



**QNAP**

# **QGD Rackmount Switch**

**QGD-1600P**

**QGD-1602P**

**User Guide**

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# 1. Preface





## About This Guide

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

## Audience

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

## Document Conventions

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

## 2. Product Overview

This chapter provides basic information about the QNAP device.

### About the QGD-1600P and QGD-1602P

The QGD-1600P and QGD-1602P are QNAP's first smart-edge network switches with built-in storage capacity. The switches support virtual machines (VMs) and come with a dual-CPU design that offers Layer 2 management functions for VM and QTS applications.

The QGD-1600P is equipped with 4-port 60-watt and 12-port 30-watt Gigabit Power over Ethernet (PoE), and features software-defined networking (SDN) to support multiple SMB applications, including NAS, NVR, router, firewall, AP controller, and surveillance.

The QGD-1602P is equipped with 2.5 GbE and 10 GbE SFP+ ports with up to 90-watt Power over Ethernet (PoE) output. The switch integrates QuWAN to form a SD-WAN architecture with other QNAP devices across multiple sites, and fulfills IP surveillance, network security, wireless AP management, and storage expansion applications.

Both models can also be configured as ADRA devices for network detection and response. For details, see the ADRA Device (Global Edition) User Guide.

### Hardware Specifications



#### Warning

If your QNAP product has hardware defects, return the product to QNAP or a QNAP-authorized service center for maintenance or replacement. Any attempt to repair or perform maintenance procedures on the product by you or an unauthorized third party invalidates the warranty.

QNAP is not responsible for any damage or data loss caused by unauthorized modifications and installation of unsupported third-party applications.

For details, see the [QNAP Warranty Terms and Conditions](#).












#### Tip

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

| Ordering P/N        | CPU                   | Frequency                                  | Memory |
|---------------------|-----------------------|--|--------|
| QGD-1600P-4G        | Intel® Celeron® J4115 | 4-core/4-thread 1.8 GHz base/2.5 GHz burst | 4 GB   |
| QGD-1600P-8G        |                       |  | 8 GB   |
| QGD-1602P-C3558-8G  | Intel® Atom® C3558    | 4-core/4-thread 2.2 GHz                    | 8 GB   |
| QGD-1602P-C3758-16G | Intel® Atom® C3758    | 8-core/8-thread 2.2 GHz                    | 16 GB  |

| Component         | QGD-1600P-4G                               | QGD-1600P-8G | QGD-1602P-C3558-8G      | QGD-1602P-C3758-16G     |
|-------------------|--|--------------|-------------------------|-------------------------|
| Processor         |  |              |                         |                         |
| CPU               | Intel® Celeron® J4115                      |              | Intel® Atom® C3558      | Intel® Atom® C3758      |
| Frequency         | 4-core/4-thread 1.8 GHz base/2.5 GHz burst |              | 4-core/4-thread 2.2 GHz | 8-core/8-thread 2.2 GHz |
| Architecture      | x86 64-bit                                 |              |                         |                         |
| Encryption engine | AES-NI                                     |              |                         |                         |

| Component                      | QGD-1600P-4G   | QGD-1600P-8G                   | QGD-1602P-C3558-8G             | QGD-1602P-C3758-16G              |
|--------------------------------|--|--------------------------------|--------------------------------|----------------------------------|
| Graphics                       | Intel® HD Graphics 600   |                                | -                              | -                                |
| Memory                         |  |                                |                                |                                  |
| Pre-installed memory           | 4 GB RAM: 1 x 4 GB SODIMM DDR4   | 8 GB RAM: 2 x 4 GB SODIMM DDR4 | 8 GB RAM: 1 x 8 GB SODIMM DDR4 | 16 GB RAM: 1 x 16 GB SODIMM DDR4 |
| Memory slots                   | 2 x 4 GB SODIMM DDR4   |                                | 2 x 32 GB SODIMM DDR4          |                                  |
|                                |  <b>Important</b><br>Use only QNAP memory modules to maintain system performance and stability. For devices with more than one memory slot, use QNAP modules with identical specifications. Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting. |                                |                                |                                  |
| Maximum memory                 | 8 GB RAM: 2 x 4 GB   |                                | 64 GB RAM: 2 x 32 GB           |                                  |
| Flash memory                   | 4 GB (dual-boot OS protection)   |                                |                                |                                  |
| Storage                        |  |                                |                                |                                  |
| Drive bays                     | 2 x 2.5-inch SATA 6 Gbps   |                                |                                |                                  |
|                                |  <b>Note</b><br>The drive bays are backward compatible with SATA 3 Gbps drives.   |                                |                                |                                  |
| Drive compatibility            | <ul style="list-style-type: none"> <li>• 2.5-inch SATA hard disk drives</li> <li>• 2.5-inch SATA solid-state drives</li> </ul>   |                                |                                |                                  |
| M.2 SSD slots                  | -  | -                              | 2 x PCIe Gen 3 x1 NVMe         | 2 x PCIe Gen 3 x2 NVMe           |
|                                |  <b>Tip</b><br>You can install an M.2 SSD expansion card in the PCIe slot.  |                                |                                |                                  |
| M.2 SSD form factor            | -  | -                              | 2280                           | 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: <ul style="list-style-type: none"> <li>• M.2 SSDs</li> <li>• SSD cache drives</li> </ul>   |                                | Not supported                  |                                  |
| Network                        |  |                                |                                |                                  |
| 10 Gigabit network interface   | -  | -                              | 2 x 10 GbE SFP+                |                                  |
| 2.5 Gigabit network interface  | -  | -                              | 8 x 2.5 GbE RJ45               |                                  |
| Gigabit network interface      | <ul style="list-style-type: none"> <li>• 2 x 1 GbE SFP/RJ45 combo ports</li> <li>• 14 x 1 GbE RJ45</li> </ul>  |                                | 8 x 1 GbE RJ45                 |                                  |
| PoE support                    |  |                                |                                |                                  |

| Component                            | QGD-1600P-4G   | QGD-1600P-8G | QGD-1602P-C3558-8G   | QGD-1602P-C3758-16G |
|--------------------------------------|--|--------------|--|---------------------|
| 802.3af (PoE)                        | Ports 1 to 16<br> <b>Note</b><br>The ports support IEEE 802.3af-2003 PoE standard and provide up to 15.4W of DC power.  |              |  |                     |
| 802.3at (PoE+)                       | Ports 1 to 16<br> <b>Note</b><br>The ports support IEEE 802.3at-2009 PoE standard and provide up to 30W of DC power.  |              |  |                     |
| 802.3bt (PoE++)                      | Ports 1 to 4<br> <b>Note</b><br>The ports support IEEE 802.3bt-2018 PoE standard and provide up to 60W of DC power.   |              | Ports 1 to 4<br> <b>Note</b><br>The ports support IEEE 802.3bt-2018 PoE standard and provide up to 90W of DC power. |                     |
| PoE max power port                   | <ul style="list-style-type: none"> <li>Ports 1 to 4: Up to 60W</li> <li>Ports 5 to 16: Up to 30W</li> </ul>  |              | <ul style="list-style-type: none"> <li>Ports 1 to 4: Up to 90W</li> <li>Ports 5 to 16: Up to 30W</li> </ul>  |                     |
| Total PoE power budget               | 260W   |              | 200W   | 370W                |
|                                      |  <b>Warning</b><br>To reduce the risk of fire or electric shock, ensure that you only connect the power cord to a properly grounded electrical outlet.                   |              |  |                     |
| Total power consumption              | 418W   |              | 280W   | 500W                |
| External I/O Ports & Expansion Slots |  |              |  |                     |
| PCIe slots                           | 2 x PCIe 2.0 x2  |              | 2 x PCIe 3.0 x4  |                     |
|                                      |  <b>Tip</b><br>For the list of compatible drive models and expansion cards, go to <a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a> . |              |  |                     |
| USB ports                            | <ul style="list-style-type: none"> <li>1 x USB 3.2 Gen 1 Type-A</li> <li>2 x USB 2.0 Type-A</li> </ul>   |              | 2 x USB 3.2 Gen 1 Type-A   |                     |
| HDMI ports                           | 1 x HDMI 2.0 (up to 3840 x 2160 resolution at 30 Hz with HDR)  |              | -  | -                   |
| Interface                            |  |              |  |                     |
| Display panel                        | Monochrome backlit LCD display   |              |  |                     |
| Buttons                              | <ul style="list-style-type: none"> <li>Enter</li> <li>Select</li> <li>QTS reset</li> <li>Switch reset</li> <li>System power</li> </ul>   |              |  |                     |
| Switches                             | Power  |              |  |                     |
| Dimensions                           |  |              |  |                     |



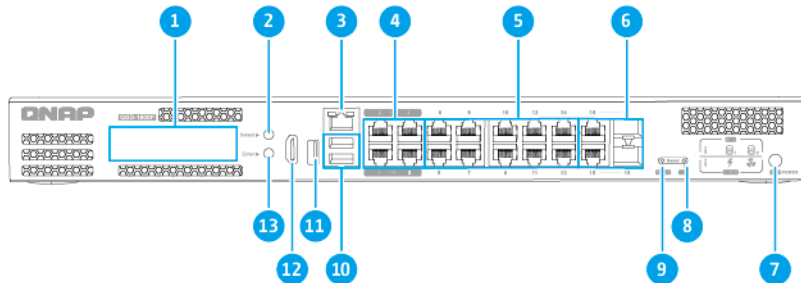
| Component              | QGD-1600P-4G   | QGD-1600P-8G | QGD-1602P-C3558-8G   | QGD-1602P-C3758-16G |
|------------------------|--|--------------|--|---------------------|
| Form factor            | 1U Rackmount   |              |  |                     |
| Dimensions (H x W x D) | 47.2 × 436.2 × 326.2 mm<br>(1.86 x 17.17 x 12.84 in)   |              | 44.2 x 435.2 x 327.7<br>(1.74 x 17.13 x 12.9 in)   |                     |
| Net weight             | 4.41 kg (9.72 lbs)   |              | 4.37 kg (9.63 lbs)   |                     |
| Others                 |  |              |  |                     |
| Rail compatibility     | <ul style="list-style-type: none"> <li>RAIL-B02</li> <li>SP-EAR-BLK-01</li> </ul> <div style="border-left: 2px solid #0070C0; padding-left: 10px; margin-top: 10px;"> <p><b>Note</b><br/>The RAIL-B02 rail kit and SP-EAR-BLK-01 rack mount ear require separate purchase. For details, see <a href="#">QNAP Accessories Store</a>.</p> </div> |              |  |                     |
| System battery         | CR2032 lithium battery (3V, 225 mAh)   |              |  |                     |
| Fans                   | <ul style="list-style-type: none"> <li>System: 2 x 40 mm 12V DC fans</li> <li>Drive bay: 1 x 40 mm 12V DC fan</li> </ul>   |              | <ul style="list-style-type: none"> <li>System: 3 x 40 mm 12V DC fans</li> <li>Drive bay: 1 x 40 mm 12V DC fan</li> </ul> |                     |
| 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>   |              |  |                     |

## Package Contents

| Item                           | Quantity          |
|--------------------------------|-------------------|
| QGD-1600P / QGD-1602P          | 1                 |
| Power cord                     | 1                 |
| Ethernet cable                 | 1 x 1 GbE (Cat5e) |
| Screws for 2.5-inch drives     | 6                 |
| Rail brackets                  | 2                 |
| Screws for rail brackets       | 4                 |
| Rubber feet                    | 4                 |
| Quick Installation Guide (QIG) | 1                 |

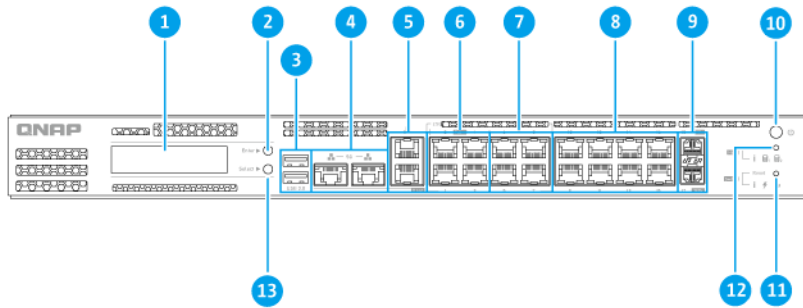
## Components

## Front Panel



### QGD-1600P

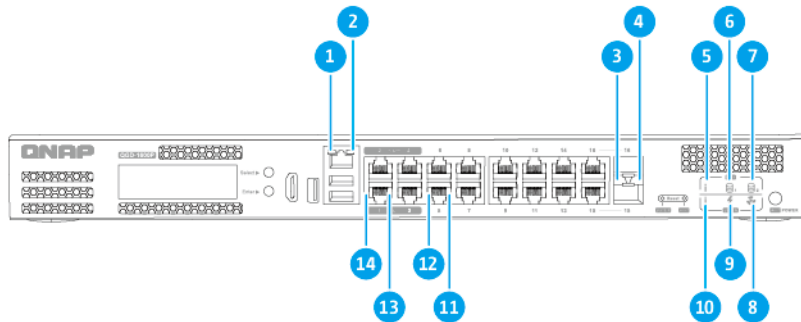
| No. | Component                            | No. | Component            |
|-----|--------------------------------------|-----|----------------------|
| 1   | LCD panel                            | 8   | QTS reset button     |
| 2   | LCD select button                    | 9   | Switch reset button  |
| 3   | Host port                            | 10  | USB 2.0 Type-A ports |
| 4   | Gigabit 802.3bt PoE++ ports          | 11  | USB 3.0 Type-A port  |
| 5   | Gigabit 802.3at PoE+ ports           | 12  | HDMI 2.0 port        |
| 6   | Gigabit 802.3at PoE+/SFP combo ports | 13  | LCD enter button     |
| 7   | Host power button                    | -   | -                    |



### QGD-1602P

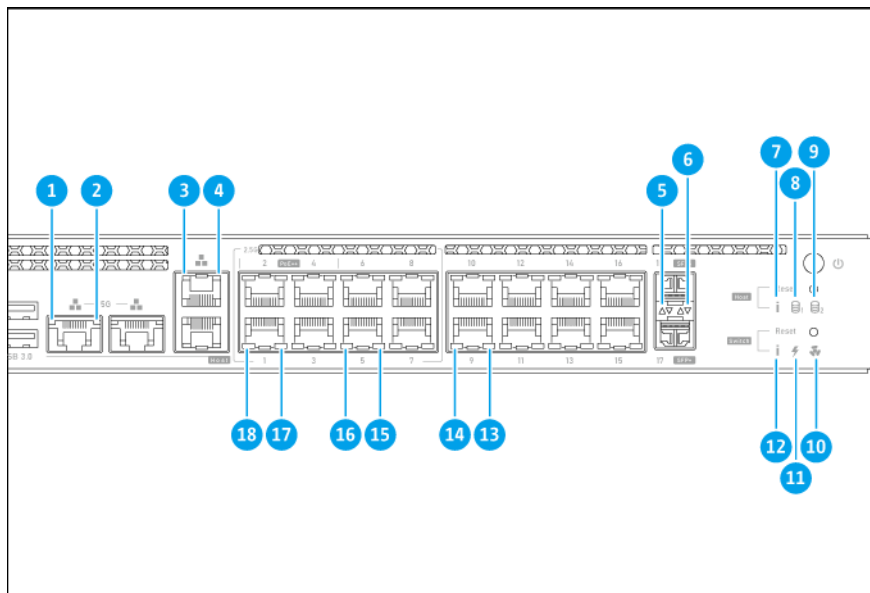
| No. | Component                       | No. | Component                  |
|-----|---------------------------------|-----|----------------------------|
| 1   | LCD panel                       | 8   | Gigabit 802.3at PoE+ ports |
| 2   | LCD enter button                | 9   | 10 Gigabit SFP+ ports      |
| 3   | USB 3.0 Type-A ports            | 10  | Host power button          |
| 4   | 5 Gigabit host ports            | 11  | Switch reset button        |
| 5   | Gigabit host ports              | 12  | QTS reset button           |
| 6   | 2.5 Gigabit 802.3bt PoE++ ports | 13  | LCD select button          |
| 7   | 2.5 Gigabit 802.3at PoE+ ports  | -   | -                          |

## Front Panel LEDs



### QGD-1600P

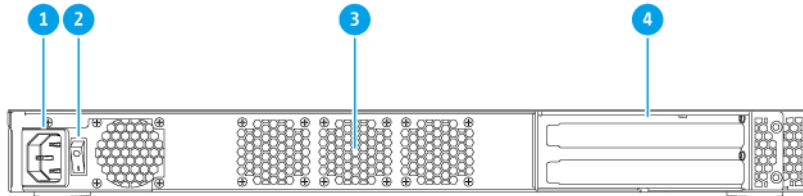
| No. | Component               | No. | Component                               |
|-----|-------------------------|-----|---|
| 1   | Host port speed LED     | 8   | Fan LED                                 |
| 2   | Host port activity LED  | 9   | Power LED                               |
| 3   | Combo port speed LED    | 10  | Switch status LED                       |
| 4   | Combo port activity LED | 11  | Gigabit 802.3at PoE+ port speed LED     |
| 5   | QTS status LED          | 12  | Gigabit 802.3at PoE+ port activity LED  |
| 6   | Drive 1 LED             | 13  | Gigabit 802.3bt PoE++ port speed LED    |
| 7   | Drive 2 LED             | 14  | Gigabit 802.3bt PoE++ port activity LED |



QGD-1602P

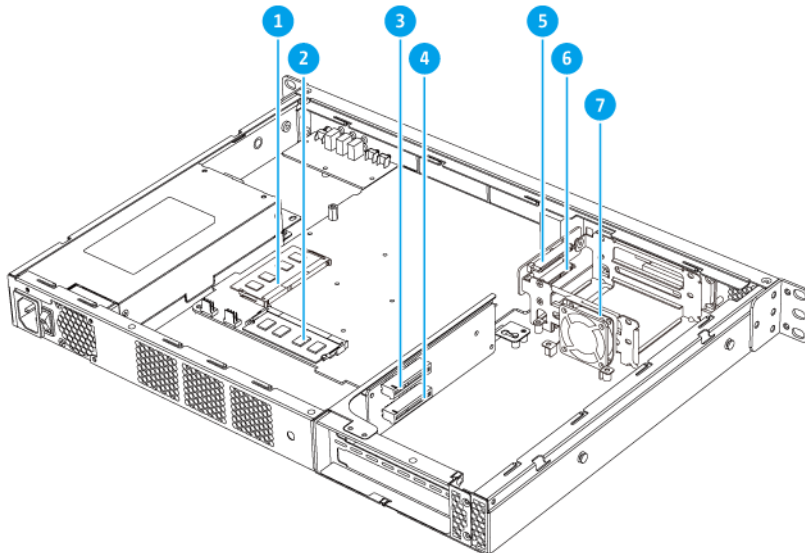
| No. | Component                         | No. | Component                                   |
|-----|-----------------------------------|-----|---|
| 1   | 5 Gigabit host port speed LED     | 10  | Fan LED                                     |
| 2   | 5 Gigabit host port activity LED  | 11  | Power LED                                   |
| 3   | Gigabit host port speed LED       | 12  | Switch status LED                           |
| 4   | Gigabit host port activity LED    | 13  | Gigabit 802.3at PoE+ port speed LED         |
| 5   | 10 Gigabit SFP+ port speed LED    | 14  | Gigabit 802.3at PoE+ port activity LED      |
| 6   | 10 Gigabit SFP+ port activity LED | 15  | 2.5 Gigabit 802.3at PoE+ port speed LED     |
| 7   | QTS status LED                    | 16  | 2.5 Gigabit 802.3at PoE+ port activity LED  |
| 8   | Drive 1 LED                       | 17  | 2.5 Gigabit 802.3bt PoE++ port speed LED    |
| 9   | Drive 2 LED                       | 18  | 2.5 Gigabit 802.3bt PoE++ port activity LED |

## Rear Panel



| No. | Component           | No. | Component               |
|-----|---------------------|-----|-------------------------|
| 1   | Power input         | 3   | System fans             |
| 2   | System power switch | 4   | PCIe full-height covers |

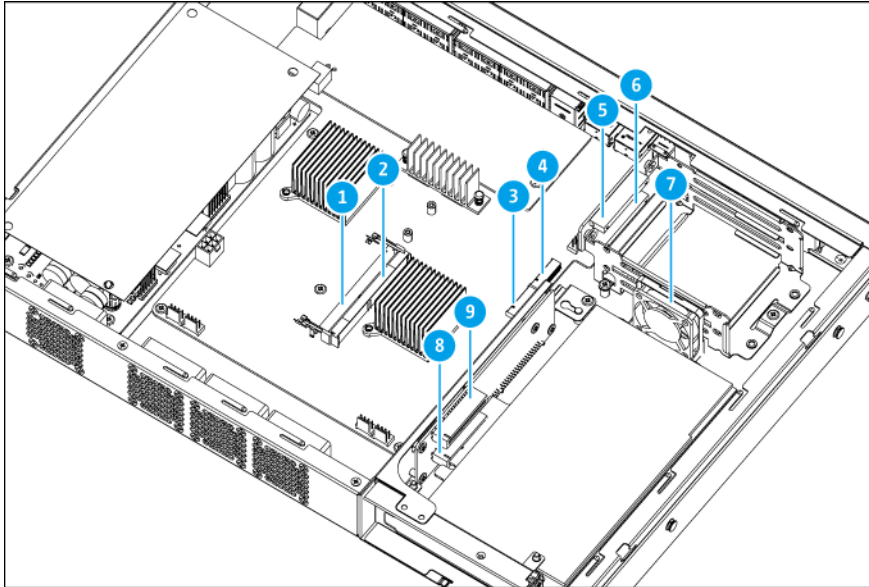
## System Board



### QGD-1600P

| No. | Component     | No. | Component         |
|-----|---------------|-----|-------------------|
| 1   | Memory slot 2 | 5   | Drive connector 1 |
| 2   | Memory slot 1 | 6   | Drive connector 2 |

| No. | Component          | No. | Component     |
|-----|--------------------|-----|---------------|
| 3   | PCIe 2.0 x2 slot 1 | 7   | Drive bay fan |
| 4   | PCIe 2.0 x2 slot 2 | -   | -             |



**QGD-1602P**

| No. | Component         | No. | Component          |
|-----|-------------------|-----|--------------------|
| 1   | Memory slot 1     | 6   | Drive connector 1  |
| 2   | Memory slot 2     | 7   | Drive bay fan      |
| 3   | M.2 SSD slot 2    | 8   | PCIe 3.0 x4 slot 2 |
| 4   | M.2 SSD slot 1    | 9   | PCIe 3.0 x4 slot 1 |
| 5   | Drive connector 2 | -   | -                  |

**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**

- 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>• Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals</li> <li>• Free from objects that may obstruct device ventilation or apply pressure to the device or power cord</li> </ul> |
| Hardware and peripherals | <ul style="list-style-type: none"> <li>• Storage drives<br/>For the list of compatible drive models, go to <a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a>.</li> <li>• Network cable</li> <li>• Optional: RAIL-B02</li> <li>• Optional: SP-EAR-BLK-01</li> </ul>   |



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

## Setting Up the Device



### Important

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

1. Place your device in an environment that meets the requirements.  
For details, see [Installation Requirements](#).
2. Install drives.  
For details, see the following topics:
  - [Installing 2.5-Inch Drives](#)
  - [Installing M.2 Solid-State Drives on the QGD-1602P](#)
3. Optional: Install expansion cards.  
For details, see [Installing Expansion Cards](#).
4. Optional: Connect expansion units.  
For details, see [Connecting USB Expansion Units](#).
5. Connect the power cord and all applicable cables.
6. Power on the device.
7. Install QTS.  
For details, see [QTS Installation](#).
8. Log on to QTS.

## 3. Installation and Configuration

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

### Hardware Installation

This section provides information on installing drives, memory modules, expansion cards, rubber feet, handles, fans, and connecting other devices.

### Removing the Case Cover



#### Warning

- 



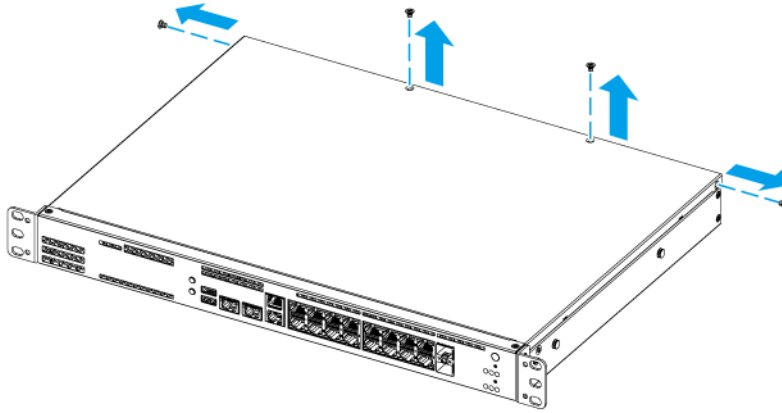
**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

- 

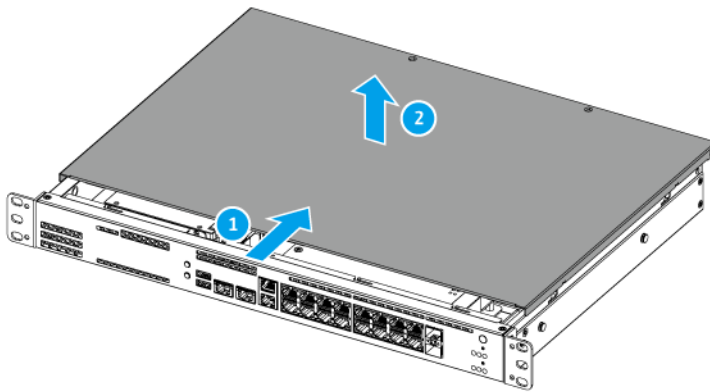


**Other moving components:** Keep your hands and other body parts away from other moving components.

1. 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.



- b. Slide the cover back.
- c. Lift the cover off the device.



## Attaching the Case Cover



### Warning

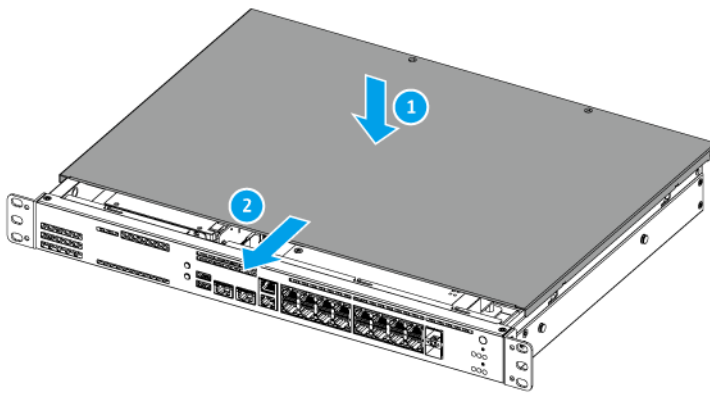


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

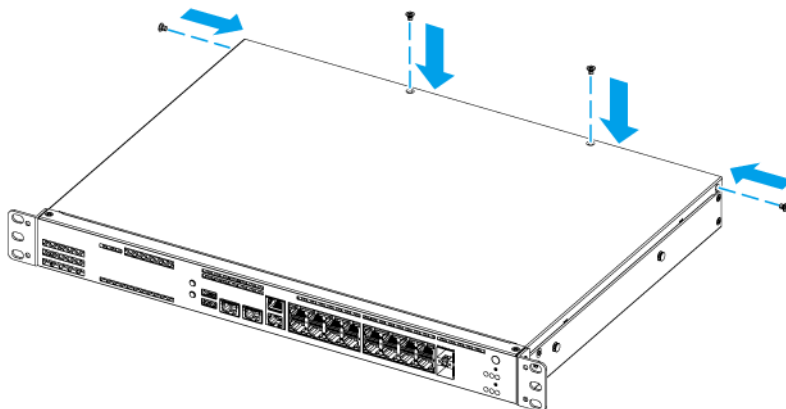


**Other moving components:** Keep your hands and other body parts away from other moving components.

1. Attach the case cover.
  - a. Place the cover on the device.
  - b. Slide the cover forward.



- c. Attach the screws.



2. Connect all cables and external attachments.

3. Connect the power cord to the electrical outlet.
4. Power on the device.

## Drive Installation

The QGD-1600P is compatible with 2.5-inch hard drives and 2.5-inch solid-state drives.

The QGD-1602P is compatible with 2.5-inch hard drives, 2.5-inch solid-state drives, and M.2 solid-state drives.

### Installing 2.5-Inch Drives

The device is compatible with 2.5-inch hard disk drives and 2.5-inch solid-state drives.



#### Warning

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

•



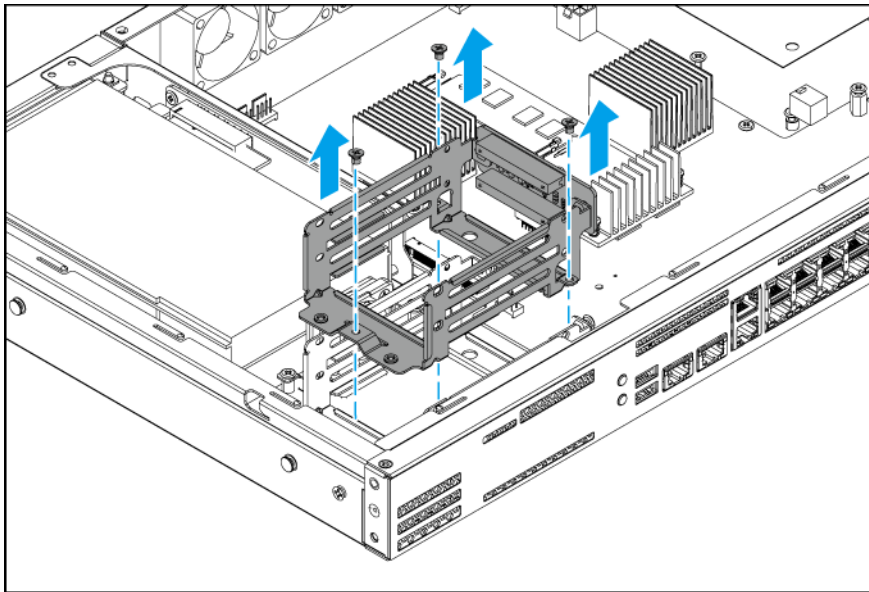
**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

•



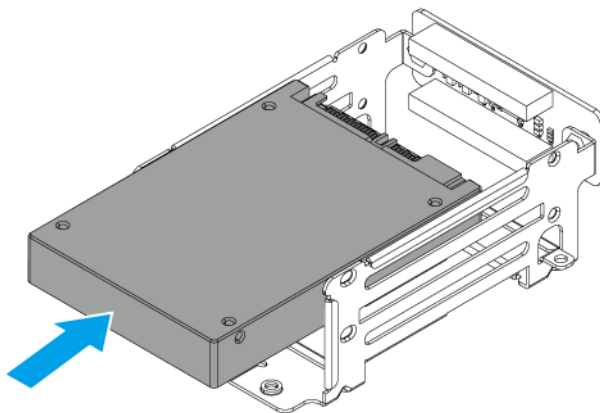
**Other moving components:** Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Remove the case cover.  
For details, see [Removing the Case Cover](#).
3. Remove the drive module.
  - a. Remove the screws.
  - b. Lift the drive module out of the device.

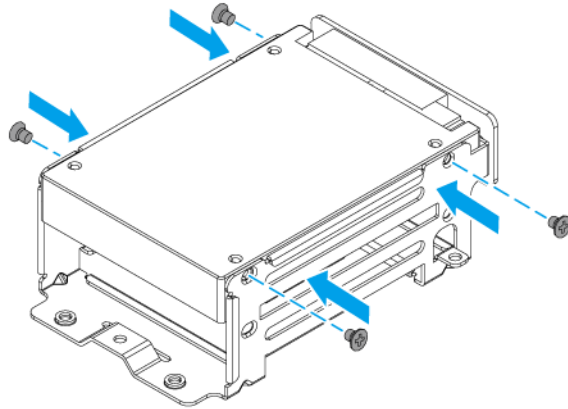


**4.** Install the drive onto the drive module.

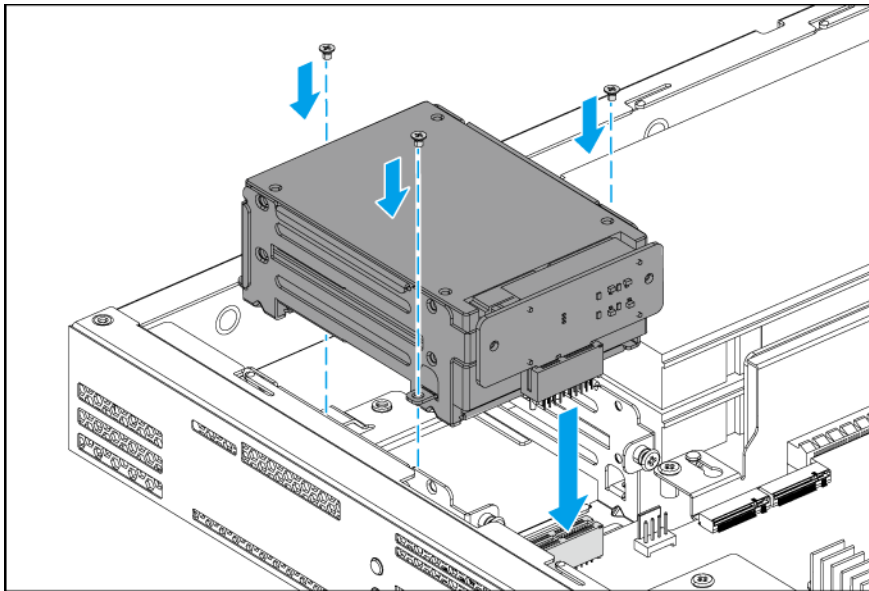
**a.** Insert the drive into the slot.



**b.** Attach the screws.



5. Insert the drive module.
  - a. Align the drive module connector to the system board.
  - b. Insert the drive module and connect it to the system board.
  - c. Attach the screws.



6. Attach the case cover.  
For details, see [Attaching the Case Cover](#).
7. Power on the device.

## Installing M.2 Solid-State Drives on the QGD-1602P

The QGD-1602P has two M.2 SSD slots on the system board.

For details, see [System Board](#).

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



### Warning

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

- 



**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. Optional: Install a heatsink on the M.2 SSD.
  - a. Locate the controller on the M.2 SSD.

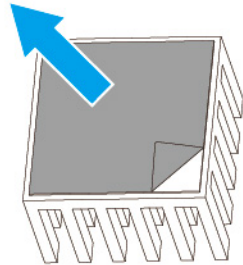


### Note

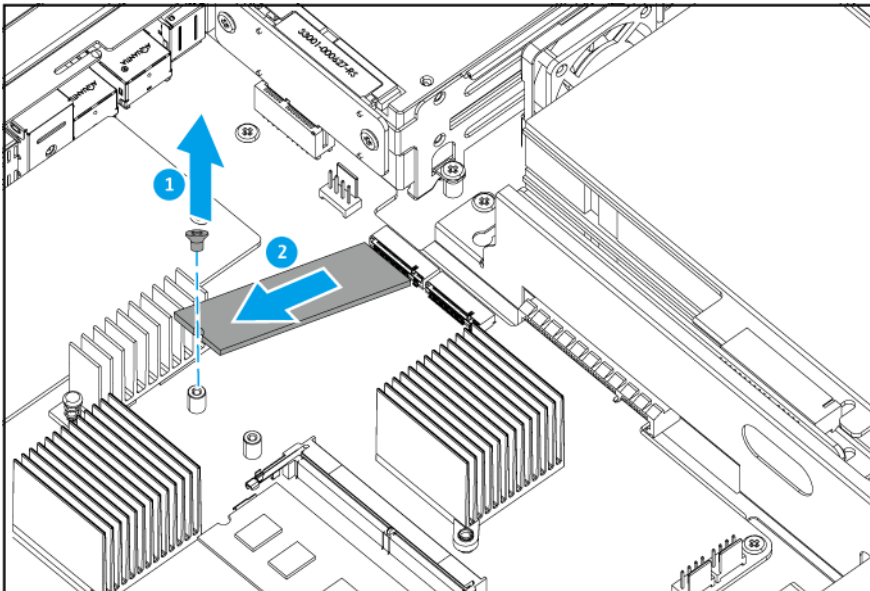
The controller location varies depending on the model and manufacturer of the M.2 SSD. For details, refer to the documentation or contact the manufacturer.

- b. Remove the protective film from the heatsink.

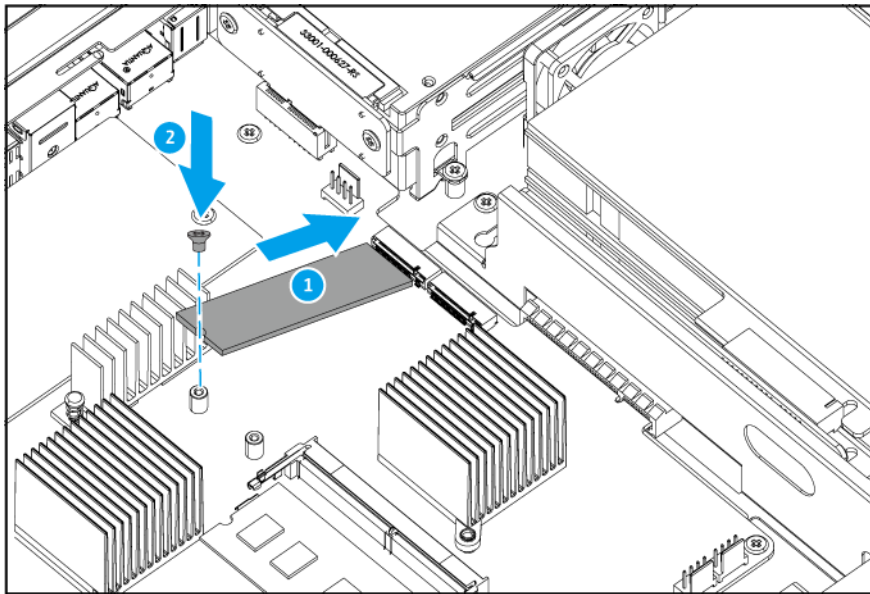




- c. Install the heatsink on the controller.
6. Optional: Remove an existing M.2 SSD.
- a. Remove the screw.
  - b. Pull the M.2 SSD away from the slot.



7. Install the new M.2 SSD.
- a. Insert the M.2 SSD into the slot.
  - b. Attach the screw.



8. Optional: Install an additional M.2 SSD.
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.

## Replacing Memory Modules

The device has two memory slots. The QGD-1600P-4G, QGD-1602P-C3558-8G, and QGD-1602P-C3758-16G come pre-installed with one memory module, while the QGD-1600P-8G has two pre-installed memory modules.

You can increase the memory capacity of the device by upgrading the memory modules. When using two modules, use only QNAP modules of the same type and capacity to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.



### Warning

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

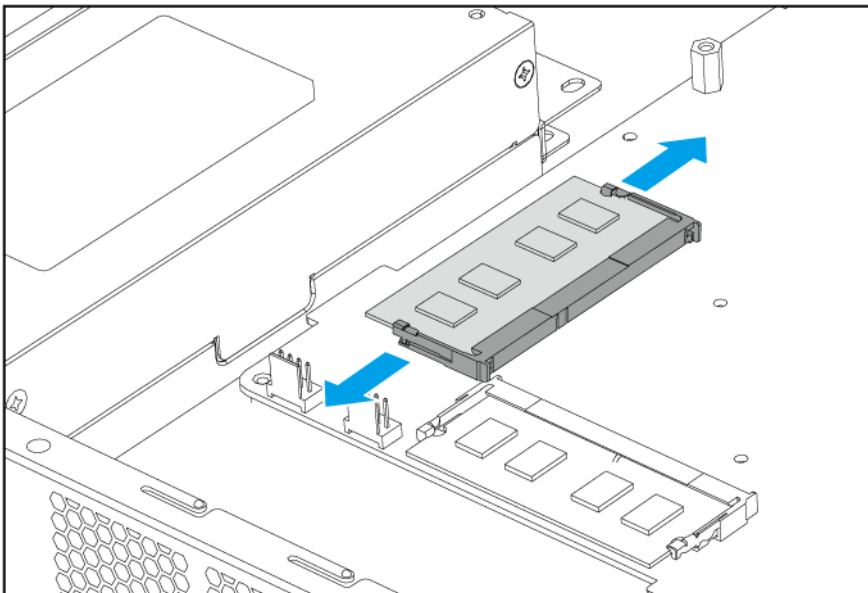


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

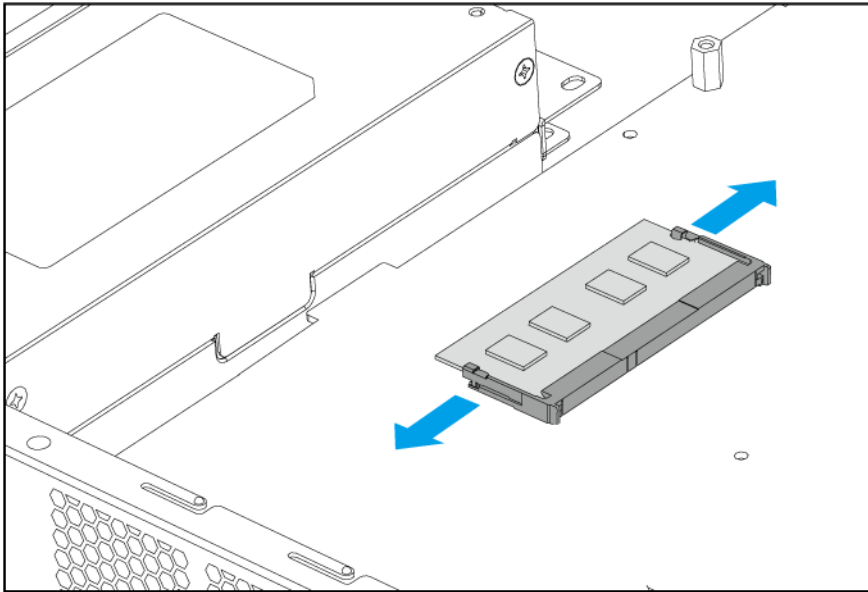


**Other moving components:** Keep your hands and other body parts away from other moving components.

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. Optional: Remove an existing module.
  - a. Push the retention clips outward simultaneously to release the module.



**QGD-1600P**

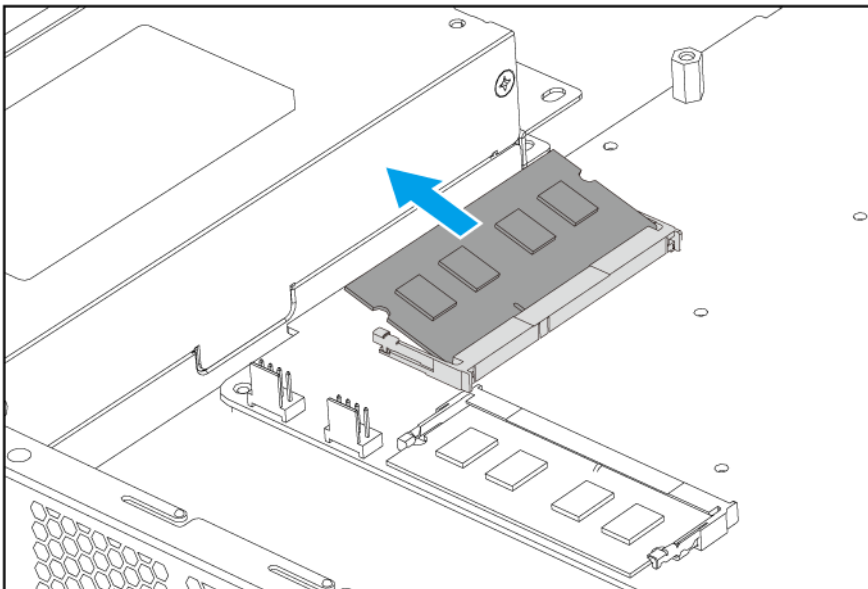
**QGD-1602P**

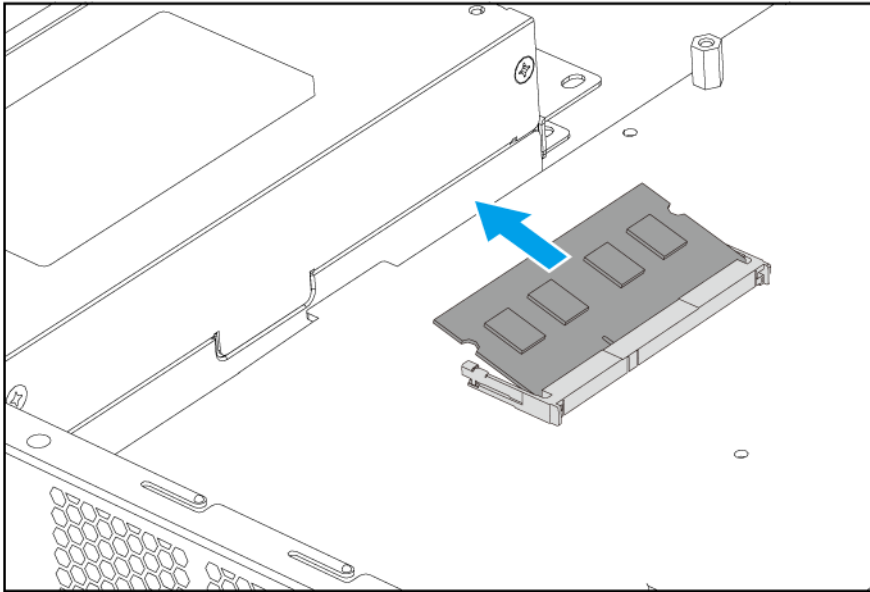
- b. Verify that the module has tilted upward and is completely released from the slot.

**Warning**

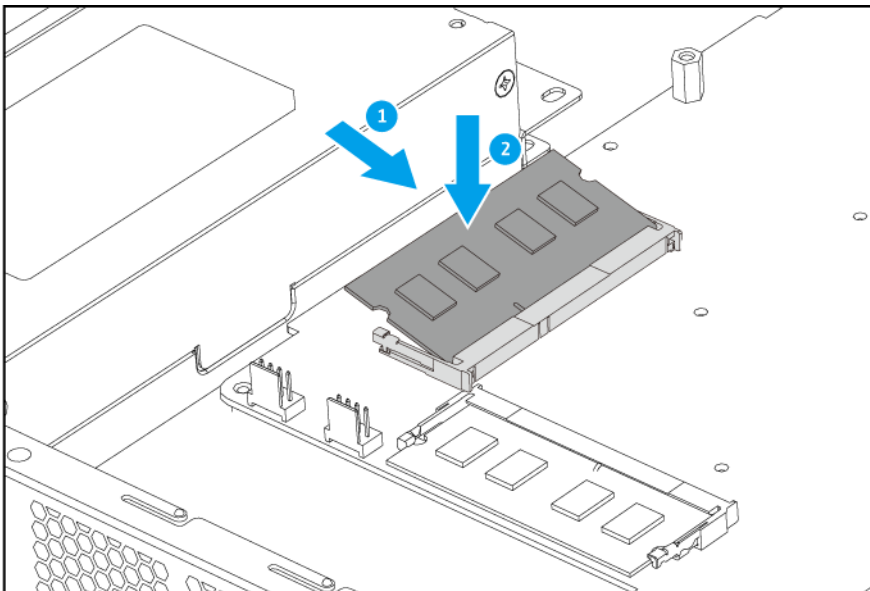
Attempting to remove a module that is not completely released may damage the module and the system board.

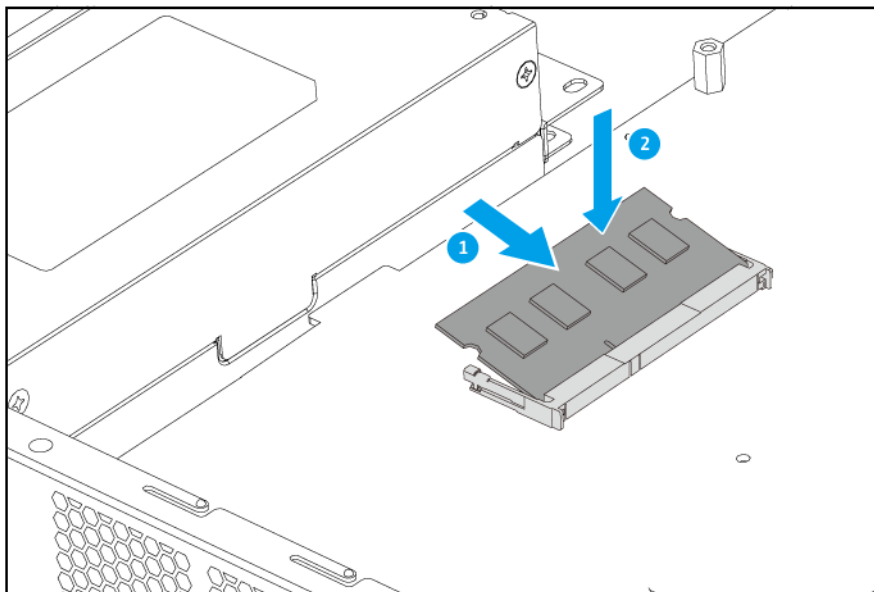
- c. Hold the module by the edges.
- d. Carefully slide the module out of the slot.

**QGD-1600P**

**QGD-1602P**

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

**QGD-1602P**

**QGD-1602P**

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

## 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 <http://www.qnap.com/compatibility>.



### Warning

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

- 



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

- 



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

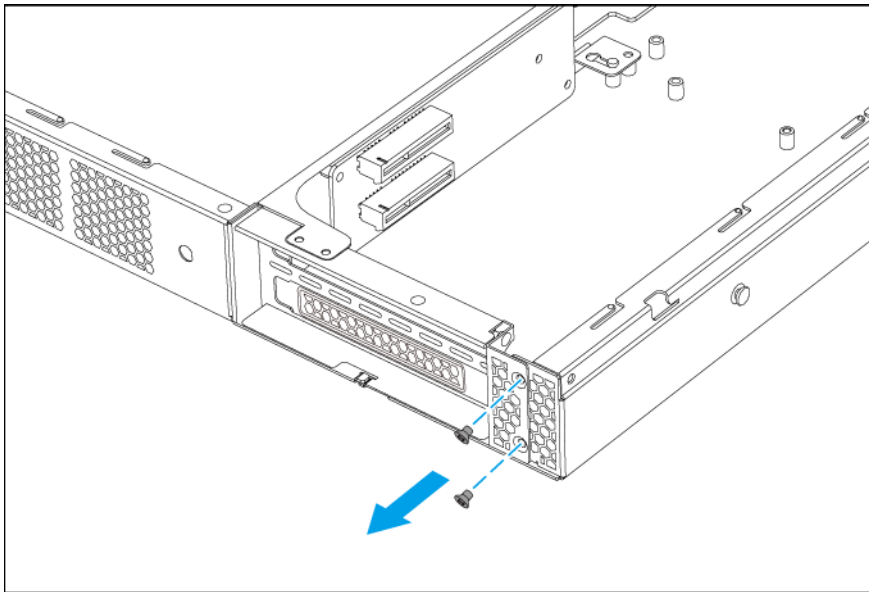
1. Power off the device.

2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.  
For details, see [Removing the Case Cover](#).

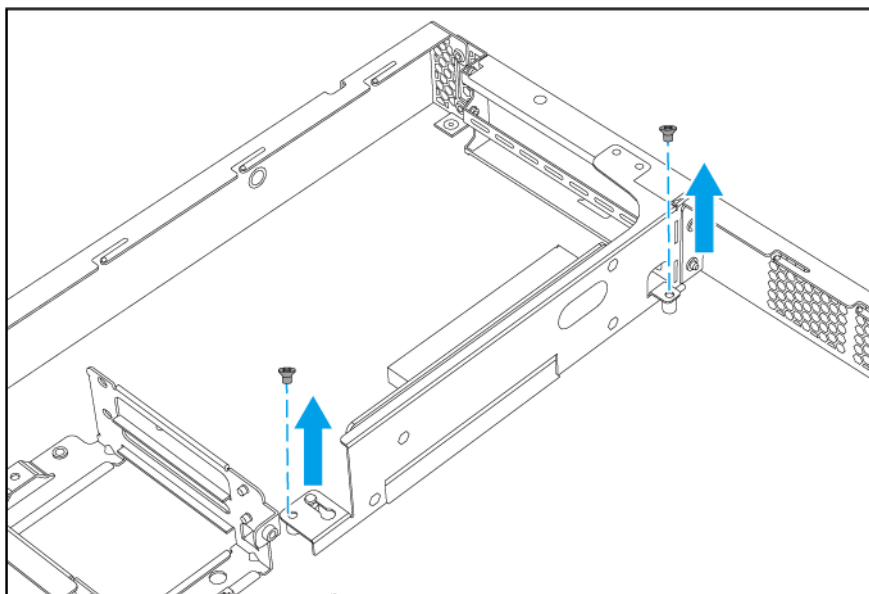
**Warning**

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

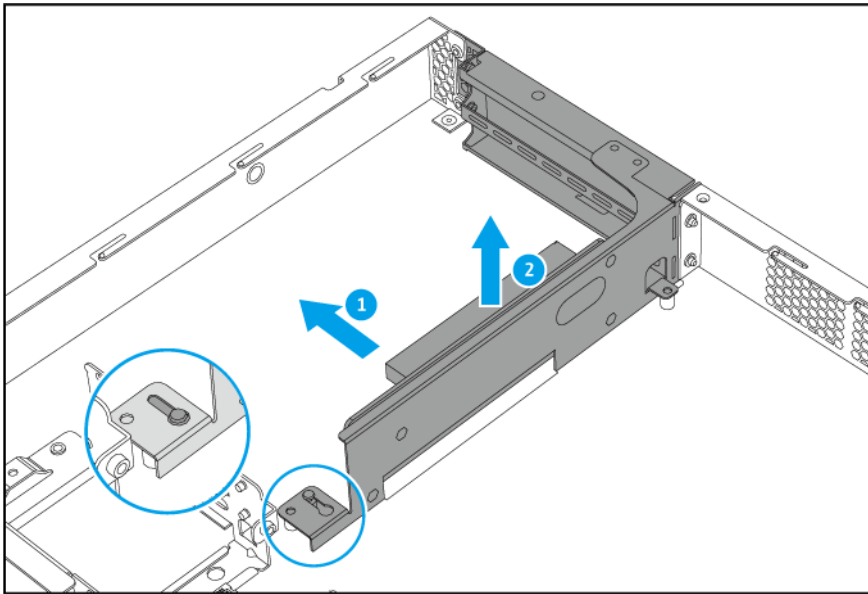
5. Remove the expansion card module.
  - a. Remove the screws on the rear panel.



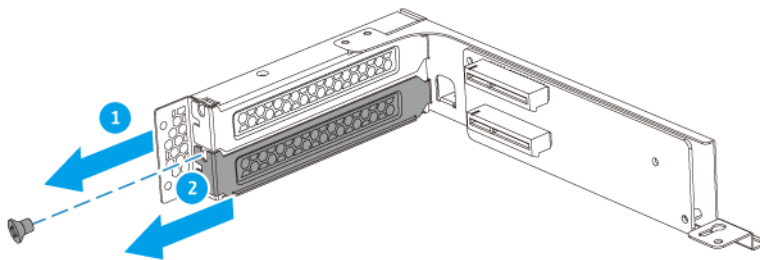
- b. Remove the screws inside the chassis.



- c. Slide the module to the right until it is completely detached from the system board.
- d. Remove the module.

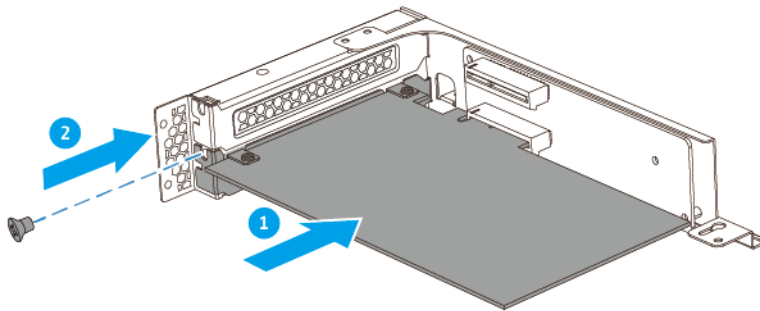


6. Remove the PCIe cover.
  - a. Remove the screw that secures the cover to the module.
  - b. Pull the cover away from the slot.

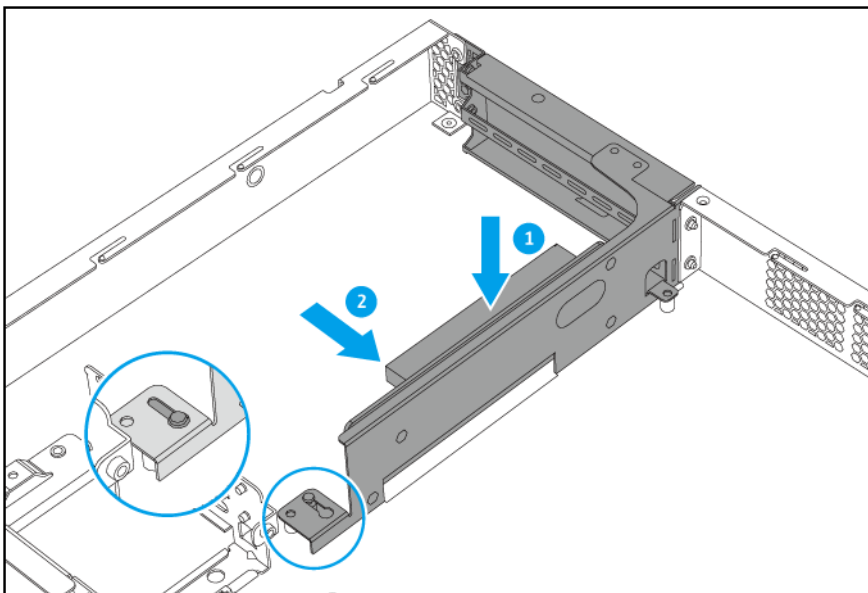


7. Install the expansion card.
  - a. Hold the card by the edges.
  - b. Insert the card into the slot.
  - c. Attach the screw.

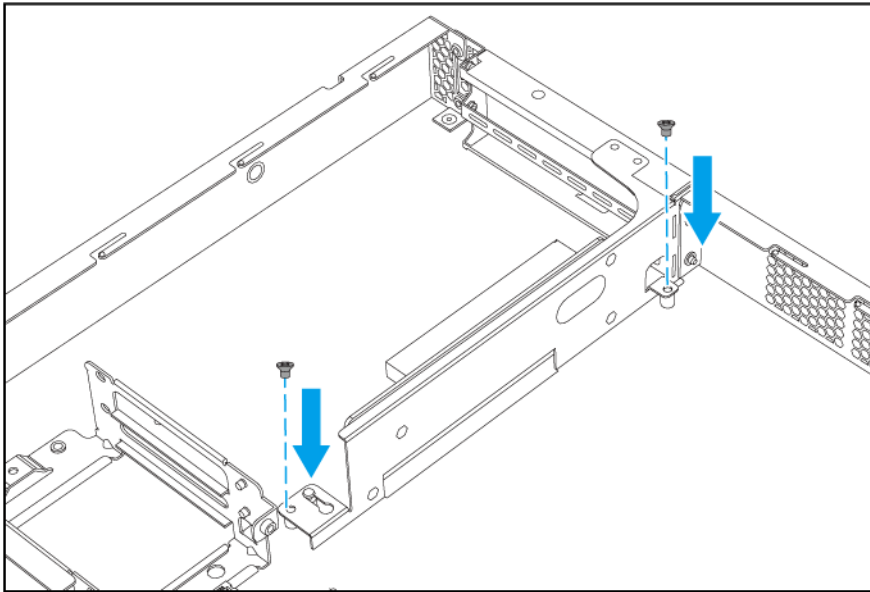




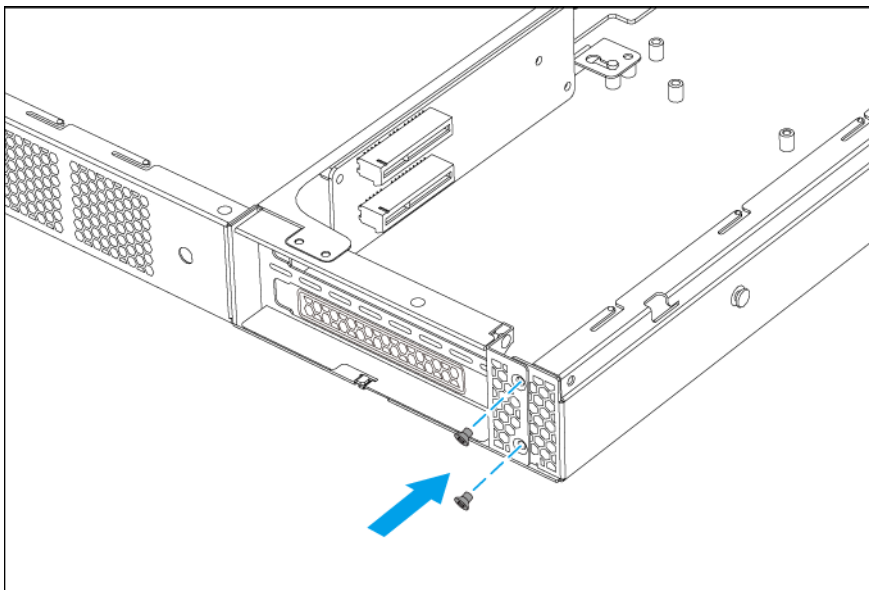
- 8.** Install the expansion card module.
  - a.** Align the module connector with the system board.
  - b.** Slide the module to the left until it is completely connected with the system board.



- c.** Attach the screws inside the chassis.



**d.** Attach the screws on the rear panel.

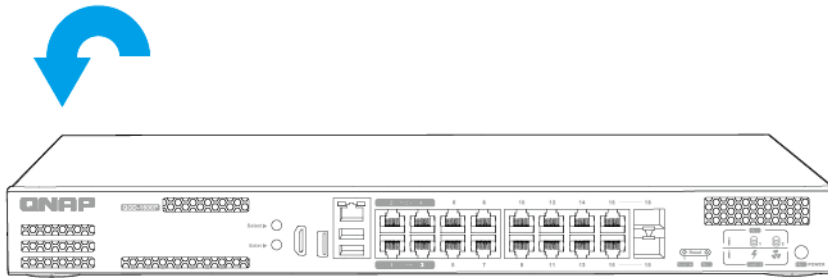


9. Attach the case cover.  
For details, see [Attaching the Case Cover](#).
10. Connect all cables and external attachments.
11. Connect the power cord to the electrical outlet.
12. Power on the device.

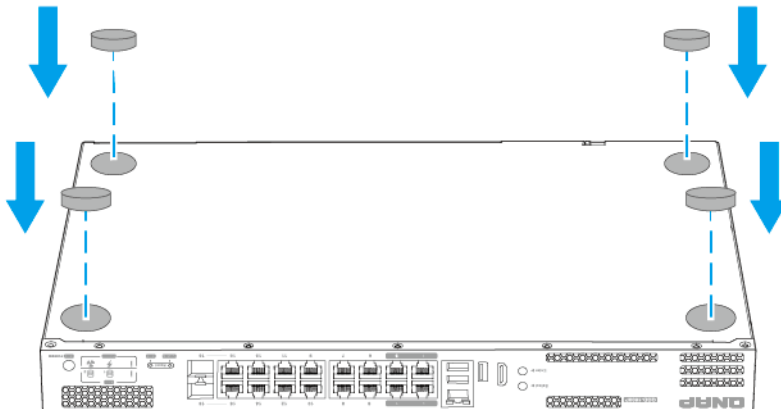
## Attaching Rubber Feet

1. Power off the device.

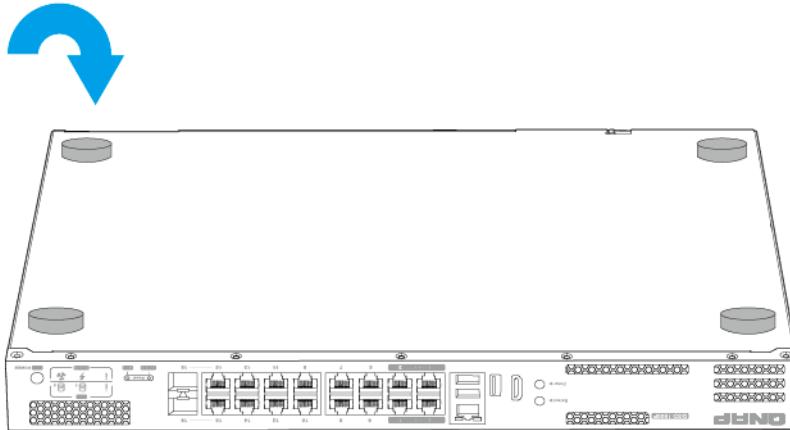
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Turn the device upside down.



5. Attach the rubber feet.
  - a. Remove the protective film from the rubber feet.
  - b. Attach the rubber feet.



- c. Place the device in its normal upright position.

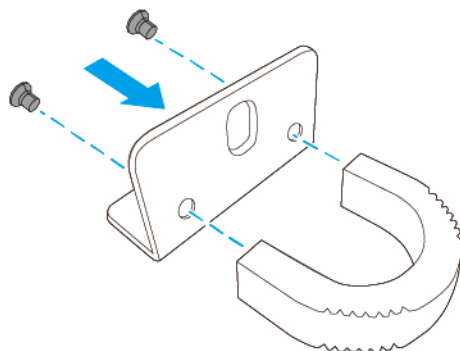


6. Connect all cables and external attachments.
7. Connect the power cord to the electrical outlet.
8. Power on the device.

## Installing Handles

Installing handles enables you to better grip and secure the device on a rack.

1. Power off the device
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Install a handle on an angle bracket.
  - a. Align the openings on the handle with the two round screw holes on the angle bracket.
  - b. Attach the screws to lock the handle to the angle bracket.

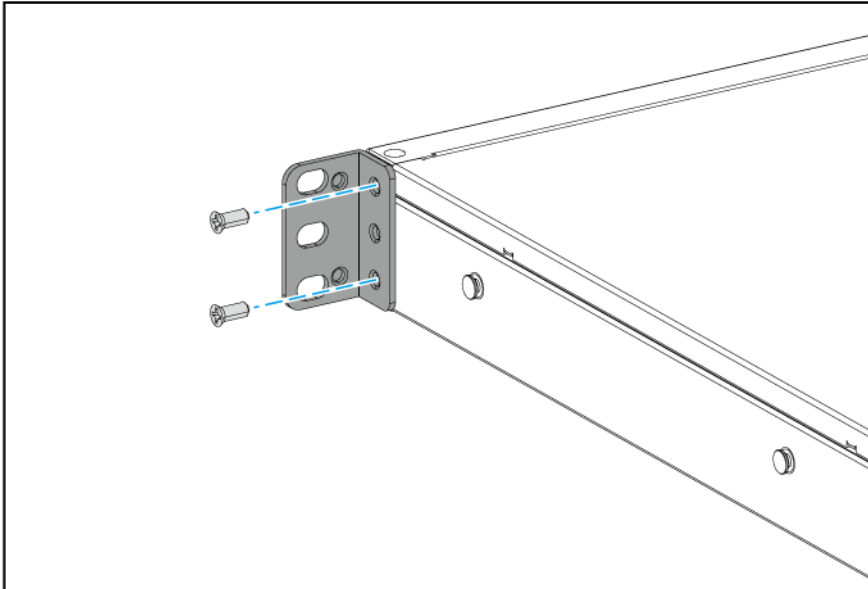


5. Install the angle bracket on the device.
  - a. Align the holes on the angle bracket with the holes on the chassis.


**Note**

Ensure that the handle faces the same direction as the front panel.

- b. Attach the screws.



6. Install a second handle on the other side of the chassis.
7. Connect all cables and external attachments.
8. Connect the power cord to the electrical outlet.
9. Power on the device.

## Fan Installation

The device contains replaceable system and drive bay fans.

### Replacing System Fans


**Warning**

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

•

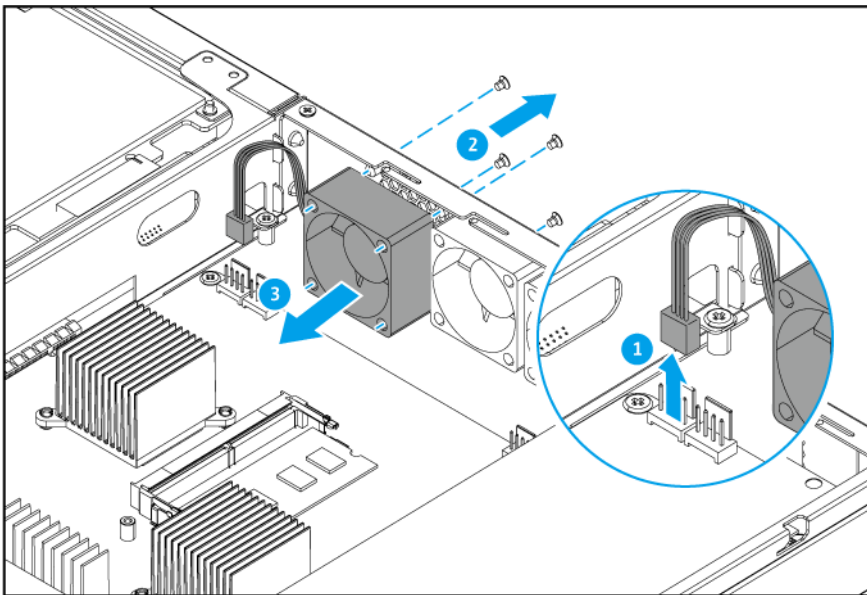


**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

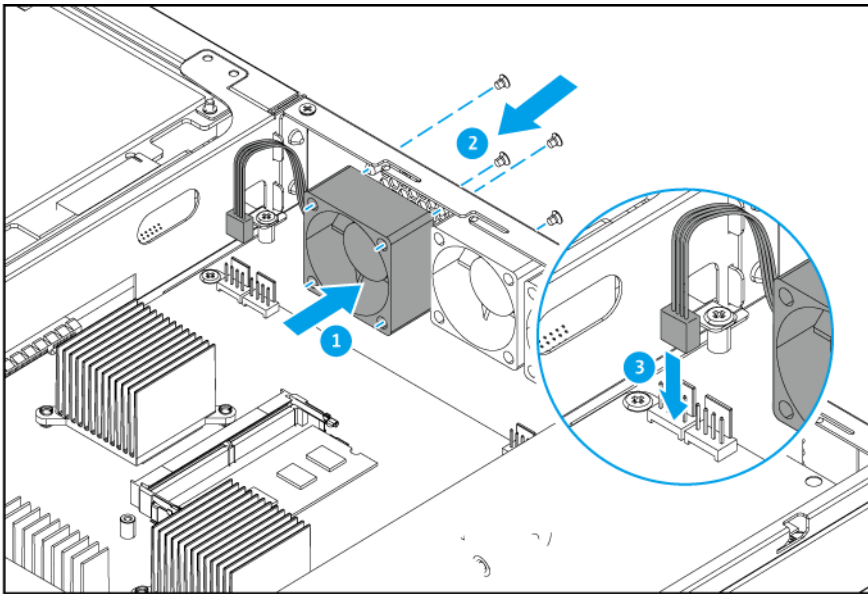


**Other moving components:** Keep your hands and other body parts away from other moving components.

1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.  
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. Attach the case cover.  
For details, see [Attaching the Case Cover](#).
8. Connect all cables and external attachments.
9. Connect the power cord to the electrical outlet.
10. Power on the device.

## Replacing the Drive Bay Fan



### Warning

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

- 



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

- 

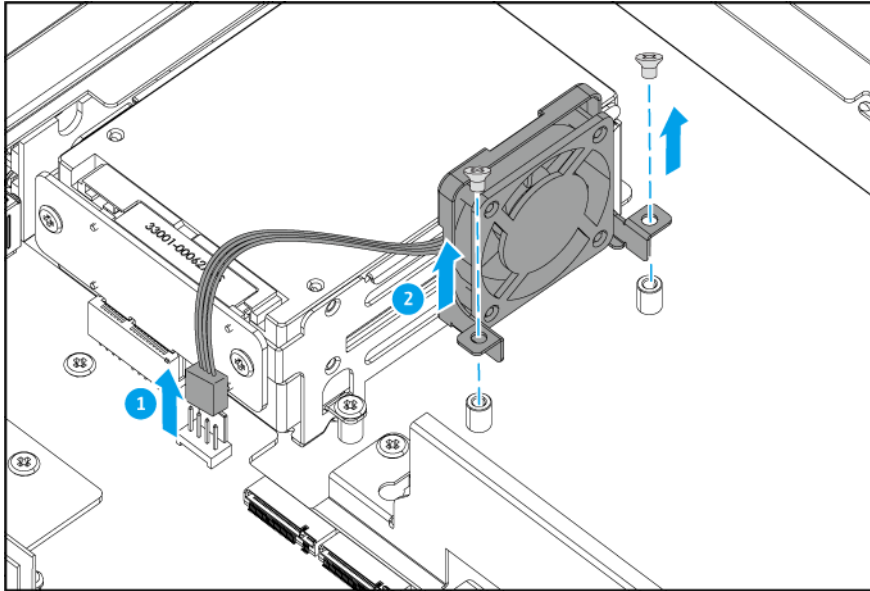


**Other moving components:** Keep your hands and other body parts away from other moving components.

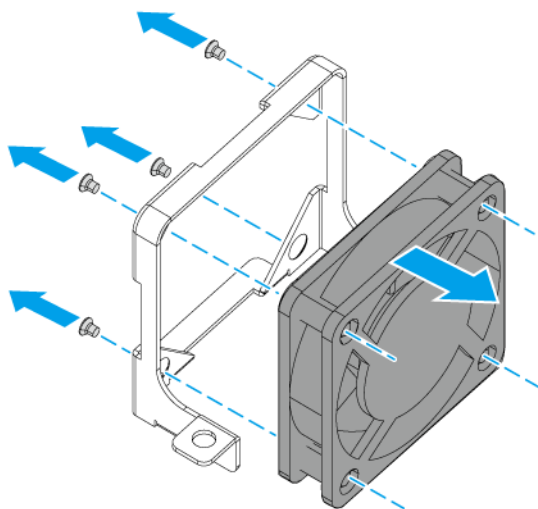
1. Power off the device.
2. Disconnect the power cord from the electrical outlet.
3. Disconnect all cables and external attachments.
4. Remove the case cover.

For details, see [Removing the Case Cover](#).

5. Remove the fan module.
  - a. Detach the fan's power connector from the system board.
  - b. Remove the screws that secure the fan module to the chassis.



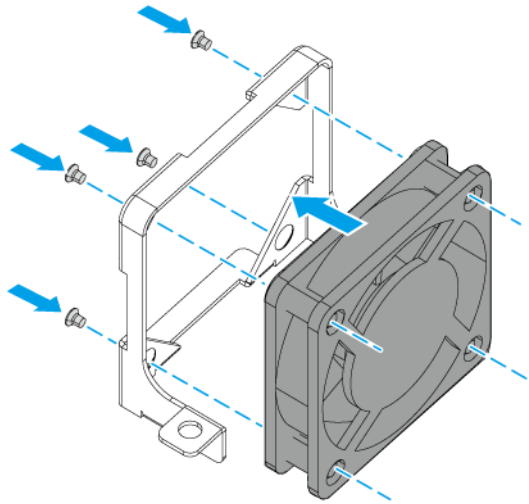
- c. Lift the fan module from the chassis.
6. Remove the fan.
  - a. Remove the screws that secure the fan to the fan module.
  - b. Remove the fan from the fan module.



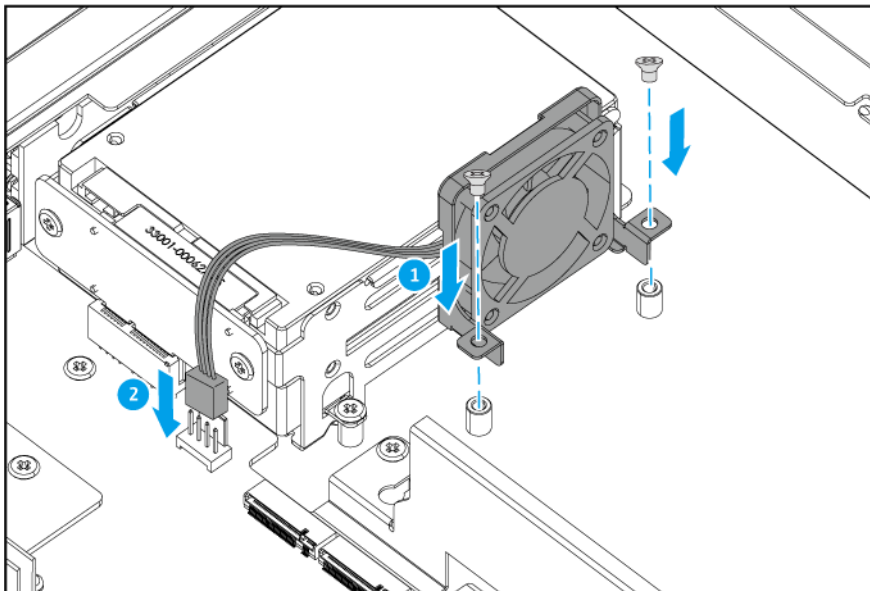
7. Install a new fan.



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



8. Attach the fan module.
- a. Align the fan module to the screw holes on the chassis.
- b. Attach the screws that secure the fan module to the chassis.
- c. Attach the fan's power connector to the system board.



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.

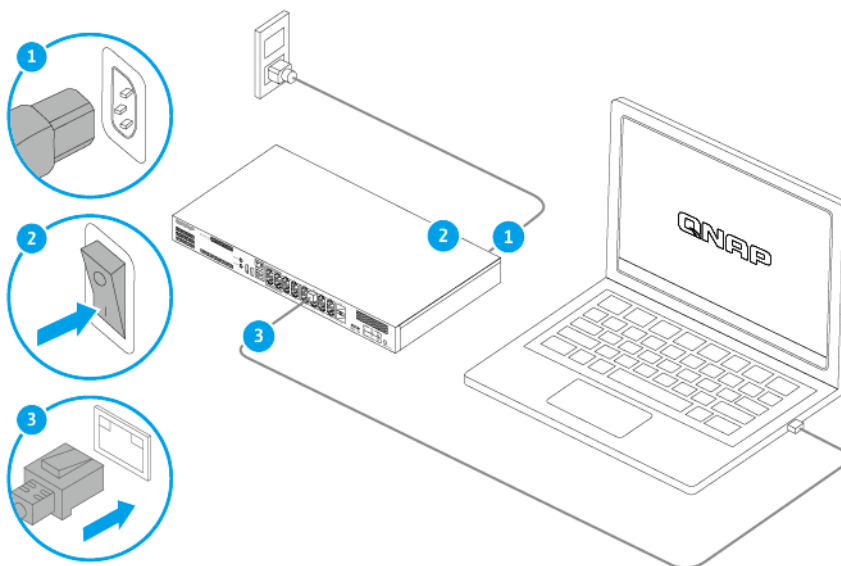
## Connecting the Device to a Computer or Network

The device can be connected to a computer or local area network.

### Connecting the Device to a Computer

Connecting the device to a QNAP NAS allows you to expand storage capacity and backup data to another NAS through Ethernet cable connections to a PoE port on the device. However, you must connect the device to a computer to configure the device settings.

1. Power on the device.
2. Connect the device to a computer.
  - a. Connect an Ethernet cable to a PoE port on the device.
  - b. Connect the Ethernet cable to a Gigabit Ethernet port on the computer.



3. Verify that the device is recognized by the computer.
  - a. Open Qfinder Pro on the host computer.



#### Note

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

- b. Locate the device on the list.

### Connecting the Device to a Network

The device can connect to the local area network through the host port or a PoE port.

1. Power on the device.

2. Connect the device to your local area network through one of the following port types:

| Port Type | QGD-1600P  | QGD-1602P   |
|-----------|--|---|
| Host Port | Use the device IP address obtained from Adapter 1 on the LCD panel.              | Use the device IP address obtained from Adapter 1, Adapter 2, Adapter 3, or Adapter 4 on the LCD Panel. |
| PoE Port  | Use the device IP address obtained from Adapter 2 or Adapter 3 on the LCD panel. | User the device IP address obtained from Adapter 5 or Adapter 6 on the LCD panel.                       |

3. Run Qfinder Pro on a computer that is connected to the same local area network.



#### Note

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

4. Enter the IP address in the Qfinder Pro search bar.
5. Locate the device in the list and then double-click the name or IP address. The QTS login screen appears.
6. Enter your QTS login information.
7. Click **Log In**.

## Connecting USB Expansion Units

The device supports USB expansion units. Refer to the following table for details.

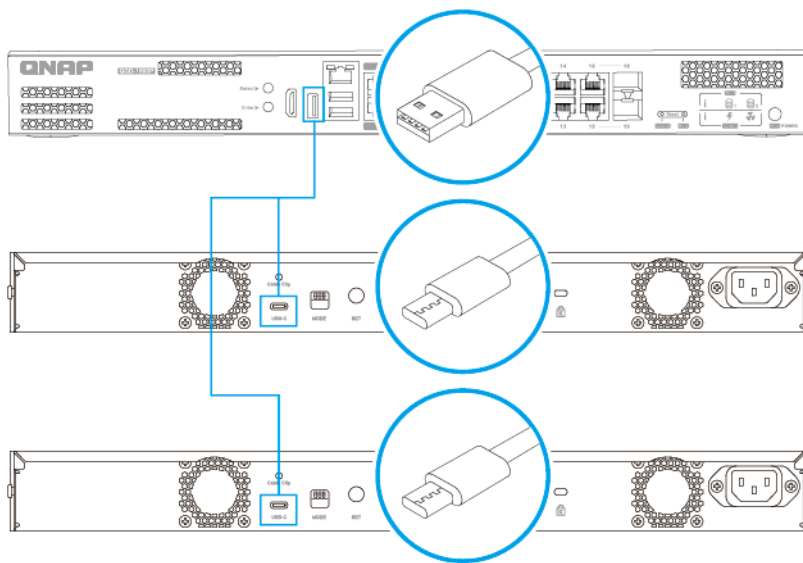
For the list of compatible expansion units and the maximum number of applicable expansion units, go to <https://www.qnap.com/go/compatibility-expansion>.

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

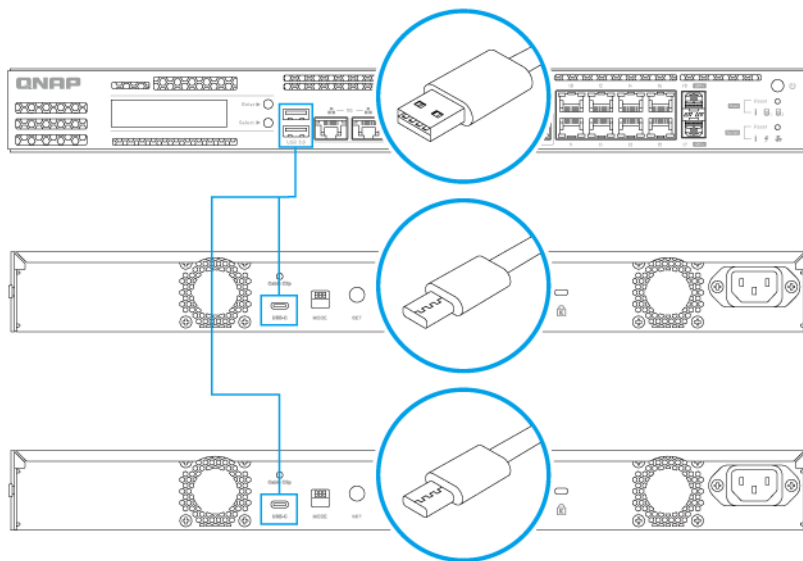
For details, go to <https://shop.qnap.com/>.

| Expansion Unit Model | Description  | Required Accessories   |
|----------------------|--|--|
| 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> |

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



### QGD-1600P



### QGD-1602P

2. Power on the expansion units.
3. Verify that the expansion units are recognized by the device.
  - 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 device uses the QNAP QTS operating system. You can install QTS using any of the following methods.

To install QNE ADRA and configure the device for network detection and response, see the ADRA Device (Global Edition) User Guide.

| Method                                 | Description  | Requirements  |
|--|--|---|
| Qfinder Pro installation (Recommended) | <p>If the device is connected to your local area network, you can do the following:</p> <ul style="list-style-type: none"> <li>• Locate the device using Qfinder Pro.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul>   | <ul style="list-style-type: none"> <li>• Computer</li> <li>• Network cable</li> <li>• Qfinder Pro installer</li> </ul>                                    |
| Cloud                                  | <p>If the device is connected to the internet, you can do the following:</p> <ul style="list-style-type: none"> <li>• Scan the QR code on the device.</li> <li>• Specify the Cloud Key.</li> <li>• Log into your myQNAPcloud account.</li> <li>• Use myQNAPcloud Link to remotely access your device.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul> | <ul style="list-style-type: none"> <li>• Computer or mobile device</li> <li>• myQNAPcloud account</li> <li>• Cloud Key</li> </ul>                         |
| Local                                  | <p>If the device supports HDMI output, you can do the following:</p> <ul style="list-style-type: none"> <li>• Connect the device to the required hardware.</li> <li>• Complete the steps in the Smart Installation Guide wizard.</li> </ul>  | <ul style="list-style-type: none"> <li>• Monitor</li> <li>• HDMI cable</li> <li>• USB keyboard or Remote control (not available on all models)</li> </ul> |

## Installing QTS Using Qfinder Pro



### Warning

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



### Important

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

1. Power on the device.
2. Connect the device to your local area network.



### Tip

You can connect to the local area network through the host port or through any PoE port.

3. Run Qfinder Pro on a computer that is connected to the same local area network.



### Note

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

4. Locate the device in the list and then double-click the name or IP address.

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 screen opens in the default web browser.

7. Verify the operating system indicated on the screen is QTS and the version is the one you want to install.

8. Optional: Select a different operating system version.



**Note**

To install QNE ADRA and configure the device for network detection and response, see the ADRA Device (Global Edition) User Guide.

a. Click **Switch OS**.

b. Select an available operating system version or upload a firmware file.

c. Click **Apply**.

The device reboots and the smart installation screen appears with the selected operating system version.

9. Click **Start Smart Installation**.

10. Specify the following information.

- **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
- **Username:** Specify an administrator username that contains 1 to 32 characters. The name supports 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 ([ ]), backslash (\), vertical bar (|), semicolon (;), colon (:), apostrophe ('), quotation mark ("), comma (,), less than sign (<), greater than sign (>), slash (/), question mark (?), percent sign (%)
- **Password:** Specify an administrator password with 8 to 64 characters. The password supports all ASCII characters.
- **Confirm Password:** Enter the new administrator password again.

11. Click **Next**.

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

12. 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 device follows the Coordinated Universal Time (UTC) standard.

| Methods  | User Actions   |
|--|--|
| Synchronize with computer or device time               | Select <b>Same as the computer/device time</b><br>The device time will be the same as your computer or device used to configure the time.          |
| Enter manually   | <p>a. Select <b>Input Manually</b>.</p> <p>b. Specify the date and time.<br/>The device date and time will be the same as the configured time.</p> |
| Synchronize with an Internet time server automatically | Click <b>Synchronize with an Internet time server automatically</b> .<br>The device time will be the same as the NTP server.                       |

13. Click **Next**.  
The **Configure the network settings** screen appears.

14. Configure the network settings using any of the following methods.

| Method   | User Action  |
|--|--|
| <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>                     | <p>a. Select <b>Use static IP address</b>.<br/>The IP address configuration page appears.</p> <p>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> |

15. 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.

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

17. Review the settings.

18. Click **Apply**.  
A confirmation message appears.



#### Warning

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

19. Click **Confirm**.  
QTS is installed.

## Installing QTS Using the Cloud Key



### Warning

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



### Important

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

1. Power on the device.
2. Connect the device to the internet.
3. Go to the QNAP Cloud Installation page using one of the following methods:
  - On your computer, go to your respective region's site to download QTS:
    - China: <https://install.qnap.com.cn>
    - Global: <https://install.qnap.com>
  - Scan the QR code on the NAS using a mobile device.

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

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



### Note

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

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 device.



### Note

- The myQNAPcloud device name is used when remotely accessing the device.
- For security purposes, the myQNAPcloud Link remote connection service will be disabled on your device 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 screen opens in the default web browser.
10. Verify the operating system indicated on the screen is QTS and the version is the one you want to install.
11. Optional: Select a different operating system version.



**Note**

To install QNE ADRA and configure the device for network detection and response, see the ADRA Device (Global Edition) User Guide.

- a. Click **Switch OS**.
- b. Select an available operating system version or upload a firmware file.
- c. Click **Apply**.

The device reboots and the smart installation screen appears with the selected operating system version.

12. Click **Start Smart Installation**.
13. Specify the following information.
  - **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
  - **Username:** Specify an administrator username that contains 1 to 32 characters. The name supports 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 ([ ]), backslash (\), vertical bar (|), semicolon (;), colon (:), apostrophe ('), quotation mark ("), comma (,), less than sign (<), greater than sign (>), slash (/), question mark (?), percent sign (%)
  - **Password:** Specify an administrator password with 8 to 64 characters. The password supports all ASCII characters.
  - **Confirm Password:** Enter the new administrator password again.
14. Click **Next**.  
The **Set the date and time** screen appears.
15. 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 device follows the Coordinated Universal Time (UTC) standard.

| Methods                                  | User Actions  |
|--|---|
| Synchronize with computer or device time | Select <b>Same as the computer/device time</b><br>The device time will be the same as your computer or device used to configure the time. |

| Methods  | User Actions   |
|--|--|
| Enter manually   | <p><b>a.</b> Select <b>Input Manually</b>.</p> <p><b>b.</b> Specify the date and time.<br/>The device date and time will be the same as the configured time.</p> |
| Synchronize with an Internet time server automatically | <p>Click <b>Synchronize with an Internet time server automatically</b>.</p> <p>The device time will be the same as the NTP server.</p>                           |

**16.** Click **Next**.

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

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

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

**18.** 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.

**19.** Click **Next**.

The **Summary** screen appears.

**20.** Review the settings.

**21.** Click **Apply**.

A confirmation message appears.



**Warning**

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

**22.** Click **Confirm**.

QTS is installed.

## Installing QTS Using an HDMI Connection on the QGD-1600P



### Warning

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



### Important

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

1. Connect an HDMI display to the device.
2. Connect a USB keyboard to the device.
3. Power on the device.  
The **Welcome** screen of the Smart Installation Guide appears.
4. Select **Start Smart Installation Guide**.  
The **Enter the NAS name and administrator's password** screen appears.
5. Specify the following information:
  - **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
  - **Username:** Specify an administrator username that contains 1 to 32 characters. The name supports 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 ([ ]), backslash (\), vertical bar (|), semicolon (;), colon (:), apostrophe ('), quotation mark ("), comma (,), less than sign (<), greater than sign (>), slash (/), question mark (?), percent sign (%)
  - **Password:** Specify an administrator password with 8 to 64 characters. The password supports all ASCII characters.
  - **Confirm Password:** Enter the new administrator password again.
6. 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.

7. Click **Next**.  
The **Summary** screen appears.
8. Review the settings.
9. Click **Next**.  
The **Confirm** screen appears.



### Warning

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

10. Click **Next**.  
QTS is installed.

## Switch Management Access

You can manage switch settings on the QGD-1600P and QGD-1602P by using one of the following software interfaces:

| Software Interface | Description   |
|--------------------|---|
| QSS                | QNAP network management operating system for switch devices. QSS comes preinstalled on the device.<br>To access QSS, see <a href="#">Accessing QSS with Qfinder Pro</a> . |
| QuNetSwitch        | Switch management utility for QTS. QuNetSwitch comes preinstalled on QTS.<br>To access QuNetSwitch, see <a href="#">Accessing QuNetSwitch in QTS</a> .                    |

For details on managing switch settings in QSS or QuNetSwitch, see [Switch Management](#).

### Accessing QSS with Qfinder Pro

1. Power on the switch.
2. Connect the switch to your local area network.  
For details, see [Connecting the Switch to a Network](#).
3. Run Qfinder Pro on a computer that is connected to the same local area network.



#### Note

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

4. Enter the switch IP address.  
The switch IP address will be displayed as %your NAS name% - switch.
5. Locate the switch in the list and then double-click the name or IP address.  
The QSS login screen appears.
6. Log in to QSS.  
The QSS default login details are as follows:
  - Account name: admin
  - Password: admin
 The **Welcome** window appears.
7. Specify the following information.
  - **NAS name:** Specify a name with 1 to 14 characters. The name supports letters (A to Z, a to z), numbers (0 to 9), and hyphens (-), but cannot end with a hyphen.
  - **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.
8. Continue with switch management.



#### Note

For details, see [Switch Management](#).

## Accessing QuNetSwitch in QTS

**Note**

You must create a default system volume before using QuNetSwitch. For more details, see the QTS User Guide.

1. Power on the device.
2. Log on to QTS.

**Note**

For details, see [Connecting the Device to a Network](#).

3. Go to **Main Menu > QuNetSwitch** .
4. Continue with switch management.

**Note**


For details, see [Switch Management](#).

## 4. Basic Operations


This chapter describes basic device operations.


### Buttons

#### Host Power Button

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

#### QTS Reset Button

| Operation          | User Action                              | Result  |
|--------------------|--|---|
| Basic system reset | Press and hold the button for 3 seconds. | <p>The following settings are reset to default:</p> <ul style="list-style-type: none"> <li>System administrator password: The default password is the first MAC address in uppercase letters without special characters. For example, if the first MAC address is 00-08-9B-F6-15-75, then the admin password would be 00089BF61575.</li> </ul> <p> <b>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>The admin account is automatically enabled.</li> <li>TCP/IP configuration: <ul style="list-style-type: none"> <li>Obtain IP address settings automatically via DHCP</li> <li>Disable jumbo frames</li> <li>If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to "Active Backup (Failover)".</li> </ul> </li> <li>System port: 8080 (system service port)</li> <li>Security level: Low (Allow all connections)</li> <li>LCD panel password: (blank)</li> <li>VLAN: Disabled</li> </ul> |

| Operation             | User Action                               | Result   |
|-----------------------|---|--|
| Advanced system reset | Press and hold the button for 15 seconds. | The default factory settings are restored.<br><br> <b>Tip</b><br>To retrieve old data after an advanced system reset, recreate the previous folder structure on the device. |

## Switch Reset Button

| Operation | User Action                              | Result   |
|-----------|--|--|
| Reset     | Press and hold the button for 3 seconds. | The switch resets and all default settings are restored. |

## LCD Panel

### Viewing TCP/IP Settings

You can view 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 device 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 device 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>       |

## Viewing Drive Information

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

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

## 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 device name and QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Enter** repeatedly until the panel displays `Main Menu 4. System`.
4. Press and hold **Enter**.  
The panel displays the CPU and system temperature.



5. Press and hold **Select**.  
The panel displays the system fan speed.

## Powering Off the Switch

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

## Restarting the Device

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

## Changing the LCD Password

Specifying a password for the LCD panel prevents unauthorized access.

1. Press **Enter** or **Select**.  
The panel displays the device name and QTS version.
2. Press and hold **Enter** for two seconds.  
The panel displays `Main Menu 1. TCP/IP`.
3. Press **Enter** repeatedly until the panel displays `Main Menu 7. Password`.
4. Press and hold **Enter**.  
The `Change Password` screen appears.
5. Select **Yes** by pressing and holding **Enter**.  
The `New Password` screen appears.
6. Press **Select** and **Enter** to specify a new password.
  - Specify a password.
    - 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. |

- Press **Enter**.  
The device 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    | All LAN disconnected in failover or load-balancing mode. |
| LAN Lost        | LAN has disconnected.                                    |
| HDD Failure     | Drive has failed.  |
| Vol1 Full       | Volume is full.  |
| HDD Ejected     | Drive has ejected.                                       |
| Vol Degraded    | Volume is in degrade mode.                               |
| Vol Unmounted   | Volume has unmounted.                                    |
| Vol Nonactive   | Volume is inactive.                                      |

## LEDs

LEDs indicate system status and related information when the device is powered on.

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

| LED          | Status                      | Description                           |
|--------------|-----------------------------|---------------------------------------|
| Host Power   | Green                       | The host system is ready.             |
|              | Flashes green every 1.0 sec | The host system is starting up.       |
|              | Red                         | A fatal host system error occurred.   |
|              | Off                         | The host system is powered off.       |
| Drive 1      | Green                       | Drive operations are normal.          |
|              | Red                         | An error occurred.                    |
|              | Off                         | No drive was detected.                |
| Drive 2      | Green                       | Drive operations are normal.          |
|              | Red                         | An error occurred.                    |
|              | Off                         | No drive was detected.                |
| Switch power | Green                       | The switch is ready.                  |
|              | Flashes green every 1.0 sec | The switch is starting up.            |
|              | Red                         | A fatal switch system error occurred. |
|              | Off                         | The switch system is powered off.     |

| LED                      | Status                      | Description                                 |
|--------------------------|-----------------------------|---|
| PoE                      | Green                       | The PoE status is normal.                   |
|                          | Red                         | A fatal PoE error occurred.                 |
| Fan                      | Green                       | The fan status is normal.                   |
|                          | Red                         | A fatal fan error occurred.                 |
| PoE port speed           | Flashes green every 1.0 sec | The link speed is operating at 1 Gbps.      |
|                          | Flashes amber every 1.0 sec | The link speed is operating at 10/100 Mbps. |
|                          | Off                         | No link was detected.                       |
| PoE port activity/link   | Green                       | The switch is connected to a power device.  |
|                          | Amber                       | A power device error occurred.              |
|                          | Off                         | No power device was detected.               |
| Combo port speed         | Flashes green every 1.0 sec | The link speed is operating at 1 Gbps.      |
|                          | Flashes amber every 1.0 sec | The link speed is operating at 10/100 Mbps. |
|                          | Off                         | No link was detected.                       |
| Combo Port activity/link | Flashes amber every 1.0 sec | Data is being transferred.                  |

## Audio Alert

| Duration                 | Frequency           | Description   |
|--------------------------|---------------------|---|
| Short beep (0.5 seconds) | 1                   | <ul style="list-style-type: none"> <li>The device is starting up.</li> <li>The device is shutting down (software shutdown).</li> <li>The user pressed the Switch Reset button.</li> <li>The operating system was updated.</li> </ul>  |
| Long beep (1.5 seconds)  | 3 (every 5 minutes) | The system fan is not functioning.  |
|                          | 2                   | <ul style="list-style-type: none"> <li>The disk volume is about to reach its full capacity.</li> <li>The disk volume has reached its full capacity.</li> <li>The drives are in degraded mode.</li> <li>The user started the drive rebuilding process.</li> <li>A drive is disconnected or connected.</li> </ul> |
|                          | 1                   | <ul style="list-style-type: none"> <li>The device was powered off by force shutdown (hardware shutdown).</li> <li>The device was powered on successfully and is ready.</li> </ul>   |
| Long beep (5 seconds)    | 1                   | The operating system is restarting.   |

## 5. Switch Management

### About QSS and QuNetSwitch

The QNAP Switch System (QSS) is a network management operating system for QNAP switch devices. QSS allows for layer 2 network administration and system management of the switch.

QuNetSwitch is a switch utility that allows you to manage network configurations of the switch on the QTS operating system. With its intuitive interface, QuNetSwitch makes it easy to configure and secure the features of your switch.

To access QSS or QuNetSwitch, see [Switch Management Access](#).

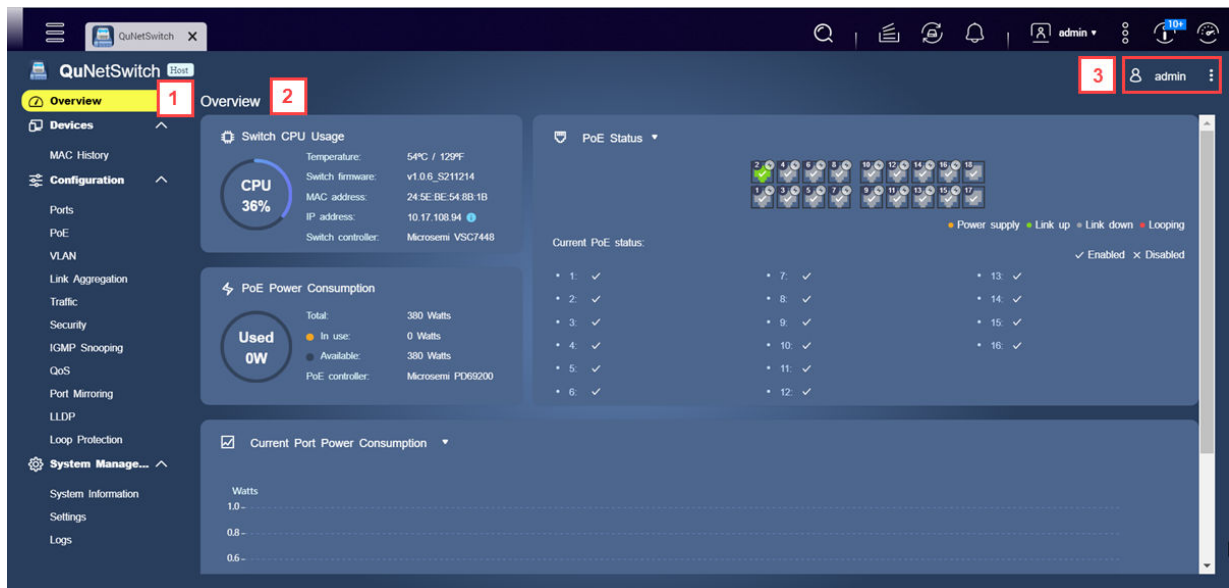
### Parts of the User Interface




#### QSS

The screenshot displays the QSS Management interface. The top navigation bar includes the 'QSS Management' title, a user profile 'admin', and a red box labeled '3' around the user profile. The left sidebar contains navigation options: Overview (highlighted with a red box labeled '1'), Devices, Configuration, System Management, and Host Control Management. The main content area is divided into several sections:

- Overview:** A central dashboard with a red box labeled '2' around the 'Switch CPU Usage' widget, which shows a CPU usage of 29%. Other widgets include 'PoE Power Consumption' (Total: 380 Watts, Used: 0W) and 'Current Port Power Consumption' (a line graph showing Watts).
- PoE Status:** A section showing a grid of port status icons and a list of 'Current PoE status' for ports 1 through 16, each with a checkmark indicating it is enabled.

## QuNetSwitch



| Label | Area       | Description  |
|-------|------------|--|
| 1     | Menu       | <p>The menu has three sections: Devices, Configuration, and System</p> <p><b>Note</b><br/>                     QSS allows you to manage power actions on the QTS interface using <b>Host Control Management</b>. For details, see <a href="#">Performing Host Control Actions</a>.</p> <p>Click  or  to expand or collapse the menu.</p>   |
| 2     | Main panel | The main panel displays the selected screen.   |
| 3     | Toolbar    | <p>The toolbar displays the following information:</p> <ul style="list-style-type: none"> <li>• <b>[USER_NAME]</b>: Click to access the <b>Log out</b> button.</li> <li>• : Click to view the following:                             <ul style="list-style-type: none"> <li>• <b>Restart Switch</b>: Restarts the switch</li> <li>• <b>Help</b>: Opens the interface Help guide</li> <li>• <b>About</b>: Displays the following information:                                     <ul style="list-style-type: none"> <li>• Model name</li> <li>• Version number</li> </ul> </li> </ul> </li> </ul> |

## Client Device Management

The **MAC History** screen displays information about devices connected to the switch. This screen provides access to all the connected devices and access to Wake-on-LAN (WoL) commands.


WoL allows network administrators to perform maintenance on connected devices even if the device is powered down. You can remotely power up sleeping devices by sending specially coded network packets to devices equipped and enabled to respond to these coded packets.

## Scanning for Connected Devices

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Devices > MAC History** .
3. Click **Scan**.


QSS or QuNetSwitch scans for connected devices.

## Sending a WoL Packet to a Device

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Devices > MAC History** .
3. Identify a connected device.
4. Click  .  
The **Send WoL Command** window opens.
5. Specify a MAC address.
6. Click **Wake**.

QSS or QuNetSwitch sends a WoL command to the device.

## Deleting a MAC Address

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Devices > MAC History** .
3. Identify a connected device.
4. Click  .  
A dialog box opens.
5. Click **Delete**.

QSS or QuNetSwitch deletes the MAC address.

## Clearing the MAC Address History

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Devices > MAC History** .
3. Click **Clear**.  
A dialog box opens.
4. Click **Clear**.

QSS or QuNetSwitch clears the MAC address history.

## Network Management

Basic network configuration of the switch includes port management, VLAN configuration, configuration of various protocols, and traffic management via Quality of Service (QoS) and Access Control Lists (ACLs).


### Dashboard

The dashboard opens to the configuration section of the interface. Click the drop-down menu in the dashboard to view the port status, VLAN status, link aggregation status, and port traffic for all ports.

You can also delete user-configured network settings and monitor the network settings of the switch.

### Configuring Port Settings

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Port Management**.
3. Go to **Port Configuration**.
4. Identify a port.
5. Configure the settings.

| Setting            | Description   |
|--------------------|---|
| State              | Controls the operation status for a port  |
| Speed              | Specifies the maximum speed at which a port can operate   |
| Flow Control       | Controls the flow control status for a port<br> <b>Important</b><br>Flow Control is not supported when the port speed is set to HDX. |
| Maximum Frame Size | Controls the maximum frame size allowed for the port  |

6. Click **Apply**.

QSS or QuNetSwitch saves the settings.

### Managing PoE Settings

Power over Ethernet (PoE) systems pass electric power along Ethernet cables, and allow a single cable to provide both a data connection and electric power to devices such as wireless access points, cameras, or VoIP phones.

The **PoE** screen displays information about PoE power consumption and provides access to PoE scheduling and configuration options.

### Configuring PoE Settings

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > PoE**.
3. Go to **Power Configuration**.
4. Identify a port.



5. Configure the settings.

| Setting           | Description  |
|-------------------|--|
| PoE Mode          | Controls the PoE operating mode for the port   |
| Priority          | Controls the priority of each port<br>If multiple ports share the same priority, the port with the lower number is given priority. |
| Power Consumption | Displays the amount of power currently consumed by the powered device  |

6. Click **Apply**.

QSS or QuNetSwitch saves the PoE settings.

### Configuring a PoE Schedule

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > PoE**.
3. Go to **PoE Schedule**.
4. Identify a port.
5. Click  Scheduling is enabled for the port.
6. Click  The **PoE Schedule Configuration** window opens.
7. Configure the schedule.
  - a. Optional: Select additional ports.  
Selected ports will also be included in the schedule.
  - b. Select port operating hours.
  - c. Optional: Select **Activate schedule now**.
8. Click **Save**.  
The **PoE Schedule Configuration** window closes.
9. Click **Apply**.

QSS or QuNetSwitch saves the schedule.

### Adding a VLAN

A virtual LAN (VLAN) groups multiple network devices together and limits their broadcast domain. Members of a VLAN are isolated and network traffic is only sent between group members

Each VLAN is assigned a specific VLAN identification number. The **VLAN** screen displays information about existing VLANs and provides access to VLAN configuration options.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > VLAN**.



3. Click **Add**.  
The **Add VLAN** window opens.
4. Specify a VLAN ID.
5. Select ports to include in the VLAN.  
Only tagged ports can belong to multiple VLANs.
6. Click **Save**.  
The configuration window closes.
7. Click **Apply**.

QSS or QuNetSwitch adds the VLAN.

### Adding a Link Aggregation Group (LAG)

Link Aggregation Control Protocol (LACP) allows you to combine multiple network adapters into a single logical network interface. This ensures increased throughput and provides redundancy. In case of port failure, traffic continues on the remaining ports.



The **Link Aggregation** page displays information about existing link aggregation groups and provides access to configuration options.



**Warning**

To prevent network loop errors during the LAG configuration process, do not connect the switch to other devices using more than one network cable until after you have configured LAGs on all the devices. You can enable loop protection to avoid network loops in the connected network.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Link Aggregation**.
3. Click **Add**.  
The **Add Group** window appears.
4. Configure the group settings.

| Setting            | Description   |
|--------------------|---|
| Group number       | Specify a group number between 1 and 9  |
| Mode               | Controls the link aggregation mode for the group<br><br> <b>Important</b><br>Enable Link Aggregation before connecting cables to the switch to avoid creating a data loop. |
| Port Configuration | Specifies which ports are included in the group<br><br> <b>Note</b><br>You can add up to four ports in a group.  |

5. Click **Save**.

QSS or QuNetSwitch updates the group settings.


**Note**

When assigning a LAG to a VLAN, QNAP recommends removing individual LAG port members from the VLAN, and then adding the entire group to the VLAN as required. If individual port members are not removed, the VLAN is reset to its default settings.

## Configuring IGMP Snooping

The Internet Group Management Protocol (IGMP) manages membership to IP multicast groups. IP hosts and adjacent multicast routers use IGMP to establish multicast group memberships.

The **IGMP Snooping** page displays information about detected IGMP groups and provides access to IGMP snooping configuration options.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > IGMP Snooping**.
3. Next to **IGMP Snooping**, click . IGMP snooping is enabled.
4. Configure the IGMP snooping settings.

| Setting                  | Description  |
|--------------------------|--|
| Multicast flood blocking | Blocks multicast flooding from unknown sources   |
| Router Port              | Specifies which ports to use as the router port for the VLAN<br>After receiving an IGMP packet, QuNetSwitch forwards the traffic through the selected router ports.                        |
| Fast Leave               | Specifies the ports that support the IGMP v2 Fast Leave feature<br>After receiving an IGMP leave message, QuNetSwitch stops forwarding multicast traffic to the selected Fast Leave ports. |

5. Click **Apply**.

QSS or QuNetSwitch saves the IGMP snooping settings.

## Adding a Static MAC Address

The MAC address table tracks MAC addresses and forwards associated unicast traffic through specific ports.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Traffic > MAC Address Table**.
3. Click **Add**.  
The **Add Static MAC Address** window opens.
4. Specify the aging time for the MAC table.

**Note**

You can configure the amount of time that an entry remains in the MAC table.


5. Configure the MAC address settings.
  - a. Specify a VLAN ID.
  - b. Specify a MAC address.

- c. Select at least one port.
6. Click **Save**.  
The **Add Static MAC Address** window closes.

QSS or QuNetSwitch adds the MAC address.

## Configuring Rate Limits on a Port

Rate limits restricts the speed at which a port can send or receive packets.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Traffic > Rate Limits**.
3. Identify a port.
4. Click .  
The **Configure Rate Limiting** window opens.
5. Configure the rate limits.
  - a. Optional: Select additional ports.



### Note

- This applies rate limits to the additional ports.
- To select all available ports, select **All**.

- b. Optional: Specify an ingress rate.



### Note

You must deselect **Unlimited** to set an ingress rate.

- c. Optional: Specify an egress rate.



### Note

You must deselect **Unlimited** to set an egress rate.



### Tip

Click **Match rates** to use the same ingress and egress rates.

6. Click **Save**.

QSS or QuNetSwitch saves the rate limits.

## Managing Access Control List (ACL) Entries

Access control lists allow you to handle network traffic in a switch by using controlled rule sets. Each ACL rule is specific to a user-created set of conditions that a data packet must meet to match the rule. In the instance that a data packet has no ACL rule match, the switch applies the default rule. Otherwise, the switch matches the data packet to the rule and permits or denies the packet.

You can use ACLs to control host access to different parts of a network or to control traffic forwarding or blocking at the switch level.

## Adding an IP Address–Based ACL Rule

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Security > By IP Address** .
3. Click **Add**.  
The **Add ACL - IP Address** window opens.
4. Configure the ACL settings.

| Setting     | User Action  |
|-------------|--|
| ACL No.     | Specify a number between 1 and 255.  |
| Source      |  |
| IP Address  | Specify the source IP address.   |
| Subnet Mask | Specify the source subnet mask.  |
| Destination |  |
| IP address  | Specify the destination IP address.  |
| Subnet Mask | Specify the destination subnet mask.   |
| Port        | Select specific ports to apply the ACL rule, or select <b>All</b> to apply the rule to all ports.                    |
| Permission  | Select one of the following: <ul style="list-style-type: none"> <li>• <b>Allow</b></li> <li>• <b>Deny</b></li> </ul> |

5. Click **Save**.

QSS or QuNetSwitch adds the IP address–based ACL rule.

## Adding a MAC Address–Based ICL Rule

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > ACL > By MAC Address** .
3. Click **Add**.  
The **Add ACL - MAC Address** window opens.
4. Configure the ACL settings.

| Setting     | User Action   |
|-------------|---|
| ACL No.     | Specify a number between 1 and 255.   |
| Source      |   |
| MAC address | Specify the source MAC address.   |
| Destination |   |
| MAC address | Specify the destination MAC address.  |
| Port        | Select specific ports to apply the ACL rule, or select <b>All</b> to apply the rule to all ports. |


| Setting    | User Action  |
|------------|--|
| Permission | Select one of the following: <ul style="list-style-type: none"> <li>• <b>Allow</b></li> <li>• <b>Deny</b></li> </ul> |

5. Click **Save**.

QSS or QuNetSwitch adds the MAC address-based ACL rule.

## Configuring QoS Settings

Quality of service (QoS) improves network traffic shaping by classifying and prioritizing different network devices and packets.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > QoS**.
3. Next to **QoS**, click . QoS is enabled on the switch.
4. Select a QoS mode.

| Mode              | Description                       |
|-------------------|-----------------------------------|
| <b>Port-based</b> | Prioritizes traffic for each port |
| <b>VLAN-based</b> | Prioritizes traffic for each VLAN |

5. Configure the priority.



### Note


Larger numbers are given greater priority.

6. Click **Apply**.

QSS or QuNetSwitch saves the QoS settings.

## Configuring Port Mirroring

Port mirroring monitors network traffic and forwards a copy of a packet from one network switch port to another.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Port Mirroring**.
3. Next to **Port Mirroring**, click . Port mirroring is enabled.
4. Select the mirror type.

| Mirror Type                   | Description                                 |
|-------------------------------|---|
| <b>Transmit &amp; receive</b> | Mirrors all packets to the destination port |

| Mirror Type   | Description   |
|---------------|---|
| Transmit only | Mirrors only outgoing packets to the destination port |
| Receive only  | Mirrors only incoming packets to the destination port |

5. Select source ports.



**Tip**  
You can select multiple source ports at the same time.

6. Select a destination port.

7. Click **Apply**.

QSS or QuNetSwitch saves the settings.

### Enabling LLDP on the Switch

The Link Layer Discovery Protocol (LLDP) uses periodic broadcasts to advertise device information over the network and discover neighboring devices. This protocol operates by establishing a distributed database and gathering information from neighboring ports connected by a network link.

The **LLDP** page displays information about detected devices and allows you to enable and disable LLDP.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > LLDP** .
3. Change the LLDP control status.

| Toggle Setting | Description                   |
|----------------|-------------------------------|
|                | The LLDP function is disabled |
|                | The LLDP function is enabled  |



4. Click **Apply**.

QSS or QuNetSwitch saves the setting.

### Configuring Loop Protection

A loop occurs when data packets are continually forwarded between ports. If a loop is detected, loop protection can disable the interface.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration > Loop Protection** .
3. Next to **Loop Protection**, click .  
Loop protection is enabled.
4. Configure the settings.

| Setting                  | Description  |
|--------------------------|--|
| <b>Transmission time</b> | <p>Controls the time between transmitted loop protection packets</p> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• The default transmission time is 5 seconds.</li> <li>• The value must be from 1 to 10 seconds.</li> </ul> |
| <b>Shutdown time</b>     | <p>Controls how long to disable a port after detecting a loop</p> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• The default shutdown time is 180 seconds.</li> <li>• The value must be from 0 to 604800 seconds.</li> </ul>  |

5. Click **Apply**.

QSS or QuNetSwitch saves the settings.


## Deleting a Network Setting

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration**.
3. Select a network setting.



### Note

Deleting network settings is applicable only to link aggregation groups, static MAC addresses, and VLANs.



4. Click .  
A confirmation message appears.
5. Click **Delete**.

## Monitoring Network Settings

You can monitor the following network settings in the **Configuration** section. These settings can be used to monitor and diagnose switch operations.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **Configuration**.
3. Select a network setting.

| Setting                         | Description  |
|---------------------------------|--|
| <b>IGMP Snooping Statistics</b> | Go to <b>IGMP &gt; IGMP Snooping Statistics</b> .<br>Displays statistical information about detected IGMP groups.  |
| <b>LLP Remote Devices</b>       | Go to <b>LLDP &gt; LLDP Remote Devices</b> .<br>Displays information about the LLDP-enabled port including system capabilities and remote management IP address. |



| Setting                  | Description   |
|--------------------------|---|
| <b>Port Status</b>       | Go to <b>Port Management &gt; Port Status</b> to view the following port status information: <ul style="list-style-type: none"> <li>• Port number</li> <li>• Port link status</li> <li>• Port state</li> <li>• Port speed</li> <li>• Flow control</li> <li>• Maximum frame size</li> </ul>  |
| <b>Port Statistics</b>   | <p><b>a.</b> Go to <b>Port Management &gt; Port Statistics</b> to view the statistics of the network ports.</p> <p><b>b.</b>  Click  to change the viewing option to List View.</p> |
| <b>Power Consumption</b> | <p><b>a.</b> Go to <b>PoE</b>.<br/>The <b>Power Consumption</b> page opens.</p> <p><b>b.</b> Select the port.<br/>The current power consumption of the port is displayed.</p>   |

## System Management

The **System** section provides access to device configuration options.

### Configuring Connection Settings

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **System Management > Settings > IP**.
3. Configure the connection settings.

| Setting                                  | Description   |
|--|---|
| <b>Obtain IP &amp; DNS automatically</b> | Obtain the IP & DNS information automatically from the DHCP server.<br><br> <b>Tip</b><br>Click  to refresh the IP & DNS information. |
| <b>Set the IP &amp; DNS manually</b>     | Specify the IP & DNS manually.  |

4. Click **Apply**.

QSS or QuNetSwitch updates the connection settings.


### Updating the Switch Password

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **System Management > System Settings > Password**.



3. Specify a new password.

**Tip**

Click  to make the password visible.

| Setting                     | User Action  |
|-----------------------------|--|
| <b>Current password</b>     | Specify the current password of the device.                |
| <b>New password</b>         | Specify a password that contains 8 to 20 ASCII characters. |
| <b>Confirm new password</b> | Reenter the new password.                                  |

4. Click **Apply**.

QSS or QuNetSwitch logs you out of the switch interface. You can access the switch with the new password.

## Configuring Time Settings

**Note**

You must configure the system time correctly to ensure the following:

- When using a web browser to connect to the device or save a file, the displayed time of the action is correct.
- Event logs reflect the exact time that events occur.
- Scheduled tasks run at the correct time.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **System Management > Settings > Time**.
3. Specify the date & time format.
4. Specify the time configuration.

| Setting                                      | Description   |
|--|---|
| <b>Synchronize with device</b>               | Synchronize the switch clock with the firmware clock.   |
| <b>Synchronize with internet time server</b> | Ensure that your device is connected to the internet, and then specify the following information: <ul style="list-style-type: none"> <li>• <b>Server:</b> Name of the Network Time Protocol (NTP) server<br/>Examples: time.nist.gov, time.windows.com</li> <li>• <b>Time zone:</b> Select the time zone for the device.</li> </ul> |

5. Click **Apply**.

QSS or QuNetSwitch updates the time settings.

## Managing Logs

You can filter logs by type or search for specific log files. These logs can be used to diagnose issues or monitor switch operations.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **System > Log**.

3. Perform any of the following tasks.

| Task             | User Action  |
|------------------|--|
| Search log files | <ol style="list-style-type: none"> <li>Locate the <b>Search</b> field.</li> <li>Enter search terms.</li> </ol>                             |
| Delete log files | <ol style="list-style-type: none"> <li>Click <b>Clear</b>.<br/>The <b>Clear Logs</b> window opens.</li> <li>Click <b>Clear</b>.</li> </ol> |

QSS or QuNetSwitch performs the specified task.

## Resetting the Switch to Factory Settings

Resetting the switch deletes the data stored on the device and restores the switch to the default factory settings.



### Tip

You can also reset the switch to factory defaults by pressing and holding the physical reset button for 10 seconds.

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Go to **System Management > Settings > Factory Reset**.
3. Click **Factory Reset**.  
A confirmation message appears.
4. Click **Yes**.


QSS or QuNetSwitch resets the switch to the factory default settings.



### Note

To log in to the interface again, you must locate the device using Qfinder Pro. For details, see [Switch Management Access](#).

## Restarting the Switch

1. Log in to QSS, or open QuNetSwitch in QTS.
2. Click  located on the upper-right corner of the page.
3. Click **Restart Switch**.  
A confirmation message appears.
4. Click **Yes**.

QSS or QuNetSwitch restarts the switch.

## Viewing the Switch Information

To view the hardware and system information of the switch, go to **System Management > System Information**.

The screen provides the following information.

| Information                | Description  |
|----------------------------|--|
| Switch name                | Displays the default or modified name of the device                    |
| Model name                 | Displays the model name of the switch                                  |
| MAC address                | Displays the MAC address of the switch image                           |
| IP address                 | Displays the DHCP or static IP address of the switch                   |
| Current firmware version   | Displays the firmware image version of the switch                      |
| Switch CPU                 | Displays the switch CPU information along with the supported software  |
| QTS CPU                    | Displays the storage CPU information along with the supported software |
| PoE controller             | Displays the PoE controller integrated into the switch                 |
| Total memory               | Displays the total amount of memory installed on the switch            |
| Switch CPU temperature     | Displays the real time temperature of the switch CPU                   |
| QTS CPU temperature        | Displays the real time temperature of the storage CPU                  |
| System temperature         | Displays the overall real time temperature of the switch               |
| PoE controller temperature | Displays the real time temperature of the PoE controller               |
| System fan                 | Displays the fan speed (in RPM) of the installed system fans           |
| Disk fan                   | Displays the fan speed (in RPM) of the installed disk fans             |

## Performing Host Control Actions

QSS allows you to perform power actions on QTS, if you have installed and configured the storage operating system.

1. Log in to QSS.
2. On the menu, click **Host Control Management**.
3. You can perform the following tasks:

| Task                  | Action  |
|-----------------------|---|
| <b>Start Host</b>     | Click to power on the QTS operating system on the switch. |
| <b>Restart Host</b>   | Click to perform a cold reboot of the operating system.   |
| <b>Shut Down Host</b> | Click to perform a cold shutdown of the operating system. |

## 6. Troubleshooting

This chapter describes basic troubleshooting information.

### Hot-Swapping Failed Drives

The device 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. |

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. Install the new drive.  
The device beeps twice.
8. Go to **Main Menu > Storage & Snapshots > Storage > Storage/Snapshots** .
9. Locate the volume that contains the new drive and then verify that the status is `Rebuilding`.

### Forcing Qfinder Pro and myQNAPcloud to Locate the Device

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

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

### Support and Other Resources

QNAP provides the following resources:

| Resource      | URL   |
|---------------|---|
| Documentation | <a href="https://download.qnap.com">https://download.qnap.com</a> |

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

## 7. Glossary

### **myQNAPcloud**

Provides various remote access services such as DDNS and myQNAPcloud Link

### **myQNAPcloud Link**

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

### **Qfinder Pro**

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

### **QSS**

QNAP switch management application

### **QTS**

QNAP NAS operating system

### **QuNetSwitch**

QNAP switch management app

## 8. Notices

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Version 3, 29 June 2007

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