



**QNAP**

# **TS-1655**

## **User Guide**



Document Version: 2  
27/06/2023

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# 1. Product Overview

This chapter provides basic information about the QNAP device.

## About the TS-1655

The TS-1655 is powered by an 8-core Intel® Atom® processor and up to 128 GB of DDR4 memory, delivering high performance within a compact chassis. The NAS features enhanced connectivity through two 2.5 Gigabit Ethernet ports. Designed for scalability, the TS-1655 also has two M.2 PCIe NVMe SSD slots and three PCIe Gen 3 x4 slots to accommodate expansion cards.

## 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 | Drive bays | Memory |
|--------------|------------|--------|
| TS-1655-8G   | 16         | 8 GB   |

| Component            | TS-1655                       |
|----------------------|-------------------------------|
| Processor            |                               |
| CPU                  | Intel® Atom® Processor C5125  |
| Frequency            | 8-core/8-thread 2.8 GHz       |
| Architecture         | x86 64-bit                    |
| Encryption engine    | AES-NI                        |
| Memory               |                               |
| Pre-installed memory | 8 GB RAM: 1 x 8 GB DDR4 UDIMM |

| Component                            | TS-1655   |
|--------------------------------------|---|
| Memory slots                         | 4 x DDR4 UDIMM<br><br> <b>Important</b> <ul style="list-style-type: none"> <li>Use only QNAP memory modules to maintain system performance and stability. For NAS devices with more than one memory slot, use QNAP modules with identical specifications.</li> <li>Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting.</li> </ul><br> <b>Note</b><br>This device supports ECC memory modules. |
| Maximum memory                       | 128 GB RAM: 4 x 32 GB   |
| Flash memory                         | 5 GB (dual-boot OS protection)  |
| Storage                              |   |
| Drive bays                           | <ul style="list-style-type: none"> <li>12 x 3.5-inch SATA 6 Gbps</li> <li>4 x 2.5-inch SATA 6 Gbps</li> </ul><br> <b>Tip</b><br>The drive bays are backward compatible with SATA 3 Gbps drives.   |
| Drive compatibility                  | 3.5-inch bays: <ul style="list-style-type: none"> <li>3.5-inch SATA hard disk drives</li> <li>2.5-inch SATA solid-state drives</li> </ul> 2.5-inch bays: <ul style="list-style-type: none"> <li>2.5-inch SATA solid-state drives</li> </ul>   |
| M.2 SSD slots                        | 2 x PCIe Gen 3 x2   |
| M.2 SSD form factor                  | 2280  |
| SSD cache acceleration support       | This device supports SSD cache acceleration for all drives.   |
| Hot-swapping                         | The device supports hot-swapping drives except for the following:<br>M.2 SSDs   |
| Network                              |   |
| 2.5 Gigabit network interface        | 2 x 2.5 GbE RJ45<br><br> <b>Note</b><br>The 2.5 Gigabit Ethernet ports provide 4 network connection speeds: 2.5 Gbps, 1 Gbps, 100 Mbps, and 10 Mbps.   |
| Wake-on-LAN                          | Yes (2.5 GbE RJ45)  |
| Management interfaces                | 1 x 3.5 mm console port   |
| External I/O Ports & Expansion Slots |   |


| Component              | TS-1655  |
|------------------------|--|
| PCIe slots             | 3 x PCIe Gen 3 x4<br> <b>Tip</b><br>You can install a graphics card in the PCIe slot.   |
| USB ports              | Front:<br>1 x USB 3.2 Gen 1 Type-A<br> <b>Note</b><br>This USB port supports One Touch Copy.<br>Rear:<br>3 x USB 3.2 Gen 1 Type-A |
| Interface              |  |
| Display panel          | Monochrome backlit LCD display   |
| Buttons                | <ul style="list-style-type: none"> <li>• Power</li> <li>• Reset</li> <li>• LCD enter</li> <li>• LCD select</li> <li>• USB One Touch Copy</li> </ul>  |
| Switches               | Power supply unit  |
| LEDs                   |  |
| System                 | <ul style="list-style-type: none"> <li>• LCD panel</li> <li>• Drive LEDs</li> </ul>  |
| Ports                  | <ul style="list-style-type: none"> <li>• Speed</li> <li>• Activity</li> </ul>  |
| Dimensions             |  |
| Form factor            | Tower  |
| Dimensions (H x W x D) | 294.3 x 369.9 x 319.8 mm<br>(11.59 x 14.56 x 12.59 in)   |
| Net weight             | 13.16 kg (29.01 lbs)   |
| Others                 |  |
| Power supply unit      | 550W, 100-240V AC, 50/60 Hz  |

| Component             | TS-1655   |
|-----------------------|---|
| System battery        | <p>CR2032 lithium battery (3V, 225 mAh)</p> <p> <b>Warning</b></p> <ul style="list-style-type: none"> <li>• This battery is a button battery. If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours. Keep batteries out of reach of children.</li> <li>• To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.</li> </ul> <p> <b>Important</b><br/>Dispose of used batteries according to local regulations or the instructions of the battery manufacturer.</p> |
| Fans                  | <ul style="list-style-type: none"> <li>• System: 3 x 92 mm, 12V DC</li> <li>• System board: 2 x 97 mm, 12V DC</li> </ul> <p> <b>Warning</b></p> <p></p> <p>To avoid potential injury or damage to components, do not touch the fans while the NAS is connected to a power source.</p>   |
| Operating temperature | 0°C to 40°C (32°F to 104°F)   |
| Relative humidity     | <ul style="list-style-type: none"> <li>• Non-condensing relative humidity: 5% to 95%</li> <li>• Wet-bulb temperature: 27°C (80.6°F)</li> </ul>  |
| Security slot         | Kensington security slot  |

**Tip**

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

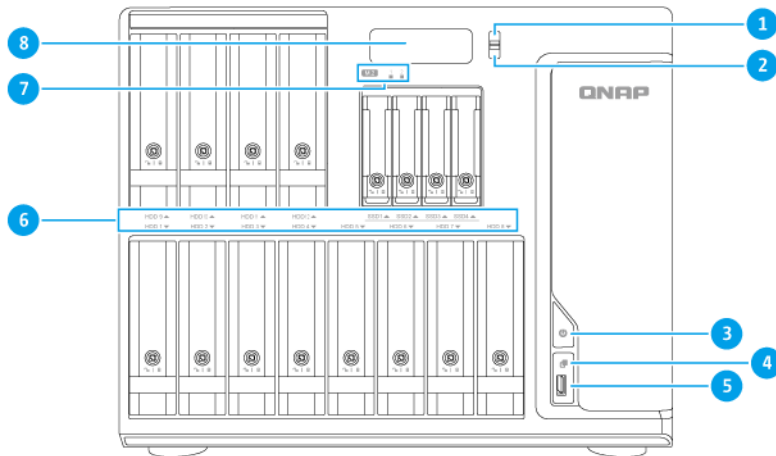
## Package contents

| Item                       | Quantity  |
|----------------------------|---|
| TS-1655 NAS                | 1   |
| Power cord                 | 1   |
| Ethernet cable             | <p>1 x Cat5e (RJ45)</p> <p> <b>Note</b><br/>The Cat5e Ethernet cable supports transfer speeds of up to 2.5 Gbps.</p> |
| Drive trays                | <ul style="list-style-type: none"> <li>• 12 x 3.5-inch trays</li> <li>• 4 x 2.5-inch trays</li> </ul>   |
| Drive tray keys            | 2   |
| Screws for 3.5-inch drives | 64  |

| Item                           | Quantity |
|--------------------------------|----------|
| Screws for 2.5-inch drives     | 36       |
| Quick Installation Guide (QIG) | 1        |

## Components

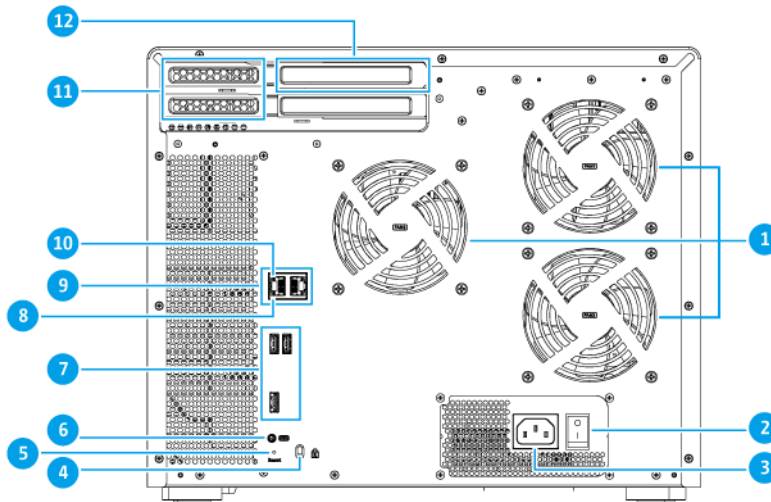
### Front panel




| No. | Component                 | No. | Component                                |
|-----|---------------------------|-----|--|
| 1   | LCD enter button          | 5   | USB 3.2 Gen 1 One Touch Copy Type-A port |
| 2   | LCD select button         | 6   | Drive LEDs                               |
| 3   | Power button              | 7   | M.2 SSD LEDs                             |
| 4   | USB One Touch Copy button | 8   | LCD panel                                |



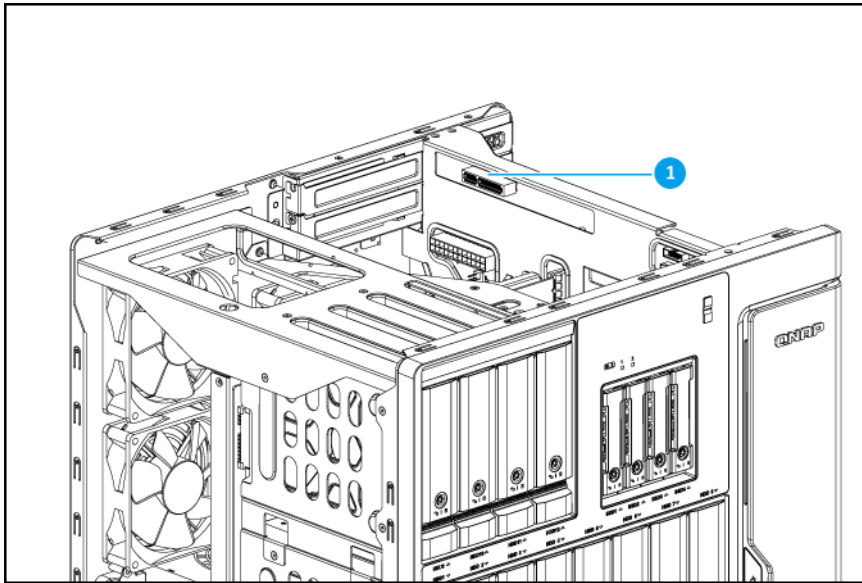
## Rear panel



| No. | Component                | No. | Component                         |
|-----|--------------------------|-----|-----------------------------------|
| 1   | System fans              | 7   | USB 3.2 Gen 1 Type-A ports        |
| 2   | Power supply unit switch | 8   | 2.5 Gigabit Ethernet speed LED    |
| 3   | Power input              | 9   | 2.5 Gigabit Ethernet ports (RJ45) |
| 4   | Kensington security slot | 10  | 2.5 Gigabit Ethernet activity LED |
| 5   | Reset button             | 11  | PCIe low-profile covers           |
| 6   | Console port             | 12  | PCIe full-height cover            |

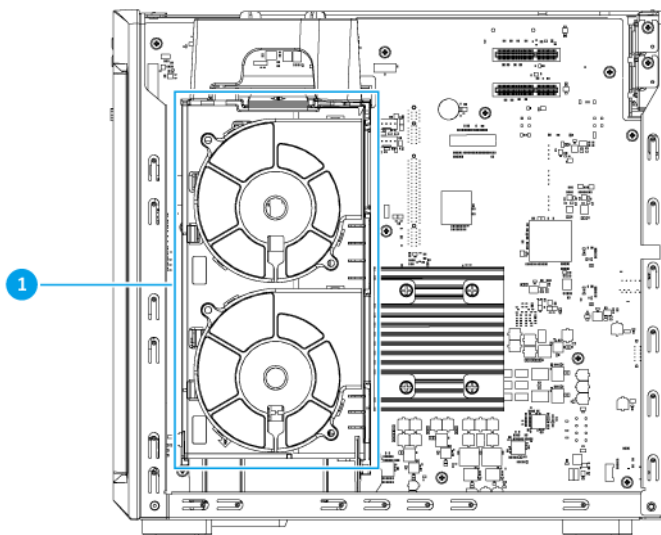
 **Note**  
This port is only for engineering purposes.

## Left panel

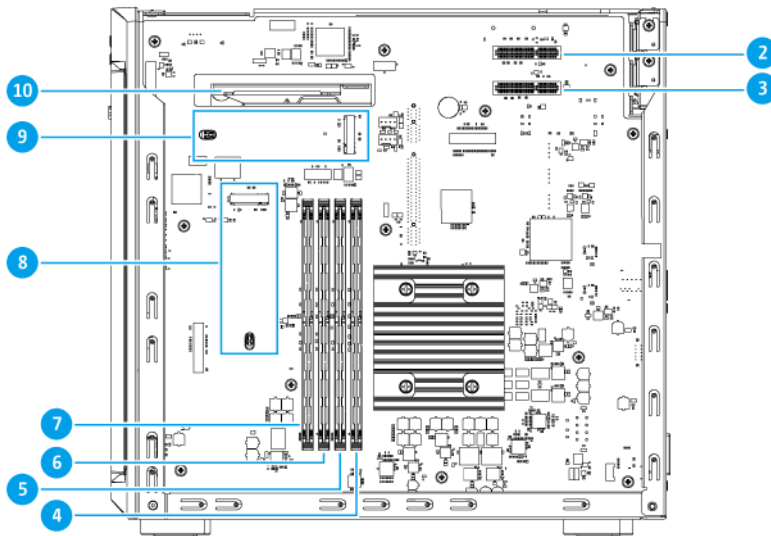


| No. | Component            | No. | Component |
|-----|----------------------|-----|-----------|
| 1   | PCIe Gen 3 x4 slot 1 | -   | -         |

## Right panel



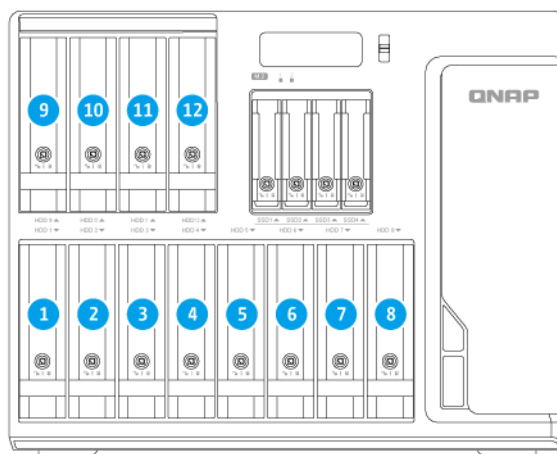
**Fan module attached**



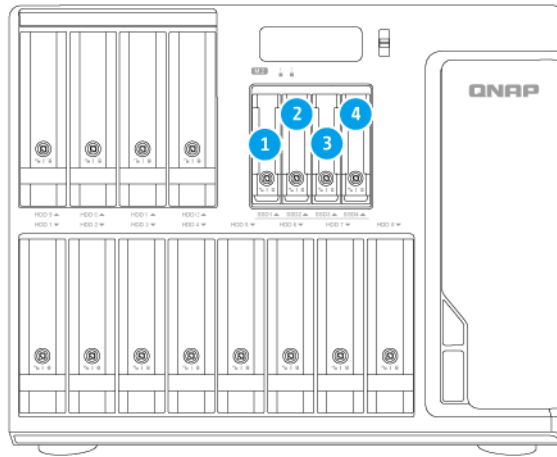
**Fan module removed**

| No. | Component                                | No. | Component                                |
|-----|--|-----|--|
| 1   | Fan module                               | 6   | Memory slot 2 (Channel B, DIMM 2, black) |
| 2   | PCIe Gen 3 x4 slot 2                     | 7   | Memory slot 1 (Channel B, DIMM 1, blue)  |
| 3   | PCIe Gen 3 x4 slot 3                     | 8   | M.2 SSD slot 2                           |
| 4   | Memory slot 4 (Channel A, DIMM 2, black) | 9   | M.2 SSD slot 1                           |
| 5   | Memory slot 3 (Channel A, DIMM 1, blue)  | 10  | Fan module latch holder                  |

**Front drive numbering**

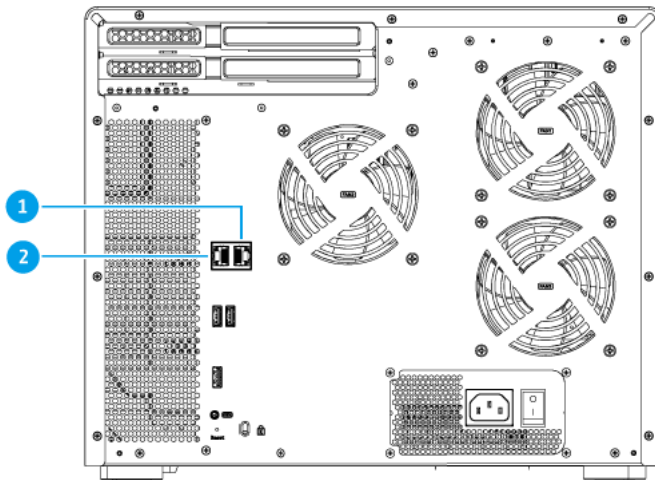


**3.5-inch drive bays**

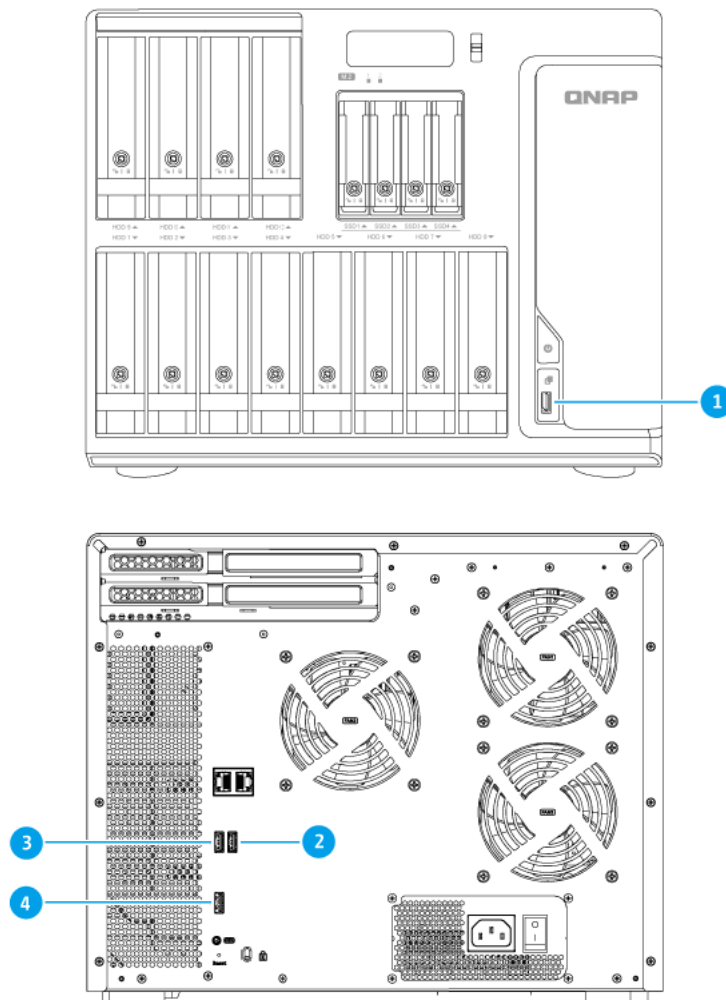


### 2.5-inch drive bays

### Network port numbering



## USB port numbering



## Safety information

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

### General Instructions

- The device should be stored in a secure location with restricted access, controlled through the use of a tool, lock and key, or any means of security.
- Only qualified, skilled, and authorized persons with knowledge of all restrictions, safety precautions, and installation and maintenance procedures should have physical access to the device.
- To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.
- Observe electrostatic discharge (ESD) procedures to avoid potential injury or damage to components.

## Power

- To reduce the risk of fire or electric shock, ensure that you only connect the power cord to a properly grounded electrical outlet.
- To avoid serious injuries, a trained service technician must disconnect all PSU cords from the device before installing or replacing system components.

## System Battery

- This product contains a button battery.
- If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.
- Keep batteries out of reach of children.
- If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.
- To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.
- Dispose of used batteries properly according to local regulations or the instructions of the battery manufacturer.

## Moving Parts

•



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

•



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

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

## Installation requirements

| Category                 | Item  |
|--------------------------|---|
| Environment              | <ul style="list-style-type: none"> <li>• Room temperature: 0°C to 40°C (32°F to 104°F)</li> <li>• Non-condensing relative humidity: 5% to 95%</li> <li>• Wet-bulb temperature: 27°C (80.6°F)</li> <li>• Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals</li> </ul> |
| Hardware and peripherals | <ul style="list-style-type: none"> <li>• Storage drives<br/>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>  |

| Category | Item   |
|----------|--|
| Tools    | <ul style="list-style-type: none"> <li>• Phillips #1 or #2 screwdriver</li> <li>• Anti-static wrist strap</li> </ul> |

## Setting up the NAS



### Important

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

1. Place your NAS device in an environment that meets the requirements.  
For details, see [Installation requirements](#).
2. Install drives.  
For details, see the following topics:
  - [Installing 3.5-inch hard drives on 3.5-inch trays](#)
  - [Installing 2.5-inch solid-state drives on 3.5-inch trays](#)
  - [Installing 2.5-inch solid-state drives on 2.5-inch trays](#)
  - [Installing M.2 solid-state drives](#)
3. Optional: Replace or install additional memory modules.  
For details, see [Replacing memory modules](#).
4. Optional: Install expansion cards.  
For details, see [Installing expansion cards](#).
5. Optional: Connect expansion units.  
For details, see the following topics:
  - [Connecting SATA JBOD expansion units](#)
  - [Connecting USB expansion units](#)
6. Connect the power cord and all applicable cables.
7. Power on the NAS.
8. Install QTS.  
For details, see [QTS installation](#).
9. Log on to QTS.

## 2. 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, expansion cards, fans, and expansion units.

### Removing the case cover



#### Warning

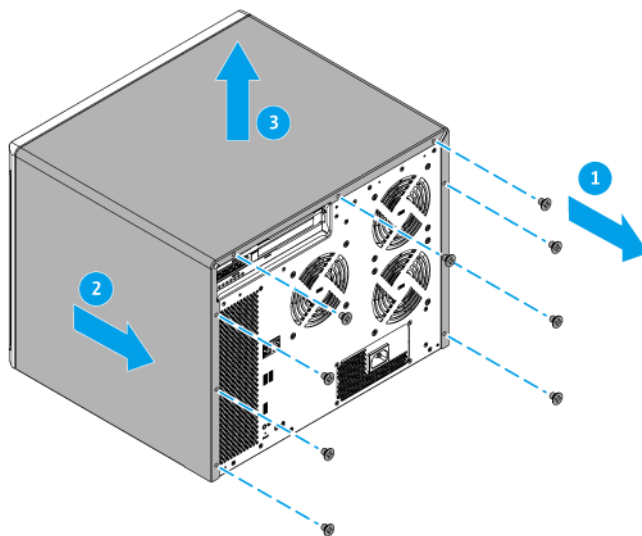
- Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.

- 



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

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.
  - a. Remove the screws on the rear panel.
  - b. Slide the cover back.
  - c. Lift the cover off the device.





## Attaching the case cover



### Warning

- 



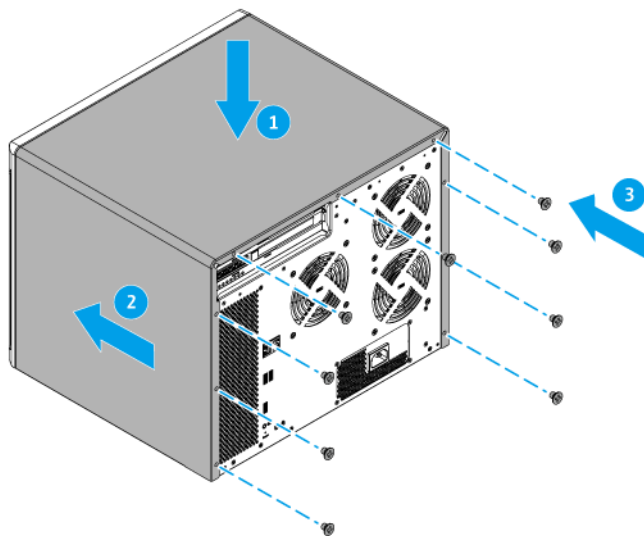
**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

- 



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

1. Place the cover on the device.
2. Slide the cover forward.
3. Attach the screws on the rear panel.



4. Connect all cables and external attachments.
5. Connect the power cord to the electrical outlet.
6. Power on the device.

## Drive installation

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

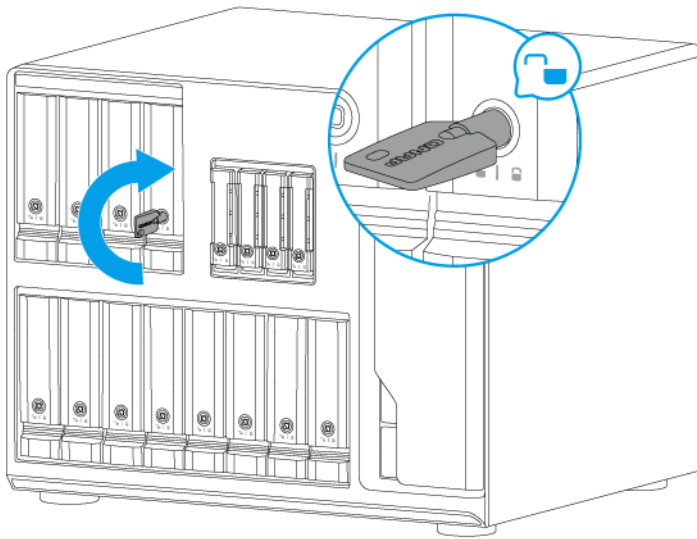
## Installing 3.5-inch hard drives on 3.5-inch trays



### 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. Optional: Unlock the tray.



### Note

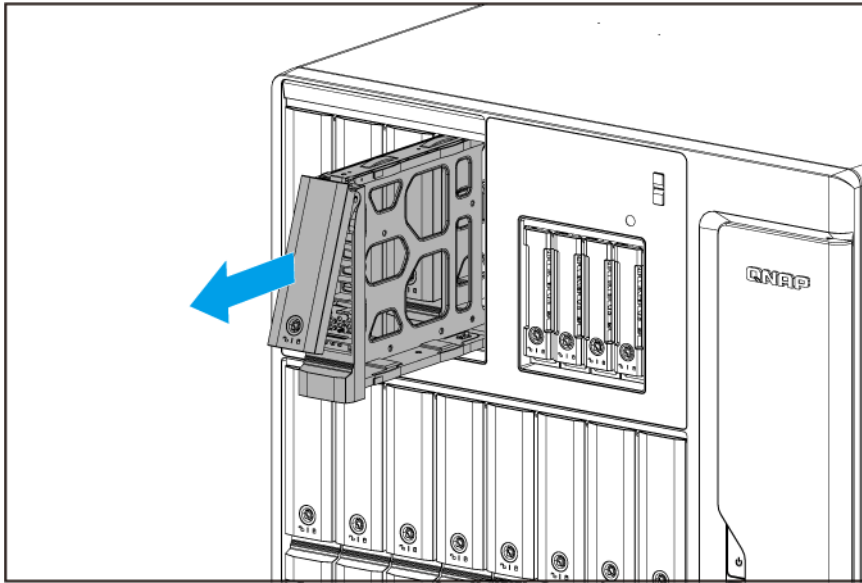
The preinstalled drive trays come unlocked.



### Important

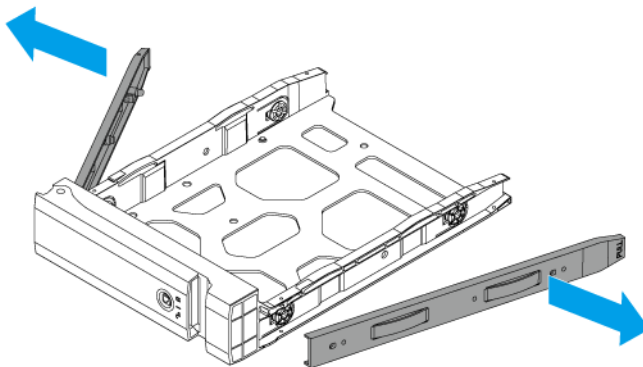
Ensure the drive tray keys are stored in a safe place.

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

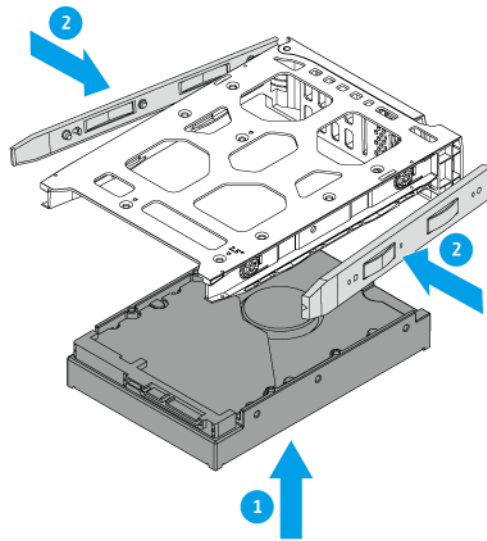


**3. Install a drive on the tray.**

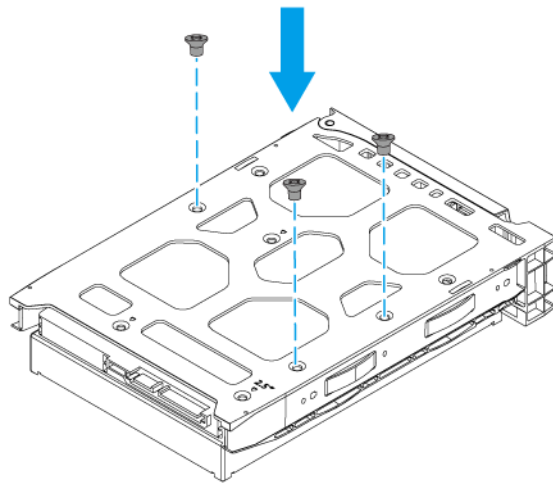
- a.** Remove the fastening panels from the sides of the drive tray.



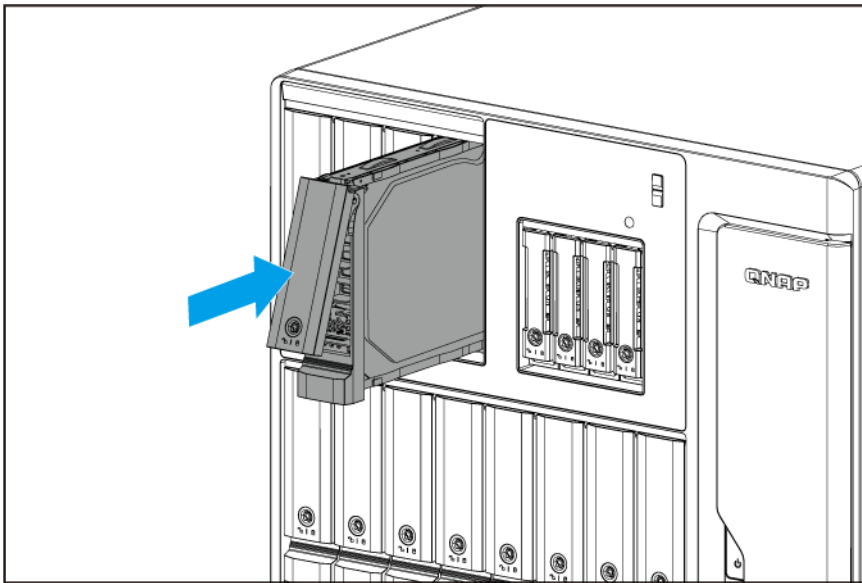
- b.** Place the drive on the tray so that the holes on the sides of the drive are aligned with the holes on the sides of the tray.
- c.** Attach the fastening panels to lock the drive to the tray.



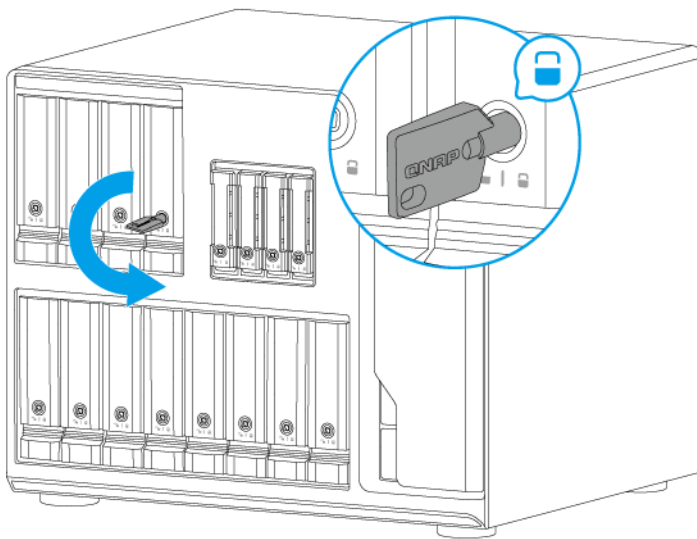
**d.** Optional: Attach the screws to further secure the drive.



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



c. Lock the tray.



5. Power on the NAS.

### Installing 2.5-inch solid-state drives on 3.5-inch trays

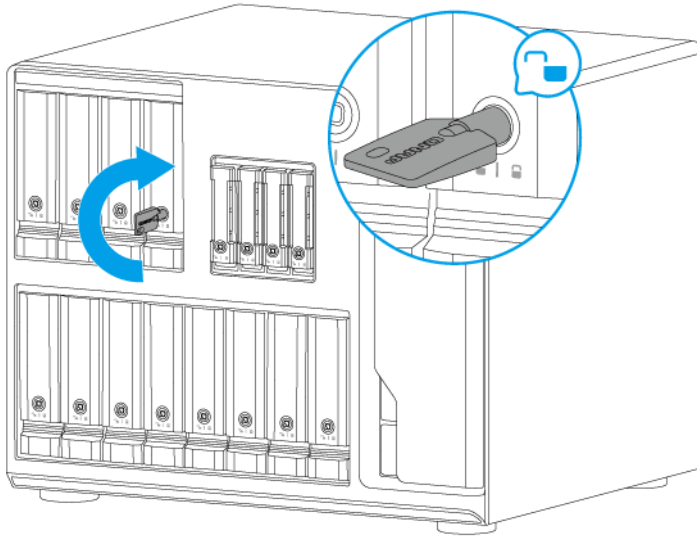


#### Warning

- 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. Optional: Unlock the tray.

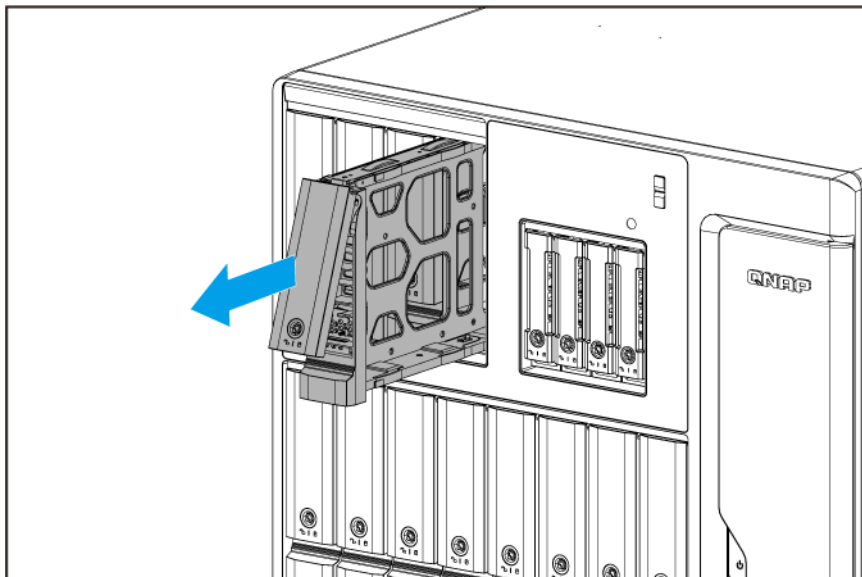
**Note**

The preinstalled drive trays come unlocked.

**Important**

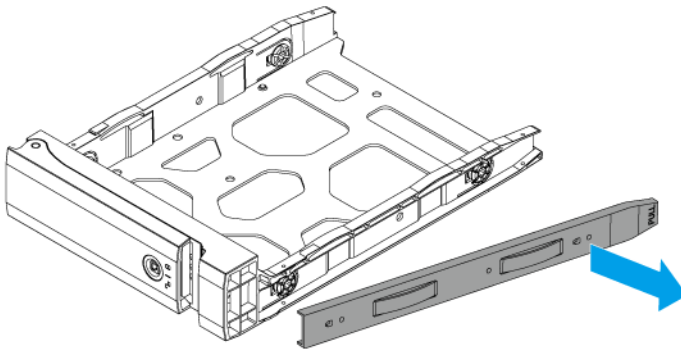
Ensure the drive tray keys are stored in a safe place.

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

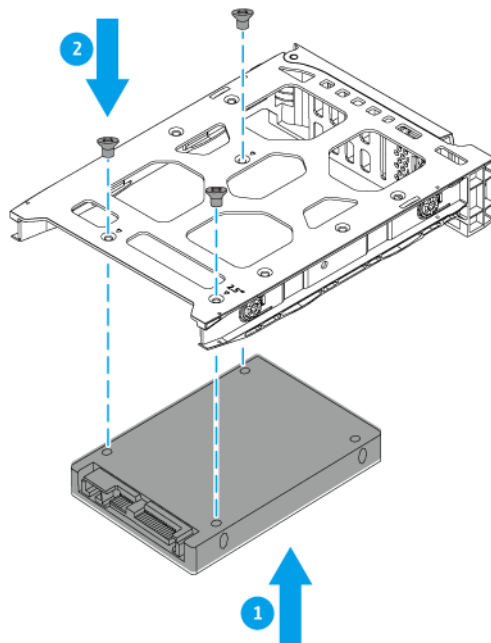


3. Install a drive on the tray.

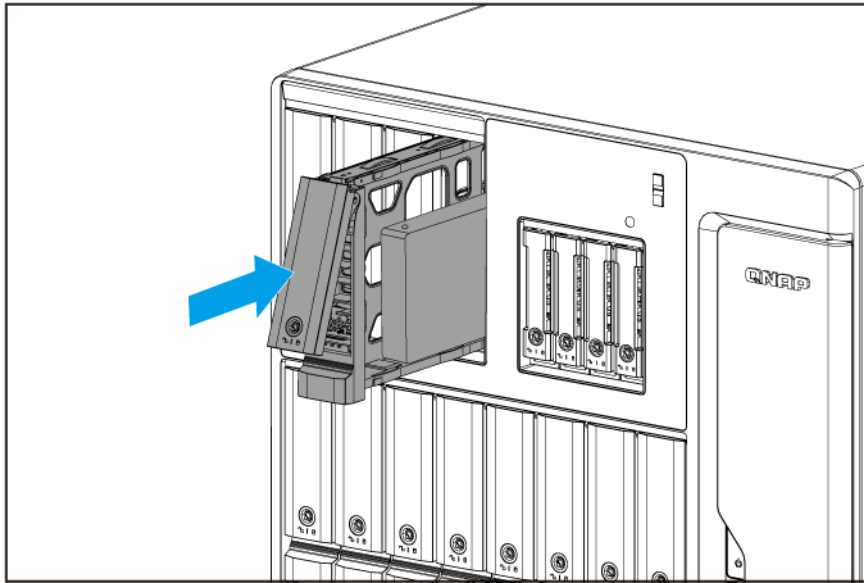
- a. Remove the right fastening panel from the drive tray.



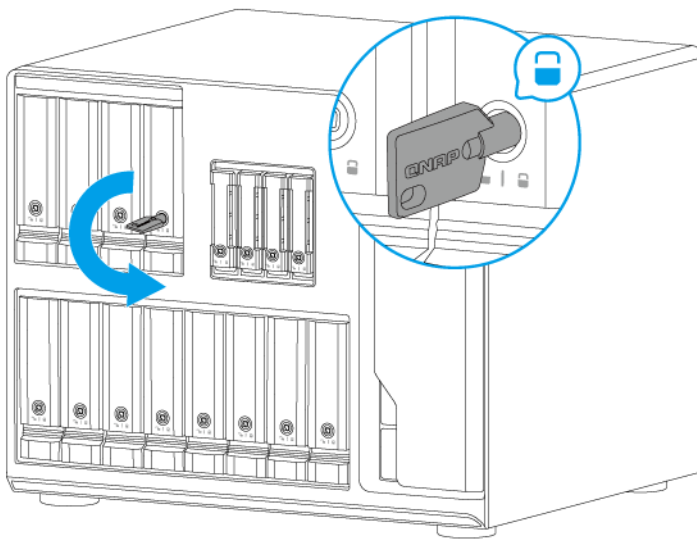
- b.** Place the drive on the tray so that the holes on the bottom of the drive are aligned with the holes on the bottom of the tray.
- c.** Attach the screws.



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



c. Lock the tray.



5. Power on the NAS.

### Installing 2.5-inch solid-state drives on 2.5-inch trays



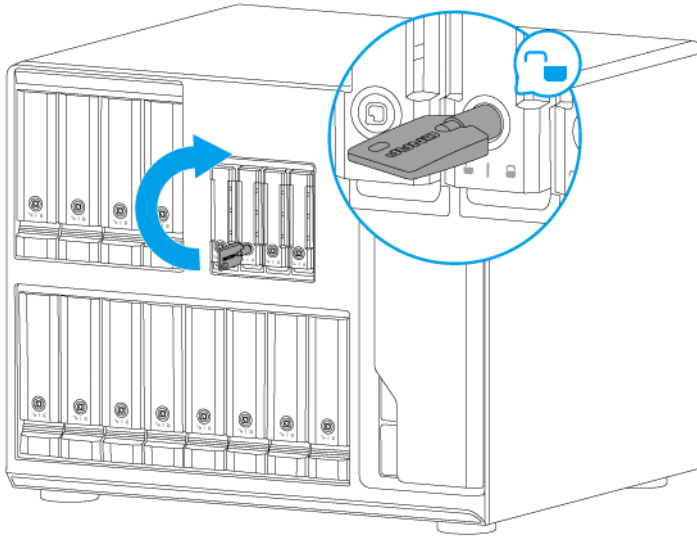
#### Warning

- 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. Optional: Unlock the tray.

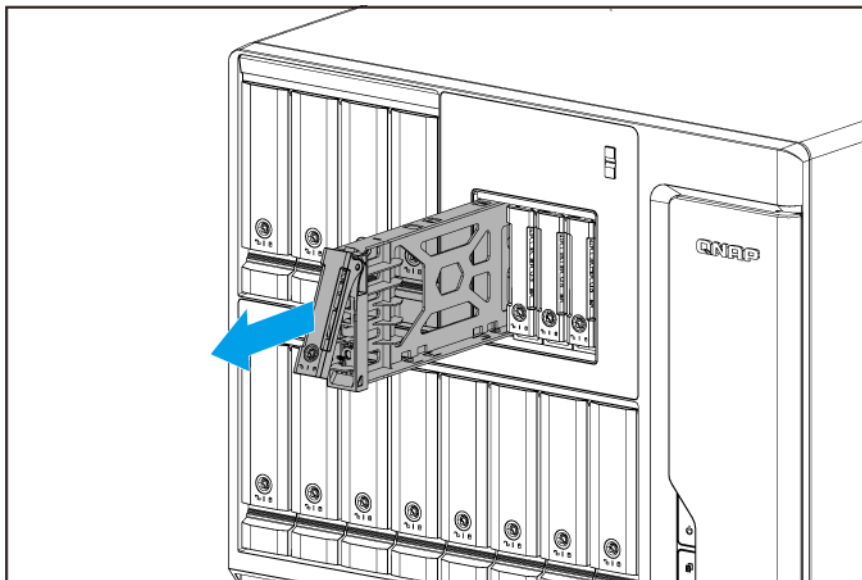
**Note**

The preinstalled drive trays come unlocked.

**Important**

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

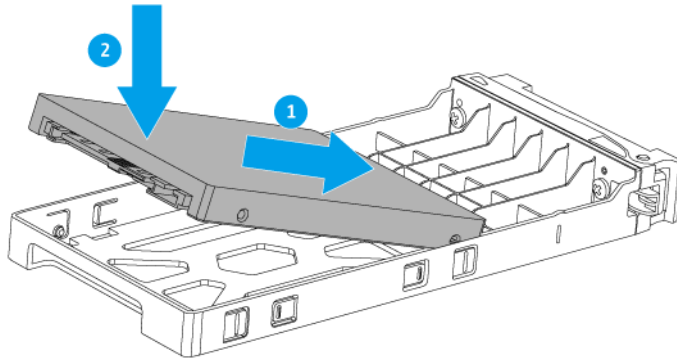
- b. Pull the tray handle outward.
- c. Pull the tray out.



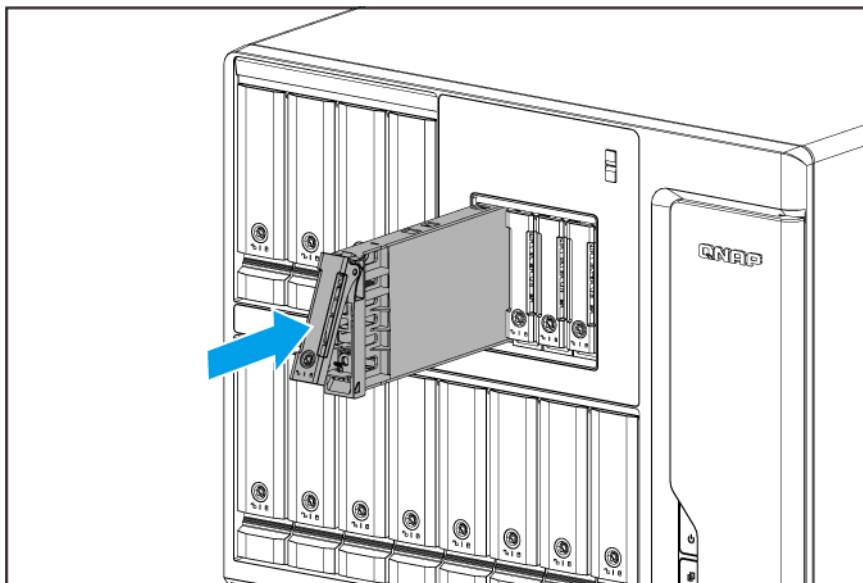
3. Install a drive on the tray.

- a. Align the connector on the drive with the opening at the end of the tray.

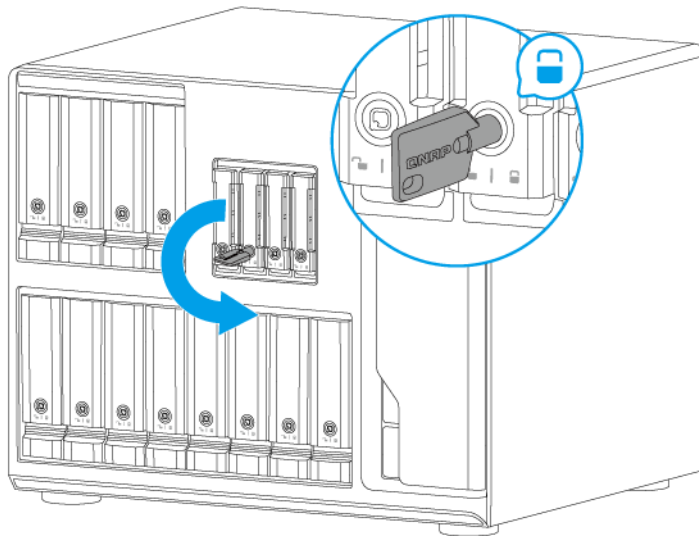
- b.** Place the drive on the tray.



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



- c.** Lock the tray.



5. Power on the NAS.

### Installing M.2 solid-state drives

The device has two M.2 SSD slots on the right panel.

For details, see [Right panel](#).

For a list of compatible M.2 SSDs, go to <https://www.qnap.com/compatibility>.



#### Warning

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



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



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



#### Note

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

- Before installing non-QNAP heatsinks, ensure that they are of the appropriate size and shape.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.  
For details, see [Removing the case cover](#).
5. Remove the fan module.  
For details, see [Removing the fan module](#).
6. Prepare the M.2 SSD.
  - a. Remove the protective film from both sides of the thermal pad.
  - b. Install the thermal pad on the SSD controller.
  - c. Remove the protective film from the black rubber pad.
  - d. Turn the SSD over.
  - e. Install the rubber pads on the bottom of the SSD.

**Note**

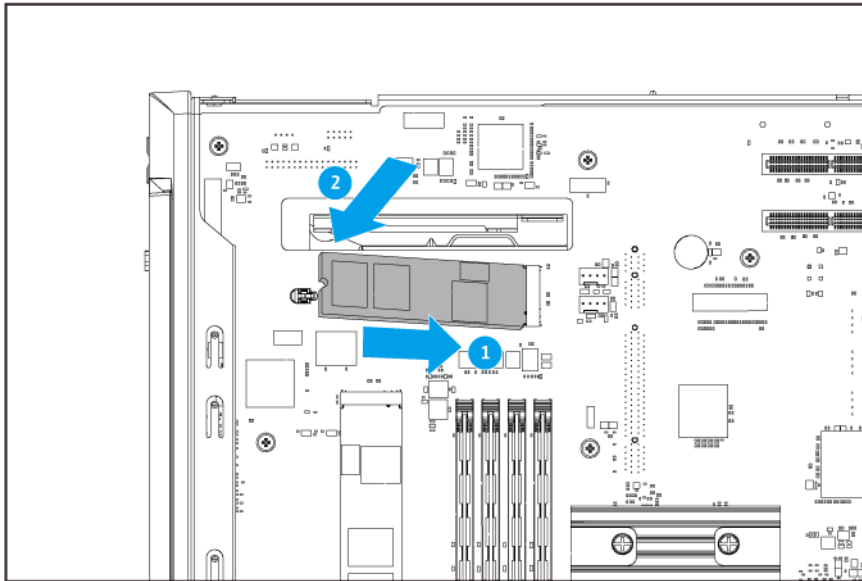
The thermal and rubber pads work together to transfer heat from the SSD controller to the cooling module.

7. Install a heatsink on the M.2 SSD.
  - a. Locate the controller on the M.2 SSD.

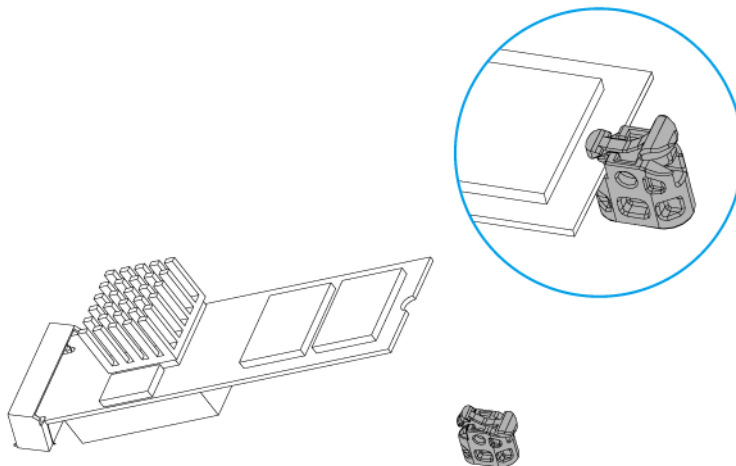
**Note**

The controller location varies depending on the model and manufacturer of the M.2 SSD. For details, refer to the documentation or contact the manufacturer.

- b. Remove the protective film from the heatsink.
  - c. Install the heatsink on the controller.
8. Install the M.2 SSD.
    - a. Unlock the M.2 spacer by pushing down on its edge.
    - b. Insert the M.2 SSD into the slot.
    - c. Carefully press the M.2 SSD down until the spacer locks the drive into place.



- d.** Verify that the M.2 spacer is firmly locking the M.2 SSD into place.



- 9.** Optional: Install an additional M.2 SSD.
- 10.** Attach the fan module.  
For details, see [Attaching the fan module](#).
- 11.** Attach the case cover.  
For details, see [Attaching the case cover](#).
- 12.** Connect all cables and external attachments.
- 13.** Connect the power cord to the electrical outlet.
- 14.** Power on the device.

## Replacing memory modules

The NAS has four memory slots. You can increase the memory capacity of the NAS by upgrading memory modules. For optimal dual-channel performance, replace memory modules in pairs.

This NAS also comes preinstalled with one non-ECC memory module. 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

- QNAP recommends installing modules in pairs to run dual-channel mode.
  - Ensure that each pair uses identical modules. Ensure that each memory channel uses identical modules. See table below for details:

| Channel name | Slot numbering |
|--------------|----------------|
| Channel A    | Slots 3, 4     |
| Channel B    | Slots 1, 2     |

- Install the pairs in sequence and follow the assigned slots for each pair.

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

- 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

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



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



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

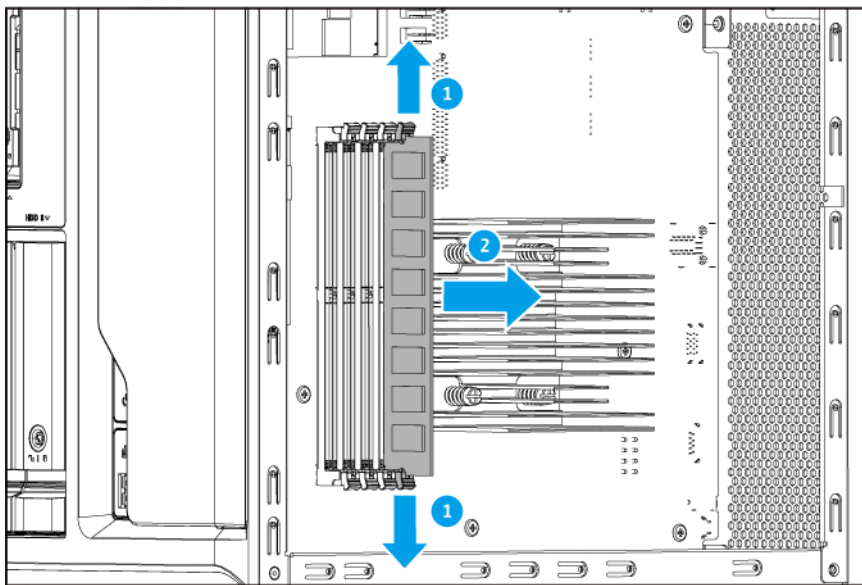
1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.

4. Remove the case cover.  
For details, see [Removing the case cover](#).
5. Remove the fan module.  
For details, see [Removing the fan module](#).
6. Remove an existing module.
  - a. Push the retention clips outward simultaneously to release the module.
  - b. Hold the module by the edges.



### Warning

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

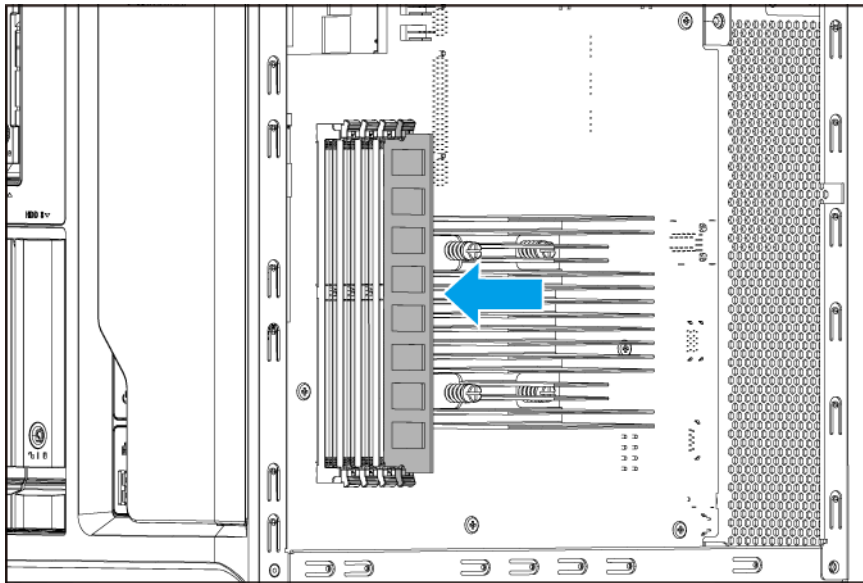


7. Install a new module.



### Warning

- Do not touch the internal components, particularly the metal connectors.
  - Do not bend the 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. Attach the fan module.  
For details, see [Attaching the fan module](#).
9. Attach the case cover.  
For details, see [Attaching the case cover](#).
10. Connect the power cords to the electrical outlet.
11. Connect all cables and external attachments.
12. Power on the device.
13. Verify that the module is recognized by the device.
  - a. Log on to QTS as administrator.
  - b. Go to **Control Panel > System > System Status > Hardware Information**.
  - c. Check the value for **Total memory**.

## Installing expansion cards

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

For details on supported expansion cards and brackets, go to [www.qnap.com/compatibility](http://www.qnap.com/compatibility).



### Warning

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



•



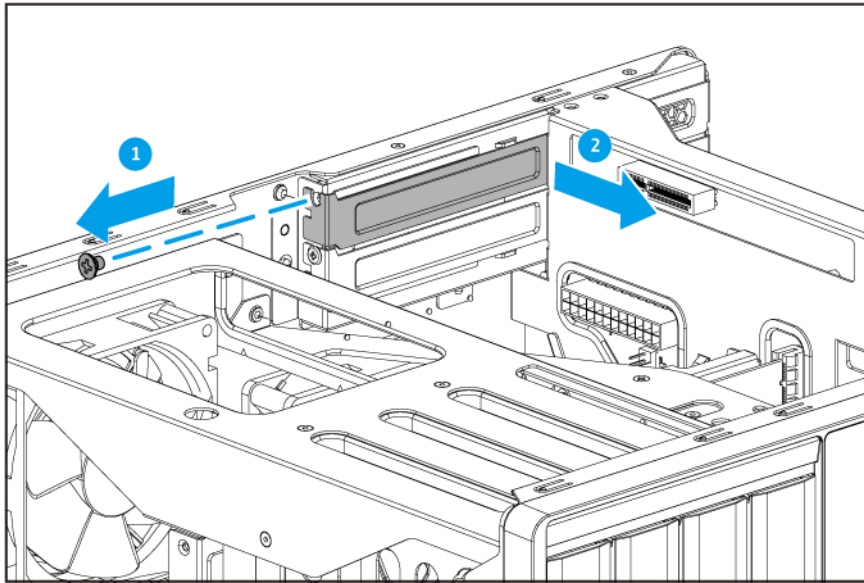
**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

•

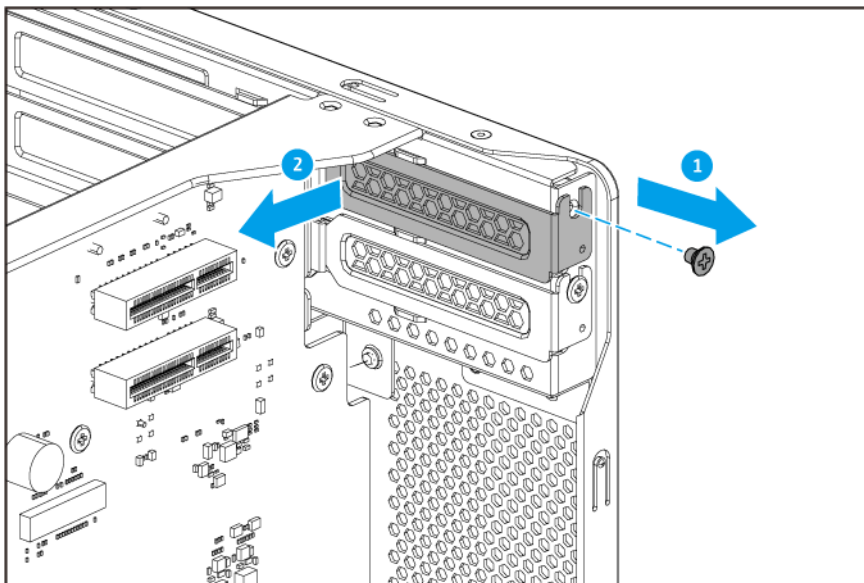


**Other moving components:** Keep your hands and other body parts away from other moving components.

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

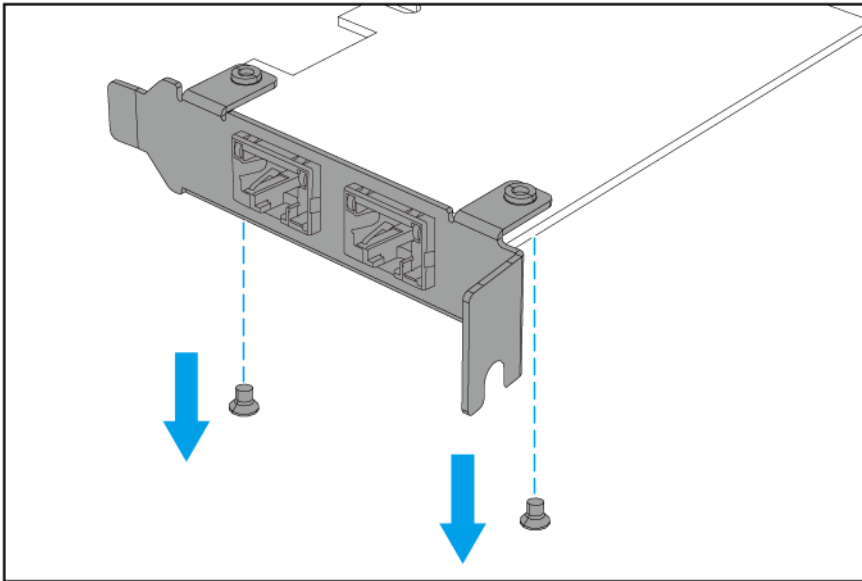


**PCIe full-height cover**

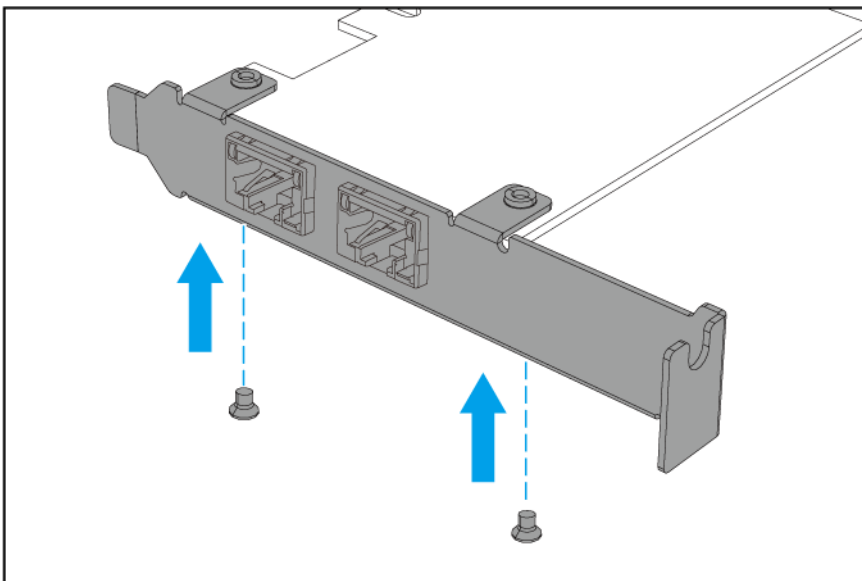


**PCIe low-profile cover**

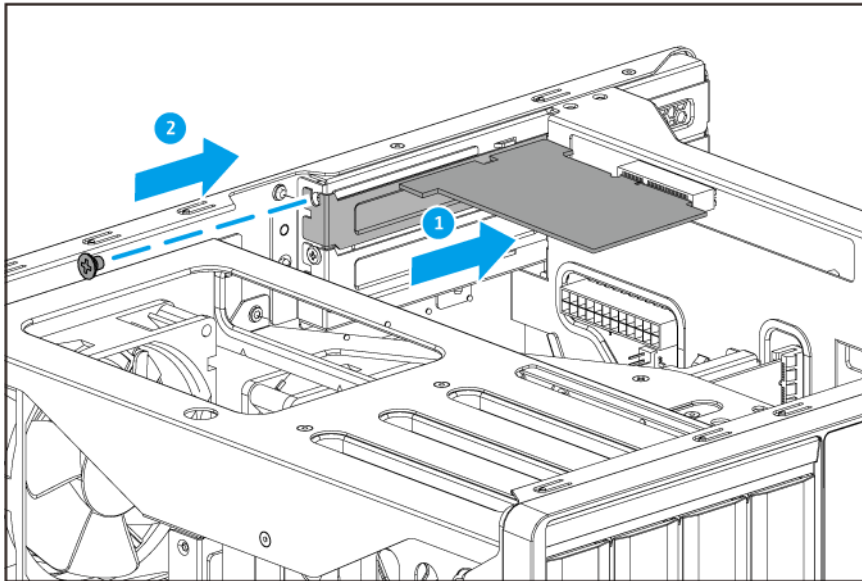
7. Optional: Attach the QNAP bracket to the expansion card.
  - a. Remove all screws of the existing bracket.



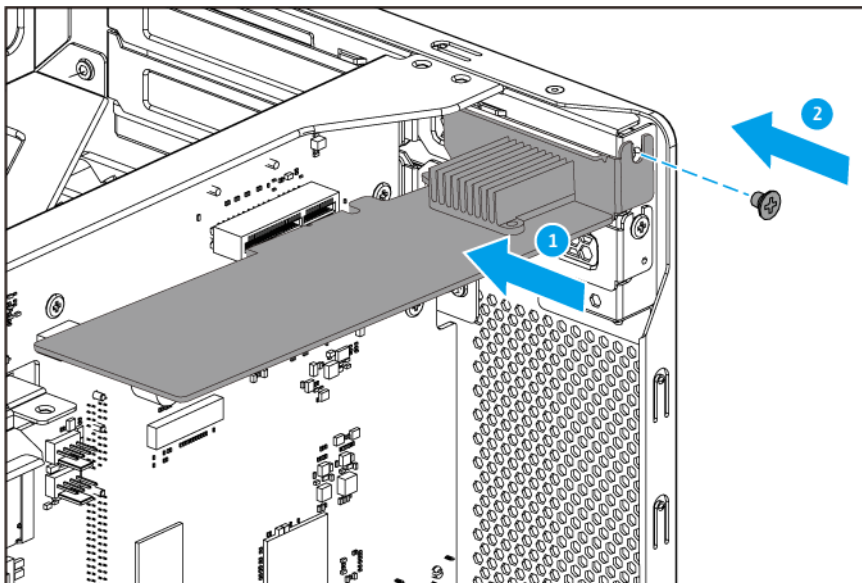
- b.** Carefully pull the bracket away from the card.
- c.** Attach the QNAP bracket to the card using the same screws.



- 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.

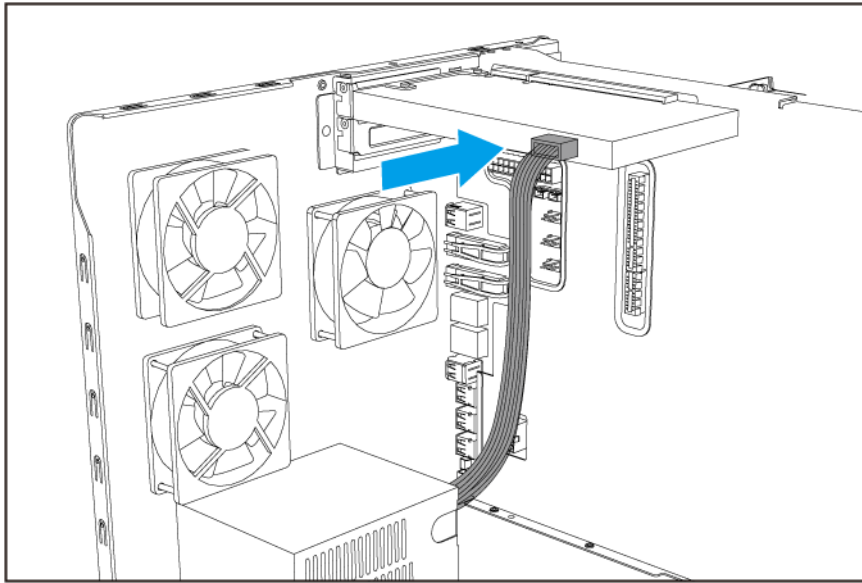


**PCIe full-height port**



**PCIe low-profile port**

- d. Optional: 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.  
For details, see [Attaching the case cover](#).
10. Connect all cables and external attachments.
11. Connect the power cord to the electrical outlet.
12. Power on the device.

## Fan installation

To ensure adequate cooling, the NAS contains a fan module with two fans on the right panel, and three system fans on the chassis behind the rear panel.

For details, see the following:

- [Right panel](#)
- [Rear panel](#)

## Removing the fan module

The fan module contains two fans and is located on the right panel.

For details, 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.

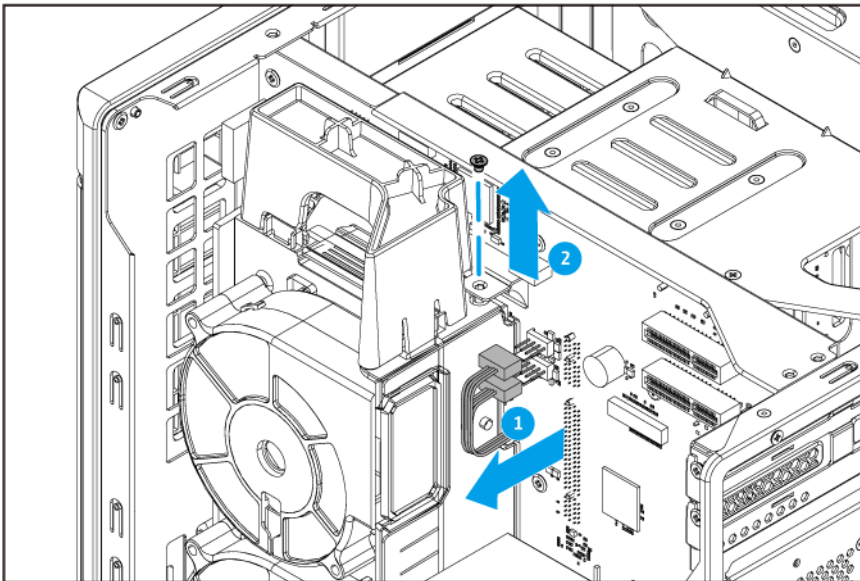


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

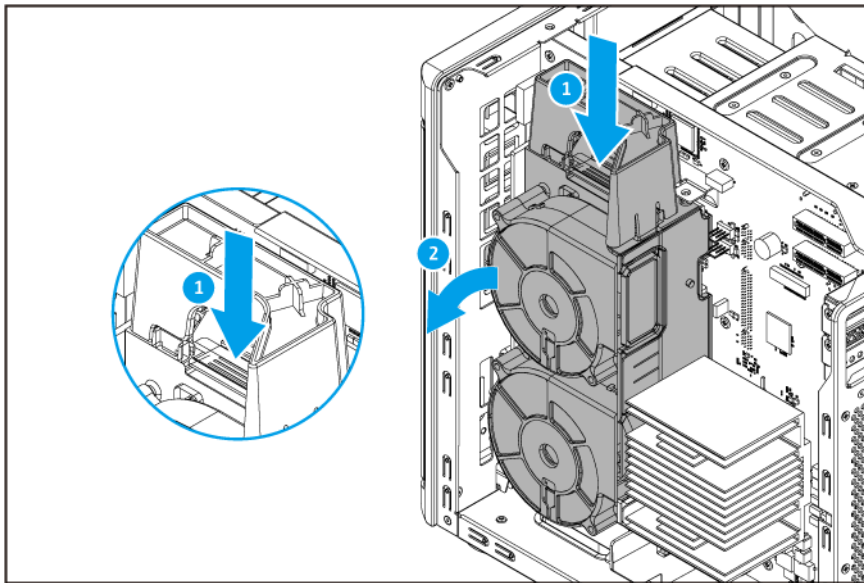


**Other moving components:** Keep your hands and other body parts away from other moving components.

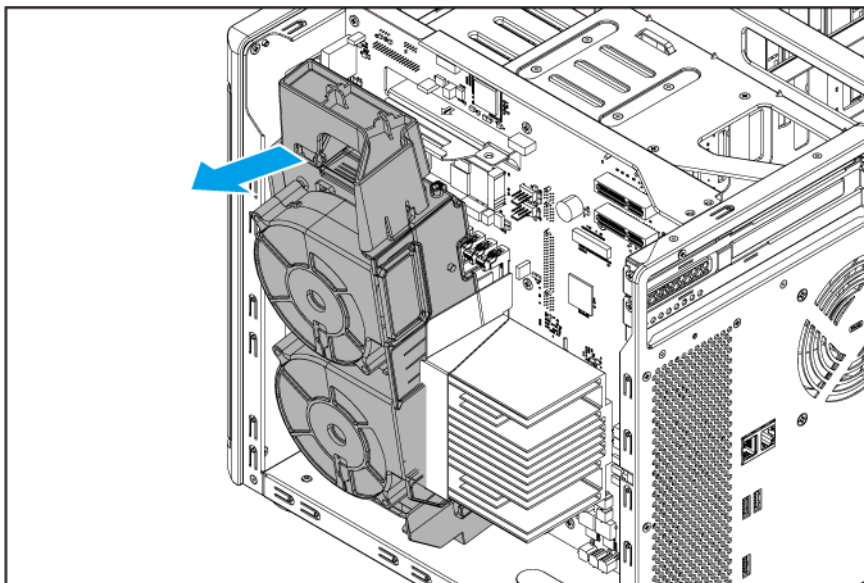
1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.  
For details, see [Removing the case cover](#).
5. Remove the fan module.
  - a. Disconnect the power connectors of all fans from the system board.
  - b. Remove the screw that secures the fan module to the system board.



- c. Push down on the fan module latch to release the fan module.
- d. Let the fan module tilt away from the system board.



- e. Carefully pull out the fan module horizontally as much as possible.



**Warning**

Do not pull the fan module out by force. Doing so can damage the memory modules on the system board.

### Attaching the fan module

The fan module contains two fans and is located on the right panel.

For details, 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.



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



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

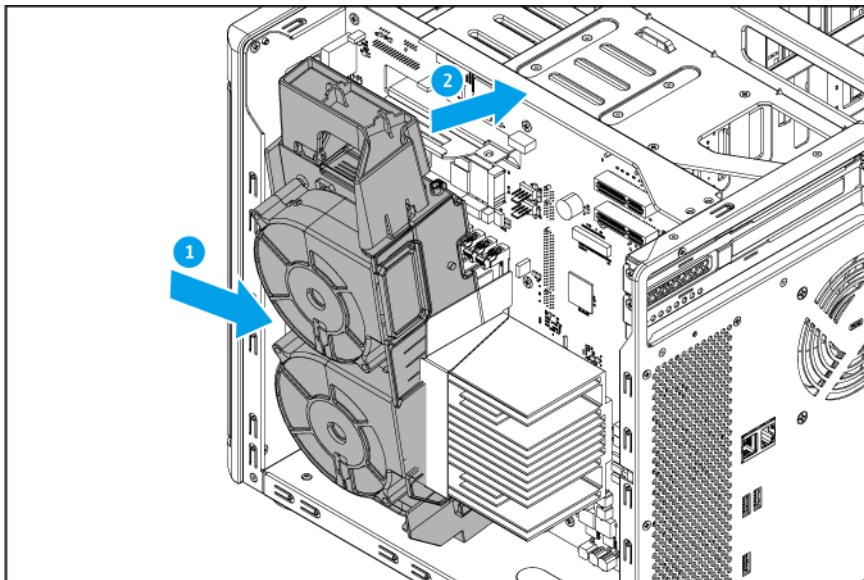
1. Attach the fan module.
  - a. Carefully insert the fan module at an angle into the slot at the bottom of the chassis.



#### Warning

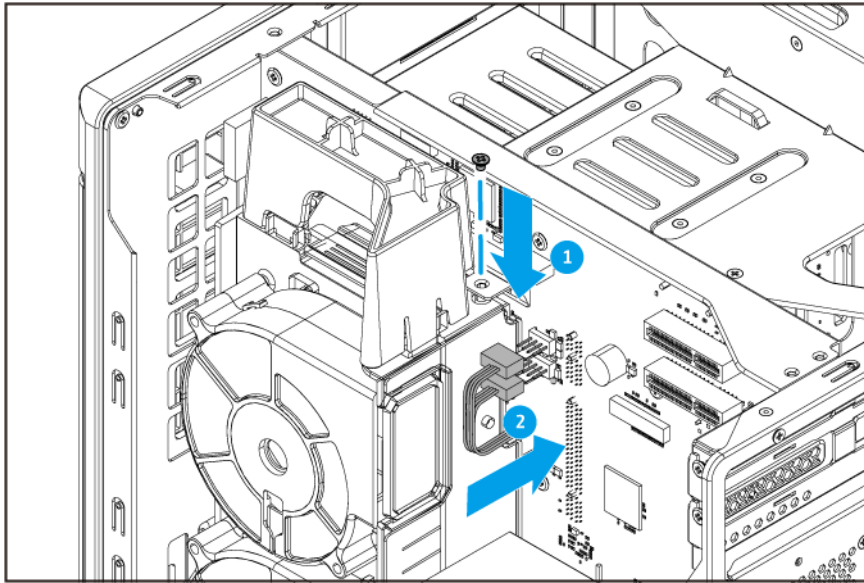
Do not push the fan module into the slot by force. Doing so can damage the memory modules on the system board.

- b. Tilt the top of the fan module toward the system board to latch the fan module to the system board.



- c. Attach the screw that secures the fan module to the system board.
- d. Connect the power connectors of all fans to the system board.





2. Attach the case cover.  
For details, see [Attaching the case cover](#).
3. Connect all cables and external attachments.
4. Connect the power cord to the electrical outlet.
5. Power on the device.

## Replacing fans on the fan module

The fan module contains two fans and is located on the right panel.

For details, 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.

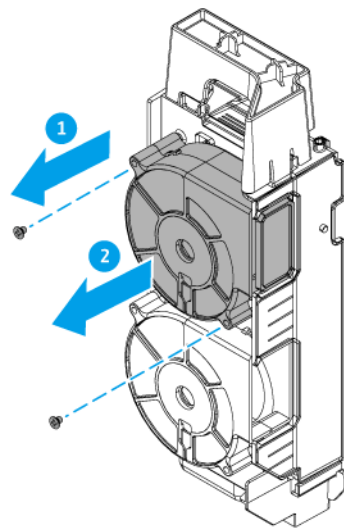


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

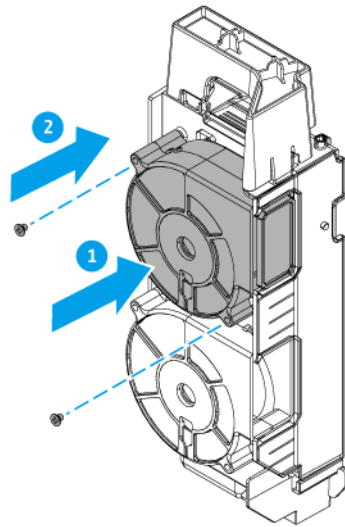


**Other moving components:** Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.  
For details, see [Removing the case cover](#).
5. Remove the fan module.  
For details, see [Removing the fan module](#)
6. Remove the fan.
  - a. Remove the screws that secure the fan to the fan unit.
  - b. Remove the fan from the fan module.



7. Install a new fan.
  - a. Align the fan to the screw holes on the fan unit.
  - b. Attach the screws that secure the fan to the fan unit.



8. Optional: Replace another fan.
9. Attach the fan module.  
For details, see [Attaching the fan module](#)
10. Attach the case cover.  
For details, see [Attaching the case cover](#).
11. Connect all cables and external attachments.
12. Connect the power cord to the electrical outlet.
13. Power on the device.

## Replacing fans on the chassis

There are three fans on the chassis, behind the rear panel.

For details, see [Rear 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.
- 

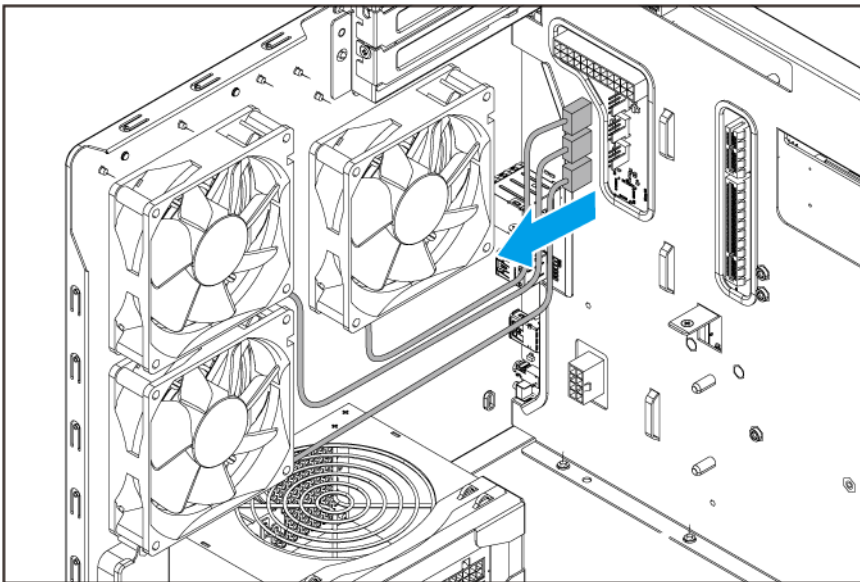


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

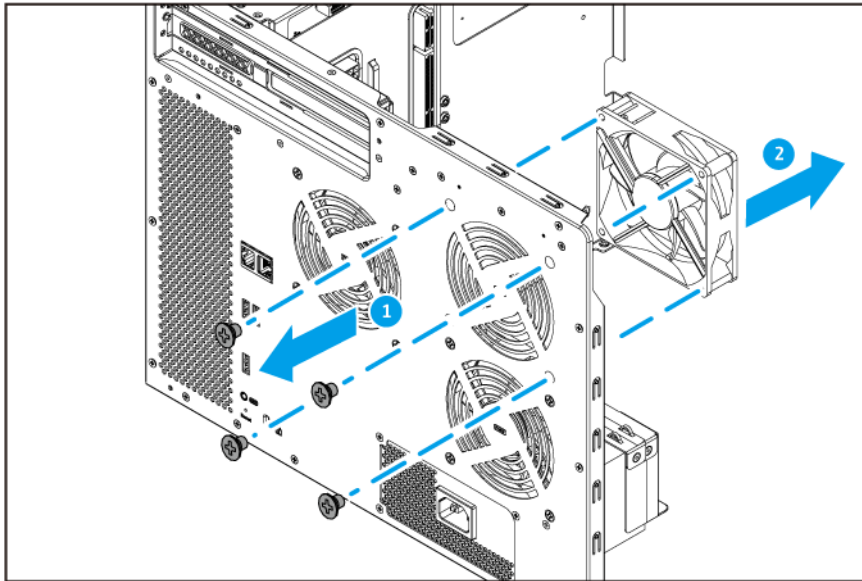


**Other moving components:** Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.  
For details, see [Removing the case cover](#).
5. Remove the fan.
  - a. Detach the fan's power connector from the system board.

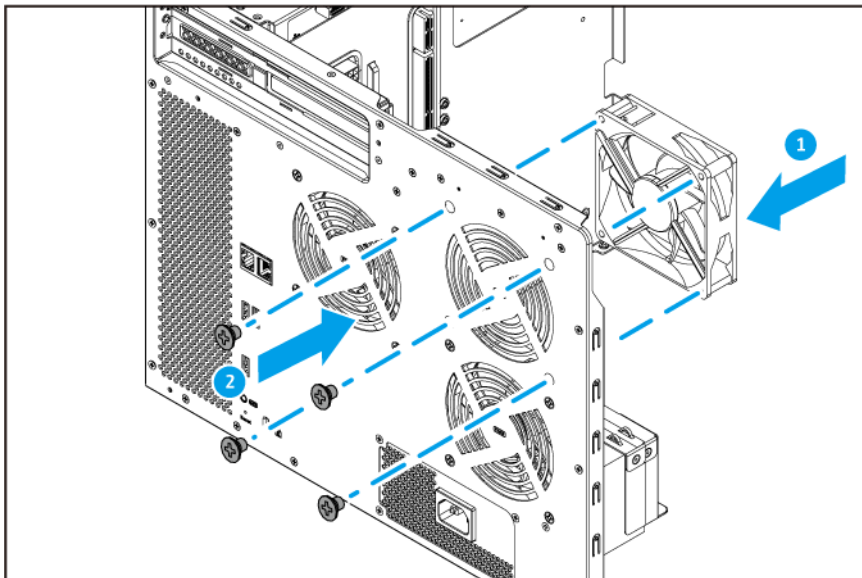


- b. Remove the screws that secure the fan to the chassis.
    - c. Remove the fan from the chassis.

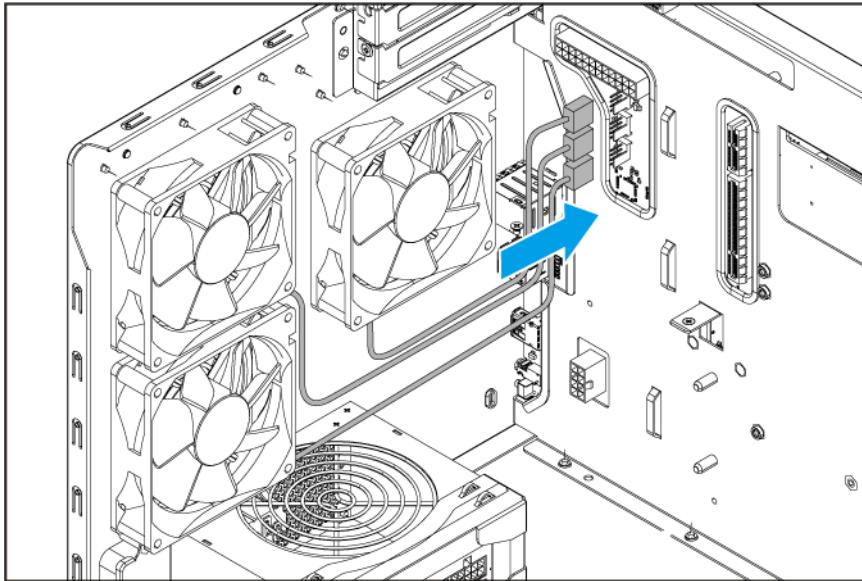


**6.** Install a new fan.

- a.** Align the fan to the screw holes on the chassis.
- b.** Attach the screws that secure the fan to the chassis.



- c.** Attach the fan's power connector to the system board.



7. Optional: Replace another fan.
8. Attach the case cover.  
For details, see [Attaching the case cover](#).
9. Connect all cables and external attachments.
10. Connect the power cord to the electrical outlet.
11. Power on the device.

## Expansion unit installation

The NAS supports SATA JBOD expansion units and USB expansion units. For details, please see the table below.

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

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

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

| Expansion Unit Model | Description  | Required Accessories  |
|----------------------|--|---|
| TL-D400S             | <ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x SFF-8088 connector cable</li> <li>• QXP-400eS-A1164 host bus adapter</li> </ul>  |
| TL-D800S             | <ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul> | <ul style="list-style-type: none"> <li>• 2 x SFF-8088 connector cables</li> <li>• QXP-800eS-A1164 host bus adapter</li> </ul> |

| Expansion Unit Model | Description  | Required Accessories   |
|----------------------|--|--|
| TL-D1600S            | <ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul> | <ul style="list-style-type: none"> <li>• 4 x SFF-8088 to SFF-8644 connector cables</li> <li>• QXP-1600eS-A1164 host bus adapter</li> </ul>                     |
| TL-R400S             | <ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul> | <ul style="list-style-type: none"> <li>• 1 x SFF-8088 connector cable</li> <li>• QXP-400eS-A1164 host bus adapter</li> <li>• RAIL-B02</li> </ul>               |
| TL-R1200S-RP         | <ul style="list-style-type: none"> <li>• Uses a SATA 6 Gbps (SFF-8088) interface</li> <li>• Supports SATA HDD/SSD</li> </ul> | <ul style="list-style-type: none"> <li>• 3 x SFF-8088 to SFF-8644 connector cables</li> <li>• QXP-1600eS-A1164 host bus adapter</li> <li>• RAIL-B02</li> </ul> |
| TR-002               | <ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 2 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>   | <ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> </ul>                       |
| TR-004               | <ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 1 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>   | <ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> </ul>                       |
| TR-004U              | <ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 1 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>   | <ul style="list-style-type: none"> <li>• USB 3.2 Gen 1 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> <li>• RAIL-B02</li> </ul>   |
| TL-D800C             | <ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 2 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>   | <ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> </ul>                       |
| TL-R1200C-RP         | <ul style="list-style-type: none"> <li>• Uses a USB 3.2 Gen 2 Type-C interface</li> <li>• Supports SATA HDD/SDD</li> </ul>   | <ul style="list-style-type: none"> <li>• USB 3.2 Gen 2 Type-A to Type-C cable</li> <li>• USB 3.2 Gen 2 Type-C to Type-C cable</li> <li>• RAIL-B02</li> </ul>   |

## Connecting SATA JBOD expansion units

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

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

1. Power off the NAS.

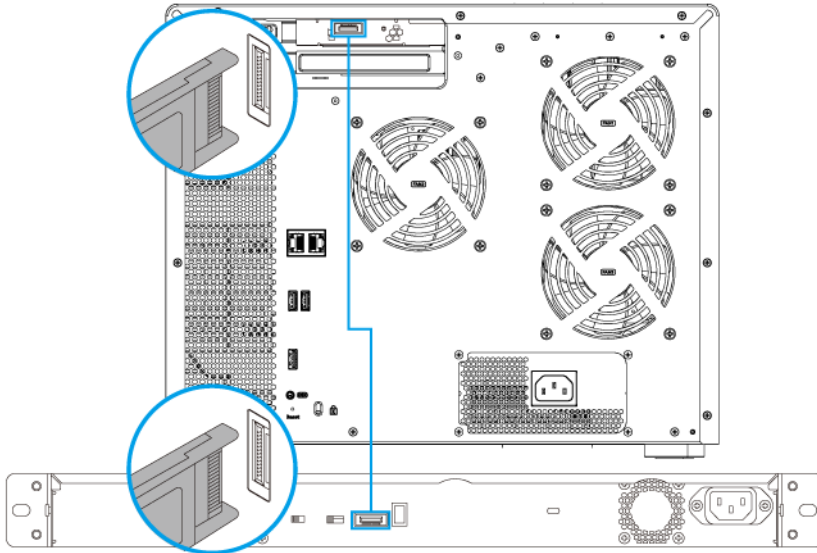
2. Install a host bus adapter on the PCIe slot.  
For details, see [Installing expansion cards](#).



### Important

The QNAP QXP host bus adapter is required for connecting the SATA JBOD enclosure to a host device. Third-party host bus adapters are not compatible with QNAP JBOD enclosures.

3. Connect the expansion unit to the NAS.



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

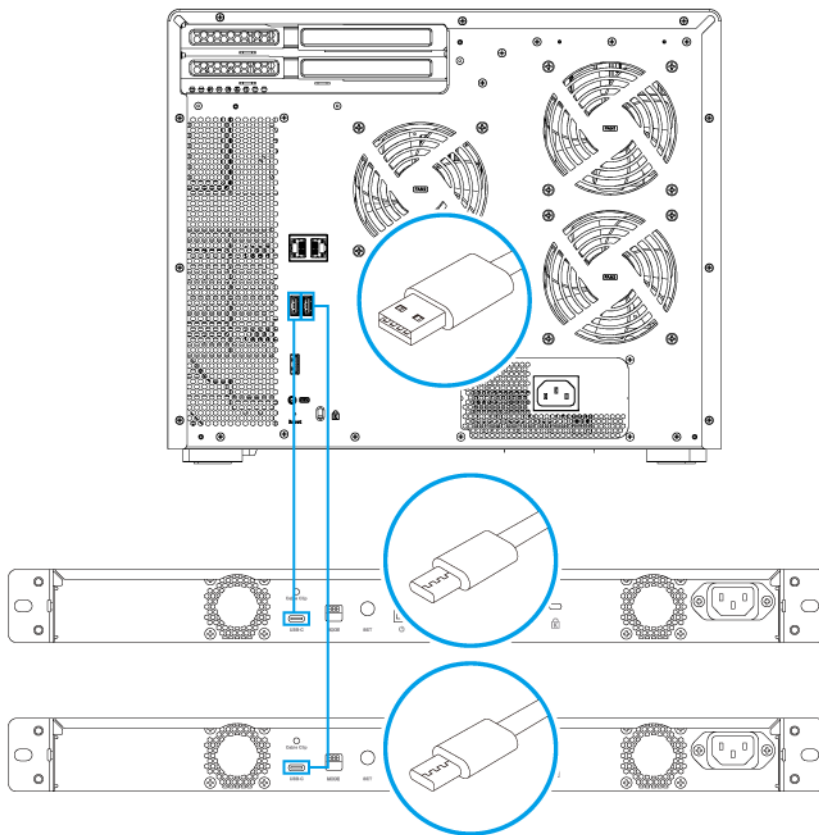
## Connecting USB expansion units

To connect the device to a USB expansion unit, a USB Type-A to USB Type-C cable is required.

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

1. Connect the expansion unit to the NAS.
  - a. Connect the USB cable to the USB Type-C port on the expansion unit.
  - b. Connect the USB cable to a USB 3.2 Gen 1 Type-A port on the NAS.





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

## QTS installation

The TS-1655 is shipped with the QNAP QTS operating system. You can install QTS using any of the following methods.

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



### Warning

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

| Method                                 | Description  | Requirements   |
|--|--|--|
| Qfinder Pro installation (Recommended) | <p>If the NAS is connected to your local area network, you can do the following:</p> <ul style="list-style-type: none"> <li>• Locate the NAS using Qfinder Pro.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul> <p>For details, see <a href="#">Initializing 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 myQNAPcloud Link to remotely access your NAS.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul> <p>For details, see <a href="#">Initializing QTS using the cloud installation website</a>.</p> | <ul style="list-style-type: none"> <li>• Computer or mobile device</li> <li>• Network cable</li> <li>• myQNAPcloud account</li> <li>• Cloud Key</li> </ul> |

## Initializing QTS using Qfinder Pro

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



### Warning

Initializing 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 network.



### Tip

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

4. Click **Next**.  
The **QNAP Warranty Service** page opens in the default web browser.
5. Click **Check warranty**.  
The **QNAP Warranty Service** window opens in a new web page.



### Important

You can check your device warranty policy or purchase an extended warranty plan at [QNAP Warranty Service](#).

6. Close the warranty page.  
The **Smart Installation Guide** opens in the default web browser.

7. If the screen shows a different operating system, click **QTS**.



#### Note

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

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

8. Click **Start Smart Installation**.
9. Specify a firmware version using any of the following methods.

| Methods                         | User Actions  |
|---------------------------------|---|
| <b>Current version</b>          | Select <b>Current version</b> .   |
| <b>Latest available version</b> | <p><b>a.</b> Select <b>Latest available version</b>.</p> <p><b>b.</b> Click <b>Check for Update</b><br/>The system checks for the latest firmware update available for your device. If a newer version is available, the system downloads the firmware update and restarts the NAS.</p> |
| <b>Uploaded version</b>         | <p><b>a.</b> Select <b>Uploaded version</b>.</p> <p><b>b.</b> Click <b>Browse</b>.<br/>The file upload window appears.</p> <p><b>c.</b> Select a firmware file.</p>   |

10. Click **Next**.  
The **Enter the NAS name and administrator's password** screen appears.
11. Specify the following information.
- **NAS Name:** Specify a name with 1 to 14 characters. The name can contain letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
  - **Username:** Specify an administrator username that contains 1 to 32 characters. The name can contain letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), multi-byte Chinese, Japanese, Korean, and Russian characters.  
The username cannot contain the following special characters: grave accent (`), asterisk (\*), equal sign (=), plus sign (+), square brackets ([ ]), curly brackets ({}), slash (/), vertical bar (|), semicolon (;), colon (:), apostrophe ('), quotation mark ("), comma (,), less than sign (<), greater than sign (>), backslash (\), question mark (?), percent sign (%), dollar sign (\$), and the space character.



#### Important

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

- **Password:** Specify an administrator password with 1 to 64 characters. The password can contain any ASCII characters.
  - **Confirm Password:** Enter the new administrator password again.
12. Click **Next**.  
The **Set the date and time** screen appears.
13. Specify the time zone, date, and time using any of the following methods:

**Tip**

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

| Methods   | User Actions  |
|---|---|
| Synchronize with computer or mobile device time | Select <b>Same as the computer/device time</b><br>The NAS synchronizes with the date and time of the computer or mobile device used to complete the initialization.     |
| Enter manually                                  | <ol style="list-style-type: none"> <li>a. Select <b>Input Manually</b>.</li> <li>b. Specify the date and time.<br/>The NAS uses the specified date and time.</li> </ol> |
| Synchronize with a time server automatically    | Click <b>Synchronize with an Internet time server automatically</b> .<br>The NAS synchronizes with the NTP server.  |

**14. Click Next.**

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

**15. Configure the network settings using any of the following methods.**

| Methods  | User Actions   |
|--|--|
| <b>Obtain an IP address automatically (DHCP)</b> | Select <b>Obtain an IP address automatically (DHCP)</b><br>The system automatically detects and configures the IP address settings.  |
| <b>Use static IP address</b>                     | <ol style="list-style-type: none"> <li>a. Select <b>Use static IP address</b>.<br/>The IP address configuration page appears.</li> <li>b. Specify the following IP address configurations: <ul style="list-style-type: none"> <li>• Interface</li> <li>• IP Address</li> <li>• Subnet Mask</li> <li>• Default Gateway</li> <li>• Primary DNS server</li> <li>• Secondary DNS server</li> </ul> </li> </ol> |

**16. Click Next.**

The **Thunderbolt Connection** page appears.

**Note**

This page only appears if your device supports Thunderbolt. You will need to connect your device to a computer using a Thunderbolt cable.

**17. Click Next.**

The **Summary** screen appears.

**18. Review the settings.****19. Click Apply.**

A confirmation message appears.



### Warning

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

20. Click **Initialize**.



### Important

The initialization may take several minutes to complete. Do not power off the device during the process.

QTS is initialized.

## Initializing QTS using the cloud installation website

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



### Warning

Initializing 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 website using one of the following methods:
  - On your computer, go to the website dedicated to your region:
    - Global: <https://install.qnap.com>
    - China: <https://install.qnap.com.cn>
  - Or scan the QR code on the NAS using a mobile device.

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

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



### Tip

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

The installation wizard opens in the default web browser

5. Create an account or sign in to myQNAPcloud.



### Note

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

6. Specify the myQNAPcloud device name for the NAS.



### Note

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

- For security purposes, the myQNAPcloud Link remote connection service will be disabled on your NAS after initialization. You can enable it by connecting to QTS through LAN and then installing myQNAPcloud Link.

**7. Click **Next**.**

The **QNAP Warranty Service** page opens in the default web browser.

**8. Click **Check warranty**.**

The **QNAP Warranty Service** window opens in a new web page.



**Important**

You can check your device warranty policy or purchase an extended warranty plan at [QNAP Warranty Service](#).

**9. Close the warranty page.**

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

**10. If the screen shows a different operating system, click **QTS**.**



**Note**

- This step is only required if the NAS supports installing more than one operating system and the default operating system for installation is not QTS.
- If the screen shows QuTS hero, you may need to click **Skip** first.

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

**11. Click **Start Smart Installation**.**

**12. Specify a firmware version using any of the following methods.**

| Methods                         | User Actions  |
|---------------------------------|---|
| <b>Current version</b>          | Select <b>Current version</b> .   |
| <b>Latest available version</b> | <p><b>a.</b> Select <b>Latest available version</b>.</p> <p><b>b.</b> Click <b>Check for Update</b><br/>The system checks for the latest firmware update available for your device. If a newer version is available, the system downloads the firmware update and restarts the NAS.</p> |
| <b>Uploaded version</b>         | <p><b>a.</b> Select <b>Uploaded version</b>.</p> <p><b>b.</b> Click <b>Browse</b>.<br/>The file upload window appears.</p> <p><b>c.</b> Select a firmware file.</p>   |

**13. Click **Next**.**

The **Enter the NAS name and administrator's password** screen appears.

**14. Specify the following information.**

- **NAS Name:** Specify a name with 1 to 14 characters. The name can contain letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.

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



### Important

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

- **Password:** Specify an administrator password with 1 to 64 characters. The password can contain any ASCII characters.
- **Confirm Password:** Enter the new administrator password again.

### 15. Click **Next**.

The **Set the date and time** screen appears.

### 16. Specify the time zone, date, and time using any of the following methods:



### Tip

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

| Methods   | User Actions  |
|---|---|
| Synchronize with computer or mobile device time | Select <b>Same as the computer/device time</b><br>The NAS synchronizes with the date and time of the computer or mobile device used to complete the initialization. |
| Enter manually                                  | <b>a. Select <b>Input Manually</b>.</b><br><br><b>b. Specify the date and time.</b><br>The NAS uses the specified date and time.                                    |
| Synchronize with a time server automatically    | Click <b>Synchronize with an Internet time server automatically</b> .<br>The NAS synchronizes with the NTP server.  |

### 17. Click **Next**.

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

### 18. Configure the network settings using any of the following methods.

| Methods  | User Actions  |
|--|---|
| <b>Obtain an IP address automatically (DHCP)</b> | Select <b>Obtain an IP address automatically (DHCP)</b><br>The system automatically detects and configures the IP address settings. |

| Methods                      | User Actions   |
|------------------------------|--|
| <b>Use static IP address</b> | <p><b>a.</b> Select <b>Use static IP address</b>.<br/>The IP address configuration page appears.</p> <p><b>b.</b> Specify the following IP address configurations:</p> <ul style="list-style-type: none"> <li>• Interface</li> <li>• IP Address</li> <li>• Subnet Mask</li> <li>• Default Gateway</li> <li>• Primary DNS server</li> <li>• Secondary DNS server</li> </ul> |

- 19.** Click **Next**.  
The **Thunderbolt Connection** page appears.

**Note**

This page only appears if your device supports Thunderbolt. You will need to connect your device to a computer using a Thunderbolt cable.

- 20.** Click **Next**.  
The **Summary** screen appears.
- 21.** Review the settings.
- 22.** Click **Apply**.  
A confirmation message appears.

**Warning**

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

- 23.** Click **Initialize**.

**Important**

The initialization may take several minutes to complete. Do not power off the device during the process.


QTS is initialized.



## 3. 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 10 seconds.  | The device powers off.<br><br> <b>Important</b><br>Use this method only when the device is unresponsive. |

### Reset button



#### Important

- The default "admin" account is automatically enabled after the system reset.
- To protect your device from brute force attacks, QNAP recommends disabling the default "admin" account after a system reset. To disable the account, change the default admin password, log out of QTS, and then log in to QTS with another admin account.

| Operation             | User Action                               | Result   |
|-----------------------|---|--|
| Basic system reset    | Press and hold the button for 3 seconds.  | <p>The following settings are reset to default:</p> <ul style="list-style-type: none"> <li>• System administrator password: The default password is the first MAC address in uppercase letters without special characters. For example, if the first MAC address is 00-08-9B-F6-15-75, then the admin password would be 00089BF61575.</li> </ul> <p> <b>Tip</b><br/>You can find the first MAC address with Qfinder Pro or attached to a label on the device listed as MAC1.</p> <ul style="list-style-type: none"> <li>• TCP/IP configuration: <ul style="list-style-type: none"> <li>• Obtain IP address settings automatically via DHCP</li> <li>• Disable jumbo frames</li> <li>• If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to "Active Backup (Failover)".</li> </ul> </li> <li>• System port: 8080 (system service port)</li> <li>• Security level: Low (Allow all connections)</li> <li>• LCD panel password: (blank)</li> <li>• VLAN: Disabled</li> </ul> |
| Advanced system reset | Press and hold the button for 10 seconds. | <p>The default factory settings are restored.<br/>To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.</p>  |

## 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.

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

## LCD panel

The LCD panel allows you to perform the following operations:

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

- View information on the system, physical disks, and 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.  
Repeat this step as necessary.

## Configuring TCP/IP settings

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

- IP address
  - Subnet mask
  - Default gateway
  - Primary DNS
  - Secondary DNS
1. Press **Enter** or **Select**.  
The panel displays the NAS name and 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 then **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>       |

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



### Important

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

The system saves the settings.

## Viewing drive information

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

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

## Viewing 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 **Select** 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**.  
Repeat this step as necessary.  
The panel displays the name and capacity of the next volume.

## 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 **Select** repeatedly until the panel displays `Main Menu 4. System`.
4. Press and hold **Enter**.  
The panel displays the CPU and system temperature.
5. Press and hold **Select**.  
The panel displays the system fan speed.

## Powering off the NAS

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

The NAS powers off.

## Restarting the NAS

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

The NAS restarts.

## Changing the LCD password

Specifying a password for the LCD panel prevents unauthorized access.

1. Press **Enter** or **Select**.  
The panel displays the NAS name and QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Select** repeatedly until the panel displays `Main Menu 7. Password`.
4. Press and hold **Enter**.  
The `Change Password` screen appears.
5. Select **Yes** by pressing and holding **Enter**.

The `New Password` screen appears.

**6.** Press **Select** and **Enter** to specify a new password.

- Specify a password.
  - Length: 1-8 characters
  - Valid characters: 0-9
- To delete a password, leave the password field blank.
- Move the cursor to `OK`.

| Button        | Usage   |
|---------------|---|
| <b>Enter</b>  | Move to the next item in the <code>New Password</code> screen.                                |
| <b>Select</b> | Change a character 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        | System fan has failed.   |
| Sys. Overheat          | System has overheated.   |
| HDD Overheat           | Drive has overheated.  |
| CPU Overheat           | CPU has overheated.  |
| Network Lost           | LAN 1 and LAN 2 disconnected in failover or load-balancing mode. |
| LAN [number] Lost      | LAN [number] has disconnected.                                   |
| HDD Failure            | Drive has failed.  |
| Vol [number] Full      | Volume [number] is full.   |
| HDD Ejected            | Drive has ejected.   |
| Vol [number] Degraded  | Volume [number] is in degrade mode.                              |
| Vol [number] Unmounted | Volume [number] has unmounted.                                   |
| Vol [number] Inactive  | Volume [number] is inactive.                                     |

## LEDs

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

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

**Drive LED**

| Status        | Description   |
|---------------|---|
| Flashes red   | Data is being accessed, and during the process a drive read/write error occurred. |
| Red           | A drive read/write error occurred.  |
| Flashes green | Data is being accessed.   |
| Green         | The drive is ready.   |
| Off           | No drive was detected.  |

**M.2 SSD 1 LED, M.2 SSD 2 LED**

| Status        | Description   |
|---------------|---|
| Flashes red   | Data is being accessed, and during the process a drive read/write error occurred. |
| Red           | A drive read/write error occurred.  |
| Flashes green | Data is being accessed.   |
| Green         | The drive is ready.   |
| Off           | No drive was detected.  |

**2.5 Gigabit Ethernet Speed LED**

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

**2.5 Gigabit Ethernet Activity LED**

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

## Audio alert

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



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

Your device must meet the following requirements:

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



#### Note

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

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



#### Important

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



#### Warning


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




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

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

### Status and setting changes after NAS migration

The status of NAS data and settings varies after migration.

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

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

## Migrating a NAS



### Important

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

For details see the following topics:

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

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



### Important

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

- a. Remove the drives from the source NAS.

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

## Migrating NAS data using HBS 3

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

## Preparing the destination NAS



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

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

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

## Creating a one-way sync job

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

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

7. Optional: Test the connection.

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

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

10. Select the paired folders.



### Important

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

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

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

12. Select **Sync now**.

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

14. Optional: Configure job rules.

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

16. Review the job summary.

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



### Note

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

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

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

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

**Note**

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

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

## 5. Troubleshooting

This chapter describes basic troubleshooting information.

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

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

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

### Hot-swapping failed drives

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

| RAID Type | Number of Disks                   | Situation   |
|-----------|-----------------------------------|---|
| RAID 1    | 2                                 | One member drive fails.                               |
| RAID 5    | $\geq 3$                          | One member drive fails.                               |
| RAID 6    | $\geq 4$                          | One or two member drives fail.                        |
| RAID 10   | $\geq 4$ (Must be an even number) | One or two member drives in two different pairs fail. |
| RAID 50   | $\geq 6$                          | One disk per subgroup fails.                          |
| RAID 60   | $\geq 8$                          | Two disks per subgroup fail.                          |

1. Log on to QTS.
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 > Storage/Snapshots** .
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 groups from unintentional disconnection or removal of drives. Users can recover an inactive RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, or RAID 60 group from degraded mode.

| RAID Type | RAID Recovery Support | Number of Disks                   | Disk Failure Tolerance       |
|-----------|-----------------------|-----------------------------------|------------------------------|
| Single    | No                    | 1                                 | N/A                          |
| JBOD      | No                    | $\geq 2$                          | N/A                          |
| RAID 0    | No                    | $\geq 2$                          | N/A                          |
| RAID 1    | Yes                   | 2                                 | 1                            |
| RAID 5    | Yes                   | $\geq 3$                          | 1                            |
| RAID 6    | Yes                   | $\geq 4$                          | 2                            |
| RAID 10   | No                    | $\geq 4$ (Must be an even number) | One disk per subgroup fails. |
| RAID 50   | Yes                   | $\geq 6$                          | One disk per subgroup fails. |
| RAID 60   | Yes                   | $\geq 8$                          | Two disks per subgroup fail. |

## Support and other resources

QNAP provides the following resources:

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



## 6. Glossary

### **Cloud Key**

Unique 8-digit code assigned to each NAS device

### **myQNAPcloud Link**

Enables you to access QNAP devices 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

### **QNAP ID**

User account that enables you to use myQNAPcloud remote access and other QNAP services

### **QTS**

QNAP NAS operating system

### **QuTS hero**

QNAP NAS operating system featuring ZFS file system

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Version 3, 29 June 2007

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END OF TERMS AND CONDITIONS

**CE notice**



This device complies with CE Compliance Class B.

**UKCA notice**



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

**FCC notice**

**FCC Class B Notice**



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**Note**

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

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

**Important**

Any modifications made to this device that are not approved by QNAP Systems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

**VCCI notice**

VCCI-B

**BSMI notice**

D33B77  
RoHS

## SJ/T 11364-2006



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