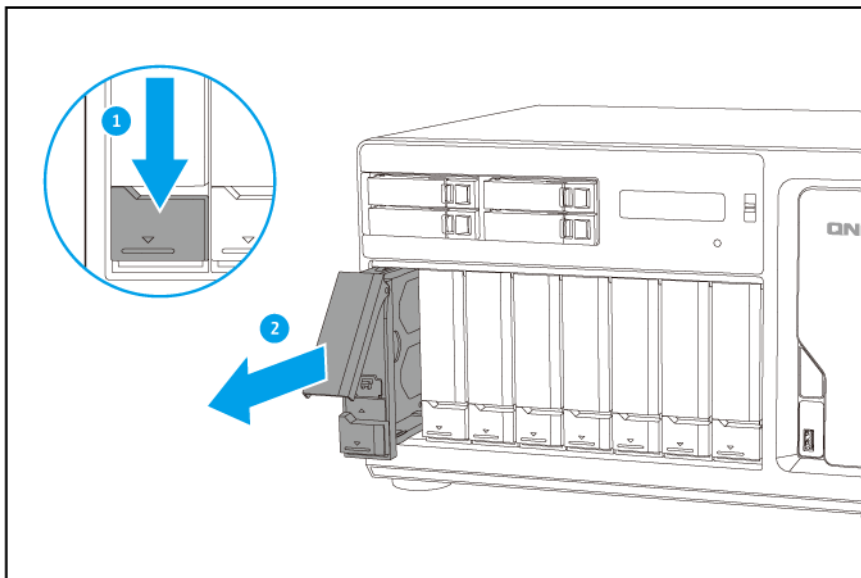
#### Installing 3.5-inch Hard Drives on 3.5-inch Trays



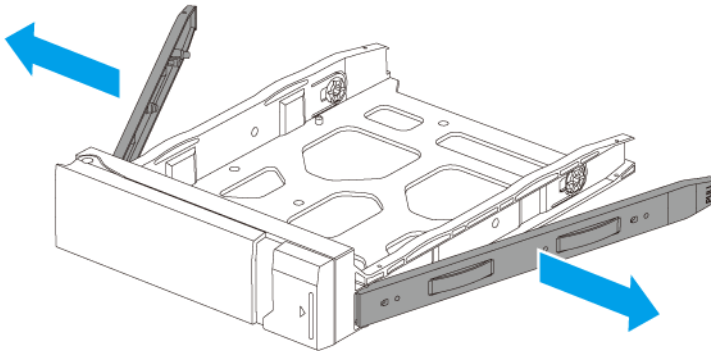
#### Warning

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

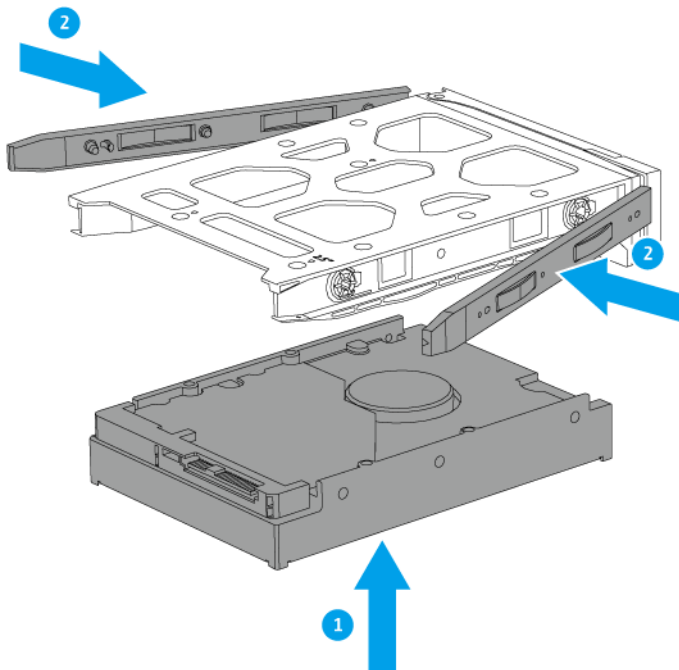
1. Power off the NAS.
2. Remove the drive tray.
  - a. Slide the lock down.
  - b. Pull the handle to release the tray.
  - c. Pull the tray out.



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

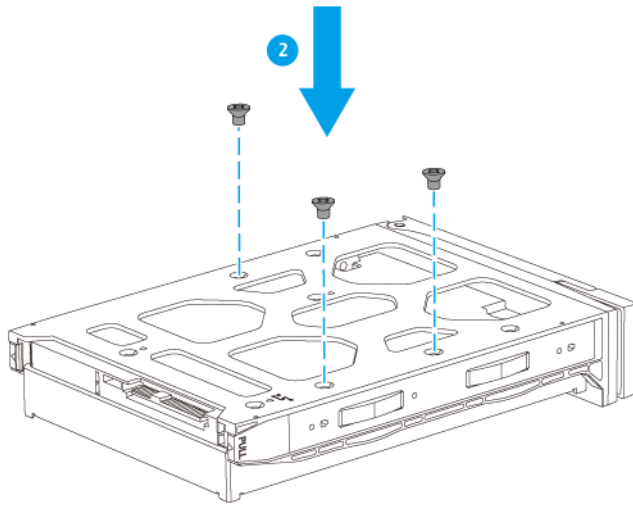


- b.** Place the drive on the tray so that the holes on the sides of the drive are aligned with the holes on the sides of the tray.
- c.** Attach the fastening panels.

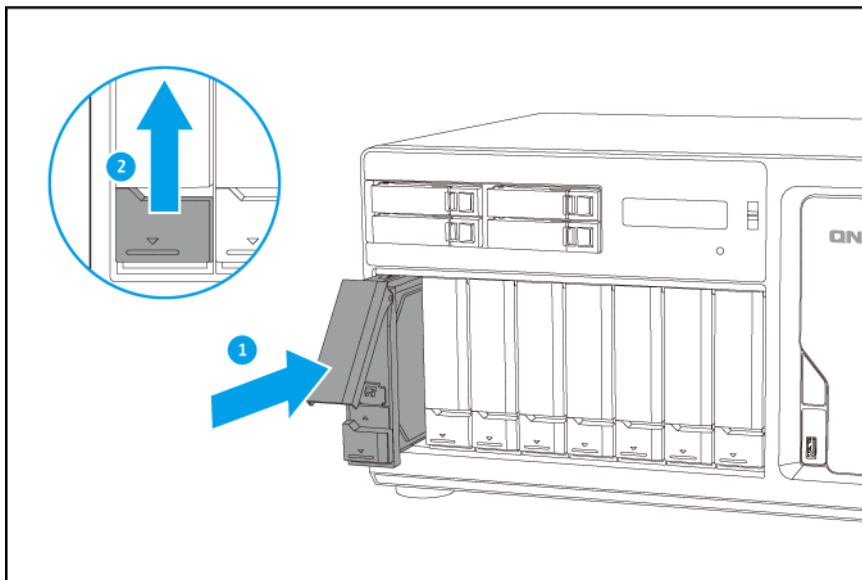


- d.** Optional: Attach the screws to further secure the drive.





4. Load the drive tray into the drive bay.
  - a. Insert the tray into the bay.
  - b. Push the handle.
  - c. Slide the lock up.



5. Power on the NAS.

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

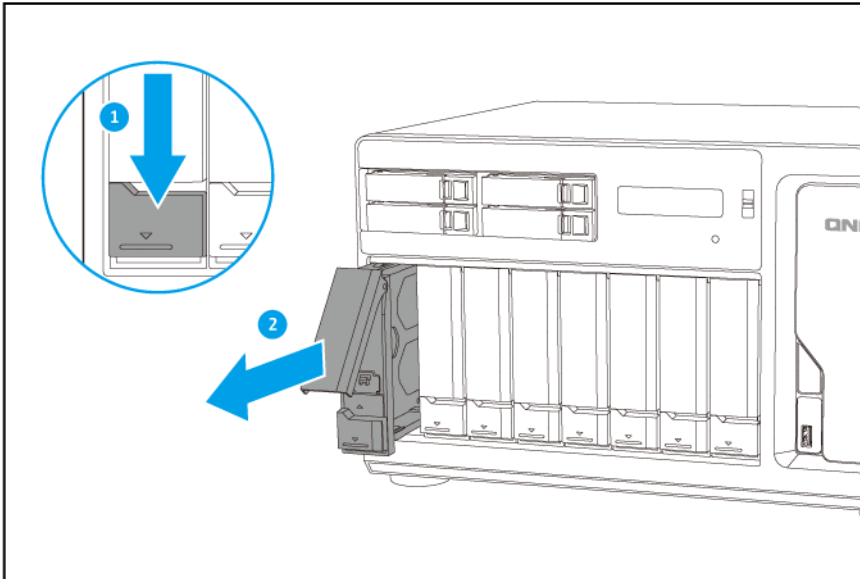


#### Warning

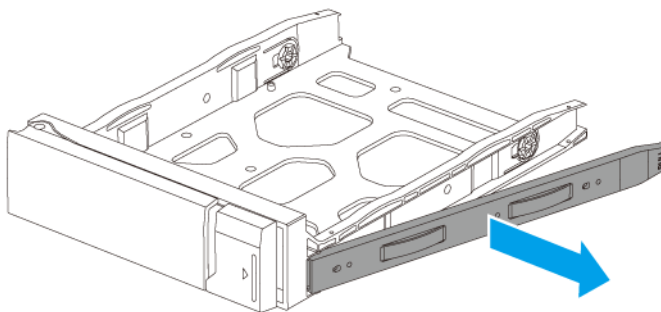
- Installing a drive deletes all data on the drive.

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

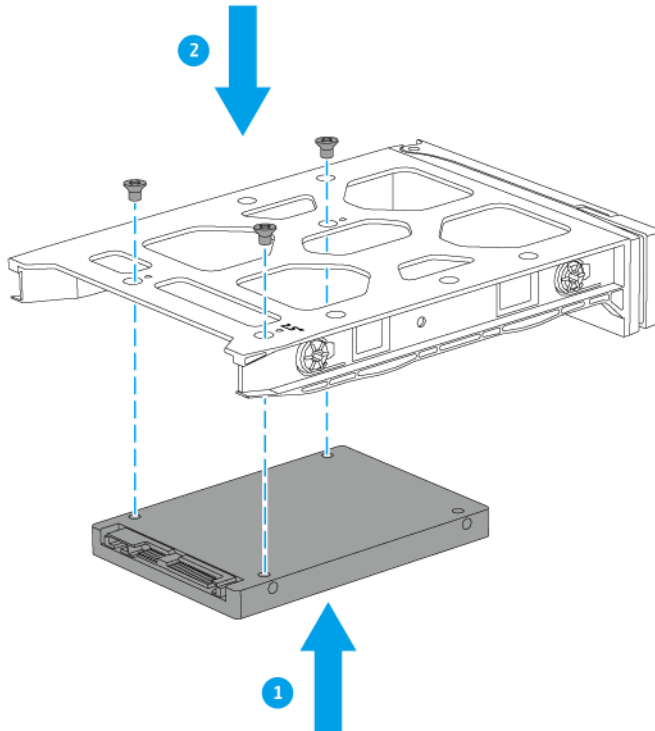
1. Power off the NAS.
2. Remove the drive tray.
  - a. Slide the lock down.
  - b. Pull the handle to release the tray.
  - c. Pull the tray out.



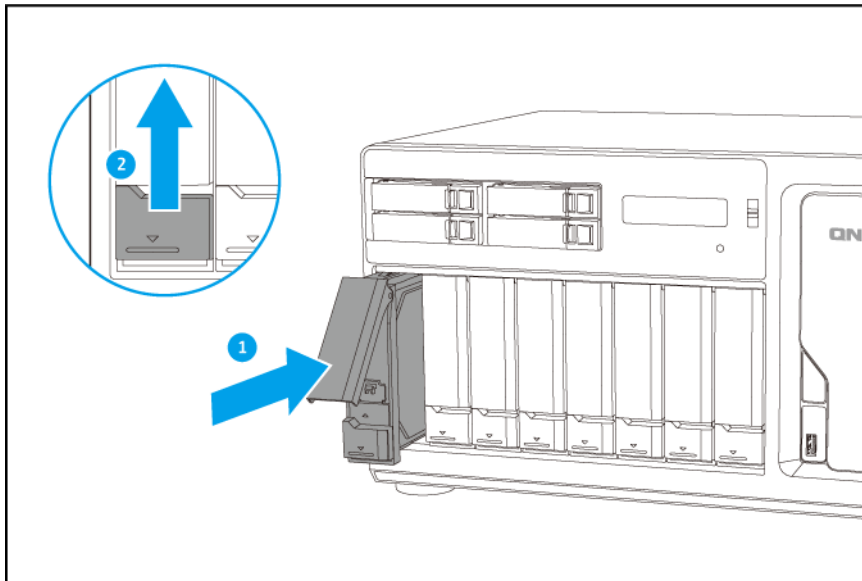
3. Install a drive on the drive tray.
  - a. Remove the right fastening panel from the tray.



- 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.



4. Load the drive tray into the drive bay.
  - a. Insert the tray into the bay.
  - b. Push the handle.
  - c. Slide the lock up.



5. Power on the NAS.

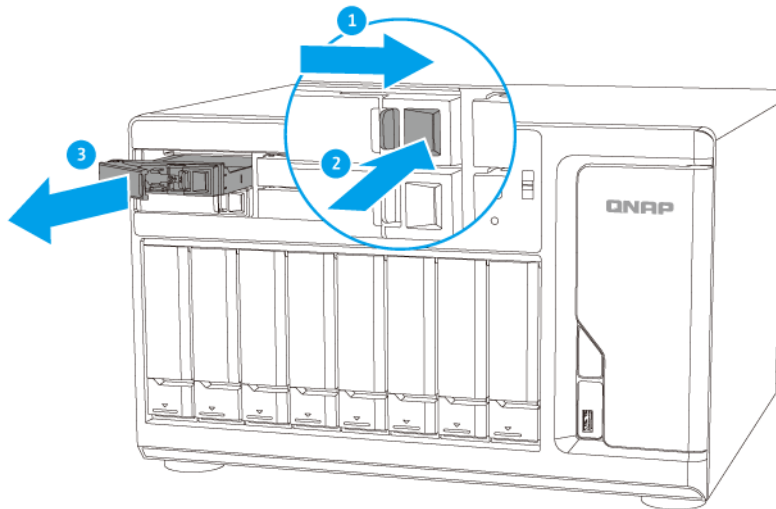
### Installing Solid State Drives on Solid State Drive Trays



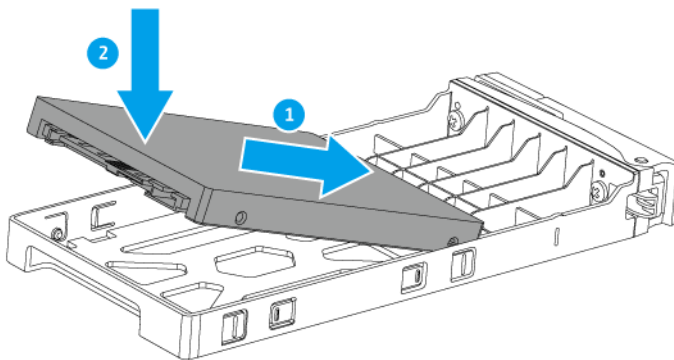
#### Warning

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

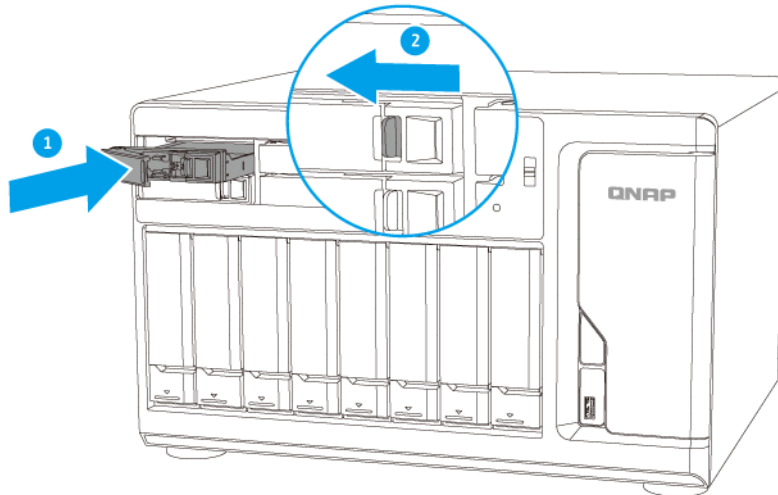
1. Power off the NAS.
2. Remove the drive tray.
  - a. Slide the lock to the right.
  - b. Push the button to release the handle.
  - c. Pull the tray out.



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



4. Load the drive tray into the drive bay.
  - a. Insert the tray into the bay.
  - b. Push the handle.
  - c. Slide the lock to the left.



5. Power on the NAS.

### Installing M.2 Solid State Drives



#### Warning

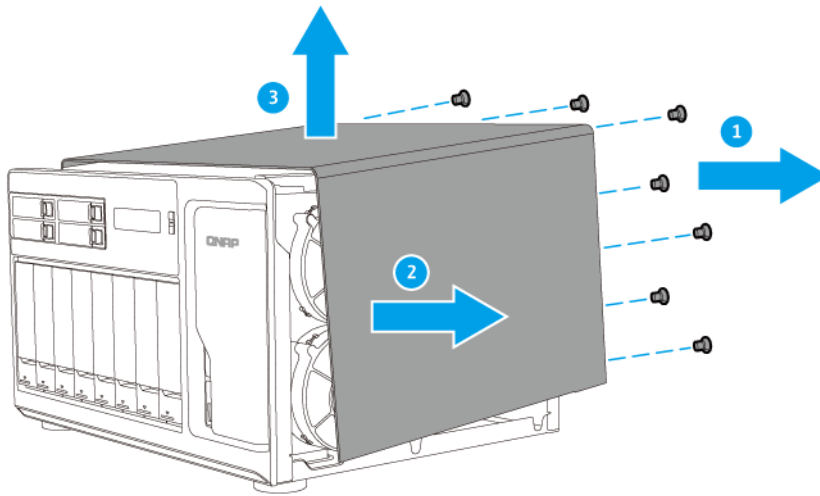
- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.



#### Note

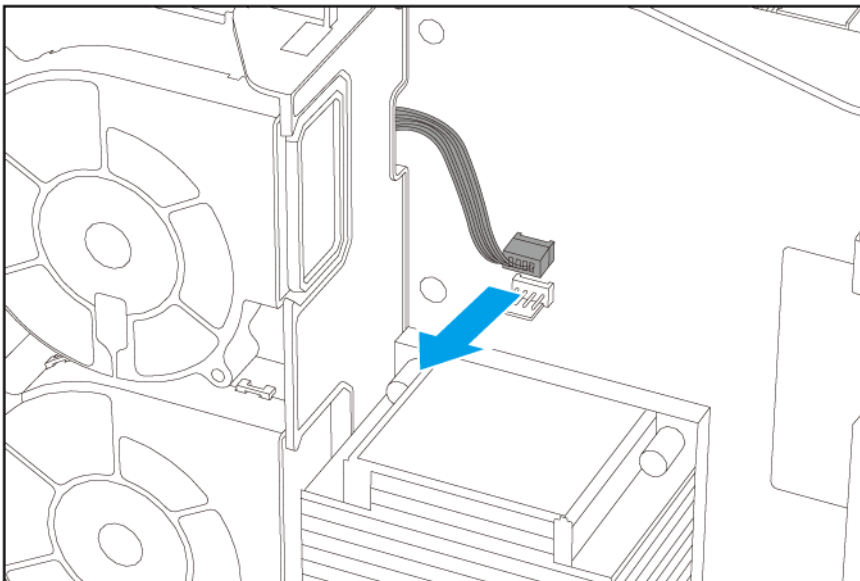
QNAP recommends installing heatsinks on the M.2 SSD controllers to enhance cooling efficiency and to ensure consistent performance.

1. Power off the NAS.
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. Pull the cover up until it completely detaches from the chassis.

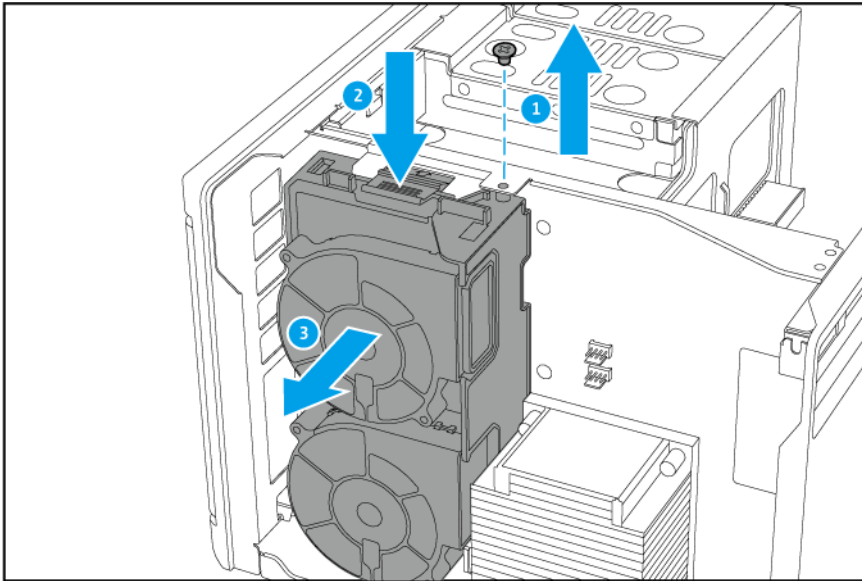


**5. Remove the fan module.**

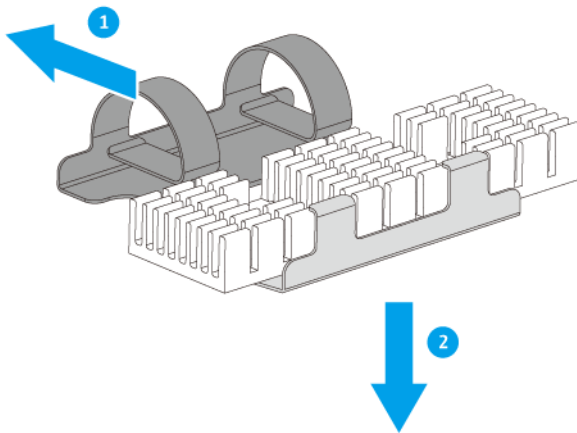
- a. Disconnect the fan cable from the system board.**



- b. Remove the screw that secures the module to the chassis.**
- c. Press the clip and then pull the module away from the system board.**

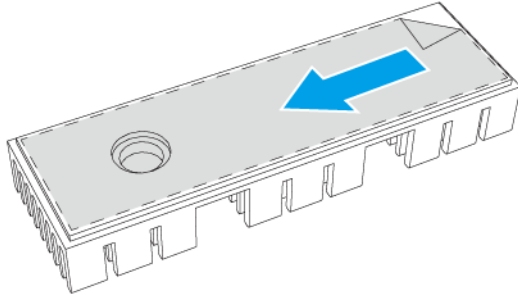


6. Install a cooling module on the M.2 SSD.
  - a. Pull the cooling module clip and tray away from the heatsink.



- b. Peel off the protective film from the heatsink.



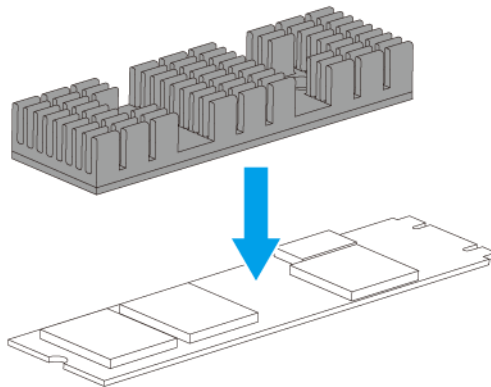


c. Attach the heatsink to the M.2 SSD.



**Tip**

On single-sided M.2 modules, components are usually mounted on the top side. On double-sided M.2 modules, components are mounted on both sides. To identify the top side, insert the module into the dedicated slot on the NAS.

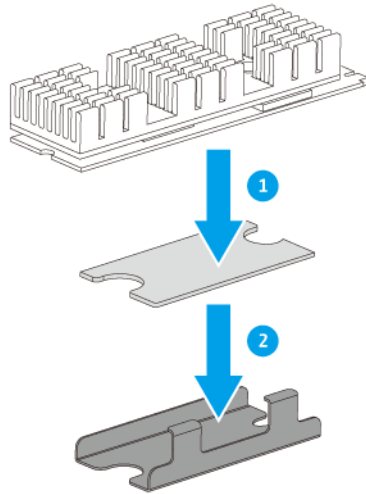


d. Place the merged M.2 SSD and heatsink on the tray.

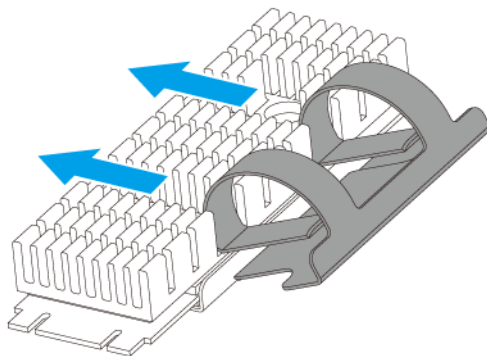


**Tip**

The cooling module package includes a spacer. You can install that spacer between the M.2 SSD and the tray.

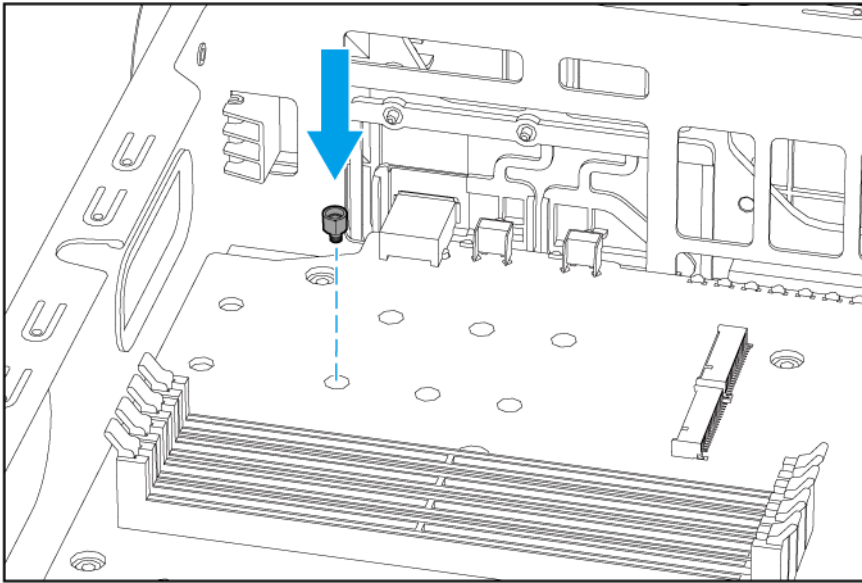


- e. Mount the clip on the merged heatsink and tray at a 35-degree angle, then slide to fasten the cooling module.

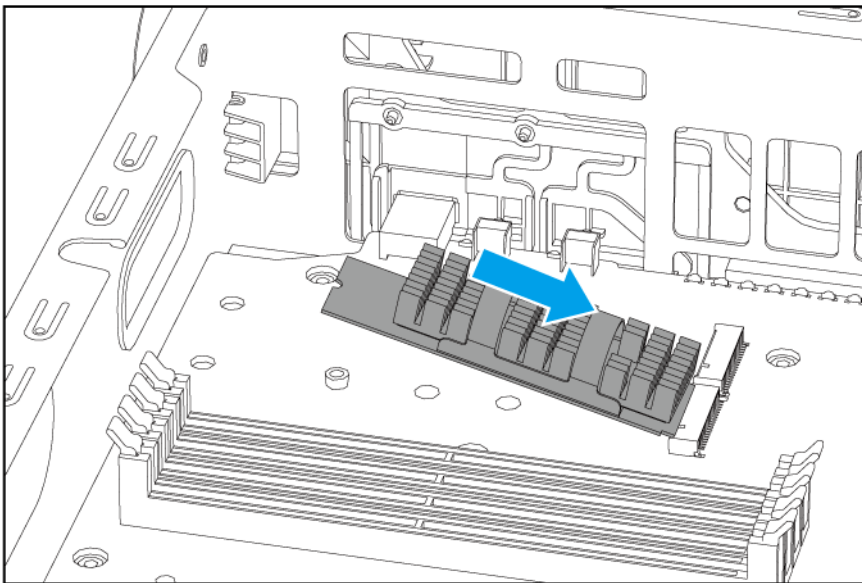


## 7. Install the M.2 SSD.

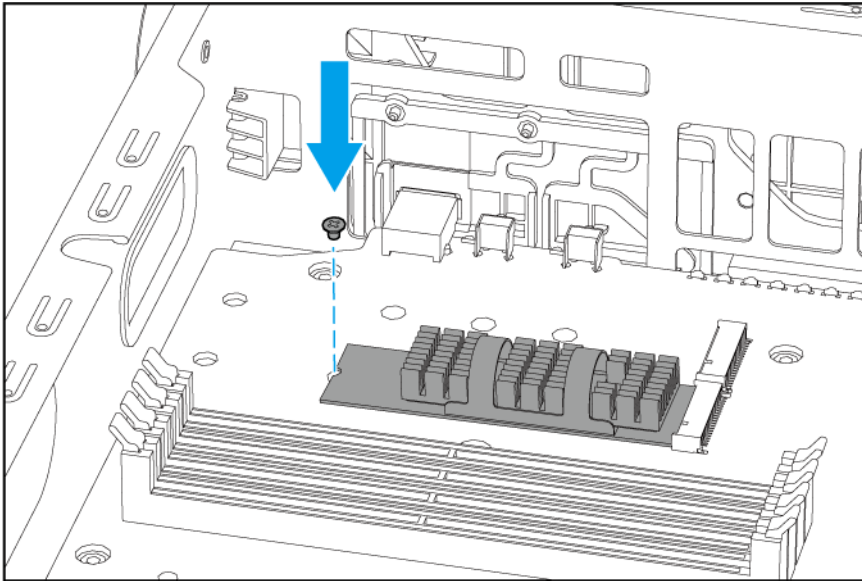
- a. Attach the riser screw to the appropriate location based on the size of the M.2 SSD.



**b.** Insert the M.2 SSD into the slot.

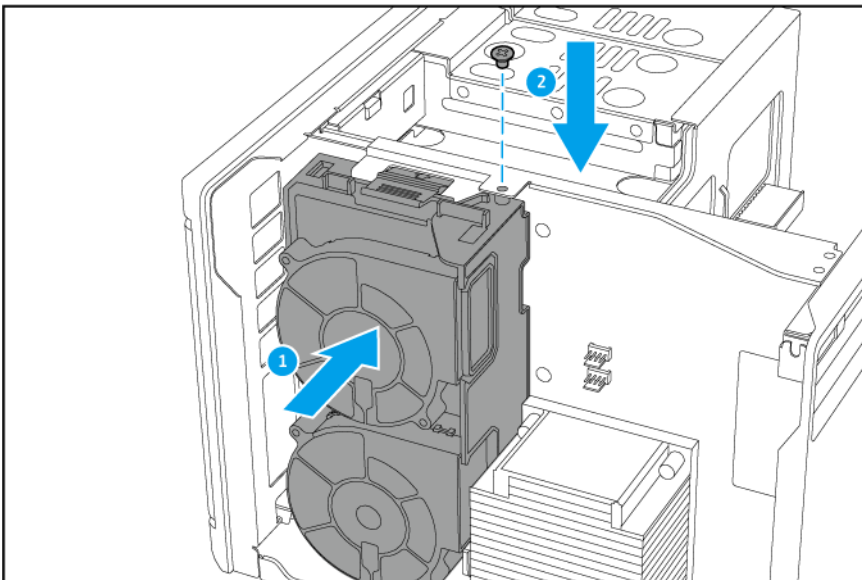


**c.** Attach the flat head screw to the riser screw.

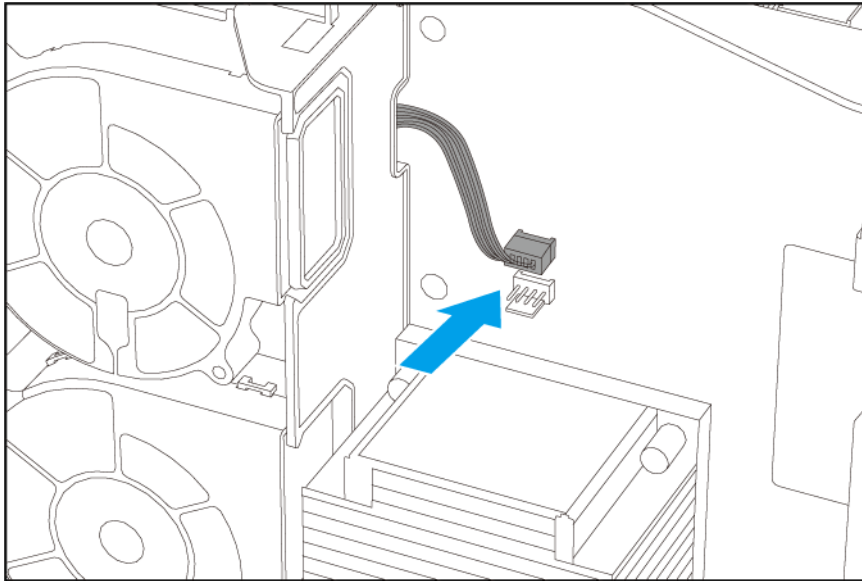


**8. Attach the fan module.**

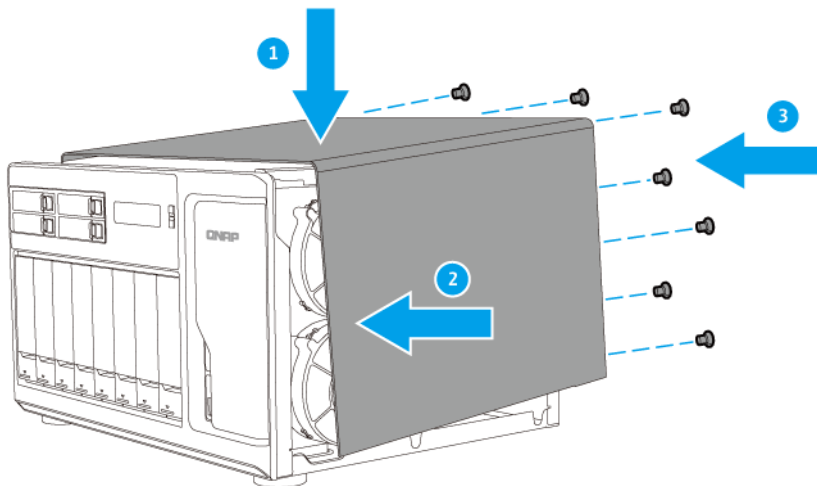
- a. Align the protruding part of the module with the hole on the chassis below the M.2 SSD slot.
- b. Push the module toward the system board until the clip locks the module into place.
- c. Attach the screw that secures the module to the chassis.



- d. Connect the fan cable to the system board.



9. Attach the case cover.
  - a. Slide the cover down until it completely connects with the chassis.
  - b. Slide the cover forward.
  - c. Attach the screws to the back side of the case.



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

## Installing Expansion Cards

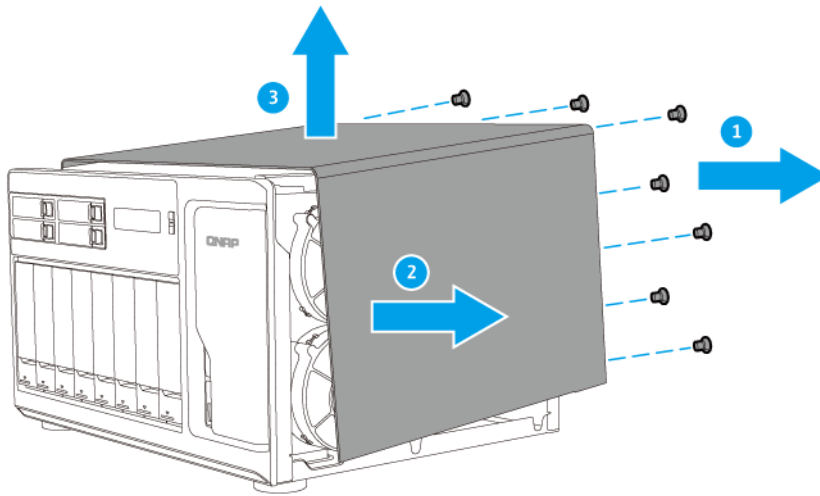
The NAS supports selected expansion cards, some of which require QNAP PCIe brackets. QNAP-branded expansion cards purchased from the company website are shipped with the brackets necessary to fit all QNAP NAS models.



### Warning

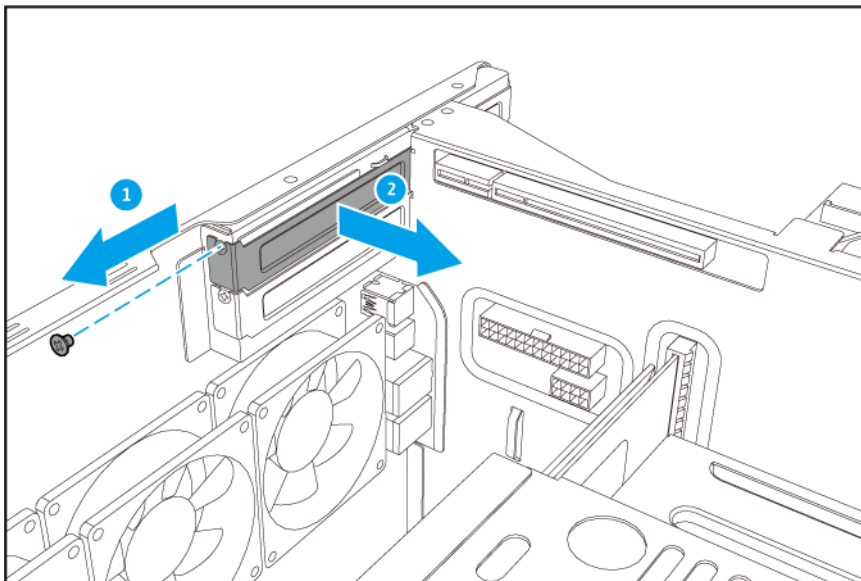
- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Check the expansion cards and brackets supported by your model on the QNAP website.
  - a. Go to [www.qnap.com/compatibility](http://www.qnap.com/compatibility).
  - b. Click **Search by NAS**.
  - c. Specify the number of bays and the specific model of your NAS.
  - d. Under **Category**, select the component or device type.
  - e. Locate a specific component or device model in the list.
  - f. Optional: Click the corresponding **Note** icon to view more information.
2. Power off the NAS.
3. Disconnect the power cord from the electrical outlet.
4. Disconnect all cables and external attachments.
5. Remove the case cover.
  - a. Remove the screws that secure the cover to the chassis.
  - b. Slide the cover back.
  - c. Pull the cover up until it completely detaches from the chassis.

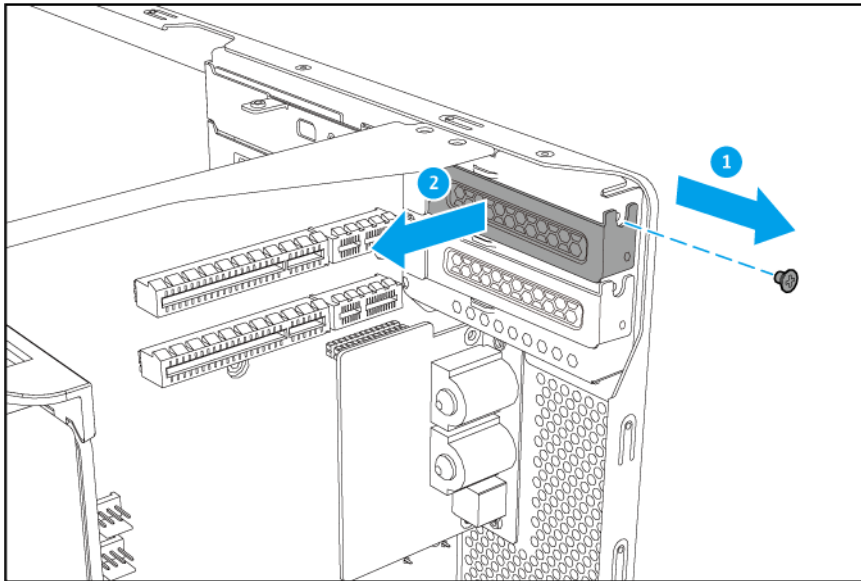


6. Remove the PCIe cover.

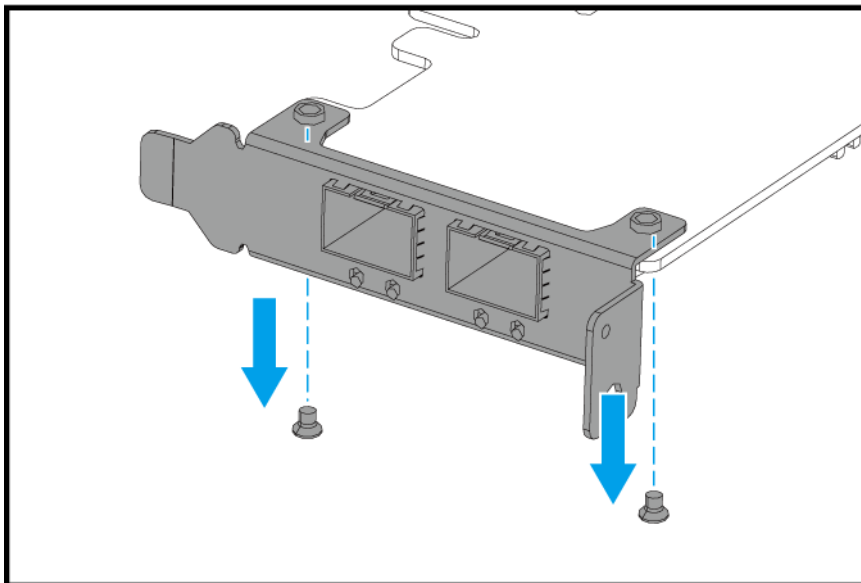
- a. Remove the screw that secures the cover to the chassis.
- b. Pull the cover away from the slot.



**PCIe 3.0 x8**

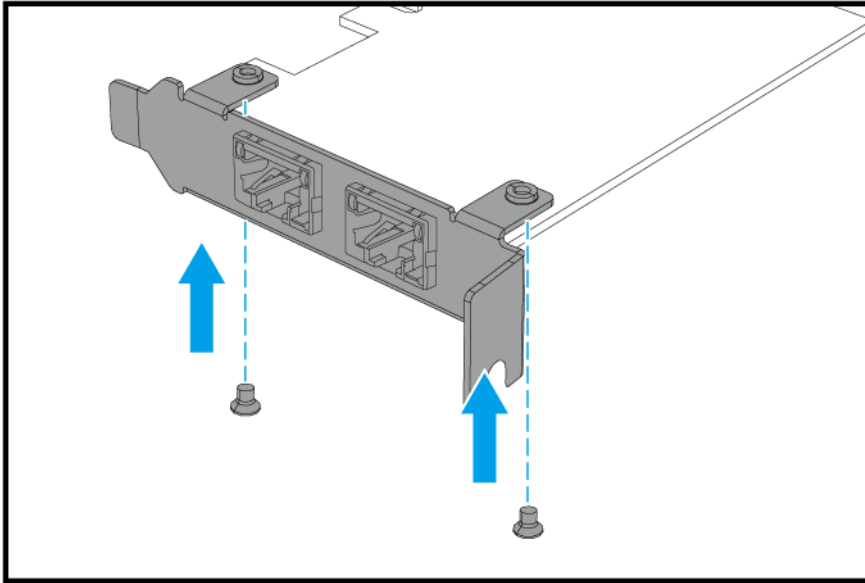
**PCIe 3.0 x4**

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

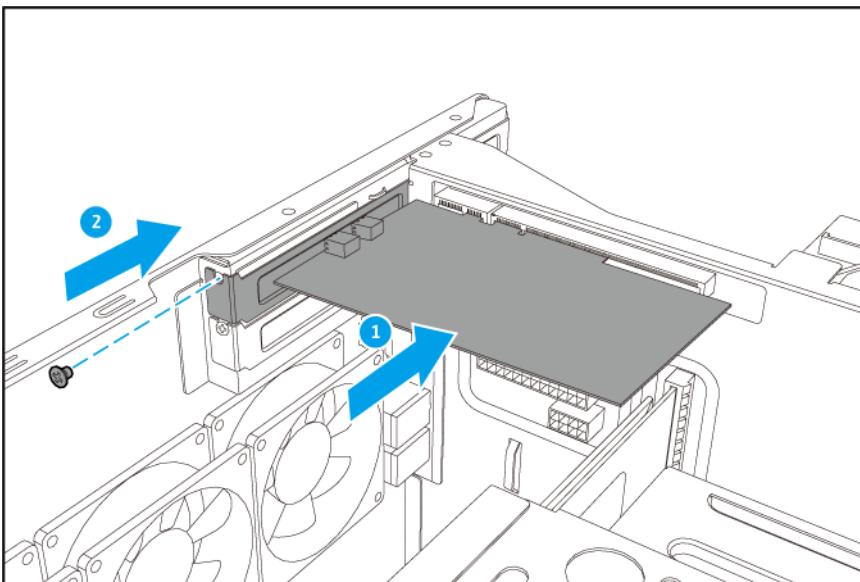


- b. Carefully pull the bracket away from the card.
    - c. Attach the QNAP bracket to the card using the same screws.

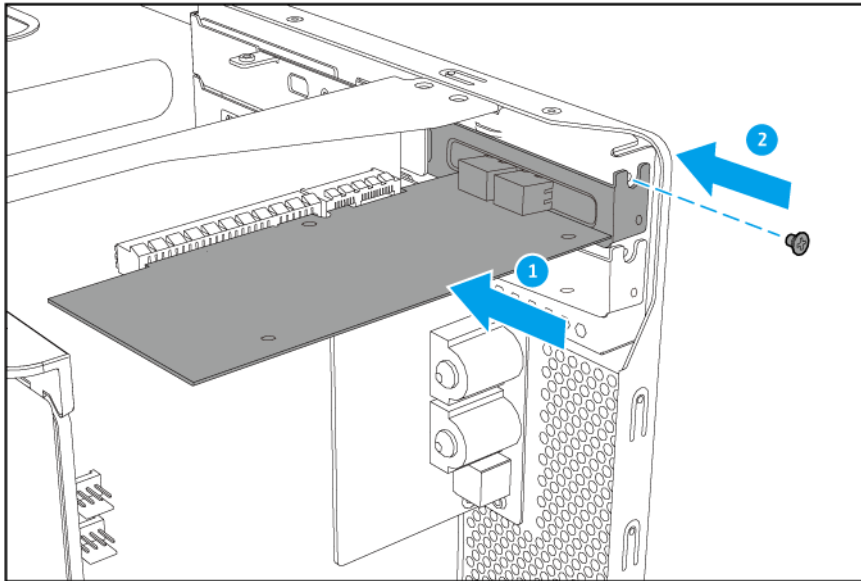




- d. Verify that the bracket does not move.
8. Install the expansion card.
- a. Hold the card by the edges.
  - b. Insert the card into the slot.
  - c. Attach the screw.

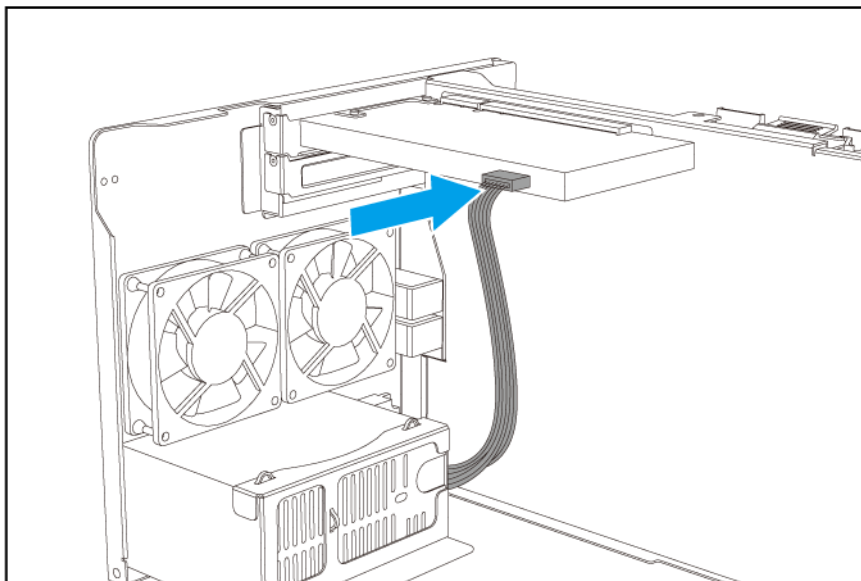


**PCIe 3.0 x8**



**PCIe 3.0 x4**

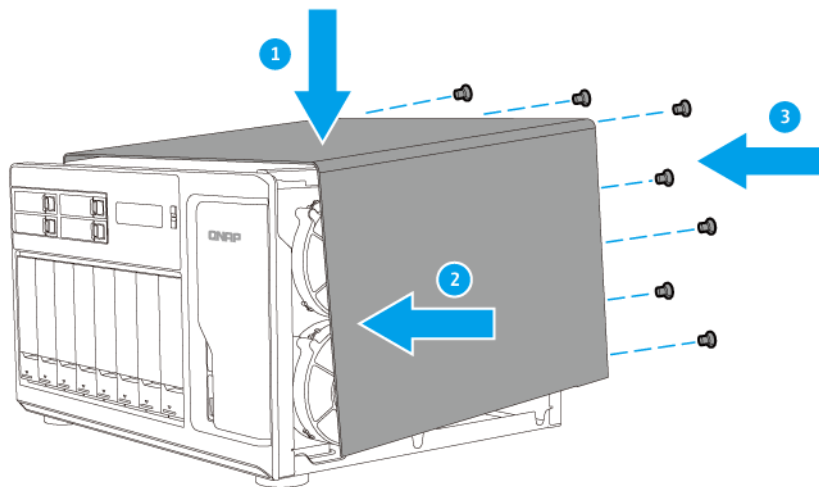
- d. Attach the PCIe power connector to the expansion card.



**Tip**

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

9. Attach the case cover.
  - a. Slide the cover down until it completely connects with the chassis.
  - b. Slide the cover forward.
  - c. Attach the screws to the back side of the case.



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

## Replacing Memory Modules

The NAS has four memory slots. You can increase the memory capacity of the NAS by upgrading the memory modules. When using multiple modules, use only QNAP modules of the same type and capacity to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.

When replacing modules, ensure the following:

1. A module is installed in slot 1.
2. Modules are installed in pairs. When installing two modules, use slots 1 and 3.

For details on slot numbering, see [Right Panel](#).

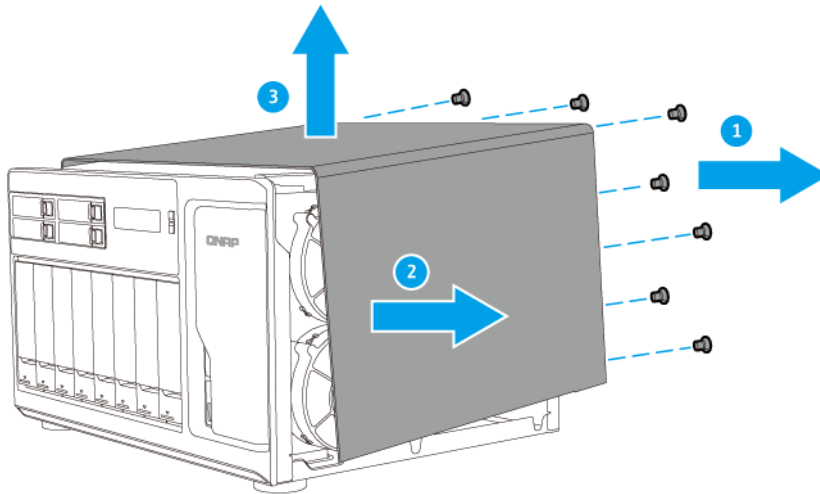


### Warning

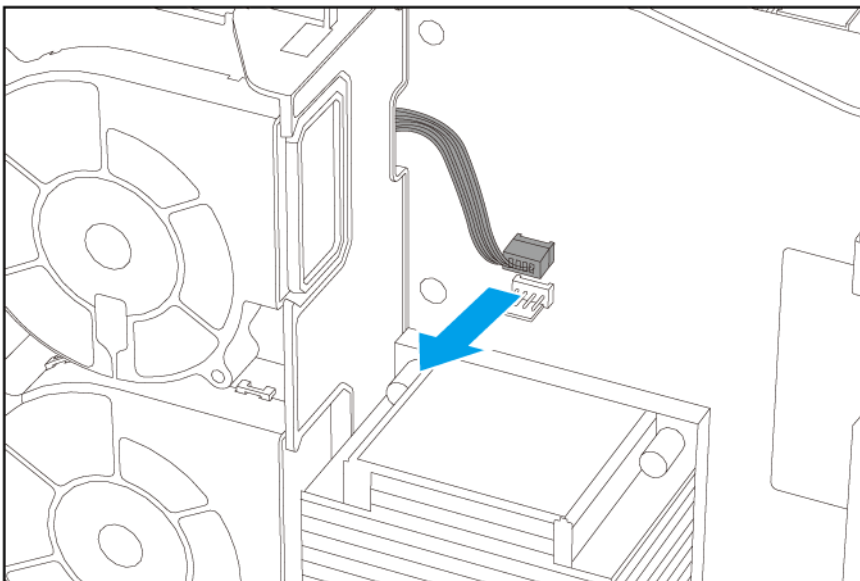
- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

1. Power off the NAS.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.
  - a. Remove the screws that secure the cover to the chassis.

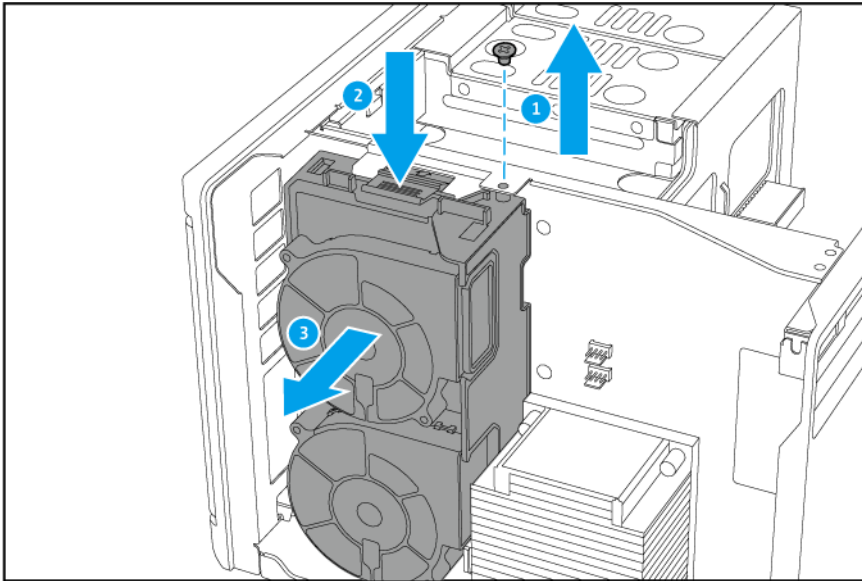
- b. Slide the cover back.
- c. Pull the cover up until it completely detaches from the chassis.



5. Remove the fan module.
  - a. Disconnect the fan cable from the system board.



- b. Remove the screw that secures the fan module to the chassis.
- c. Press the clip and then pull the fan module away from the system board.



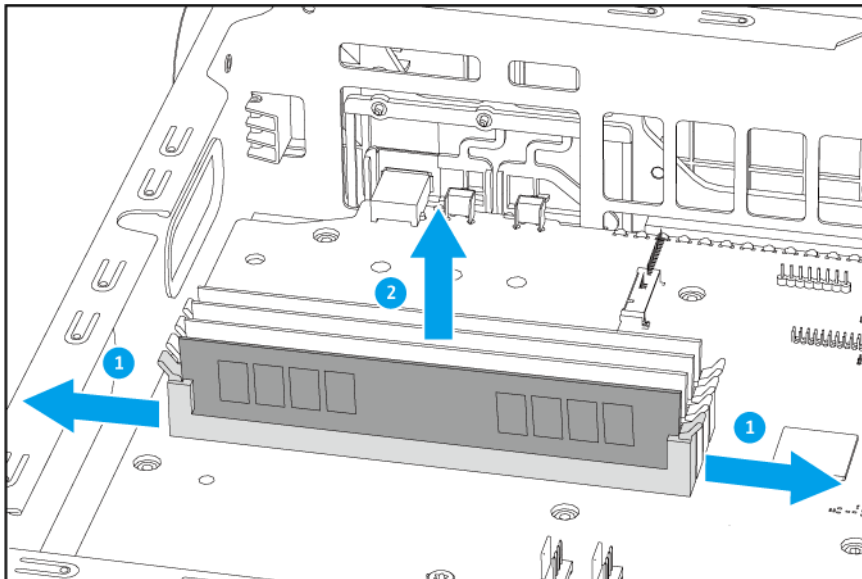
6. Remove an existing memory module.

- a. Push the retention clips outward simultaneously to release the module.
- b. Hold the module by the edges and then carefully slide it out of the slot.



**Warning**

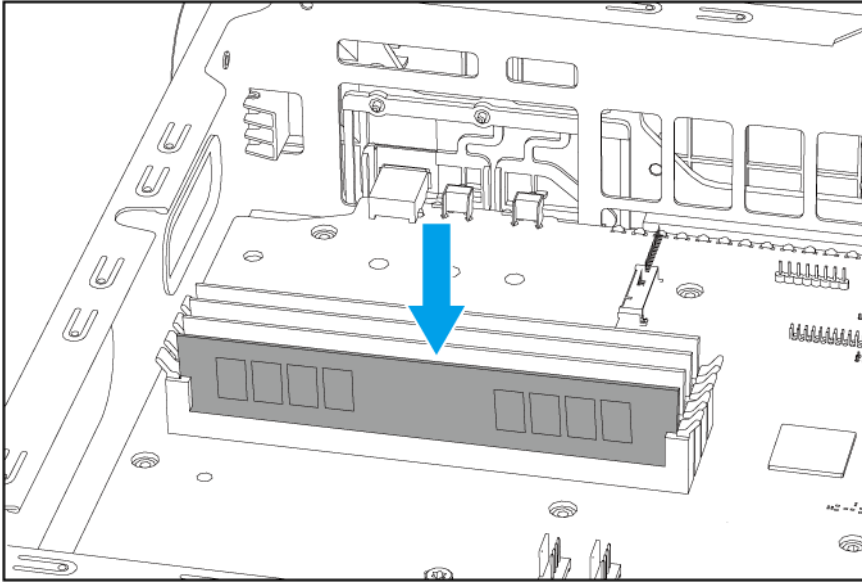
Attempting to remove a module that is not completely released may damage the module and the motherboard.



7. Install a new memory module.

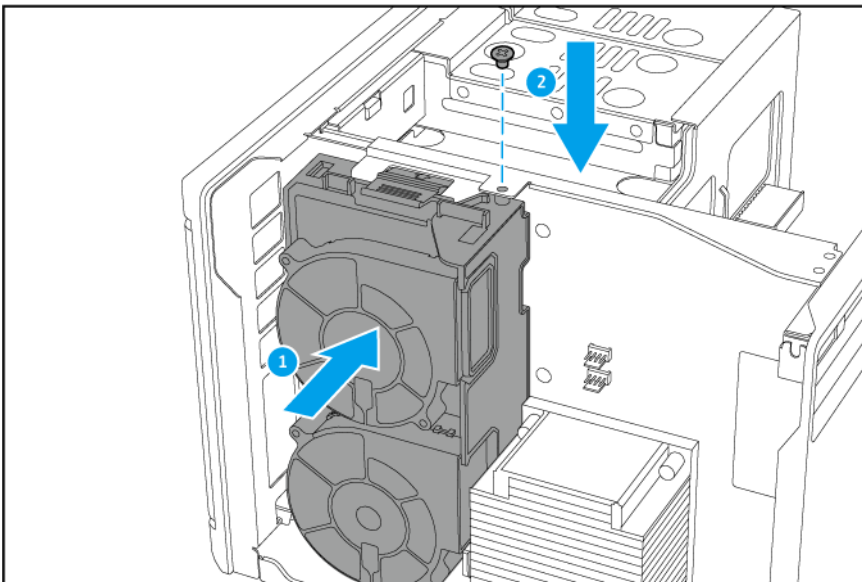
- a. Align the notch with the ridge in the slot.
- b. Insert the module into the slot.

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

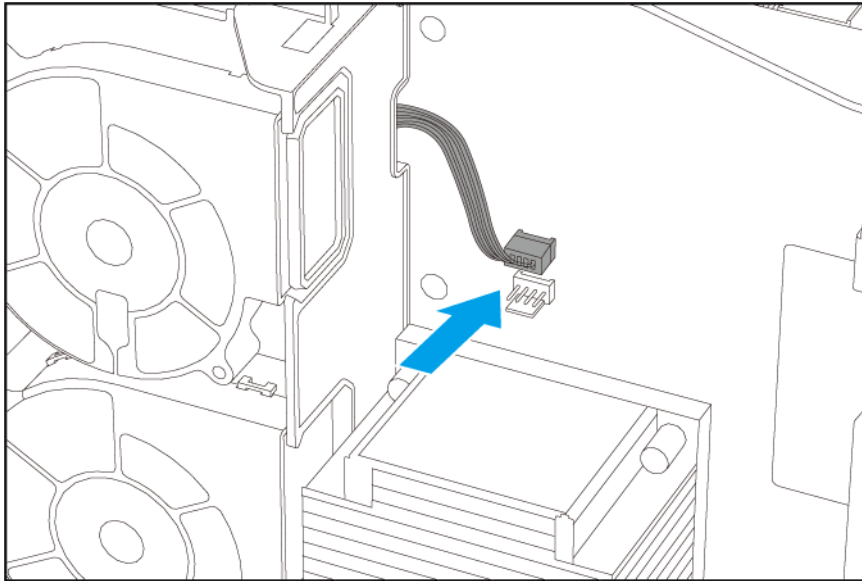


## 8. Attach the fan module.

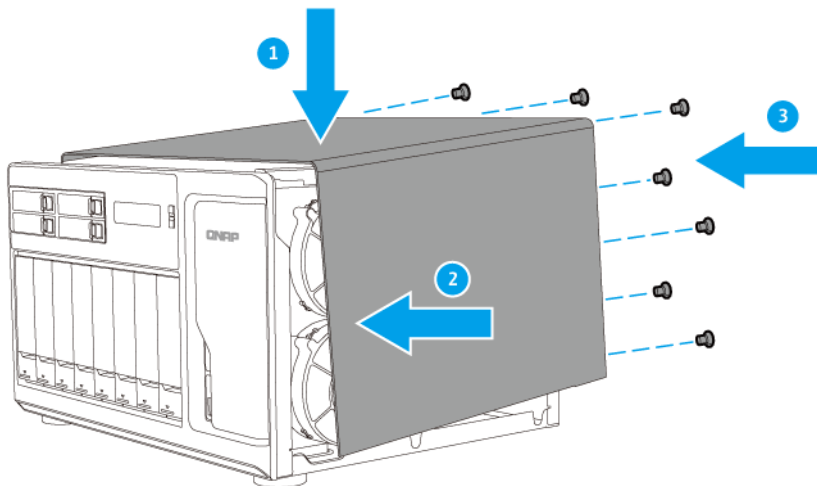
- a. Align the protruding part of the module with the hole on the chassis below the M.2 SSD slot.
- b. Push the module toward the system board until the clip locks the module into place.
- c. Attach the screw that secures the module to the chassis.



- d. Connect the fan cable to the system board.



9. Attach the case cover.
  - a. Slide the cover down until it completely connects with the chassis.
  - b. Slide the cover forward.
  - c. Attach the screws to the back side of the case.

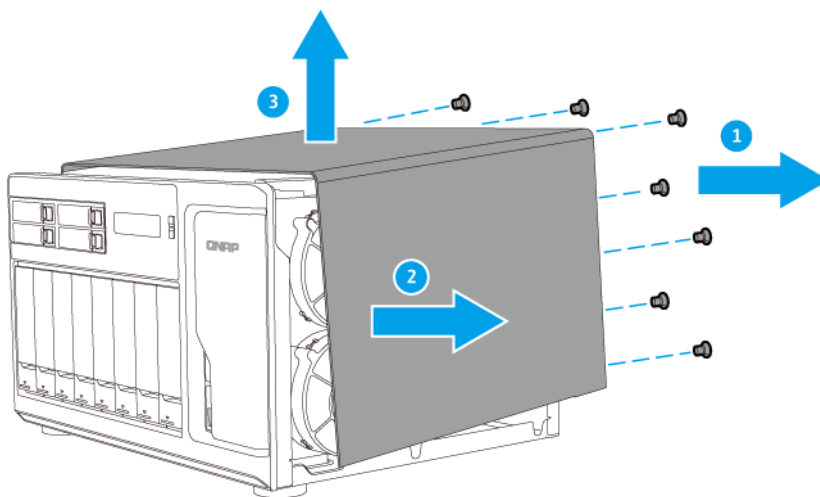


10. Connect all cables and external attachments.
11. Connect the power cord to the electrical outlet.
12. Power on the NAS.
13. Verify that the module is recognized by the NAS.

- a. Log on to QTS as administrator.
- b. Go to **Control Panel > System > System Status > Hardware Information** .
- c. Check the value for **Total memory**.

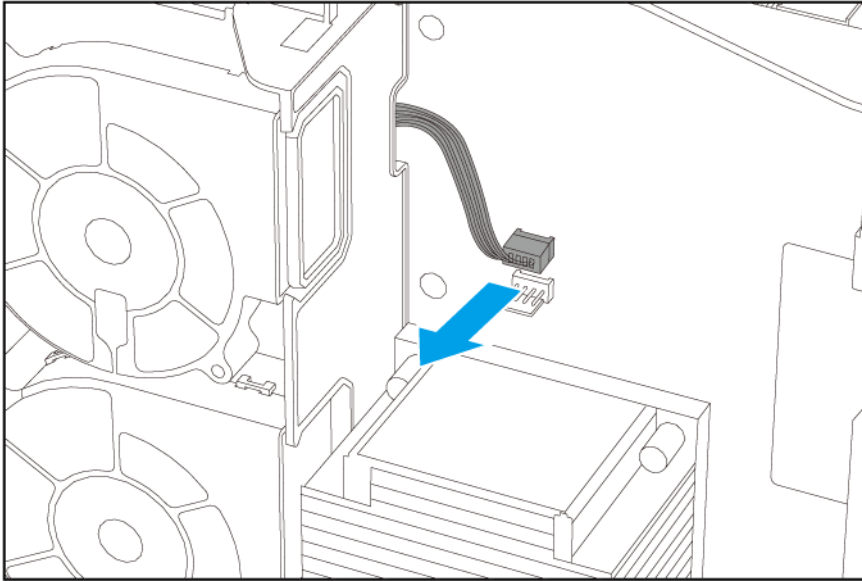
## Replacing CPU Fans

1. Power off the NAS.
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. Pull the cover up until it completely detaches from the chassis.

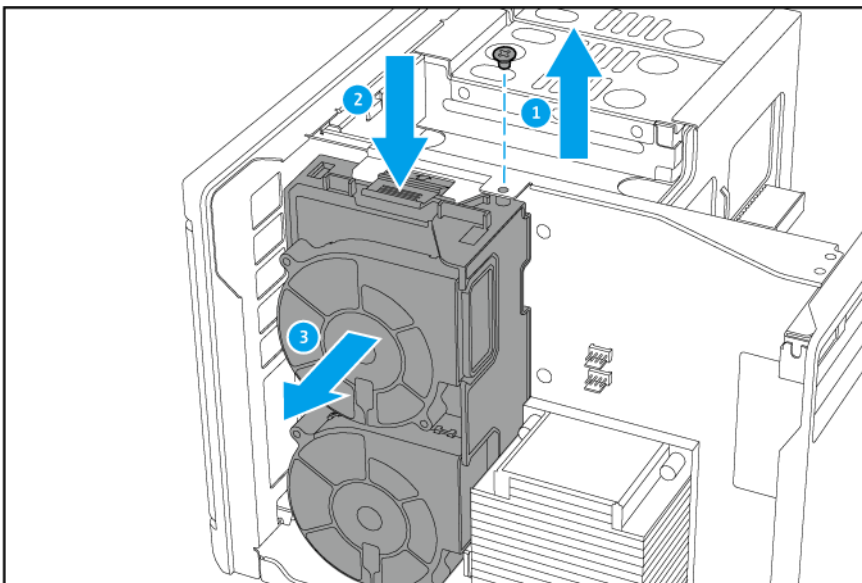


5. Remove the fan module.
  - a. Disconnect the fan cable from the system board.

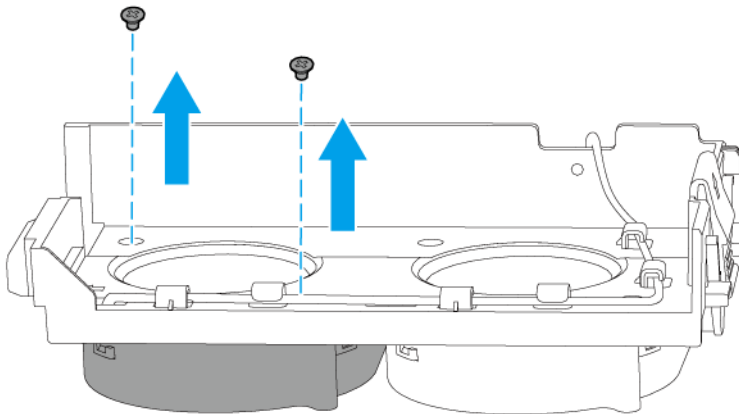




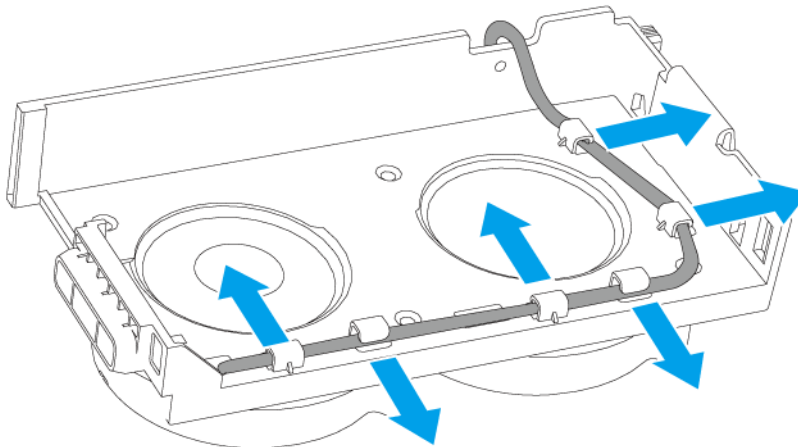
- b. Remove the screw that secures the module to the chassis.
- c. Press the clip and then pull the module away from the system board.



- 6. Remove an existing fan.
  - a. Remove the screws that secure the fan to the fan chassis.



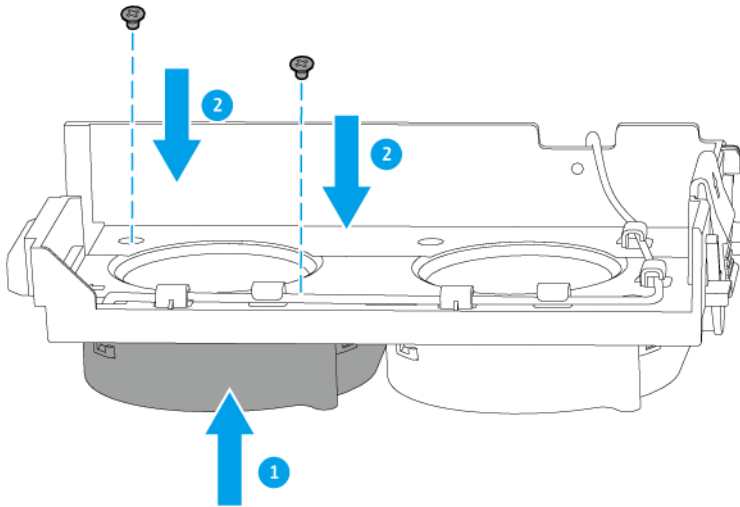
- b.** Remove the fan cable from the clips on the fan chassis.



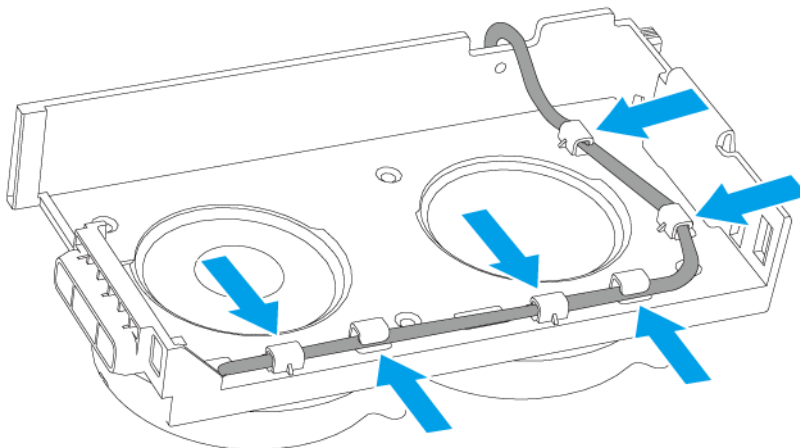
- c.** Remove the fan from the fan chassis.

**7.** Install a new fan in the same location.

- a.** Position the fan chassis so that the cable clips face upward.
- b.** Align the holes on the fan with those on the fan chassis.
- c.** Attach the screws to secure the fan to the fan chassis.

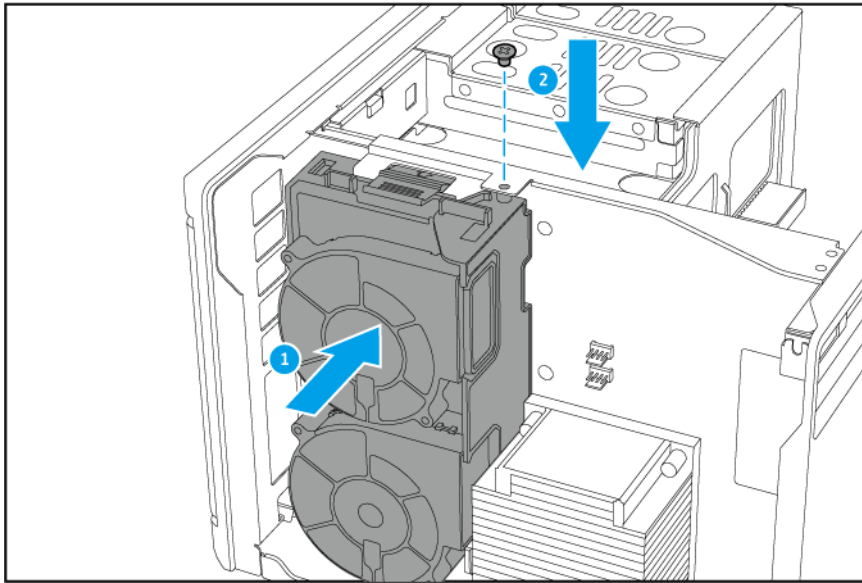


- d. Attach the fan cable to the cable clips on the fan chassis.

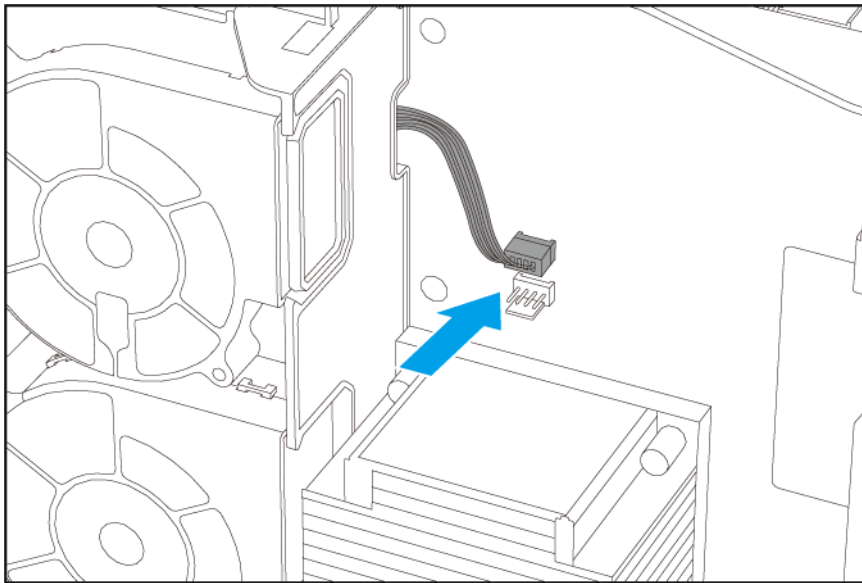


**8. Attach the fan module.**

- a. Align the protruding part of the module with the hole on the chassis below the M.2 SSD slot.
- b. Push the module toward the system board until the clip locks the module into place.
- c. Attach the screw that secures the module to the chassis.

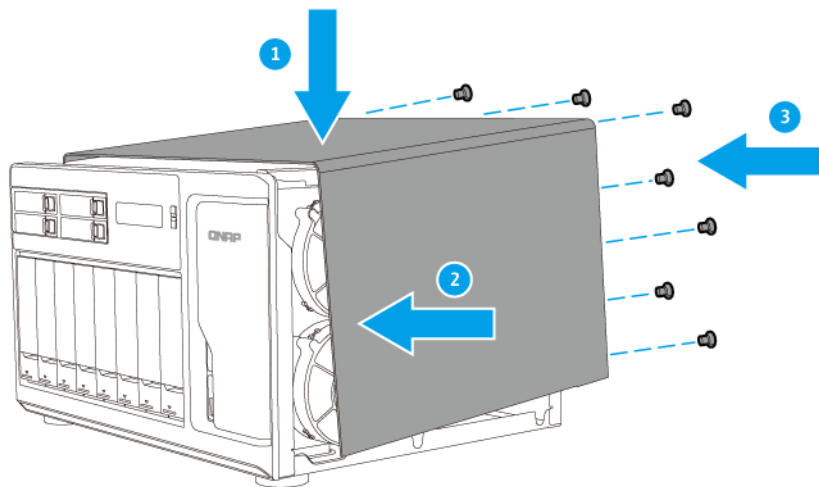


d. Connect the fan cable to the system board.



9. Attach the case cover.

- a. Slide the cover down until it completely connects with the chassis.
- b. Slide the cover forward.
- c. Attach the screws to the back side of the case.



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

## QTS Installation

The TS-x77 uses the QNAP QTS operating system. You can install QTS using any of the following methods.

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

## Installing QTS Using Qfinder Pro



### Warning

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

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



### Note

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

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



### Tip

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

9. Click **Next**.
10. Select **Obtain an IP address automatically (DHCP)**.
11. Click **Next**.
12. Select the types of devices that you will use to access shared folders on the NAS.
13. Click **Next**.
14. Select **Configure disks later**.



### Note

For details on configuring disks, see the Storage Manager section of the QTS User Guide.

15. Click **Next**.
16. Select **No**.



### Note

- Enabling the multimedia functions allows you to install multimedia applications after configuring the disks in Storage Manager.

- For details on enabling multimedia functions on QTS, see the System Administration section of the QTS User Guide.

17. Click **Next**.

18. Review the settings.

19. Click **Apply**.

A confirmation message appears.



#### Warning

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

20. Click **Confirm**.

QTS is installed.

## Installing QTS Using the Cloud Key



#### Warning

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

1. Power on the NAS.

2. Connect the NAS to the internet.

3. Go to the QNAP Cloud Installation page using one of the following methods:

- On your computer, go to <http://install.qnap.com/>.
- Scan the QR code on the NAS using a mobile device.

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

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



#### Note

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

The installation wizard opens in the default web browser.

5. Create an account or sign in to myQNAPcloud.



#### Note

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

6. Specify the myQNAPcloud device name for the NAS.



#### Note

The myQNAPcloud device name is used when remotely accessing the NAS.

7. Optional: Select **CloudLink**.



#### Note

- CloudLink allows you to remotely access the NAS without having to configure port forwarding on your router. You can remotely access the NAS by logging into QTS or by using mobile apps.

- You can also enable CloudLink by installing the CloudLink app on the NAS.

8. Click **Next**.

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

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

10. 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.

11. Click **Next**.

12. 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.

13. Click **Next**.

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

15. Click **Next**.

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

17. Click **Next**.

18. Select **Configure disks later**.



#### Note

For details on configuring disks, see the Storage Manager section of the QTS User Guide.

19. Click **Next**.

20. Select **No**.



#### Note

- Enabling the multimedia functions allows you to install multimedia applications after configuring the disks in Storage Manager.
- For details on enabling multimedia functions on QTS, see the System Administration section of the QTS User Guide.

21. Click **Next**.

22. Review the settings.

23. Click **Apply**.

A confirmation message appears.



#### Warning

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




24. Click **Confirm**.  
QTS is installed.

## 4. Basic Operations

This chapter describes basic NAS operations.

### Power Button

Operation	User Action	Result
Power on	Press the button once.	The NAS powers on.
Power off	Press and hold the button for 1.5 seconds.	The NAS powers off.
Force power off	Press and hold the button for 5 seconds.	The NAS shuts down.   <b>Important</b> Use this method only when the NAS is unresponsive.

### Reset Button

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	The following settings are reset to default: <ul style="list-style-type: none"> <li>• System administrator password: admin</li> <li>• TCP/IP configuration: <ul style="list-style-type: none"> <li>• Obtain IP address settings automatically via DHCP</li> <li>• Disable jumbo frames</li> <li>• If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to "Active Backup (Failover)".</li> </ul> </li> <li>• System port: 8080 (system service port)</li> <li>• Security level: Low (Allow all connections)</li> <li>• LCD panel password: (blank)</li> <li>• VLAN: Disabled</li> </ul>
Advanced system reset	Press and hold the button for 15 seconds.	The default factory settings are restored. <ul style="list-style-type: none"> <li>• To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.</li> </ul>

### USB One Touch Copy Button

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

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

For details on configuring USB One Touch Copy, see the QTS User Guide.

## LCD Panel

The LCD panel allows you to perform the following operations:

- Restart and power off the NAS
- Configure or change the LCD panel password
- View and configure network settings
- View information on the system, physical disks, and volumes

## 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 QTS 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.
  5. Optional: Repeat step 4 as necessary.

## Configuring TCP/IP Settings

You can configure 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 QTS 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 **Enter** to configure the settings.

Button	Usage
<b>Enter</b>	<ul style="list-style-type: none"> <li>• Display a configuration screen.</li> <li>• Move to the next item on a configuration screen.</li> </ul>
<b>Select</b>	<ul style="list-style-type: none"> <li>• Move to the next item on a menu.</li> <li>• Modify a value on a configuration screen.</li> </ul>

## 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 QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP.`
3. Press **Enter** 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 slot 1.
5. Press and hold **Select**.  
The panel displays the temperature and capacity of the next drive.
6. Optional: Repeat step 5 as necessary.

## Viewing Volume Information

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

1. Press **Enter** or **Select**.  
The panel displays the NAS name and QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP.`
3. Press **Enter** repeatedly until the panel displays `Main Menu 3. Volume.`
4. Press and hold **Enter**.  
The panel displays the name and capacity of the first volume.
5. Press and hold **Select**.  
The panel displays the name and capacity of the next volume.

6. Optional: Repeat step 5 as necessary.

## 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 QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Enter** 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 QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Enter** 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 QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Enter** 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 QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Enter** 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 with 1 to 8 characters. The password can only contain numbers (0 to 9).
  - To remove the password, leave the password field blank.

Button	Usage
<b>Enter</b>	Move to the next item in the <code>New Password</code> screen.
<b>Select</b>	Change a number in the <code>New Password</code> and <code>Verify Password</code> screens.

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

## LCD Error Messages

System Message	Description
Sys. Fan Failed	The system fan failed.
Sys. Overheat	The system overheated.
HDD Overheat	The drive overheated.
CPU Overheat	The CPU overheated.
Network Lost	LAN 1, LAN 2, LAN3, and LAN 4 are disconnected in failover or are in load-balancing mode.
LAN1 Lost	LAN 1 is disconnected.
LAN2 Lost	LAN 2 is disconnected.
LAN3 Lost	LAN 3 is disconnected.
LAN4 Lost	LAN 4 is disconnected.
HDD Failure	The drive failed.
Vol1 Full	The volume is full.
HDD Ejected	The drive was ejected.
Vol1 Degraded	The volume is in degraded mode.
Vol1 Unmounted	The volume is unmounted.
Vol1 Nonactivate	The volume is not activated.

## LEDs

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

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

LED	Status	Description
System Status	Flashes green and red alternately every 0.5 seconds	<ul style="list-style-type: none"> <li>The drive is being formatted.</li> <li>The NAS is being initialized.</li> <li>The operating system is being updated.</li> <li>RAID rebuilding is in progress.</li> <li>Online RAID Capacity Expansion is in progress.</li> <li>Online RAID Level Migration is in progress.</li> </ul>
	Red	<ul style="list-style-type: none"> <li>The drive is invalid.</li> <li>The disk volume has reached its full capacity.</li> <li>The disk volume is about to reach its full capacity.</li> <li>The system fan is not functioning.</li> <li>An error occurred when accessing (read/write) the data.</li> <li>A bad sector is detected on the hard drive.</li> <li>The NAS is in degraded read-only mode (two member drives failed in RAID 5 or RAID 6 but the data can still be read).</li> <li>Hardware self-test error</li> </ul>
	Flashes red every 0.5 seconds	The NAS is in degraded mode (one member drive failed in RAID 1, RAID 5, or RAID 6).
	Flashes green every 0.5 seconds	<ul style="list-style-type: none"> <li>The NAS is starting up.</li> <li>The NAS is not configured.</li> <li>A drive is not formatted.</li> </ul>
	Flashes green every 2 seconds	The NAS is in S3 sleep mode.
	Green	The NAS is ready.
	Off	All drives are in standby mode.
Drive/SSD	Flashes red	The drive is being located.
	Red	A drive read/write error has occurred.
	Flashes green	The data is being accessed.
	Green	The drive can be accessed.
	Off	No drive is detected.
M.2 SSD	Flashes red	The drive is being located.
	Red	A drive read/write error has occurred.
	Flashes green	The data is being accessed.
	Green	The drive can be accessed.
	Off	No drive is detected.

## Beep Alarm

Duration	Frequency	Description
Short beep (0.5 seconds)	1	<ul style="list-style-type: none"> <li>The NAS is starting up.</li> <li>The NAS is shutting down (software shutdown).</li> <li>The user pressed the Reset button.</li> <li>The operating system was updated.</li> </ul>
	3	The user tried to copy the NAS data to the external storage device from the front USB port, but the data cannot be copied.
Long beep (1.5 seconds)	3 (every 5 minutes)	The system fan is not functioning.
	2	<ul style="list-style-type: none"> <li>The disk volume is about to reach its full capacity.</li> <li>The disk volume has reached its full capacity.</li> <li>The drives are in degraded mode.</li> <li>The user started the drive rebuilding process.</li> <li>A drive is plugged in or out.</li> </ul>
	1	<ul style="list-style-type: none"> <li>The NAS was powered off by force shutdown (hardware shutdown).</li> <li>The NAS was powered on successfully and is ready.</li> </ul>



## 5. Troubleshooting

This chapter describes basic troubleshooting information.

### Forcing Qfinder Pro or myQNAPcloud to Locate the NAS

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

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

### Hot-swapping Failed Drives

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

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

## Recovering Unintentionally Removed Healthy Drives

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

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

## Support and Other Resources

QNAP provides the following resources:

Resource	URL
Documentation	<a href="http://docs.qnap.com">http://docs.qnap.com</a>
Help Desk	<a href="http://helpdesk.qnap.com">http://helpdesk.qnap.com</a>
Downloads	<a href="http://download.qnap.com">http://download.qnap.com</a>
Community Forum	<a href="http://forum.qnap.com">http://forum.qnap.com</a>

## 6. Glossary

### **CloudKey**

Unique 8-digit code assigned to each NAS device

### **CloudLink**

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

### **myQNAPcloud**

Provides various remote access services such as DDNS and CloudLink

### **myQNAPcloud ID**

Email address that was used to register for a myQNAPcloud account

### **Qfinder Pro**

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

### **QTS**

QNAP NAS operating system

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## END OF TERMS AND CONDITIONS

### 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.

### CE Notice



This QNAP NAS complies with CE Compliance Class B.

## SJ/T 11364-2006



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壳体	0	0	0	0	0	0
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
风扇组装	0	0	0	0	0	0
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电池	0	0	0	0	0	0

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