

The QNAP logo is displayed in white, bold, uppercase letters within a blue rounded rectangular box in the top-left corner of the page.

TS-h1655XeU-RP

TS-h1655XeU-RP-8G

User Guide

Contents

1. Important Information

Safety information.....	3
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2. Product Overview

About the TS-h1655XeU-RP.....	6
Hardware specifications.....	6
Package contents.....	10
Components.....	11
Front panel.....	11
Rear panel.....	12
Rear panel LEDs.....	13
System board.....	13
Front drive numbering.....	14
Installation requirements.....	14
Setting up the NAS.....	15

3. Installation and Configuration

Hardware installation.....	16
Drive installation.....	16
Replacing memory modules.....	29
Installing PCIe expansion cards.....	34
Installing the QXG-ES10GIT network expansion card.....	38
Hot-swapping redundant power supplies.....	39
Rail kits.....	41
Expansion unit installation.....	41
QuTS hero installation.....	48
Initializing QuTS hero using the cloud installation website.....	49
Initializing QuTS hero using Qfinder Pro.....	52

4. Basic Operations

Power button.....	55
Reset button.....	55
LEDs.....	56
Audio alerts.....	60

5. NAS Migration

QTS NAS migration.....	61
NAS migration requirements.....	61
Status and setting changes after NAS migration.....	61
Migrating a NAS.....	63
Migrating NAS data using HBS 3.....	63
QuTS hero NAS migration.....	67
NAS migration requirements.....	67
Status and setting changes after NAS migration.....	67

Migrating a NAS.....	69
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6. Troubleshooting

Forcing Qfinder Pro or myQNAPcloud to locate the NAS.....	70
Hot-swapping failed drives.....	70
Recovering unintentionally removed healthy drives.....	71
Support and other resources.....	72

7. Glossary

Cloud Key.....	73
myQNAPcloud.....	73
myQNAPcloud Link.....	73
QNAP ID.....	73
Qfinder Pro.....	73
QuTS hero.....	73

8. Notices

Limited warranty.....	74
Disclaimer.....	74
Copyright and trademarks.....	74
GNU General Public License.....	75
CE notice.....	84
UKCA notice.....	84
FCC notice.....	84
VCCI notice.....	85
BSMI notice.....	85
SJ/T 11364-2006.....	85

1. Important Information

Original Packaging

Please keep the original packaging and packaging materials. If you want to return the product or send it for repairs, please use the original packaging to avoid damage.

QNAP reserves the right not to provide a refund or warranty service for products that are damaged due to improper packaging.

Hardware Defects

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

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

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

Safety information

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

General Instructions

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

WARNING



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



Observe electrostatic discharge (ESD) procedures to avoid potential injury or damage to components.

Power

WARNING



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



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

Moving Parts

WARNING



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



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

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

System Battery

WARNING



INGESTION HAZARD

- This product may contain a button battery.
- Keep batteries out of reach of children.
- If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.
- If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.

- To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.

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

Rail Kits

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

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

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

WARNING

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

2. Product Overview

This chapter provides basic information about your QNAP device.

About the TS-h1655XeU-RP

The TS-h1655XeU-RP is a 3U short-depth rackmount NAS, powered by an Intel Atom® C5125 eight-core 2.8 GHz turbo processor and DDR4 SODIMM RAM. The NAS features four hot-swappable E1.S NVMe PCIe drive bays and twelve SATA 6 Gbps drive bays for both hard disk drives and solid-state drives. The TS-h1655XeU-RP is a modern storage solution, enhancing team collaboration and productivity by simplifying file management, automating tasks, and ensuring data availability for critical applications.

Hardware specifications

Tip

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

Component	TS-h1655XeU-RP-8G
Processor	
CPU	Intel ® Atom® C5125
Frequency	8-core, 2.8GHz
Architecture	x86 64-bit
Encryption engine	AES-256
Memory	

Component	TS-h1655XeU-RP-8G
Memory slots	<p>2 x DDR4 SODIMM</p> <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc;"> <p>Important</p> <ul style="list-style-type: none"> • Use only QNAP memory modules to maintain system performance and stability. For NAS devices with more than one memory slot, use QNAP modules with identical specifications. • Using unsupported modules may degrade performance, cause errors, or prevent the operating system from starting. </div> <div style="background-color: #e1eef6; padding: 10px; border: 1px solid #ccc; margin-top: 10px;"> <p>Note</p> <p>This device supports ECC memory modules.</p> </div>
Pre-installed memory	8 GB RAM: 1 x 8 GB DDR4 SODIMM
Maximum memory	64 GB RAM: 2 x 32 GB DDR4 SODIMM
Flash memory	4 GB (dual-boot OS protection)
Storage	
Drive bays	<ul style="list-style-type: none"> • 12 x 3.5-inch SATA 6 Gbps <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc; margin: 10px 0;"> <p>Tip</p> <p>The drive bays are backward compatible with SATA 3 Gbps drives.</p> </div> <ul style="list-style-type: none"> • 4 x E1.S NVMe / NVMe PCIe Gen 3 x2 <div style="background-color: #e1eef6; padding: 10px; border: 1px solid #ccc; margin-top: 10px;"> <p>Note</p> <p>Each ES.1 drive tray is preinstalled with a QDA-E1SM adapter for installing M.2 SSDs.</p> </div>

Component	TS-h1655XeU-RP-8G
Drive compatibility	<p>3.5-inch bays:</p> <ul style="list-style-type: none"> • 3.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives <p>E1.S NVMe PCIe SSD</p> <ul style="list-style-type: none"> • M.2 2280 PCIe NVMe solid-state drives • E1.S NVMe solid-state drives (up to 15 mm height) <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc;"> <p>Important</p> <p>9.5 mm and 15 mm E1.S solid state drives require the QNAP drive tray TRAY-E1S-01. This drive tray must be purchased separately.</p> </div> <div style="background-color: #fff9c4; padding: 10px; border: 1px solid #ccc;"> <p>Tip</p> <p>For the list of compatible drive models, go to https://www.qnap.com/compatibility.</p> </div>
Hot-swapping	This device supports hot-swapping for all drives.
SSD cache acceleration support	This device supports SSD cache acceleration for all drives.
Network	
2.5 Gigabit network interface	<p>2 x 2.5 GbE RJ45</p> <div style="background-color: #e1eef6; padding: 10px; border: 1px solid #ccc;"> <p>Note</p> <p>The 2.5 Gigabit Ethernet port supports the following network connectivity speeds: 2.5 Gbps, 1 Gbps, 100 Mbps, 10 Mbps</p> </div>
10 Gigabit network interface	<p>1 x 10GBASE-T</p> <div style="background-color: #e1eef6; padding: 10px; border: 1px solid #ccc;"> <p>Note</p> <p>The 10GBASE-T port RJ45 supports the following network connectivity speeds: 10 GbE, 5 GbE, 2.5 GbE, 1 GbE, and 100 Mbps.</p> </div>
Wake-on-LAN	Yes
External I/O Ports & Expansion Slots	

Component	TS-h1655XeU-RP-8G
PCIe slots	2 x PCIe Gen 3.0 x4
USB ports	2 x USB 3.2 Gen 1
Interface	
Buttons	<ul style="list-style-type: none"> • Power • Reset
Dimensions	
Form factor	3U Short-depth rackmount
Dimensions (H x W x D)	133 x 432.4 x 296.05 mm (5.24 x 17.024 x 11.66 in)
Net weight	10.9 kg (24.03 lbs)
Others	
Rail compatibility	<ul style="list-style-type: none"> • RAIL-S01 • RAIL-B02 <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p>Note</p> <ul style="list-style-type: none"> • Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to https://shop.qnap.com. • Information on rail kit installation can be found in the installation guide included in the rail kit package. For details, go to https://www.qnap.com/go/product/rail-kit. </div>
Power supply unit	2 x 550W, 100-240V AC, 50/60 Hz

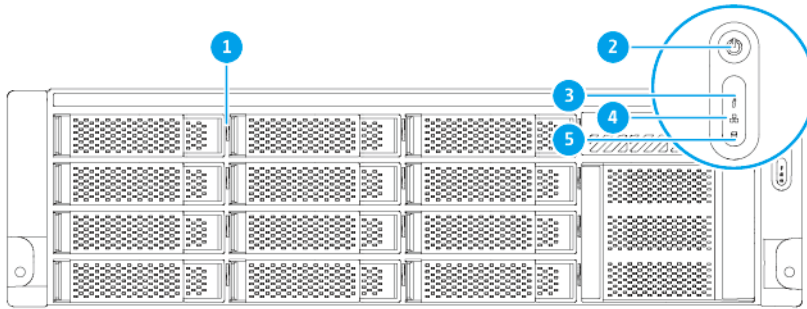
Component	TS-h1655XeU-RP-8G
System battery	<p>CR2032 lithium battery (3V, 225 mAh)</p> <div style="background-color: #ffe6e6; padding: 10px; margin: 10px 0;"> <p>Warning</p> <ul style="list-style-type: none"> • This battery is a button battery. If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours. Keep batteries out of reach of children. • To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type. </div> <div style="background-color: #ffe6cc; padding: 10px; margin: 10px 0;"> <p>Important</p> <p>Dispose of used batteries according to local regulations or the instructions of the battery manufacturer.</p> </div>
Fans	3 x 80mm, 12VDC
Operating temperature	0°C to 40°C (32°F to 104°F)
Relative humidity	<ul style="list-style-type: none"> • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27°C (80.6°F)
Security slot	Kensington security slot

Package contents

Item	Quantity
TS-h1655XeU-RP	1
Power cords	2
Ethernet cable	1 x Cat6a
Screws for 3.5-inch drives	4 x 12 = 48
Screws for 2.5-inch drives	3 x 12 = 36
Quick Installation Guide (QIG)	1

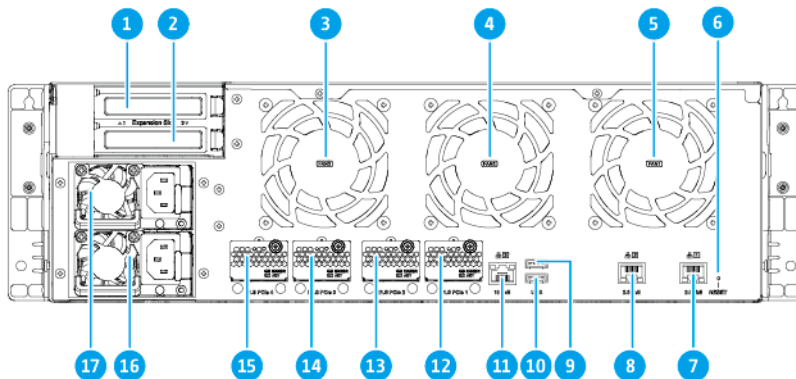
Components

Front panel



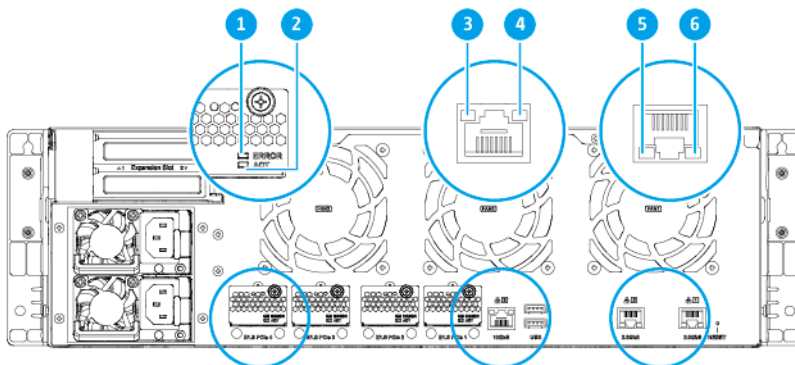
No.	Component	No.	Component
1	Drive LED	4	LAN LED
2	Power button	5	Expansion unit LED
3	System status LED	-	-

Rear panel



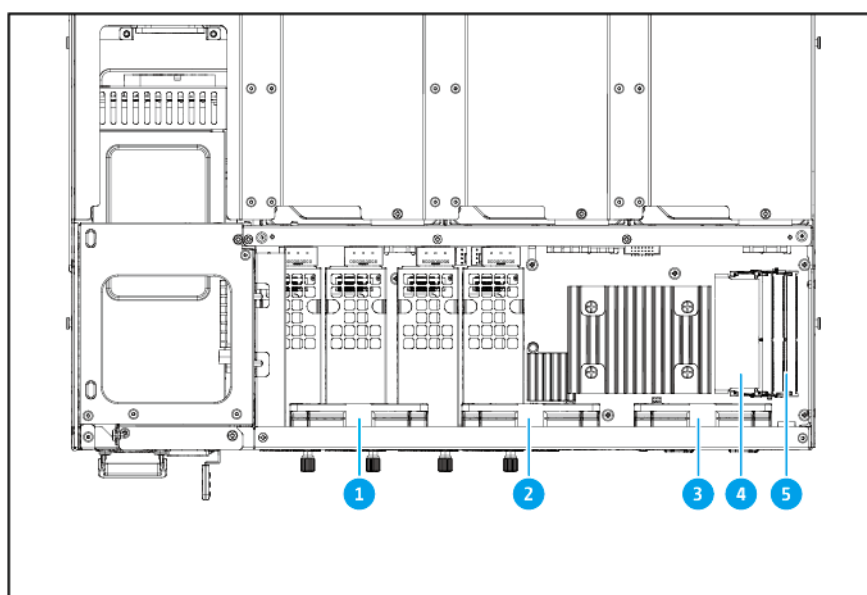
No.	Component	No.	Component
1	PCIe slot 1 (PCIe Gen 3.0 x4)	10	USB 3.2 Gen 1 Type-A port 2
2	PCIe slot 2 (PCIe Gen 3.0 x4)	11	10GBASE-T port (RJ45)
3	System fan 3	12	E1.S/M.2 PCIe slot 1
4	System fan 2	13	E1.S/M.2 PCIe slot 2
5	System fan 1	14	E1.S/M.2 PCIe slot 3
6	Reset button	15	E1.S/M.2 PCIe slot 4
7	2.5 Gigabit Ethernet port (RJ45) 1	16	Power supply unit 2
8	2.5 Gigabit Ethernet port (RJ45) 2	17	Power supply unit 1
9	USB 3.2 Gen 1 Type-A port 1	-	-

Rear panel LEDs



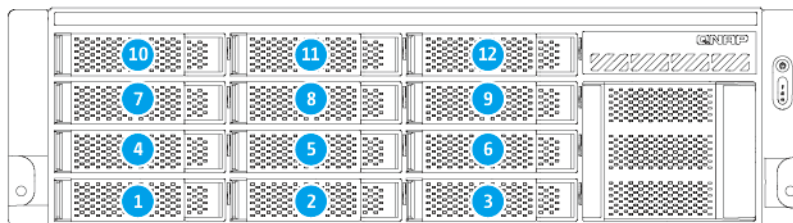
No.	Component	No.	Component
1	ES.1 NVMe Drive Error LED	4	10 Gigabit Ethernet speed LEDs
2	E1.S NVMe Drive Activity LED	5	2.5 Gigabit Ethernet activity LEDs
3	10 Gigabit Ethernet activity LEDs	6	2.5 Gigabit Ethernet speed LEDs

System board



No.	Component	No.	Component
1	System fan 3	4	Memory slot 1
2	System fan 2	5	Memory slot 2
3	System fan 1	-	-

Front drive numbering



Installation requirements

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

Category	Item
Hardware and peripherals	<ul style="list-style-type: none"> Storage drives <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p>Tip For the list of compatible drive models and expansion cards, go to https://www.qnap.com/compatibility.</p> </div> <ul style="list-style-type: none"> Network cable
Tools	<ul style="list-style-type: none"> Phillips #1 or #2 screwdriver Anti-static wrist strap

Setting up the NAS

Important

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

- Place your NAS device in an environment that meets the requirements.
For details, see [Installation requirements](#).
- Install drives.
For details, see the following:
 - [Installing 2.5-inch solid-state drives on 3.5-inch trays](#)
 - [Installing 3.5-inch hard drives on 3.5-inch trays](#)
 - [Installing 5.9-mm E1.S solid-state drives](#)
 - [Installing 9.5-mm and 15-mm E1.S solid-state drives](#)
 - [Installing M.2 solid-state drives on ES.1 drive trays](#)
- Optional: Connect an expansion unit.
For details, see [Expansion unit installation](#).
- Connect the power cord and all applicable cables.
- Power on the NAS.
- Install QuTS hero.
For details, see [QuTS hero installation](#).
- Log on to QuTS hero.

3. Installation and Configuration

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

Hardware installation

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

Drive installation

The TS-h1655XeU-RP series is compatible with 3.5-inch hard drives, 2.5-inch solid-state drives, M.2 solid-state drives, and ES.1 solid-state drives.

Important

9.5 mm and 15 mm E1.S solid state drives require the QNAP drive tray TRAY-E1S-01. This drive tray must be purchased separately.

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

Warning

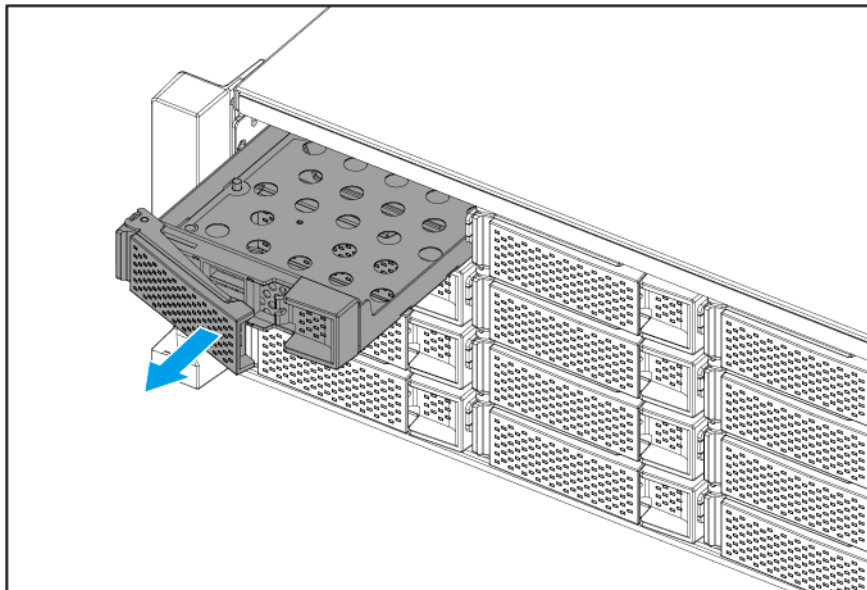
- Installing a drive deletes all data on the drive.
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.



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

1. Remove the drive tray.
 - a. Pull the tray handle outward.

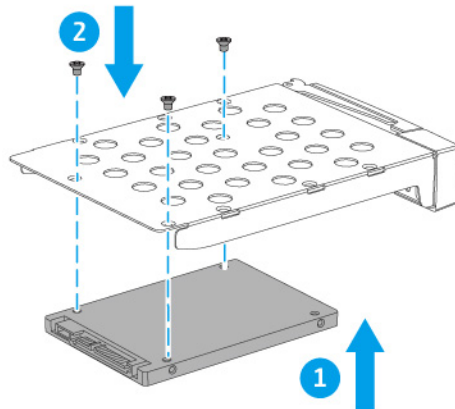
- b.** Pull the tray out.



- 2.** Install a drive on the tray.

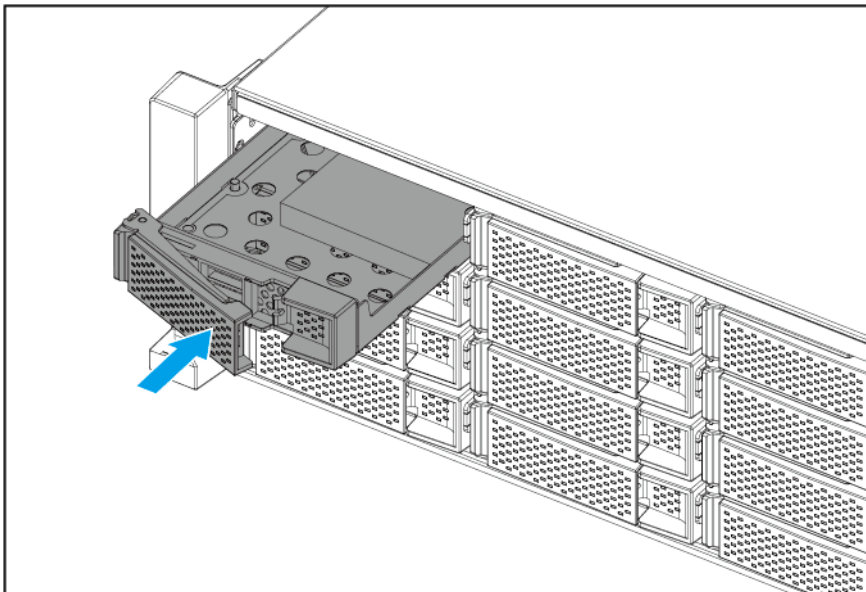
- a.** Place the tray on the drive so that the holes on the tray are aligned with those on the drive.

- b.** Attach the screws.



- 3.** Load the tray into the bay.

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



- b.** Push the handle.

Installing 3.5-inch hard drives on 3.5-inch trays

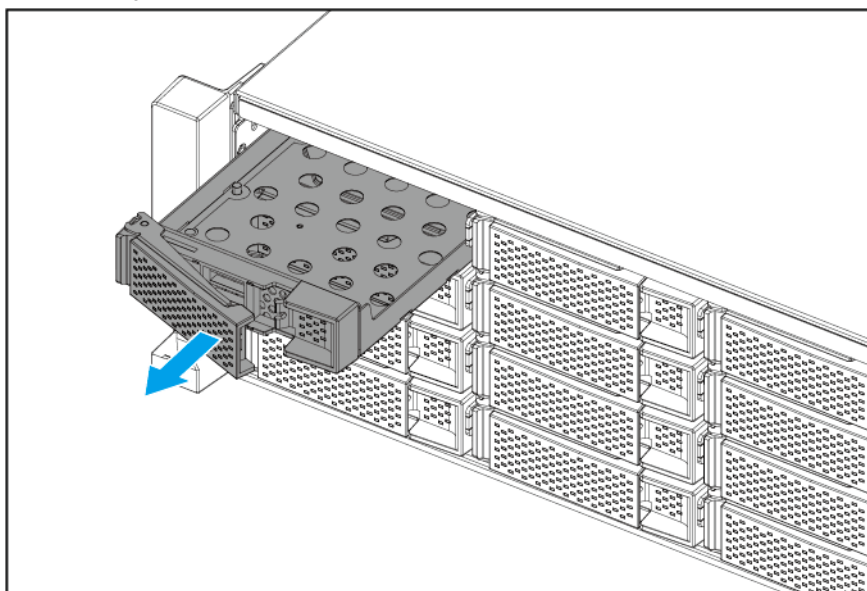
Warning

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



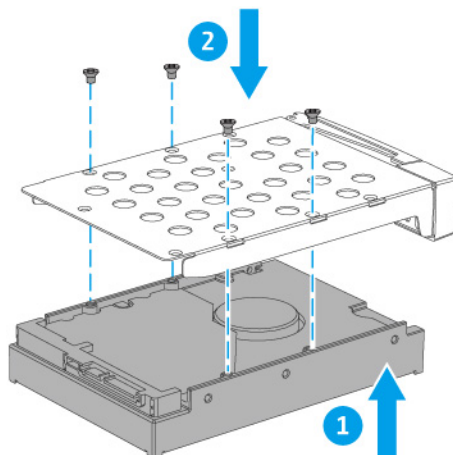
- **Other moving components:** Keep your hands and other body parts away from other moving components.

1. Remove the drive tray.
 - a. Pull the tray handle outward.
 - b. Pull the tray out.



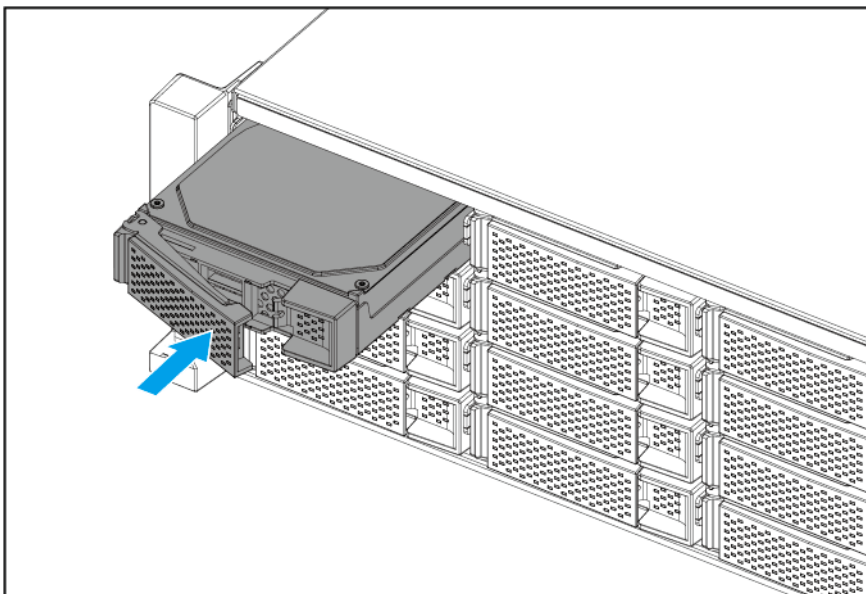
2. Install a drive on the tray.
 - a. Place the tray on the drive so that the holes on the tray are aligned with those on the drive.

b. Attach the screws.



3. Load the tray into the bay.

a. Insert the tray into the bay.



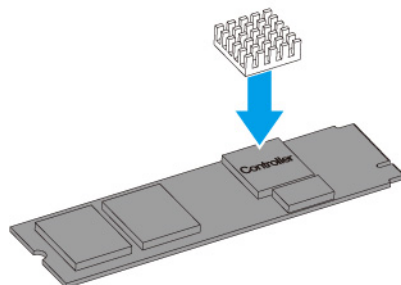
b. Push the handle.

Installing M.2 solid-state drives on ES.1 drive trays

The TS-h1655XeU-RP has four ES.1 drive bays in the [Rear panel](#).

- For a list of compatible M.2 SSDs, go to <https://www.qnap.com/compatibility>.
- ES.1 drive trays have a preinstalled QDA-E1SM adapter for installing M.2 SSDs.

- c. Install the heatsink on the controller.



3. Optional: Install one or more thermal pads on the drive tray.

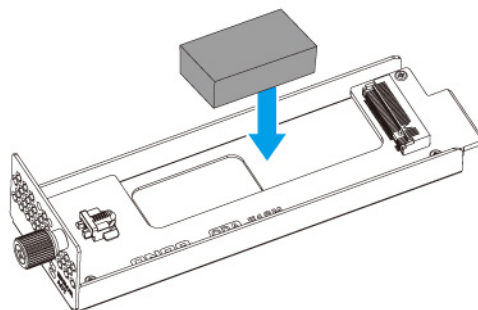
Note

- Thermal pads are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to <https://shop.qnap.com>.
- The QNAP TPAD-M2SSD-04 thermal pads are recommended. The TPAD-M2SSD-04 includes thick and thin thermal pads for installing single-sided and double-sided SSDs.

Important

Do not install thermal pads directly on the SSD. The M.2 SSD adapter does not have sufficient space to accommodate an SSD with thermal pads attached. Install thermal pads on the drive tray in the area unobstructed by the adapter.

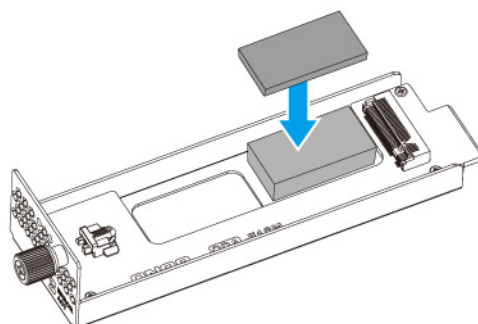
- a. Install a thick thermal pad on the drive tray.



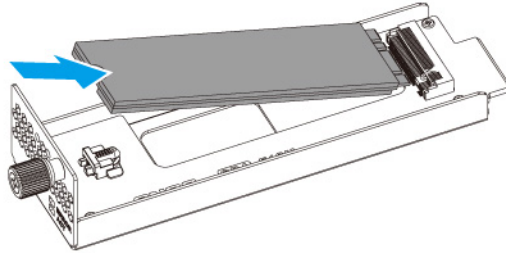
- b. Install a thin thermal pad on top of the thick thermal pad.

Note

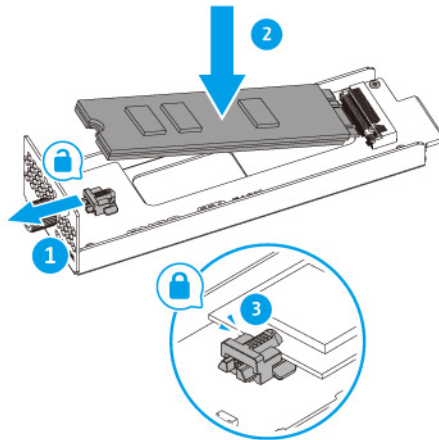
This step is for single-sided SSDs only. Skip this step if you are installing a double-sided SSD.



4. Install the M.2 SSD.
 - a. Insert the M.2 SSD into the slot.

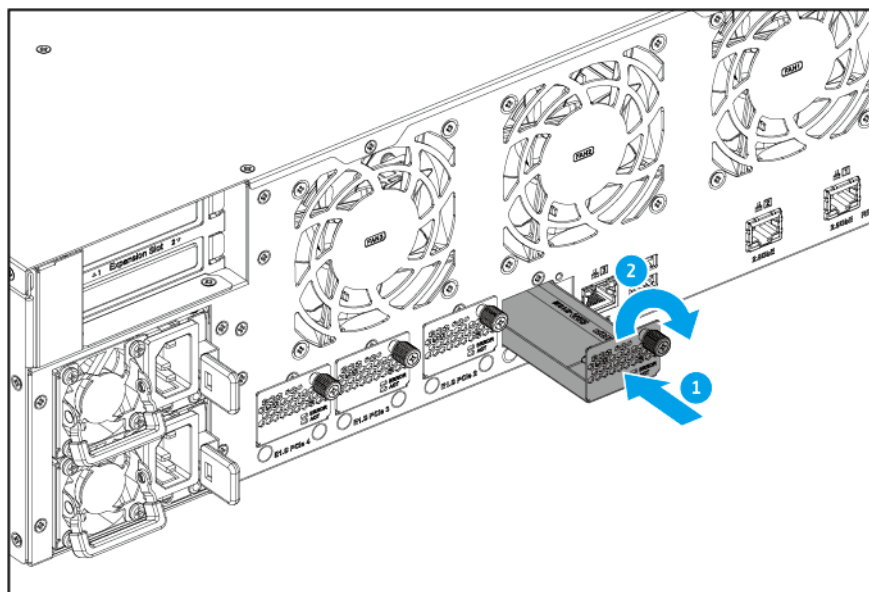


- b. Carefully press down the M.2 SSD.



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

- b.** Tighten the screw that secures the tray to the chassis.



Installing 5.9-mm E1.S solid-state drives

For a list of compatible E1.S SSDs, go to <https://www.qnap.com/compatibility>.

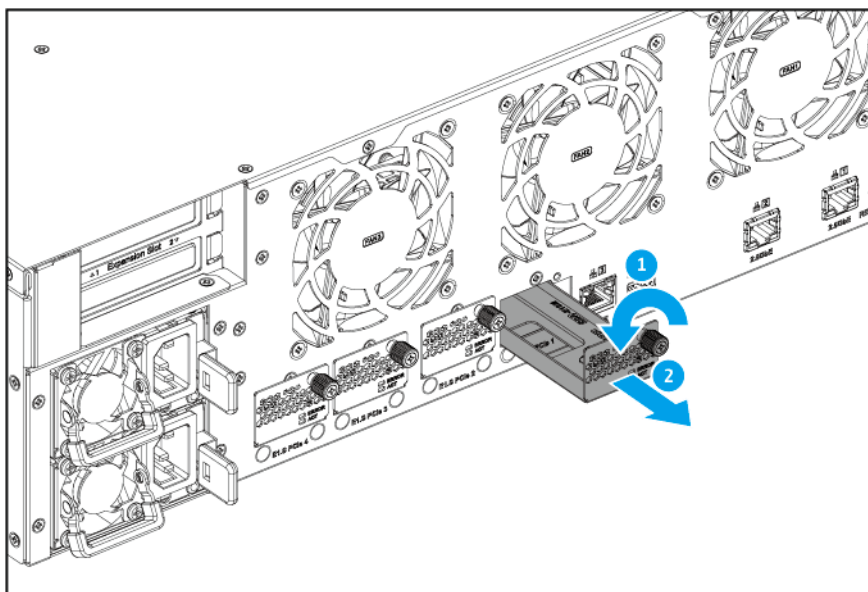
Warning

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

- 1.** Remove the drive tray.

- a.** Loosen the screw that secures the tray to the chassis.

- b.** Pull the tray out.



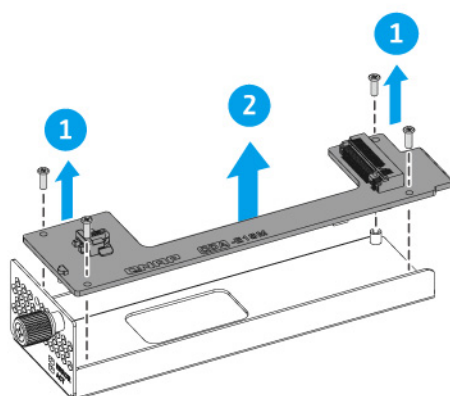
- 2.** Install the E1.S SSD.

- a.** Remove the screws that secure the M.2 SSD adapter to the tray frame.

Note

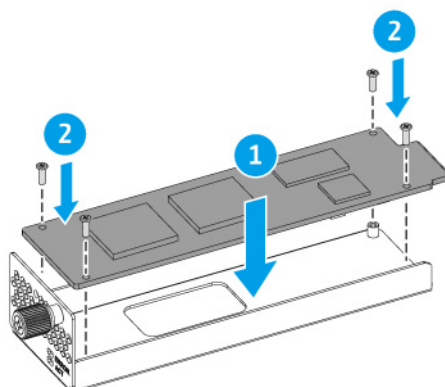
The drive tray comes preinstalled with a QDA-E1SM adapter.

- b.** Remove the M.2 SSD adapter.



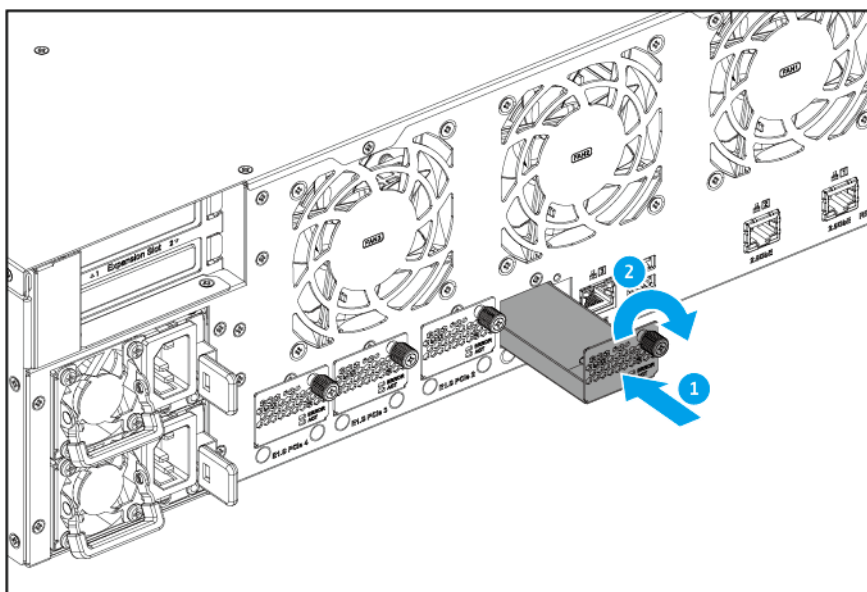
- c.** Place the drive on the tray frame so that the holes on the drive align with the holes on the tray frame.

- d. Attach the screws that secure the drive to the tray frame.



3. Load the tray into the bay.

- a. Insert the tray into the bay.
b. Tighten the screw that secures the tray to the chassis.



Installing 9.5-mm and 15-mm E1.S solid-state drives

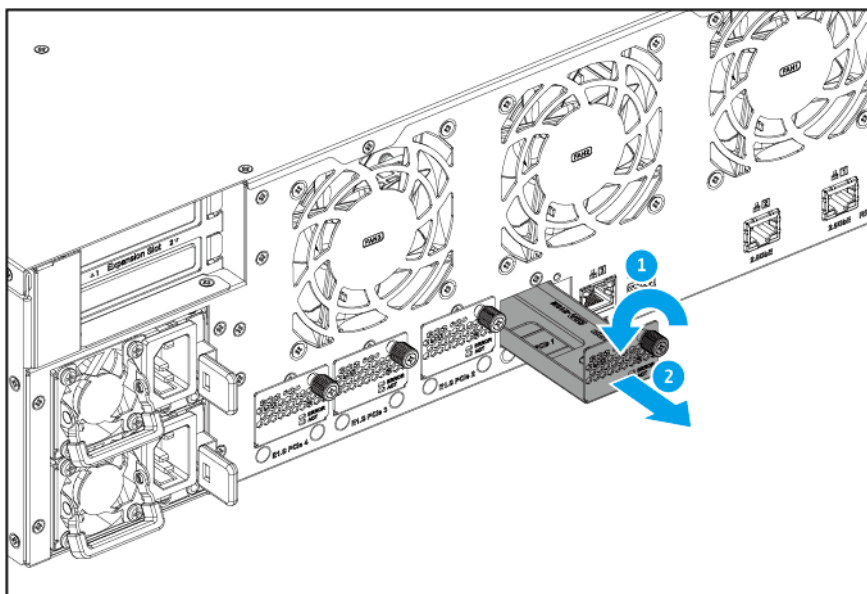
- 9.5 mm and 15 mm E1.S solid state drives require the separately purchased QNAP drive tray TRAY-E1S-01.
- For a list of compatible E1.S SSDs, go to <https://www.qnap.com/compatibility>.

Warning

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

1. Remove the drive tray.

- a. Loosen the screw that secures the tray to the chassis.
- b. Pull the tray out.

**2.** Install the E1.S SSD.

- a. Place the drive on the TRAY-E1S-01 tray base so that the holes on the drive align with the holes on the tray base.

Warning

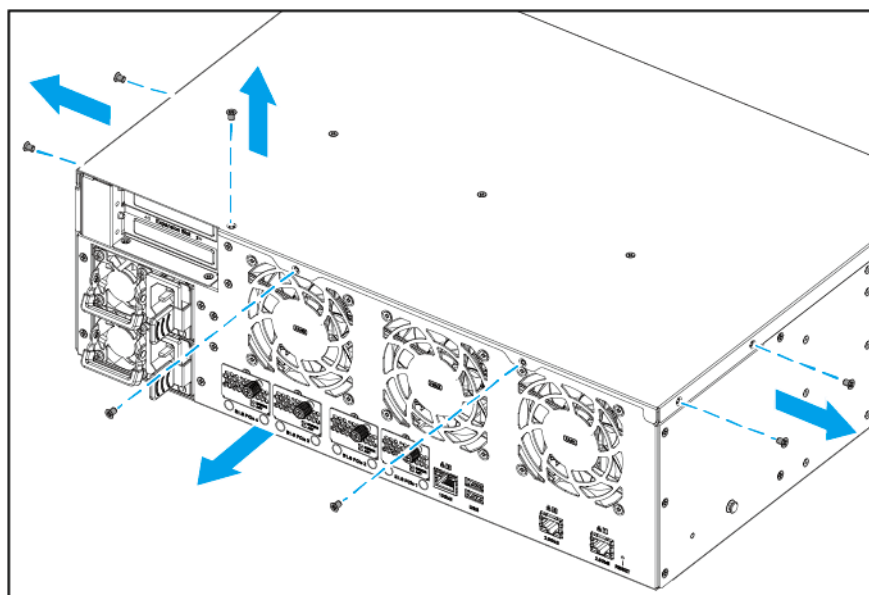
• **Moving fan blades:** Keep your hands and other body parts away from moving fan blades.



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

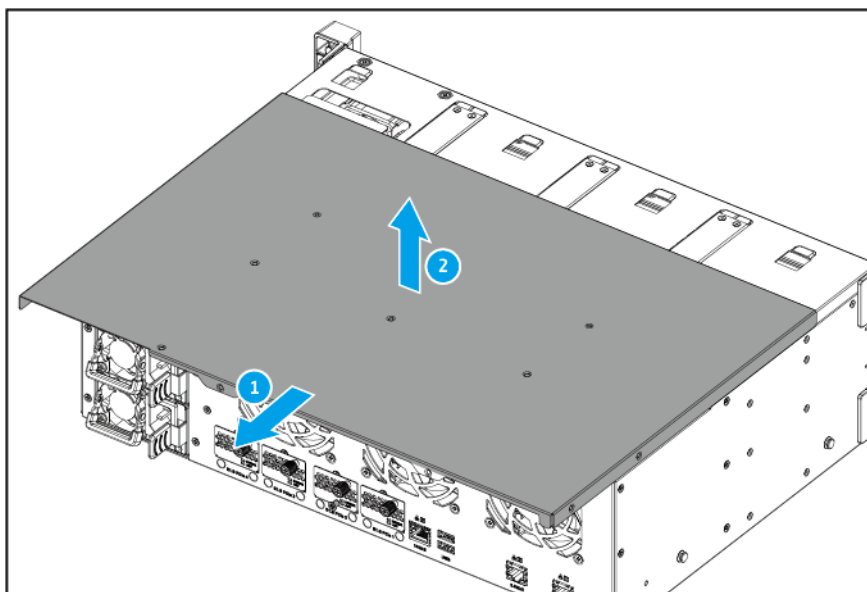
- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

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



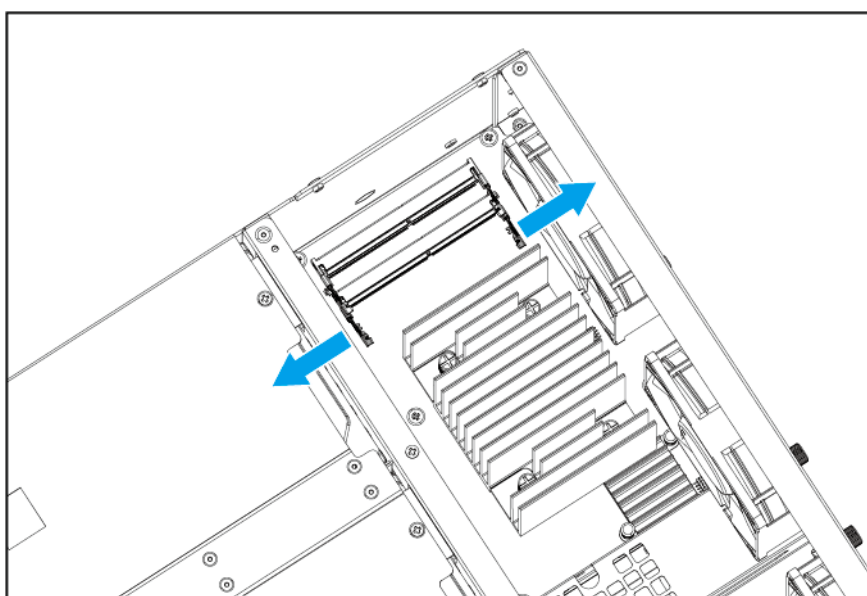
- b. Slide the top cover back.

- c. Lift the top cover off the device.



5. Remove the installed memory module.

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

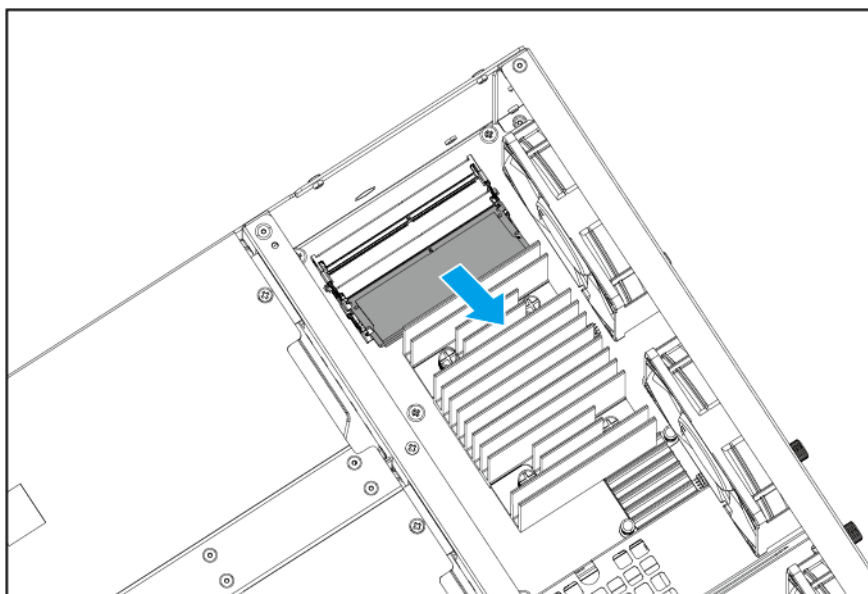


- b. Verify that the module has tilted upward and is completely released from the slot.

Warning

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

- c.** Hold the module by the edges.



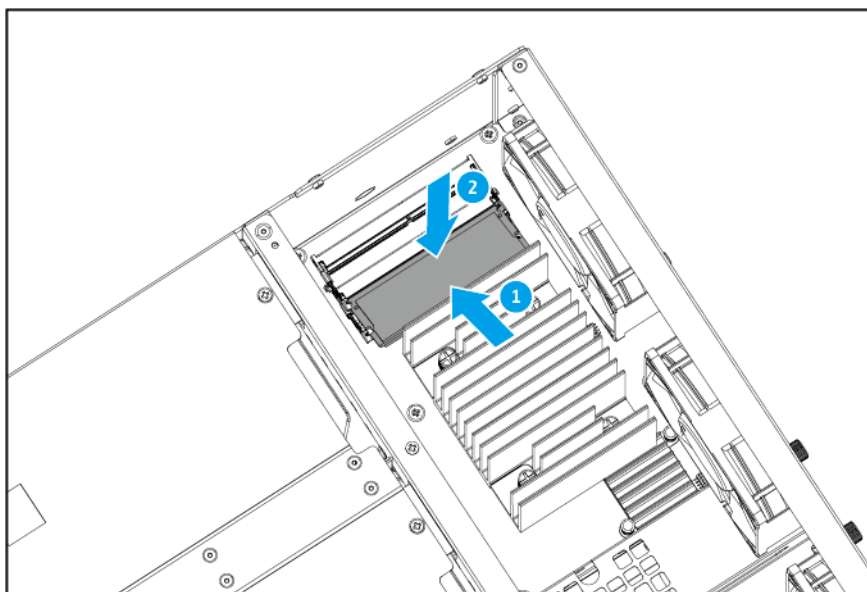
- d.** Carefully slide the module out of the slot.

Warning

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

- 6.** Install a new module.
- a.** Align the notch with the ridge in the slot.
 - b.** Insert the module into the slot.

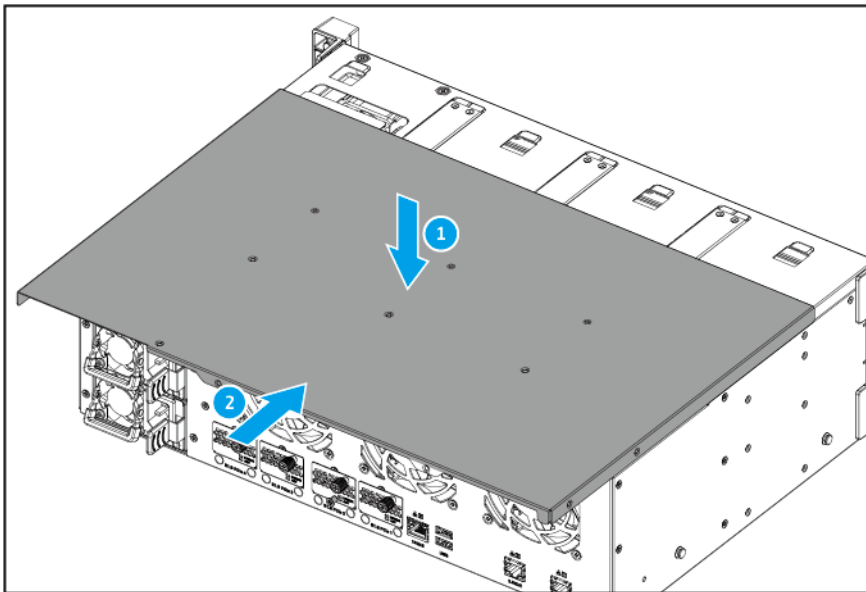
- c.** Verify that the metal connectors are completely inserted into the slot.
- d.** Carefully press down on the module until the retention clips lock the module into place.



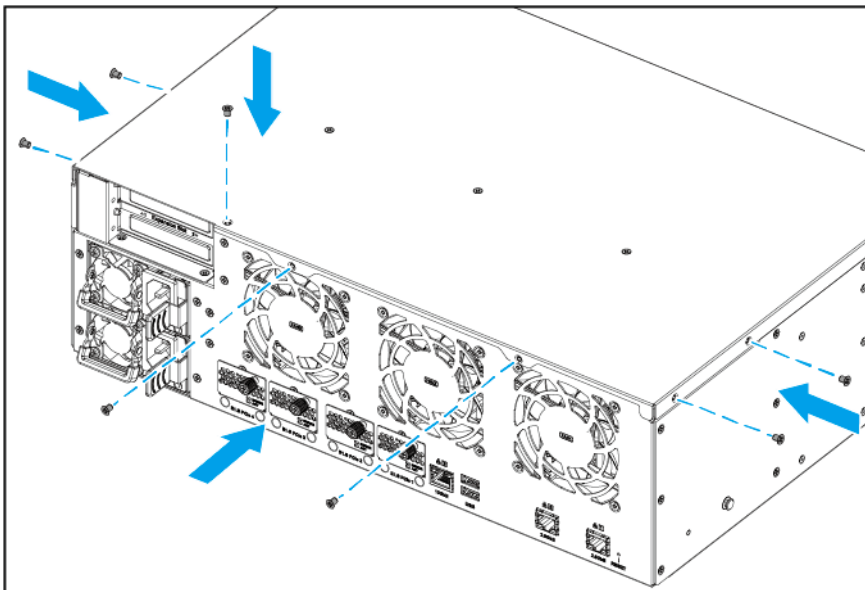
7. Attach the top cover.

- a.** Place the cover on the device.

- b. Slide the top cover forward.



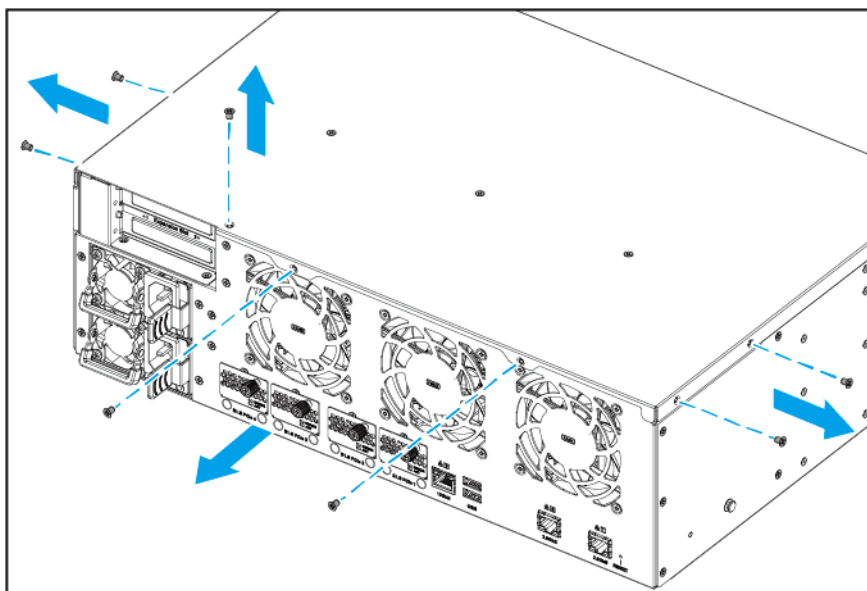
- c. Attach the screws that secure the top cover to the chassis.



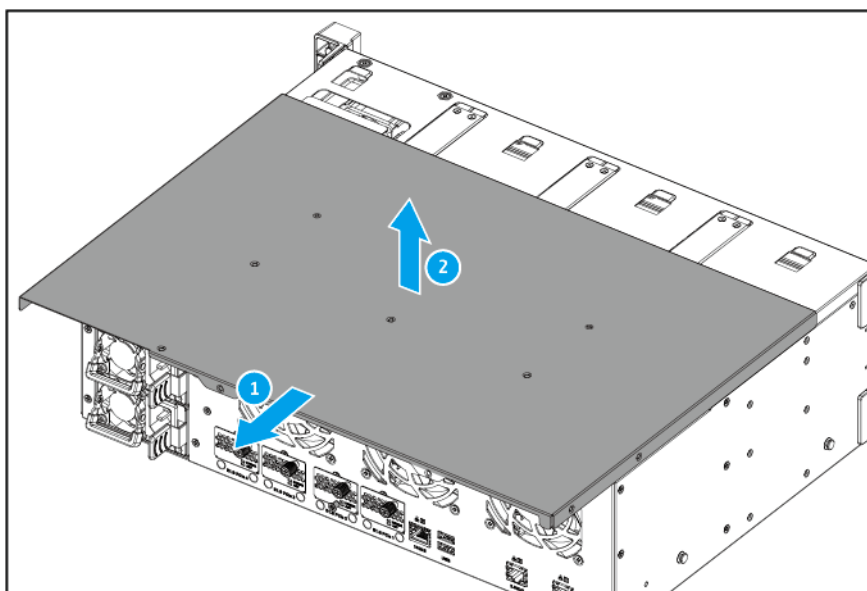
8. Connect all cables and external attachments.
9. Power on the device.
10. Verify that the module is recognized by the device.
 - a. Log on to QuTS hero as an administrator.
 - b. Go to **Control Panel > System > System Status > Hardware Information**.
 - c. Check the value for **Total memory**.

Installing PCIe expansion cards

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



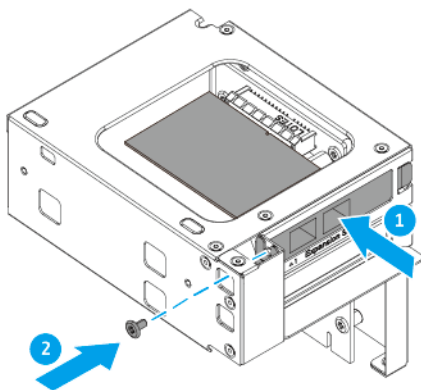
- b. Slide the top cover back.
 - c. Lift the top cover off the device.



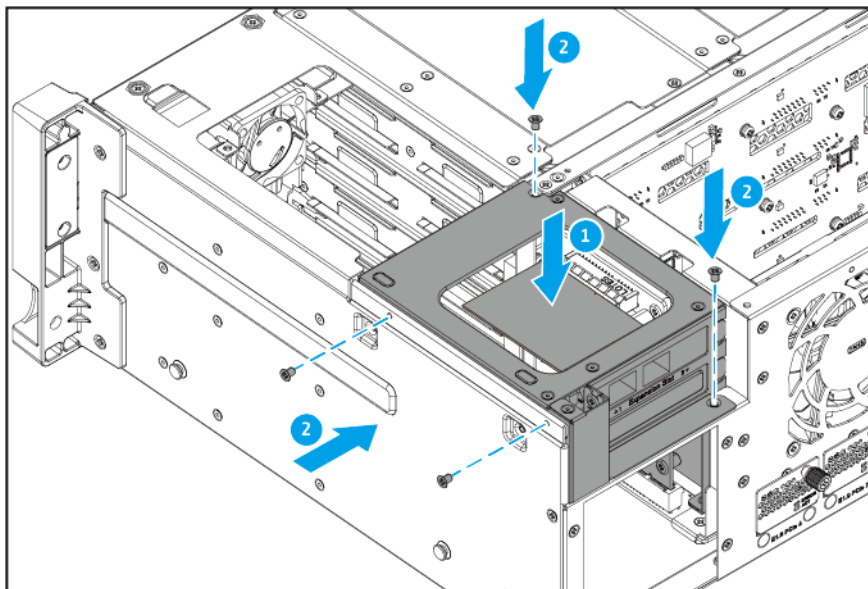
5. Remove the PCIe bracket.
 - a. Remove the screws that secure the bracket to the chassis.

7. Install the PCIe expansion card.

- a. Insert the PCIe expansion card into a PCIe slot on the PCIe bracket.
- b. Attach the screw that secures the PCIe card to the PCIe bracket.

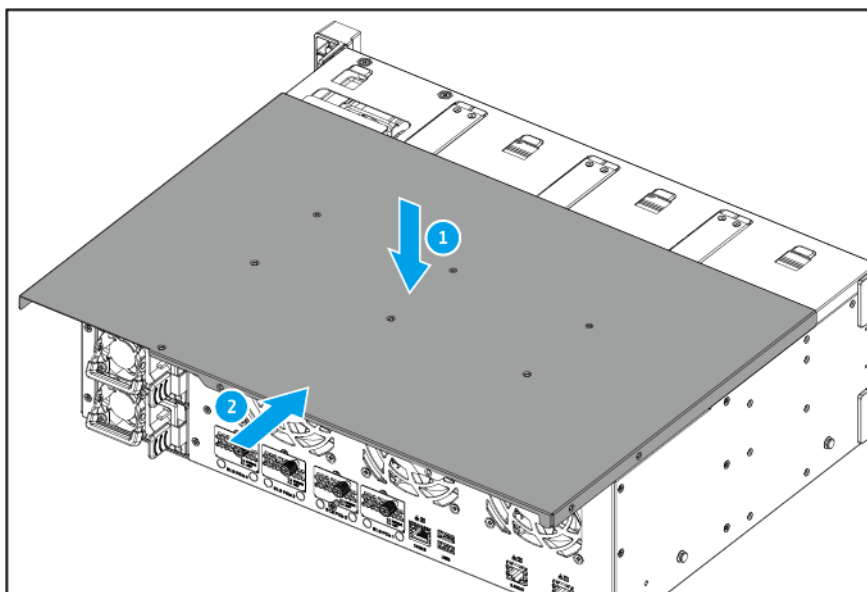
**8. Insert the PCIe bracket.**

- a. Insert the PCIe bracket into the chassis and push down on the bracket until the connector of the PCIe circuit board is firmly secured in the PCIe slot on the system board.
- b. Attach the screws that secure the PCIe bracket to the chassis.

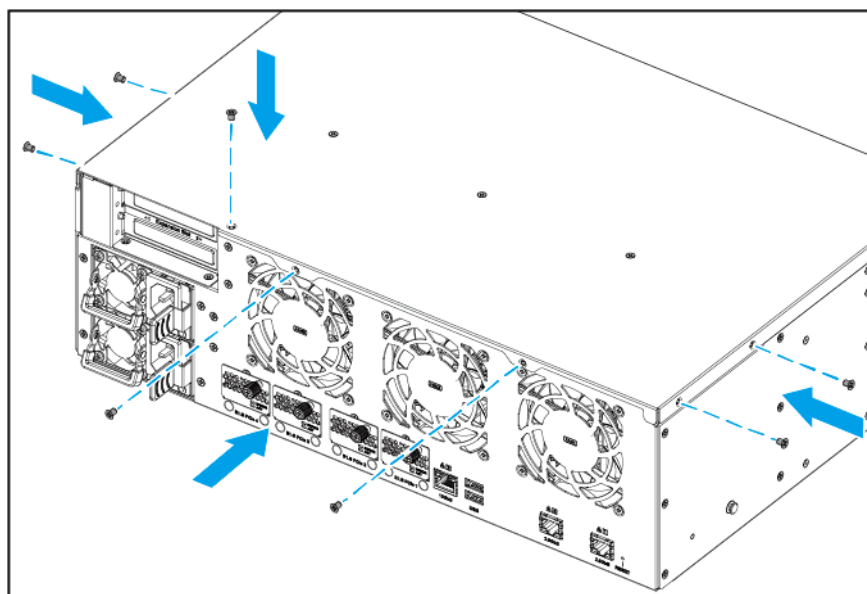
**9. Attach the top cover.**

- a. Place the cover on the device.

- b. Slide the top cover forward.



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



10. Connect all cables and external attachments.

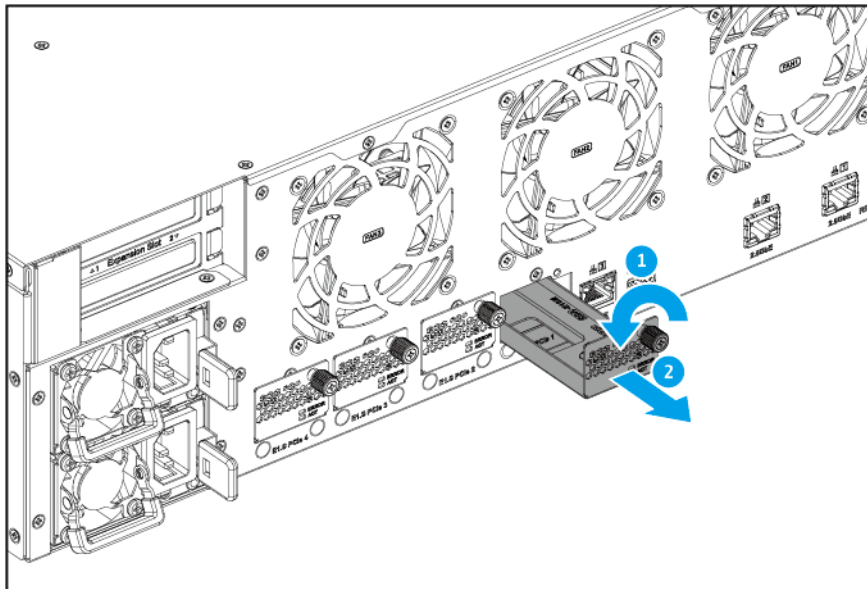
11. Power on the device.

Installing the QXG-ES10GIT network expansion card

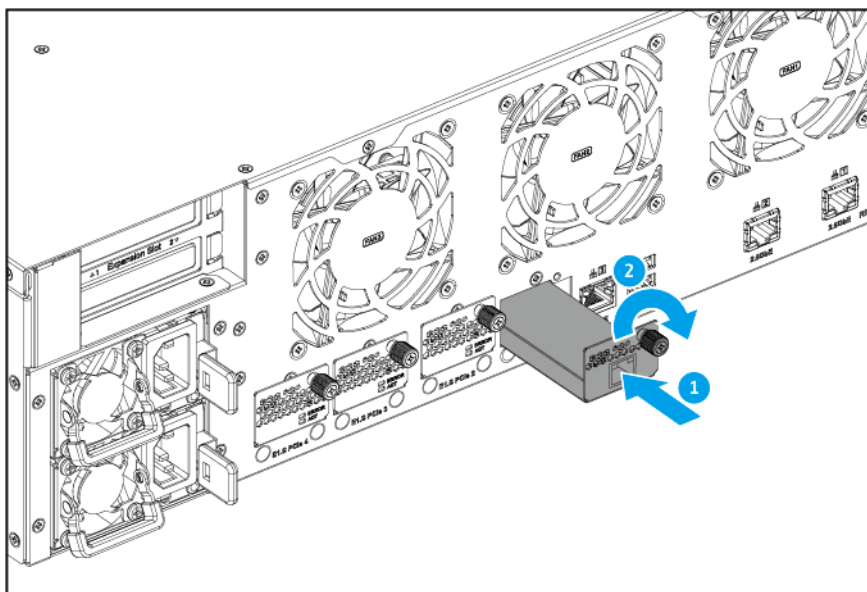
Warning

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

1. Remove a drive tray.
 - a. Loosen the screw that secures the tray to the chassis.
 - b. Pull the tray out.



2. Load the QXG-ES10G1T expansion card tray into the bay.
 - a. Insert the tray into the bay.
 - b. Tighten the screw that secures the tray to the chassis.



Hot-swapping redundant power supplies

NAS devices with redundant power supply units (PSUs) support hot-swapping.

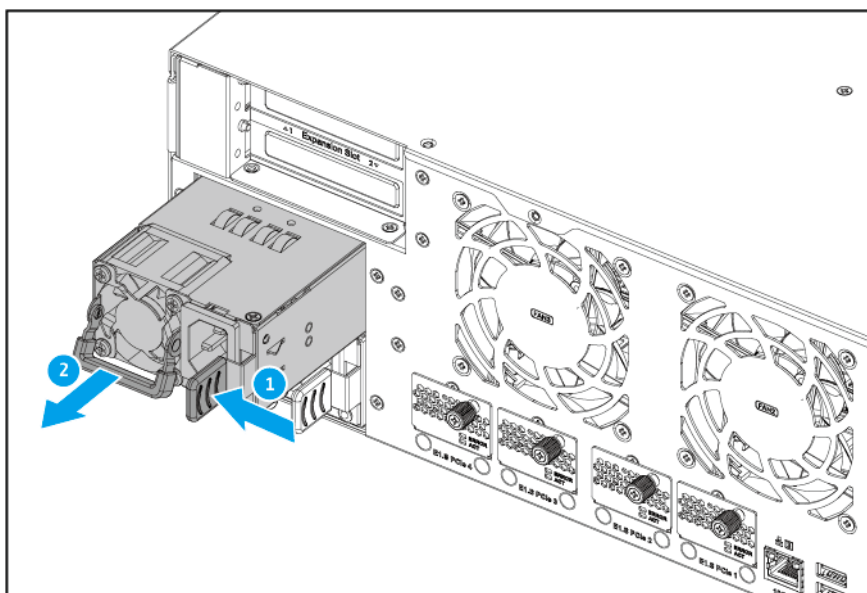
Warning

Electric shock hazard.

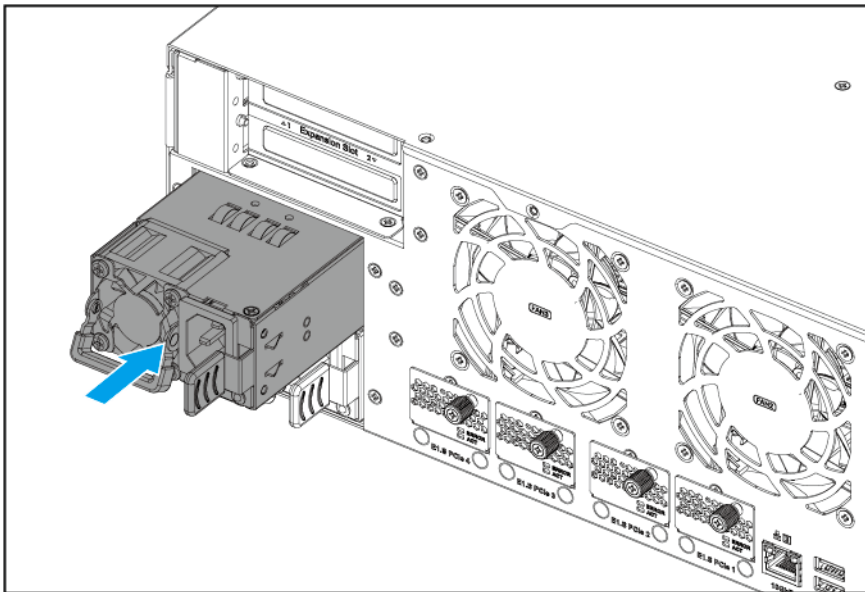
Tip

By default, the NAS issues audio alerts and desktop notifications in case of redundant PSU failures. Redundant PSU failures include when the NAS is operating on a single healthy PSU only. In this case, if you want to stop receiving redundant PSU failure alerts and notifications, go to **Control Panel > System > Hardware > General** and deselect **Enable redundant power supply mode**.

1. Disconnect the power cord from the electrical outlet and the power supply unit (PSU) that you are replacing.
2. Firmly press the latch toward the handle and then pull the PSU out.



3. Insert the new PSU.



4. Connect the power cord to the PSU and the electrical outlet.

Rail kits

Rail kits are not included with the device and must be purchased separately. For details, contact an authorized reseller or go to <http://shop.qnap.com>.

The TS-h1655XeU-RP is compatible with the following rail kit models:

Model	Compatible Rail Kit
TS-h1655XeU-RP	<ol style="list-style-type: none"> 1. RAIL-S01 2. RAIL-B02

You can find installation information in the rail kit package.

Expansion unit installation

The TS-h1655XeU-RP supports SAS, SATA, USB, and PCIe expansion units. For details, see the table below.

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

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

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

Expansion Unit Model	Description	Required Accessories
SAS expansion units		
TL-R1620Sep-RP	<ul style="list-style-type: none"> • Uses a SAS 12 Gbps (SFF-8644) interface • Supports SAS/SATA HDD/SSD 	<ul style="list-style-type: none"> • One of the following storage expansion cards: <ul style="list-style-type: none"> • QXP-820S-B3408 • QXP-1620S-B3616W • mini-SAS SFF-8644 cable • RAIL-A03-57
TL-R1220Sep-RP	<ul style="list-style-type: none"> • Uses a SAS 12 Gbps (SFF-8644) interface • Supports SAS/SATA HDD/SSD 	<ul style="list-style-type: none"> • One of the following storage expansion cards: <ul style="list-style-type: none"> • QXP-820S-B3408 • QXP-1620S-B3616W • mini-SAS SFF-8644 cable • RAIL-A03-57
USB expansion units		
TR-002	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable
TR-004	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • USB 3.2 Gen 1 Type-A to Type-C cable
TR-004U	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA HDD/SDD 	<ul style="list-style-type: none"> • USB 3.2 Gen 1 Type-A to Type-C cable • RAIL-B02
TL-D800C	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable

Expansion Unit Model	Description	Required Accessories
TL-R1200C-RP	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • RAIL-B02
SATA expansion units		
TL-D400S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter
TL-D800S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • 2 x SFF-8088 connector cables • QXP-800eS-A1164 host bus adapter
TL-D1600S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • 4 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS-A1164 host bus adapter
TL-R1200S-RP	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • 3 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS-A1164 host bus adapter • RAIL-B02
TL-R400S	<ul style="list-style-type: none"> • Uses a SATA 6 Gbps (SFF-8088) interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter • RAIL-B02
PCIe expansion units		
TL-R1200PES-RP	<ul style="list-style-type: none"> • Uses a PCIe 32 Gbps or 64 Gbps (SFF-8644) interface • Supports SATA HDD/SSD 	<ul style="list-style-type: none"> • One of the following host bus adapter and cable pairings: <ul style="list-style-type: none"> • Adapter: QXP-3X4PES Cable: CAB-PCIE10M-8644-4X • Adapter: QXP-3X8PES Cable: CAB-PCIE10M-8644-8X • RAIL-B02

Expansion Unit Model	Description	Required Accessories
TL-R1600PES-RP	<ul style="list-style-type: none"> • Uses a PCIe 32 Gbps or 64 Gbps (SFF-8644) interface • Supports SATA HDD/SDD 	<ul style="list-style-type: none"> • One of the following host bus adapter and cable pairings: <ul style="list-style-type: none"> • Adapter: QXP-3X4PES Cable: CAB-PCIE10M-8644-4X • Adapter: QXP-3X8PES Cable: CAB-PCIE10M-8644-8X • RAIL-B02
TL-R2400PES-RP	<ul style="list-style-type: none"> • Uses a PCIe 32 Gbps or 64 Gbps (SFF-8644) interface • Supports SATA HDD/SDD 	<ul style="list-style-type: none"> • One of the following host bus adapter and cable pairings: <ul style="list-style-type: none"> • Adapter: QXP-3X4PES Cable: CAB-PCIE10M-8644-4X • Adapter: QXP-3X8PES Cable: CAB-PCIE10M-8644-8X • RAIL-A02-90

Connecting PCIe expansion units

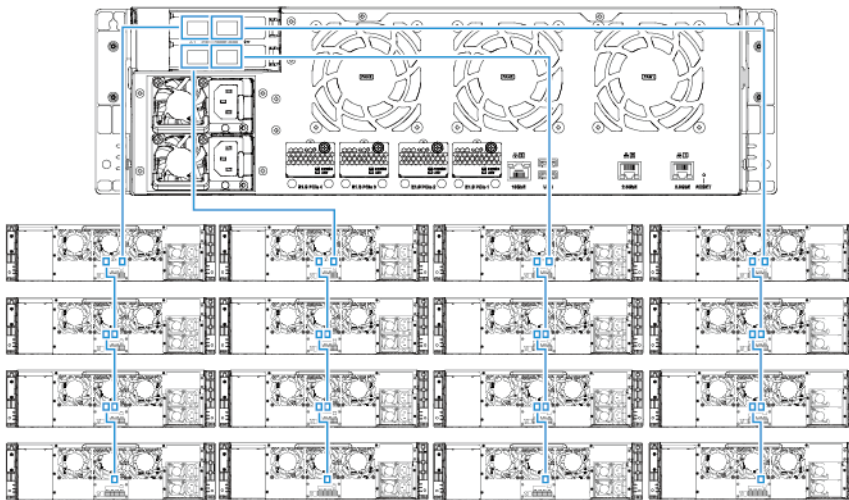
To connect the device to SAS expansion units, a storage expansion card must be installed in the device.

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

1. Power off the NAS.
2. Install a storage expansion card on the PCIe slot.
For details, see [Installing PCIe expansion cards](#).
3. Connect one or more PCIe expansion units to the NAS.
Use one of the following topologies according to the host bus adapter (HBA) model installed on the NAS.

Important

- Ensure you use compatible cables for your host bus adapter model.
- If you use the CAB-PCIE10M-8644-4X cable, you must connect the cable to the left side of the port for both upstream and downstream ports.
- For details, see the hardware user guide for your expansion unit model.



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

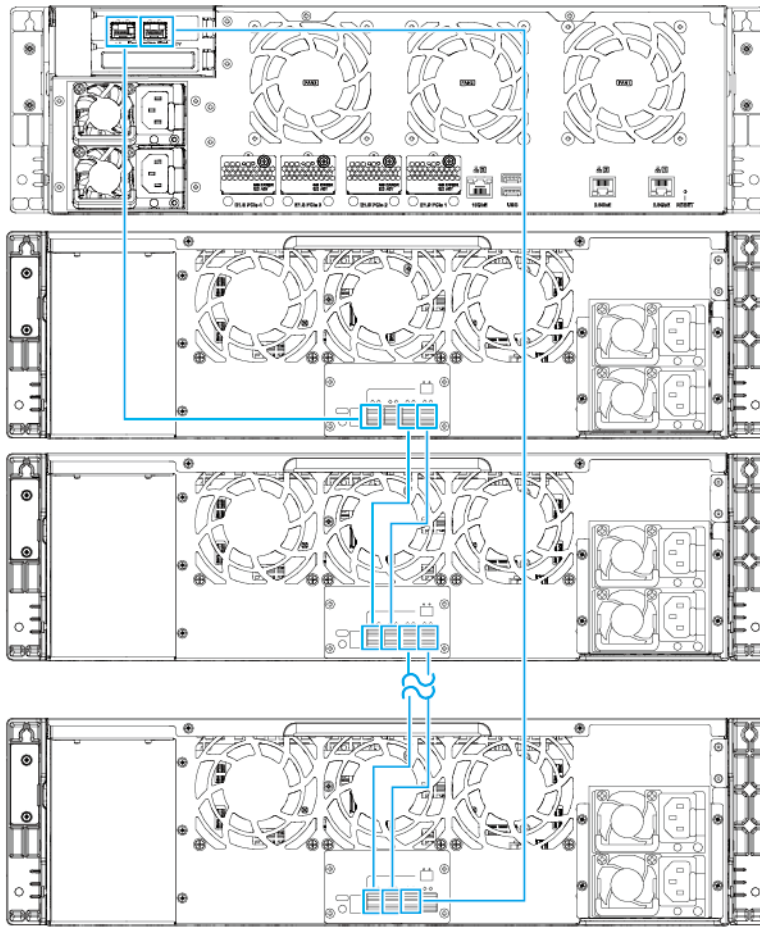
Connecting SAS expansion units

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

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

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

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



QNAP recommends always using dual-path configuration to prevent storage downtime due to expansion unit failure or cable disconnection. Single-path configuration should be used only in a situation where it is not possible to use dual-path configuration.

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

Connecting SATA expansion units

The TS-h1655XeU-RP series supports connecting one SATA expansion unit. For required accessories details, see [Expansion unit installation](#).

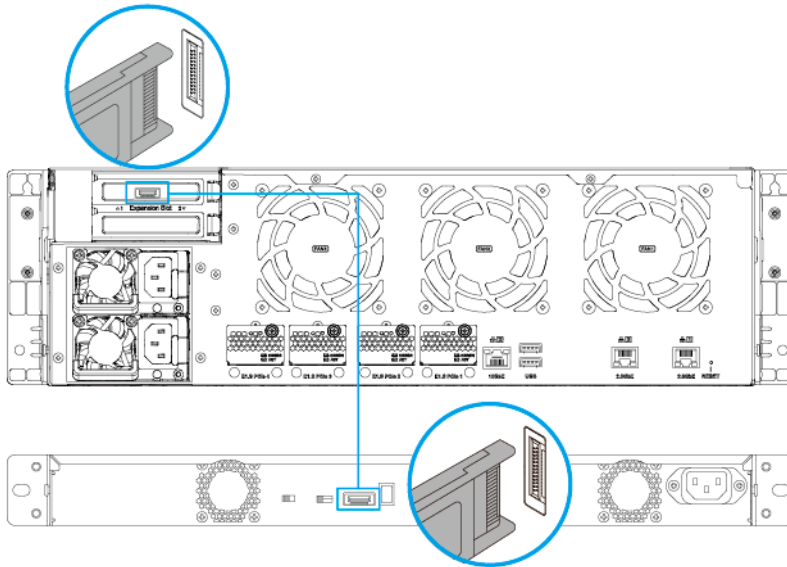
1. Power off the NAS.

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

Note

A QNAP QXP host bus adapter is required for connecting SATA expansion units to a host device. Third-party host bus adapters are not compatible with QNAP expansion units.

3. Connect the expansion unit to the NAS using the following topology.

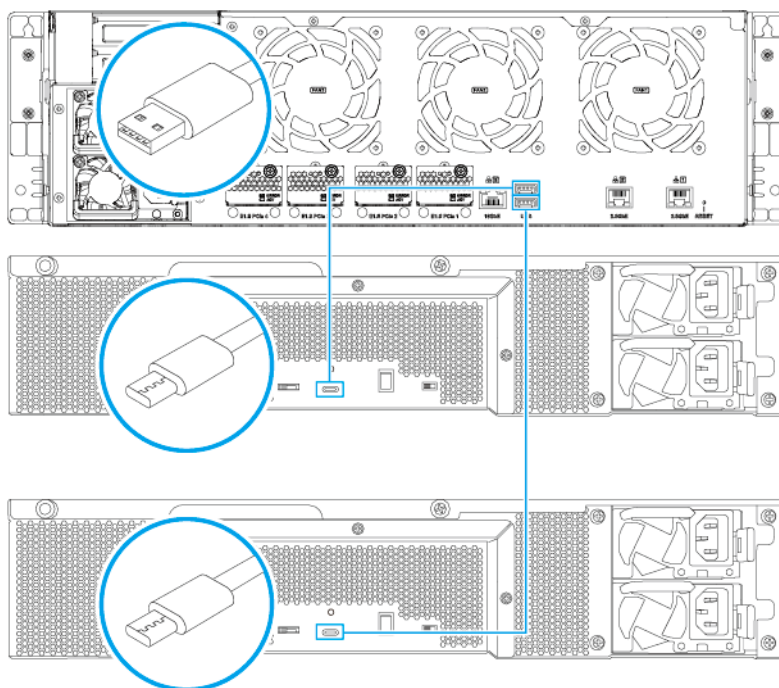


4. Power on the expansion unit.
5. Power on the NAS.
6. Verify that the expansion unit is recognized by the NAS.
 - a. Log on to QuTS hero as an administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion unit is listed.

Connecting USB expansion units

To connect the TS-h1655XeU-RP to USB expansion units, a USB Type-A to USB Type-C cable is required. For required accessories details, see [Expansion unit installation](#).

1. Connect the expansion unit to the NAS.
 - a. Connect the USB cable to the USB Type-C port on the expansion unit.
 - b. Connect the USB cable to a USB 3.1 Gen 1 Type-A port on the NAS.



2. Optional: Connect another expansion unit to the NAS.
3. Power on the expansion unit.
4. Verify that the expansion unit is recognized by the NAS.
 - a. Log on to QuTS hero as an administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion unit is listed.

QuTS hero installation

The TS-h1655XeU-RP uses the QNAP QuTS hero operating system. You can install QuTS hero using any of the following methods.

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

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

Warning

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

Initializing QuTS hero using the cloud installation website

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

Warning

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

1. Power on the device.
2. Connect the device to the internet.

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

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

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

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

Tip

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

The installation wizard opens in the default web browser.

5. Create an account or sign in to myQNAPcloud.

Note

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

6. Specify the myQNAPcloud device name for the NAS.

Note

- The myQNAPcloud device name is used when remotely accessing the NAS.
- For security purposes, the myQNAPcloud Link remote connection service will be disabled on your NAS after initialization. You can enable it by connecting to QuTS hero through LAN and then installing myQNAPcloud Link.

7. Click **Next**.

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

8. Perform any of the following actions.

- To check for the latest available version, click **Start**.
The wizard downloads the latest available version, and then the NAS restarts after the download is complete. If a newer version is not available, the wizard automatically displays the **Smart Installation Guide**.
- To install the out-of-the-box version, click **Skip**.
- If the screen shows a different operating system, click **QuTS hero**.
The NAS restarts and the smart installation screen shows QuTS hero as the operating system to install.

9. Click **Start Smart Installation Guide**.
The **Install Firmware** window appears.

10. Install firmware using any of the following methods:

Installation methods	Steps
Automatic	Click Start . Automatically searches for available firmware updates and installs firmware.
Manual installation	<p>a. Click Manual Installation. The Install Firmware window appears.</p> <p>b. Click Browse. The upload file window appears.</p> <p>c. Select file.</p> <p>d. Click Open. Starts firmware installation.</p>
Skip	Click Skip . Skips firmware installation.

11. Specify the following information

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

Important

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

- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

12. Click **Next**.

13. Specify the time zone, date, and time.

Tip

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

14. Click **Next**.
The **Configure the network settings** screen appears.
15. Select **Obtain an IP address automatically (DHCP)**.
16. Click **Next**.
17. Review the settings.
18. Click **Apply**.
A confirmation message appears.

Warning

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

19. Click **Initialize**.
QuTS hero initialization starts. It may take a few minutes to complete the process.
After the initialization, you can click **Go to NAS Management** to start using QuTS hero and configuring other settings.

Initializing QuTS hero using Qfinder Pro

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

Warning

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

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

Note

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

4. Locate the NAS in the list and then double-click the name or IP address.
The **Smart Installation Guide** opens in the default web browser.

5. If the screen shows a different operating system, click **QuTS hero**.

Note

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

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

6. Click **Start Smart Installation Guide**.
The **Install Firmware** window appears.
7. Install firmware using any of the following methods:

Installation methods	Steps
Automatic	Click Start . Automatically searches for available firmware updates and installs firmware.
Manual installation	<p>a. Click Manual Installation. The Install Firmware window appears.</p> <p>b. Click Browse. The upload file window appears.</p> <p>c. Select file.</p> <p>d. Click Open. Starts firmware installation.</p>
Skip	Click Skip . Skips firmware installation.

8. Specify the following information

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

Important

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

- **Password:** Specify an administrator password with 1 to 64 characters. The password supports all ASCII characters.

9. Click **Next**.

10. Specify the time zone, date, and time.

Tip

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

11. Click **Next**.

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

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

13. Click **Next**.

14. Review the settings.

15. Click **Apply**.

A confirmation message appears.

Warning

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

16. Click **Initialize**.

QuTS hero initialization starts. It may take a few minutes to complete the process.

After the initialization, you can click **Go to NAS Management** to start using QuTS hero and configuring other settings.

4. Basic Operations

This chapter describes basic NAS operations.

Power button

Operation	User Action	Result
Power on	Press the button once.	The device powers on.
Power off	Press and hold the button for 5 seconds.	The device powers off.
Force power off	Press and hold the button for 10 seconds.	The device powers off. Important Use this method only when the device is unresponsive.

Reset button

Important

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

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	<p>The following settings are reset to default:</p> <ul style="list-style-type: none"> • The <code>admin</code> account is automatically enabled. • System administrator password: For details on the default password, see this FAQ. • TCP/IP configuration: <ul style="list-style-type: none"> • Obtain IP address settings automatically via DHCP • Disable jumbo frames • If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to "Active Backup (Failover)". • System port: 8080 (system service port) • Security level: Low (Allow all connections) • LCD panel password: (blank) • VLAN: Disabled
Advanced system reset	Press and hold the button for 10 seconds.	<p>The default factory settings are restored.</p> <ul style="list-style-type: none"> • To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

LEDs

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

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

System Status LED

Status	Description
Flashes green and red alternately every 0.5 seconds	<ul style="list-style-type: none"> • A drive is being formatted. • The device is being initialized. • The operating system is being updated. • RAID rebuilding is in progress. • Online RAID Capacity Expansion is in progress. • Online RAID Level Migration is in progress.
Red	<ul style="list-style-type: none"> • A drive is invalid. • A shared folder has reached its full capacity. • A shared folder is about to reach its full capacity. • A system fan is not functioning. • An error occurred when accessing (read/write) the data. • A bad sector is detected on a drive. • The device is in degraded read-only mode (two member drives failed in RAID 5 or RAID 6 but the data can still be read). • A hardware self-test error occurred.
Flashes red every 0.5 seconds	The device is in degraded mode (one member drive failed in RAID 1, RAID 5, or RAID 6).
Green	The device is ready.
Flashes green every 0.5 seconds	<ul style="list-style-type: none"> • The device is not configured. • A drive is not formatted.
Off	<ul style="list-style-type: none"> • All drives are in standby mode. • The device is powered off.

LAN LED

Status	Description
Green	A network connection has been established.

Status	Description
Flashes green	The device is being accessed from the network.
Off	The device is not connected to a network.

Expansion LED

Status	Description
Blue	<ul style="list-style-type: none"> • A USB JBOD expansion unit has been detected. • A SAS JBOD expansion unit has been detected. • A PCIe expansion unit has been detected. • An expansion unit is connected.
Off	<ul style="list-style-type: none"> • No JBOD expansion unit has been detected. • No expansion unit has been detected.

3.5-inch Drive LED

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

ES.1 NVMe Drive Error LED

Status	Description
Red	A drive error was detected.
Off	No drive errors were detected.

E1.S NVMe Drive Activity LED

Status	Description
Green	The drive is ready.
Flashes green	The drive is being accessed.
Off	No drive was detected.

2.5 Gigabit Ethernet Speed LED

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

2.5 Gigabit Ethernet Activity LED

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

10GBASE-T Ethernet Activity LED

Status	Description
Orange	A network connection has been established.
Flashes orange	Data is being transmitted.
Off	There is no network connection.

10GBASE-T Ethernet Speed LED

Status	Description
Green	The network connection is operating at 10 Gbps.
Orange	The network connection is operating at 5 Gbps, 2.5 Gbps, 1 Gbps, 100 Mbps, or 10 Mbps.
Off	There is no network connection.

Audio alerts

Duration	Frequency	Description
Long beep (1.5 seconds)	1	<ul style="list-style-type: none"> The NAS is starting up. When the reset button is pressed for 3 seconds, the NAS resets configurations. When the reset button is pressed for 15 seconds, the NAS resets configurations and reboots. The operating system was updated.
	3 (every 5 minutes)	<ul style="list-style-type: none"> A system fan is not functioning. A fan module has been removed.
	2	<ul style="list-style-type: none"> A storage pool is about to reach full capacity. A storage pool has reached full capacity. The drives are in degraded mode. A drive is rebuilding. A drive is plugged in or out.
Short beep (0.5 seconds)	1	<ul style="list-style-type: none"> The NAS was powered off by force shutdown (hardware shutdown). The NAS was powered on successfully and is ready.
	2	<ul style="list-style-type: none"> The NAS is starting up. When the reset button is pressed for 3 seconds, the NAS resets configurations. When the reset button is pressed for 15 seconds, the NAS resets configurations and reboots. The operating system was updated.

5. NAS Migration

You can migrate data and settings from your current NAS to another NAS model with minimal disruptions by installing all the hard drives from the source NAS to the destination NAS. RAID configuration and other settings are retained on the destination NAS after migration.

QTS NAS migration

NAS migration requirements

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

Your device must meet the following requirements:

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

Note

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

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

Important

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

Warning

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

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

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

Status and setting changes after NAS migration

The status of NAS data and settings varies after migration.

Data and Settings	After NAS Migration
Registered myQNAPcloud name	Your registered myQNAPcloud name is not migrated.
Encrypted disk volumes	<p>If the NAS does not support file system encryption, encrypted disk volumes are not migrated.</p> <div style="background-color: #ffe6e6; padding: 10px;"> <p>Warning</p> <p>To prevent data loss, back up and save the encryption keys of encrypted disk volumes in a safe place. You can also choose to decrypt disk volumes before migration.</p> </div>
Shared folders	<p>All shared folders and the downloaded files stored in them are retained.</p> <div style="background-color: #ffe6e6; padding: 10px;"> <p>Warning</p> <p>To prevent data loss, back up and save encryption keys or passwords of encrypted shared folders in a safe place before migration.</p> </div> <div style="background-color: #ffe6d9; padding: 10px;"> <p>Important</p> <p>Folder permissions on the destination NAS must be reconfigured after migration.</p> </div>
Network	<ul style="list-style-type: none"> • If the number of network ports or network port specifications on the destination NAS is different from the source NAS, the following network and virtual settings may change and require reconfiguration: port trunking, virtual machines, Thunderbolt, USB QuickAccess, and more. • You must reconfigure network settings when the source NAS is running on QTS 4.3.5 or earlier versions.
Windows AD configuration	Windows AD configurations must be reconfigured.
Licenses	<p>Licenses are not migrated.</p> <div style="background-color: #ffe6e6; padding: 10px;"> <p>Warning</p> <p>To prevent losing all your software licenses, QNAP recommends deactivating licenses on the source NAS before data migration.</p> </div>

Data and Settings	After NAS Migration
Applications	If the destination NAS has less RAM than the source NAS, the following features and applications might not function: Virtualization Station, Qsirch, and Snapshots.
Services	Only services supported by the destination NAS are available.
Multimedia features	Some multimedia features are disabled by default.

Migrating a NAS

Important

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

For details see the following topics:

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

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

Important

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

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

Migrating NAS data using HBS 3

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

Preparing the destination NAS

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


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

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

Creating a one-way sync job

1. On the source NAS, go to **App Center > HBS 3 > Sync**.

2. Click **Sync Now**.
3. Select **One-way Sync Job**.
The **Create a Sync Job** window appears.
4. Click **Remote NAS**.
5. Click **Add New Account**.
The **Create a Storage Space** window appears.
6. Select the destination NAS as the destination storage space and specify the following:

Setting	Description
Name	The name used to identify the storage space.
IP address / Host name	The IP address or hostname used to access the storage space. <div style="background-color: #fff9c4; padding: 5px; border: 1px solid #ccc;"> <p>Tip Click  to scan for available devices.</p> </div>
Port	The port number used to access the storage space. This value must be between 1 to 65535.
Password	The password used to access the storage space.
Use SSL connection	Requires SSL connection when accessing the remote NAS.


7. Optional: Test the connection.

Test	Description
Detect Server	Tests the accessibility of the selected storage space.
Speed Test	Tests the network connection speed of the selected storage space.

8. Click **Create**.
9. Click **Select**.
10. Select the paired folders.

Important

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

- a. Under the source, click .
A dialog box opens.

- e. Click **Next**.
The NAS user and user group settings are exported as a file and downloaded onto your computer.

3. Import user settings on the source NAS to the destination NAS.

- a. On the destination NAS, log on to QTS.
- b. Go to **Control Panel > Privilege > Users**.
- c. Click **Create**, and then click **Import/Export Users**.
- d. Select **Import user and user group settings**.

Note

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

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

QuTS hero NAS migration

NAS migration requirements

You can only migrate drives and system settings to specific NAS models, depending on your source NAS. For the list of NAS models compatible with direct NAS migration, see <https://www.qnap.com/en/nas-migration>.

Your device must meet the following requirements:

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

Important

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

Warning

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

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

For NAS models that do not support NAS migration, see [How to Migrate Data and Folder Permissions between QTS and QuTS hero with HBS3](#).

Status and setting changes after NAS migration

The status of NAS data and settings varies after migration.

Data and Settings	After NAS Migration
Registered myQNAPcloud name	Your registered myQNAPcloud name is not migrated.
Encrypted shared folders	<p>If the NAS does not support file system encryption, encrypted shared folders are not migrated.</p> <div style="background-color: #ffe6e6; padding: 10px;"> <p>Warning</p> <p>To prevent data loss, back up and save the encryption keys of encrypted shared folders in a safe place. You can also choose to decrypt shared folders before migration.</p> </div>
Shared folders	<p>All shared folders and the downloaded files stored in them are retained.</p> <div style="background-color: #ffe6e6; padding: 10px;"> <p>Warning</p> <p>To prevent data loss, back up and save encryption keys or passwords of encrypted shared folders in a safe place before migration.</p> </div> <div style="background-color: #ffe6cc; padding: 10px;"> <p>Important</p> <p>Folder permissions on the destination NAS must be reconfigured after migration.</p> </div>
Network	If the number of network ports or network port specifications on the destination NAS is different from the source NAS, the following network and virtual settings may change and require reconfiguration: port trunking, virtual machines, Thunderbolt, and more.
Windows AD configuration	Windows AD configurations must be reconfigured.
Licenses	<p>Licenses are not migrated.</p> <div style="background-color: #ffe6e6; padding: 10px;"> <p>Warning</p> <p>To prevent losing all your software licenses, QNAP recommends deactivating licenses on the source NAS before data migration.</p> </div>
Applications	If the destination NAS has less RAM than the source NAS, the following features and applications might not function: Virtualization Station, Qsirch, and Snapshots.

Data and Settings	After NAS Migration
Services	Only services supported by the destination NAS are available.
Multimedia features	Some multimedia features are disabled by default.

Migrating a NAS

Important

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

For details see the following topics:

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

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

Important

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

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

6. Troubleshooting

This chapter describes basic troubleshooting information.

Forcing Qfinder Pro or myQNAPcloud to locate the NAS

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

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

Hot-swapping failed drives

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

RAID Type	Number of Disks	Situation
RAID 1	2	One member drive fails.
RAID 5	≥ 3	One member drive fails.
RAID 6	≥ 4	One or two member drives fail.
RAID 10	≥ 4 (Must be an even number)	One or two member drives in two different pairs fail.
RAID 50	≥ 6	One disk per subgroup fails.
RAID 60	≥ 8	Two disks per subgroup fail.
Triple Mirror	Multiple of 3. (For example, 3, 6, 9, 12 disks and so forth.)	One or two member drives fail.
RAID-TP	≥ 5	One, two, or three member drives fail.

1. Log on to QuTS hero.
2. Go to **Main Menu > Storage & Snapshots > Storage > Disks/VJBOD**.
3. Locate the failed drive.

4. Prepare a new drive with a capacity that is the same as or larger than the failed drive.
5. Remove the failed drive from the device.
6. Wait for 20 seconds or until the device beeps twice.
7. Remove the failed drive from the drive tray.
8. Insert the new drive into the drive tray.
9. Install the new drive.
The NAS beeps twice.
10. Go to **Main Menu > Storage & Snapshots > Storage > Storage/Snapshots**.
11. Locate the storage pool that contains the new drive and then verify that the status is Rebuilding.

Recovering unintentionally removed healthy drives

The NAS supports exclusive RAID recovery technology to recover failed RAID groups from unintentional disconnection or removal of drives. Users can recover an inactive RAID 1, RAID 5, RAID 6, RAID 10, RAID 50, RAID 60, Triple Mirror, or RAID-TP group from degraded mode.

RAID Type	RAID Recovery Support	Number of Disks	Disk Failure Tolerance
Single	No	1	N/A
JBOD	Yes	≥ 2	N/A
RAID 0	Yes	≥ 2	N/A
RAID 1	Yes	2	1
RAID 5	Yes	≥ 3	1
RAID 6	Yes	≥ 4	2
RAID 10	Yes	≥ 4 (Must be an even number)	One disk per subgroup fails.
RAID 50	Yes	≥ 6	One disk per subgroup fails.
RAID 60	Yes	≥ 8	Two disks per subgroup fail.
Triple Mirror	Yes	Multiple of 3. (For example, 3, 6, 9, 12 disks and so forth.)	2

RAID Type	RAID Recovery Support	Number of Disks	Disk Failure Tolerance
RAID-TP	Yes	≥ 5	3

Support and other resources

QNAP provides the following resources:

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

7. Glossary

Cloud Key

Unique 8-digit code assigned to each NAS device

myQNAPcloud

Provides various remote access services such as DDNS and myQNAPcloud Link

myQNAPcloud Link

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

QNAP ID

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

Qfinder Pro

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

QuTS hero

QNAP NAS operating system featuring ZFS file system

8. Notices

This chapter provides information about warranty, disclaimers, licensing, and federal regulations.

Limited warranty

QNAP offers limited warranty service on our products. Your QNAP-branded hardware product is warranted against defects in materials and workmanship for a period of one (1) year or more from the date printed on the invoice. ("Warranty Period"). Please review your statutory rights at www.qnap.com/warranty, which may be amended from time to time by QNAP in its discretion.

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

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Version 3, 29 June 2007

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Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

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The precise terms and conditions for copying, distribution and modification follow.

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A "covered work" means either the unmodified Program or a work based on the Program.

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An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

2. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not

part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

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FCC Class A Notice



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Note

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壳体	0	0	0	0	0	0
显示	0	0	0	0	0	0
印刷电路板	0	0	0	0	0	0
金属螺帽	0	0	0	0	0	0
电缆组装	0	0	0	0	0	0
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