

The QNAP logo is located in the top-left corner of the page. It consists of the letters "QNAP" in a bold, white, sans-serif font, set against a solid blue square background.

QNAP

TS-451DeU

User Guide

The background of the page features a complex, abstract geometric pattern of overlapping, semi-transparent white and light gray polygons, creating a sense of depth and movement. This pattern is most prominent in the lower-left and bottom-center areas.

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1. Preface





About This Guide

This guide provides information on the QNAP TS-451DeU NAS and step-by-step instructions on installing the hardware. It also provides instructions on basic operations and troubleshooting information.

Audience

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

Document Conventions

Symbol	Description
	Notes provide default configuration settings and other supplementary information.
	Important notes provide information on required configuration settings and other critical information.
	Tips provide recommendations or alternative methods of performing 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 TS-451DeU NAS.

About the TS-451DeU



The TS-451DeU is powered by an Intel® Celeron® J4025 dual-core 2.0 GHz processor, AES-NI hardware encryption engine, and supports up to 8 GB of DDR4 memory. The NAS features two M.2 2280 SATA 6 Gbps SSD slots and provides four hot-swappable SATA 6 Gbps drive bays to support both hard disk drives and solid-state drives. The TS-451DeU also includes two USB 2.0 ports and two USB 3.2 Gen 1 ports.

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-451DeU-2G
Processor	
CPU	Intel® Celeron® J4025
Frequency	2-core/2-thread 2.00 GHz base/2.90 GHz burst
Architecture	x86 64-bit
Encryption engine	AES-NI
Memory	
Pre-installed memory	2GB: 1 x 2 GB SODIMM DDR4
Memory slots	2 x SODIMM DDR4 <div style="border-left: 2px solid red; padding-left: 10px; margin-top: 10px;"> <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>
Maximum memory	8 GB RAM: 2 x 4 GB
Flash memory	4 GB (dual-boot OS protection)
Storage	
Drive bays	4 x 3.5-inch SATA 6 Gbps <div style="border-left: 2px solid blue; padding-left: 10px; margin-top: 10px;"> <p> Note</p> <p>The SATA 6 Gbps drive bays are backward compatible with SATA 3 Gbps drives.</p> </div>

Component	TS-451DeU-2G
Drive compatibility	3.5-inch bays: <ul style="list-style-type: none"> • 3.5-inch SATA hard disk drives • 2.5-inch SATA hard disk drives • 2.5-inch SATA solid-state drives
M.2 SSD slots	2 x SATA 6 Gbps
M.2 SSD form factor	2280
SSD cache acceleration support	3.5-inch drive bays:1 to 4
Hot-swapping	Supported
Network	
2.5 Gigabit Ethernet ports	2 x 2.5 GbE RJ45 <div style="margin-top: 10px;">  Note The 2.5 Gigabit Ethernet port provides 3 network connection speeds: 2.5G, 1G, 100M, and 10M. </div>
External I/O Ports & Expansion Slots	
USB ports	<ul style="list-style-type: none"> • 2 x USB 2.0 Type-A • 2 x USB 3.2 Gen 1 Type-A
Interface	
Buttons	<ul style="list-style-type: none"> • Power • Reset
Dimensions	
Form factor	1U Rackmount
Dimensions (H x W x D)	43.3 x 430 x 294.9 mm (1.74 x 16.92 x 11.61 in)
Net weight	4.15 kg (9.15 lbs)
Rail compatibility	RAIL-B02 <div style="margin-top: 10px;">  Note Rail kits are not included with the NAS and must be purchased separately. For details, contact an authorized reseller or go to http://shop.qnap.com. </div>
Others	
Power supply unit	100W, 100-240V AC, 50/60 Hz
System battery	CR2032 lithium battery (3V, 225 mAh)
Sound level	21.6 dB(A) <div style="margin-top: 10px;">  Note The sound level was tested at a bystander position, which is within one meter of the NAS. The test NAS operated at low speed with the maximum number of drives installed. </div>
Fans	System: 3 x 40 mm, 12V DC fans
Operating temperature	0°C to 40°C (32°F to 104°F)

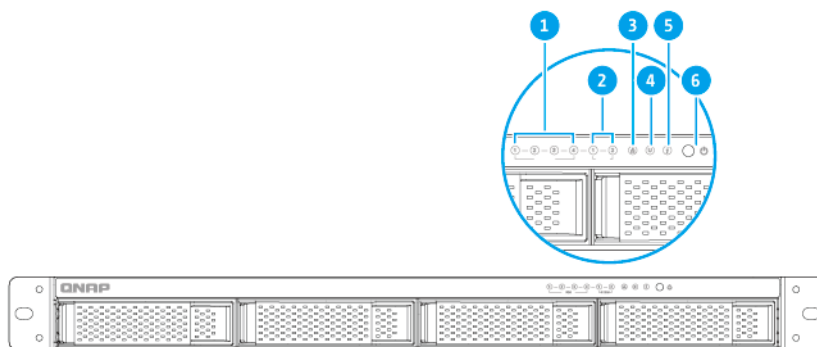
Component	TS-451DeU-2G
Relative humidity	<ul style="list-style-type: none"> • Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27°C (80.6°F)
Security slot	Kensington security slot

Package Contents

Item	Quantity
TS-451DeU	1
Power cord	1
Ethernet cables	2 x CAT5e cables
Screws for 3.5-inch drives	16
Screws for 2.5-inch drives	12
Heatsinks for M.2 SSDs	2
Handle kit	<ul style="list-style-type: none"> • 2 x handles • 2 x angle brackets • 8 x screws
Quick Installation Guide (QIG)	1

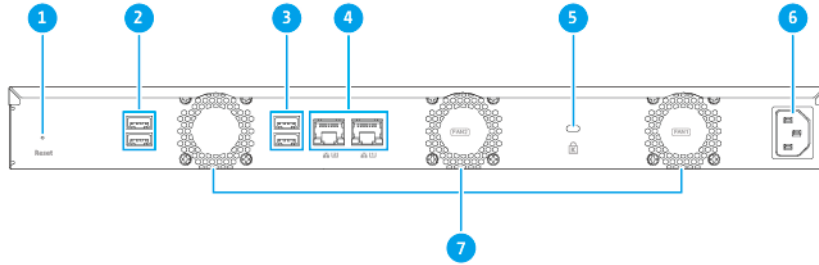
Components

Front Panel



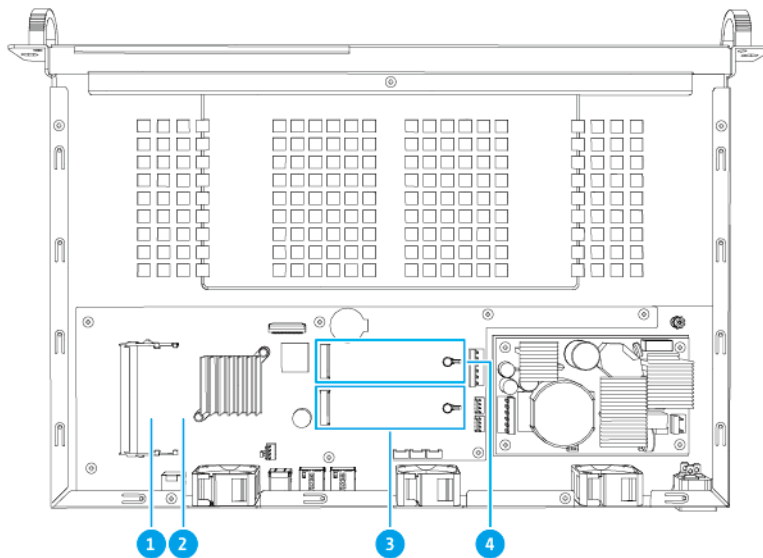
No.	Component	No.	Component
1	Drive LEDs	4	USB expansion unit LED
2	M.2 SSD LEDs	5	Status LED
3	LAN LED	6	Power button

Rear Panel



No.	Component	No.	Component
1	Reset button	5	Kensington security slot
2	USB 2.0 Type-A ports	6	Power input
3	USB 3.2 Gen 1 Type-A ports	7	System fans
4	2.5 Gigabit Ethernet ports	-	-

System Board

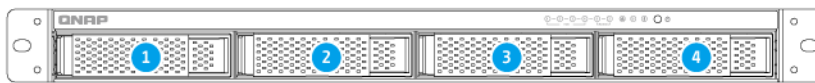


Note

The image does not include the case cover.

No.	Component	No.	Component
1	Memory slot 2	3	M.2 SSD slot 1
2	Memory slot 1	4	M.2 SSD slot 2

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

Safety Information

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

General Instructions

- The NAS 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 NAS.
- 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.



The device may have one or more power supply unit (PSU) cords. To avoid serious injuries, a trained service technician must disconnect all PSU cords 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.

Setting Up the NAS



Important

Read all safety requirements and information in [Safety Information](#) carefully before setting up the NAS or installing NAS components.

1. Place your NAS device in an environment that meets the requirements. For details, see [Installation Requirements](#).

- 2.** Install the NAS on a rack.
For details, see [Rail Kits](#) and [Installing Handles](#).
- 3.** Install the drives.
For details, see the following topics:
 - [Installing 3.5-inch Hard Drives on 3.5-inch Trays](#)
 - [Installing 2.5-inch Hard Drives or Solid-State Drives on 3.5-inch Trays](#)
 - [Installing M.2 Solid-State Drives](#)
- 4.** Connect the NAS to the network.
- 5.** Optional: Connect expansion units.
For details, see [Connecting USB Expansion Units](#)
- 6.** Connect the power cord and all applicable cables.
- 7.** Power on the NAS.
- 8.** Install QTS.
For details, see [QTS Installation](#).
- 9.** Log on to QTS.

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, handles, and adding expansion units.

Removing the Case Cover



Warning

-



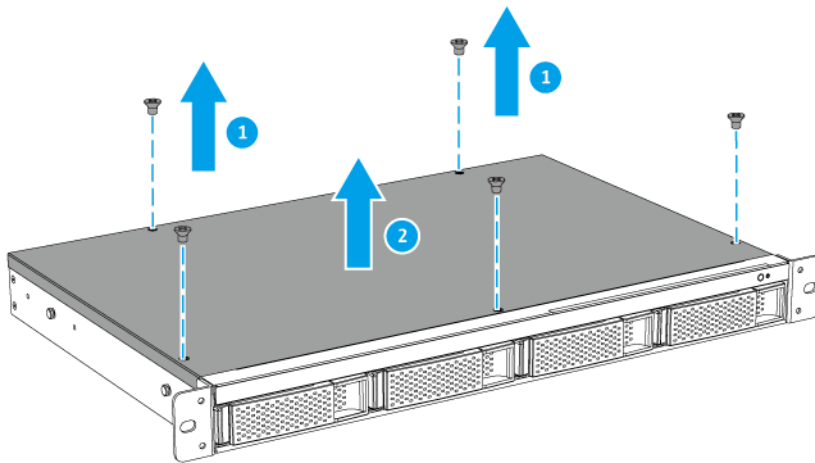
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

-

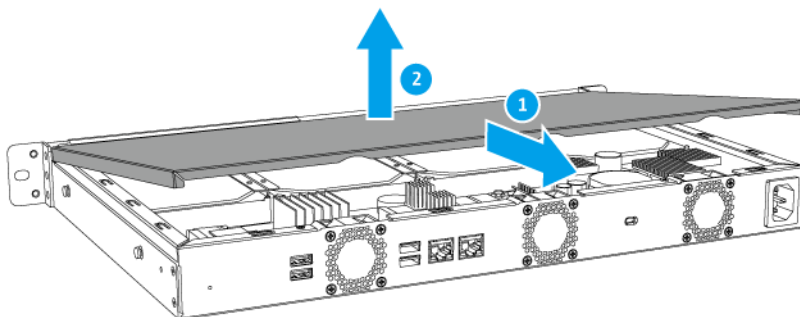


Other moving components: Keep your hands and other body parts away from other moving components.

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



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



Attaching the Case Cover



Warning

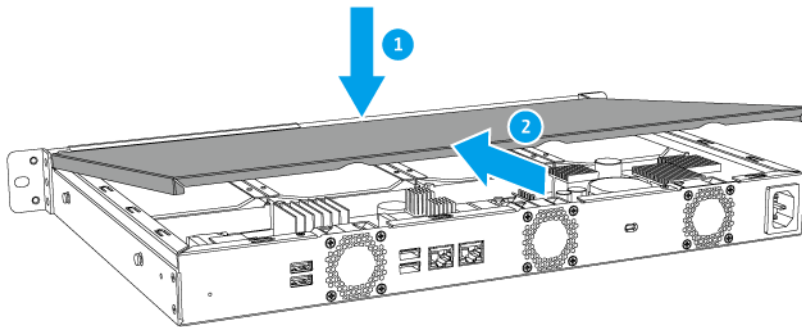


Moving fan blades: Keep your hands and other body parts away from moving fan blades.

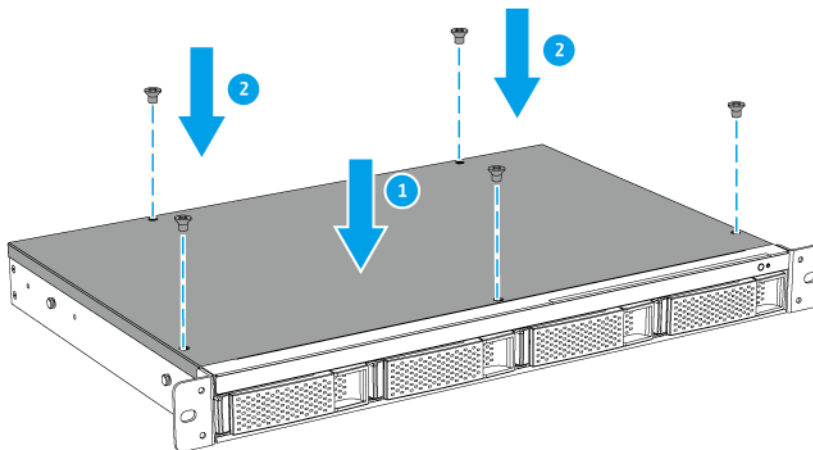


Other moving components: Keep your hands and other body parts away from other moving components.

1. Place the cover on the NAS.
2. Slide the cover forward.



3. Tighten the screws.



4. Connect all cables and external attachments.
5. Connect the power cord to the electrical outlet.

6. Power on the NAS.

Drive Installation

The TS-451DeU is compatible with 3.5-inch and 2.5-inch hard drives, 2.5-inch solid-state drives, and M.2 solid-state drives.

Installing 3.5-inch Hard Drives on 3.5-inch Trays

For the list of compatible drive models, 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.
-



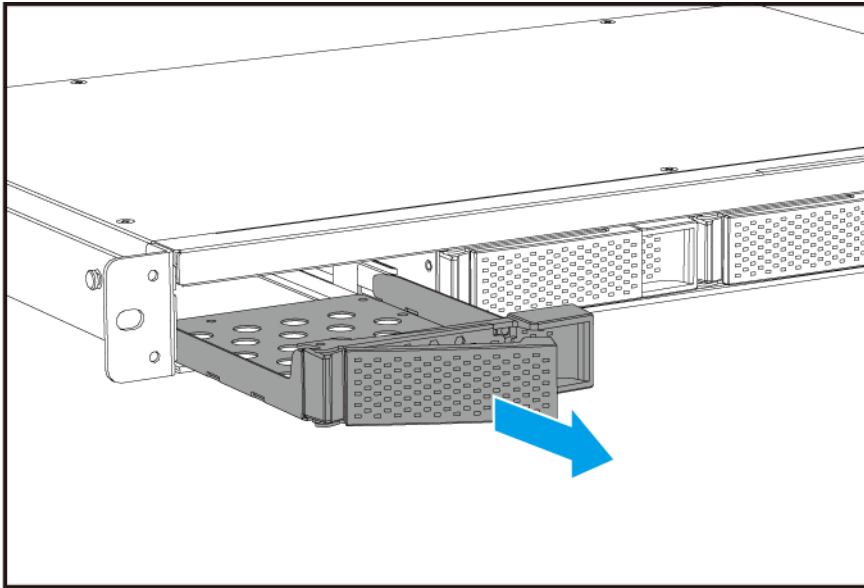
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

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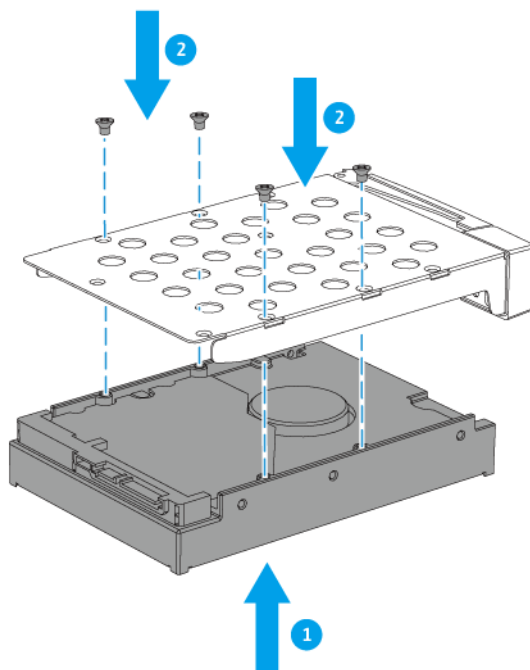
Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.
2. Remove the drive tray.
 - a. Pull the tray handle outward.
 - b. Pull the tray out.



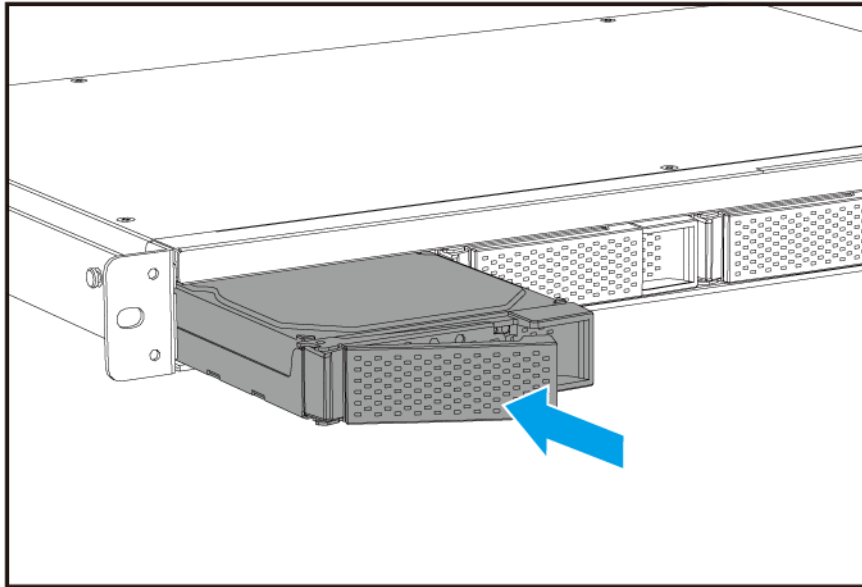
3. Install a drive on the tray.

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



4. Load the tray into the bay.

- a. Insert the tray into the bay.
- b. Slide the tray into the bay.
- c. Push the handle.
- d. Lock the tray.



5. Power on the NAS.

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

For the list of compatible drive models, 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.

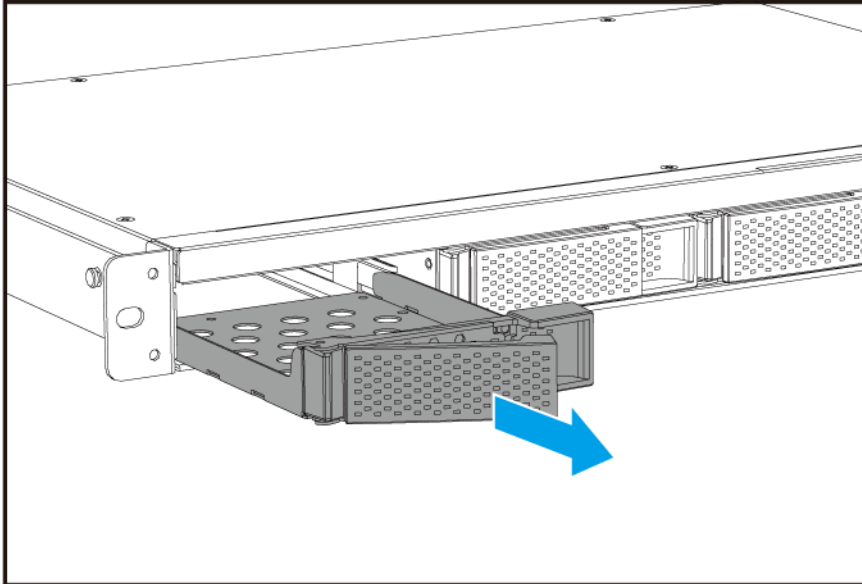
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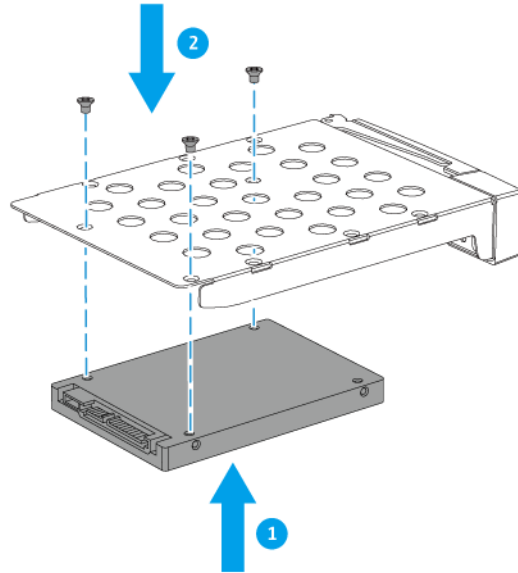
Other moving components: Keep your hands and other body parts away from other moving components.

1. Power off the NAS.

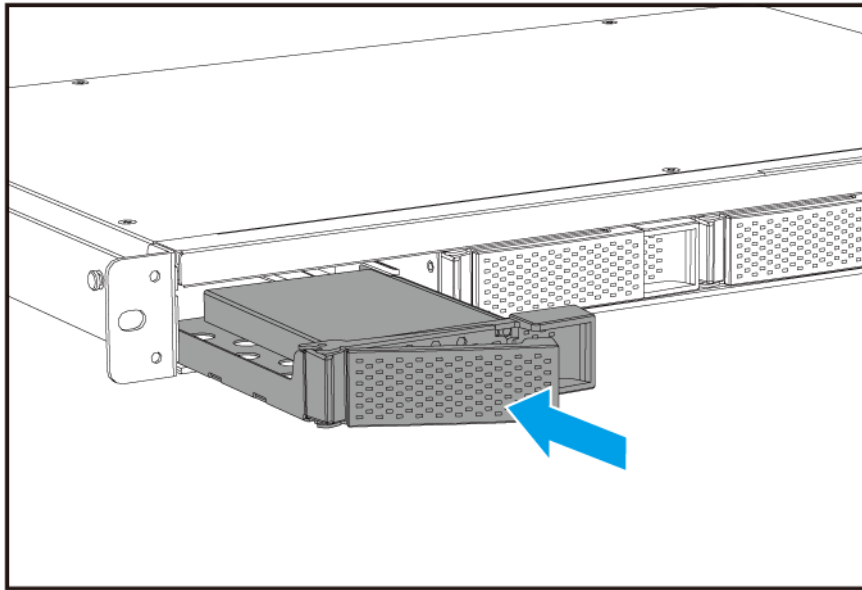
2. Remove the drive tray.
 - a. Pull the tray handle outward.
 - b. Pull the tray out.



3. 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.



4. Load the tray into the bay.
 - a. Insert the tray into the bay.
 - b. Slide the tray into the bay.
 - c. Push the handle.
 - d. Lock the tray.



5. Power on the NAS.

Installing M.2 Solid-State Drives

The TS-451DeU has two M.2 SATA 6 Gbps SSD slots on the [System Board](#). For a list of compatible M.2 SSDs, go to <http://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

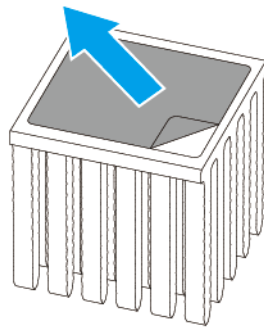
- QNAP recommend installing heatsinks on the M.2 SSD controllers to enhance cooling efficiency and to ensure consistent performance.
- Before installing non-QNAP heatsinks, ensure that they are of the appropriate size and shape.

1. Power off the NAS.
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. Install a heatsink on the M.2 SSD controller.
 - a. Locate the controller on the M.2 SSD.

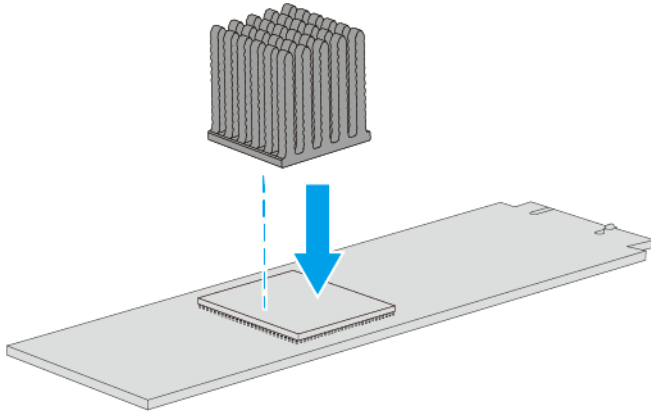
**Note**

The location of the controller 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 bottom of the heatsink.

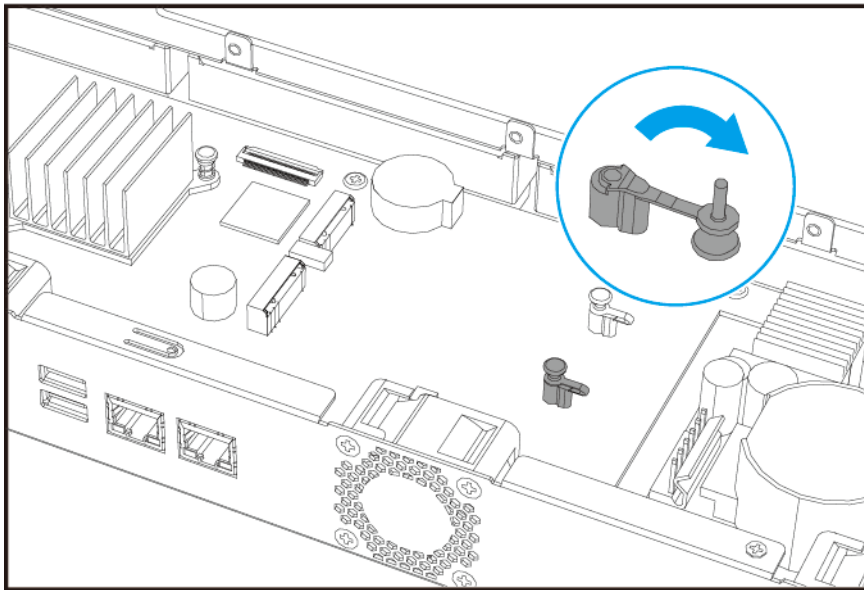


- c. Install the heatsink on the controller.

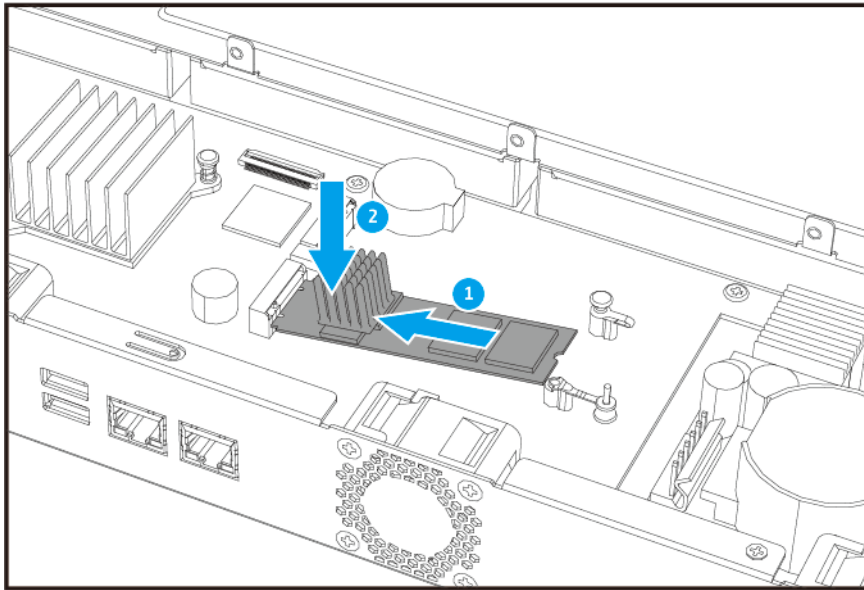


6. Install the M.2 SSD.

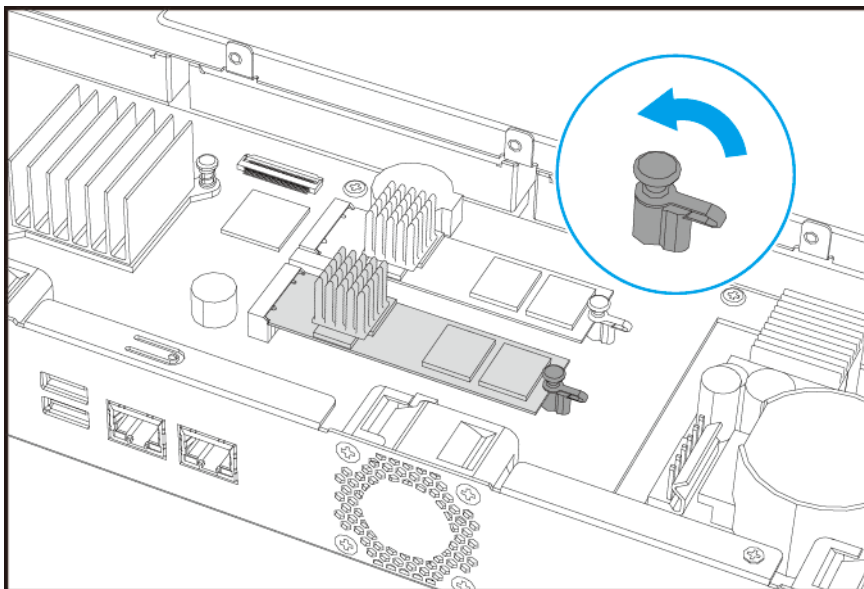
- a. Pull out the pushpin.**



- b. Insert the M.2 SSD.**



c. Insert the pushpin to secure the drive.



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

Replacing Memory Modules

The TS-451DeU has two memory slots. You can increase the memory capacity of the NAS by upgrading the memory modules.

Use only QNAP memory modules to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.



Important

Ensure that both memory modules are identical.



Warning

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

-



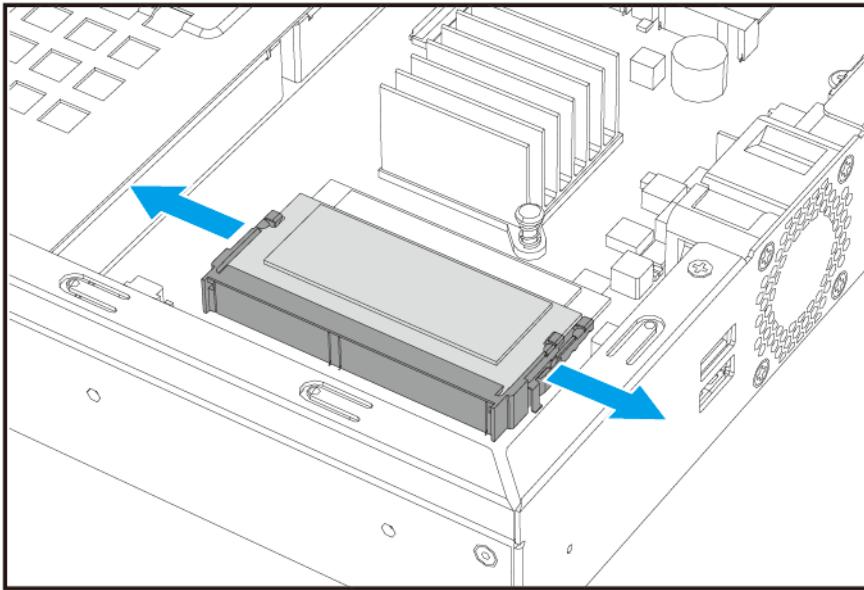
Moving fan blades: Keep your hands and other body parts away from moving fan blades.

-



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

1. Power off the NAS.
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 an existing module.
 - a. Push the retention clips outward simultaneously to release the module.



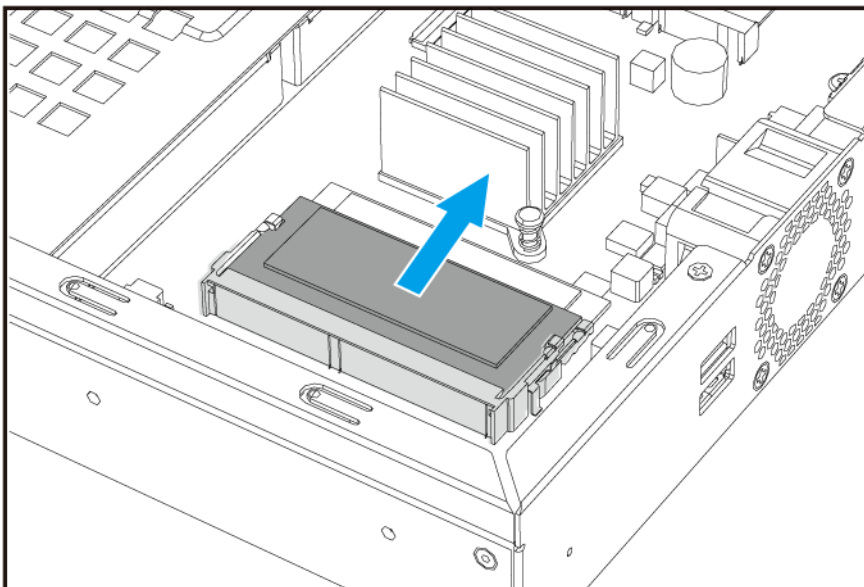
b. Verify that the module has tilted upward and is completely released from the slot.



Warning

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

c. Hold the module by the edges.



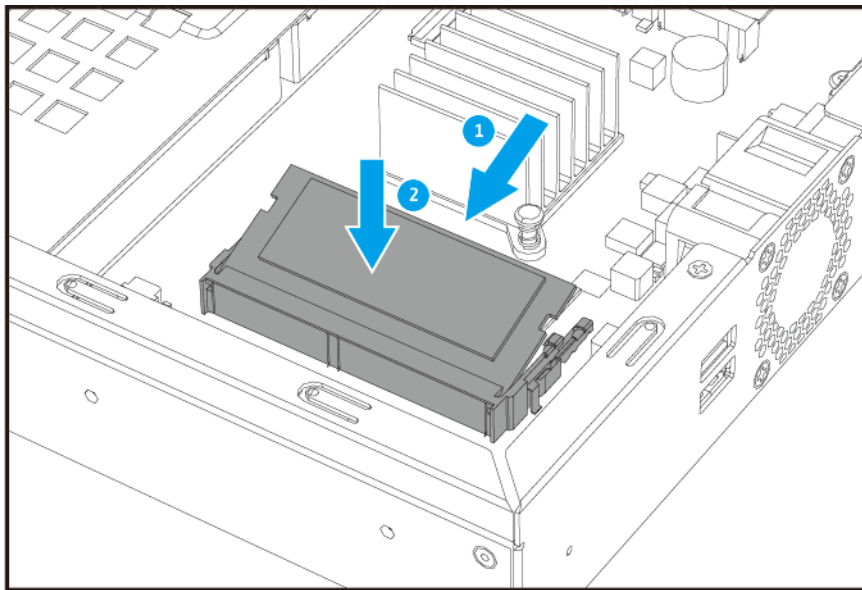
6. Install a new module.

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 case cover.
For details, see [Attaching the Case Cover](#).
8. Connect all cables and external attachments.
9. Power on the NAS.
10. Verify that the module is recognized by the NAS.
 - a. Log on to QTS as administrator.
 - b. Go to **Control Panel > System > System Status > Hardware Information**.
 - c. Check the value for **Total memory**.

Connecting USB Expansion Units

The TS-451DeU supports USB expansion units. For details, please see table below.

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

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

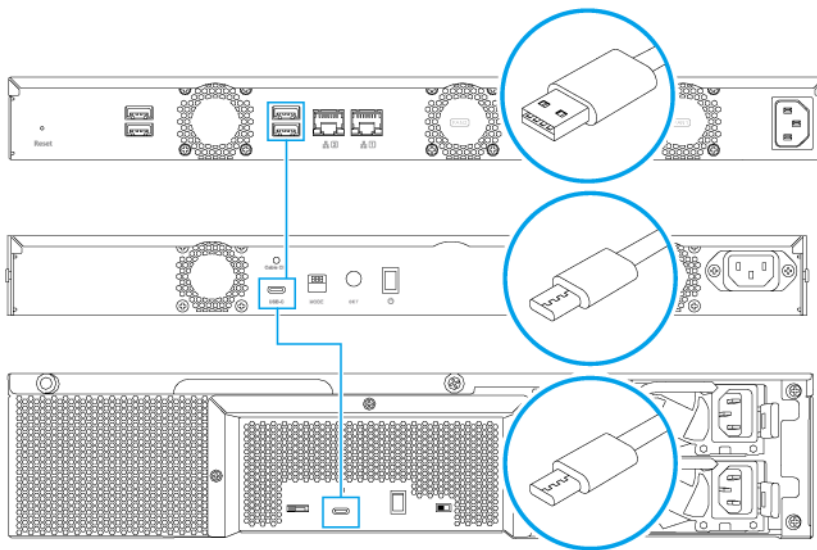
For the list of compatible expansion units and the maximum number of applicable expansion units, go to <http://www.qnap.com/go/compatibility-expansion>.

Expansion Unit Model	Description	Required Accessories
TR-004	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA 	<ul style="list-style-type: none"> • USB 3.2 Gen 1 Type-A to Type-C cable • RAIL-B02
TL-R1200C-RP	<ul style="list-style-type: none"> • Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA 	<ul style="list-style-type: none"> • USB 3.2 Gen 2 Type-A to Type-C cable • RAIL-B02

The TS-451DeU supports connecting a maximum of two USB expansion units. You can use any of the following configurations:

Expansion Unit Type	Number of Units Supported
TR-004	2
TL-R1200C-RP	1

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

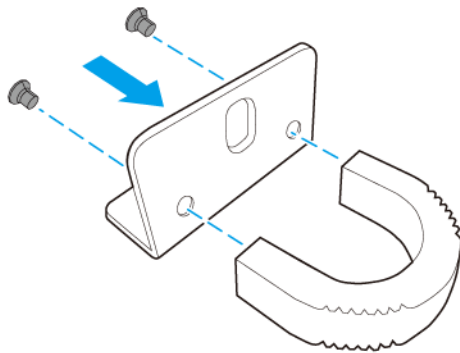


2. Power on the expansion units.
3. Verify that the expansion units are recognized by the NAS.
 - a. Log on to QTS as administrator.
 - b. Go to **Main Menu > Storage & Snapshots > Overview > System**.
 - c. Verify that the expansion units are listed.

Installing Handles

Installing handles enables you to better grip and secure the NAS.

1. Power off the NAS.
2. 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.

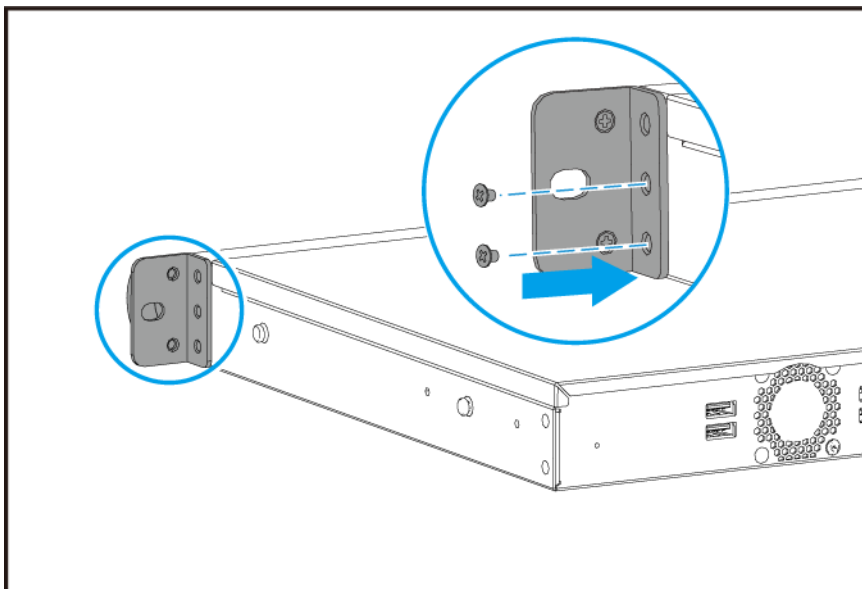


3. Install the angle bracket on the NAS.
 - a. Align the holes on the angle bracket with the holes on the chassis.

**Note**

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

- b. Attach the screws.



4. Install a second handle on the other side of the chassis.
5. Power on the NAS.

Rail Kits

The TS-451DeU is compatible with the following models:

- RAIL-B02

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

You can find installation information in the rail kit package.

QTS Installation

The TS-451DeU uses the QNAP QTS operating system. You can install QTS using any of the following methods.

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

Installing QTS Using Qfinder Pro



Warning

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

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



Note

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

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

**Tip**

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

9. Click **Next**.
10. Select **Obtain an IP address automatically (DHCP)**.
11. Click **Next**.
12. Select the types of devices that you will use to access shared folders on the NAS.
13. Click **Next**.
14. Review the settings.
15. Click **Apply**.
A confirmation message appears.

**Warning**

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

16. Click **Confirm**.
QTS is installed.

Installing QTS Using the Cloud Key

**Warning**

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

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

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

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

**Note**

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

The installation wizard opens in the default web browser.

- Create an account or sign in to myQNAPcloud.

**Note**

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

- Specify the myQNAPcloud device name for the NAS.

**Note**

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

- Click **Next**.

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

- Click **Start Smart Installation Guide**.

- 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.

- Click **Next**.

- 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.

- Click **Next**.

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

- Click **Next**.

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

- Click **Next**.

- Review the settings.

- Click **Apply**.

A confirmation message appears.

**Warning**


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

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


4. Basic Operations

This chapter describes basic NAS operations.

Power Button

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


Reset Button

Operation	User Action	Result
Basic system reset	Press and hold the button for 3 seconds.	<p>The following settings are reset to default:</p> <ul style="list-style-type: none"> System administrator password: MAC address of adapter 1 without special characters. For example, if the MAC address of adapter 1 is 11:22:33:44:55:66, then the admin password will be 112233445566. <p> Tip You can find the MAC address of adapter 1 using Qfinder Pro. A label attached to the device also lists the address as MAC1.</p> <ul style="list-style-type: none"> TCP/IP configuration: <ul style="list-style-type: none"> Obtain IP address settings automatically via DHCP Disable jumbo frames If port trunking is enabled (multi-LAN models only), the port trunking mode is reset to “Active Backup (Failover)”. System port: 8080 (system service port) Security level: Low (Allow all connections) LCD panel password: (blank) VLAN: Disabled
Advanced system reset	Press and hold the button for 15 seconds.	<p>The default factory settings are restored.</p> <ul style="list-style-type: none"> To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

LEDs

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

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

LED	Status	Description
System Status	Flashes green and red alternately every 0.5 seconds	<ul style="list-style-type: none"> The drive is being formatted. The device is being initialized. The operating system is being updated. RAID rebuilding is in progress. Online RAID Capacity Expansion is in progress. Online RAID Level Migration is in progress. The firmware is being updated. <p> Important When updating the firmware, do not remove the power cable or USB cable, and do not force-exit the application.</p>
	Red	<ul style="list-style-type: none"> The drive is invalid. The disk volume has reached its full capacity. The disk volume is about to reach its full capacity. The system fan is not functioning. An error occurred when accessing (read/write) the data. A bad sector is detected on the hard drive. The device is in degraded read-only mode (two member drives failed in RAID 5 or RAID 6 but the data can still be read). A hardware self-test error occurred. The system temperature is over the threshold.
	Flashes red every 0.5 seconds	The NAS is in degraded mode (one member drive failed in RAID 1).
	Flashes green every 0.5 seconds	<ul style="list-style-type: none"> The device is starting up. The device is not configured. A drive is not formatted.
	Flashes green every 2 seconds	All drives are in standby mode.
	Flashes green every second	The device is not configured.
	Green	The device is ready.
Off	<ul style="list-style-type: none"> All drives are in standby mode. The device is powered off. 	
LAN	Orange	A read/write error occurred while another device is accessing data.
	Flashes orange	The device is being accessed from the network.

LED	Status	Description
Drive	Flashes red	The data is being accessed and a read/write error occurs during the process.
	Red	<ul style="list-style-type: none"> A drive read/write error occurred. The drive temperature is over the threshold.
	Flashes green	<ul style="list-style-type: none"> Data is being accessed. Data is being copied.
	Green	<ul style="list-style-type: none"> The drive can be accessed. The device is powered on.
	Off	No drive is detected.
M.2 SSD	Flashes red	The drive is being located.
	Red	A drive read/write error has occurred.
	Flashes green	The data is being accessed.
	Green	The drive can be accessed.
	Off	No drive is detected.
USB Expansion Unit	Blue	A QNAP USB external storage device is connected to a USB port.
	Off	No USB external storage devices connected.

Audio Alert

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

5. Troubleshooting

This chapter describes basic troubleshooting information.

Forcing Qfinder Pro or myQNAPcloud to Locate the NAS

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

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

Hot-swapping Failed Drives

The NAS supports hot-swapping of drives when one member drive fails in RAID 1.

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

Recovering Unintentionally Removed Healthy Drives

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

Disk Volume	RAID Recovery Support	Maximum Number of Removed Drives
Single	No	N/A
JBOD	Yes	1

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

Support and Other Resources

QNAP provides the following resources:

Resource	URL
Documentation	https://docs.qnap.com
Service Portal	https://service.qnap.com
Downloads	https://download.qnap.com
Community Forum	https://forum.qnap.com

6. Glossary

CloudKey

Unique 8-digit code assigned to each NAS device

myQNAPcloud Link

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

myQNAPcloud

Provides various remote access services such as DDNS and myQNAPcloud Link

myQNAPcloud ID

Email address that was used to register for a myQNAPcloud account

Qfinder Pro

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

QTS

QNAP NAS operating system

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Version 3, 29 June 2007

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END OF TERMS AND CONDITIONS

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This QNAP NAS complies with CE Compliance Class A.

FCC Notice

FCC Class A Notice



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

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



Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.



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SJ/T 11364-2006



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