QNAP

GM-1000

GM-1001
GM-1002

User Guide

Contents

1. Preface

About This Guide

This guide provides information on the QNAP GM-1000 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 storage administrators. This guide assumes that the user is knowledgeable and qualified to install, maintain, and troubleshoot issues involving servers, server components, and storage systems. This guide also assumes that the user is trained to recognize hazards, including the appropriate actions the user needs to take to prevent personal injury and damage to data and property.

Document Conventions

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

2. Product Overview

This chapter provides basic information about the QNAP device.

About the GM-1000

The GM-1000 is a ZFS NAS designed to provide efficient data backup and hybrid cloud solutions for enterprises. The dual NAS comprises two replaceable nodes, where the GM-1001 has a 3.6 GHz for each CPU base frequency and the GM-1002 has a 3.4 for each CPU base frequency. The enclosure also contains sixteen 3.5-inch drive bays where a single node controls eight SATA drives on the front, two U.2 and SATA drives on the back, and two NVMe M.2 SSDs on the system board. Each node is equipped with two 2.5 Gigabit Ethernet ports and two 10 Gigabit Ethernet ports, making the GM-1000 ideal for bandwidth-demanding applications.

Hardware Specifications

Warning

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

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

- For details, see the QNAP Warranty Terms and Conditions.

Tip

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

Note

- The hardware specifications table is separated into components found on the enclosure, the node, and the system.

- The components presented in the node applies to a single node.

Ordering P/N	Enclosure	Node	CPU	Memory
GM-1001	1 x TEC-2N16-770W	2 x TNS-h1083X-E2234-8G	Intel® Xeon® E-2234	8 GB
GM-1002		2 x TNS-h1083X-E2236-16G	Intel® Xeon® E-2236	16 GB

Component		GM-1001	GM-1002
Enclosure			
	Name	TEC-2N16-770W	
Storage			

Component		GM-1001	GM-1002
	Drive bays	16 x 3.5-inch SATA 6 Gbps	
		Note One node controls eight drives.	
	Drive compatibility	3.5-inch bays:	
		• 3.5-inch SATA hard disk drives	
		• 2.5-inch SATA hard disk drives	
		• 2.5-inch SATA solid-state drives	
Interface			
	Buttons	• Power	
		• OLED	
Others			
	Power supply unit	2 x 770W, 100-240V AC, 50-60 Hz	
Node			
	Note The components in this section apply to a single node.		
	Name	TNS-h1083X-E2234-8G	TNS-h1083X-E2236-16G
Processor			
	CPU	Intel® Xeon® E-2234	Intel® Xeon® E-2236
	Frequency	4-core 3.6 GHz base/4.8 GHz burst	6-core 3.4 GHz base/4.8 GHz burst
	Architecture	x86 64-bit	
	Encryption engine	AES-NI	
Memory			
	Pre-installed memory	8 GB RAM: 2 x 4 GB UDIMM DDR4	16 GB RAM: 2 x 8 GB UDIMM DDR4
	Memory slots	4 x Long-DIMM DDR4	
		Important	
		• 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.	
	Maximum memory	128 GB RAM: 4 x 32 GB	
	Flash memory	5 GB (dual-boot OS protection)	
Storage			

Component		GM-1001	GM-1002
	Drive bays	2 x 2.5-inch U.2 PCIe NVMe and SATA 6 Gbps	
	Drive compatibility	2.5-inch bays: • 2.5-inch SATA solid-state drives • 2.5-inch U.2 NVMe Gen3 x4 solid-state drives	
	M.2 SSD slots	2 x M.2 Gen 3 x2 NVMe **Tip** You can install an M.2 SSD expansion card in the PCIe slot.	
	M.2 SSD form factor	2280	
Network			
	10 Gigabit Ethernet ports	2 x 10GbE SFP+ **Note** The interface has two SmartNIC ports per node.	
	2.5 Gigabit Ethernet ports	2 x 2.5GbE RJ45 **Note** This port provides 2.5 Gbps, 1 Gbps, 100 Mbps, and 10 Mbps network connection speeds.	
	Wake-on-LAN	Yes	
External I/O Ports & Expansion Slots			
	PCIe slots	• 1 x PCIe 3.0 x4 • 1 x PCIe 3.0 x8 **Tip** For the list of compatible expansion cards, go to https://www.qnap.com/compatibility.	
	USB ports	4 x USB 3.2 Gen 2 (10 Gbps) Type-A	
Interface			
	Buttons	• Power • Reset	
Others			
	System battery	CR2032 lithium battery (3V, 225 mAh)	
	Fans	3 x 60 mm, 12V DC	
System			
Dimensions			
	Dimensions (H x W x D)	132.1 x 481.7 x 623.4 mm (5.20 x 18.9 x 24.5 in)	
	Net weight	25.21 kg (55.58 lbs)	
Others			

Component		GM-1001	GM-1002
	Sound level	45. 6 dB(A) **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.	
	Operating temperature	0˚C to 40˚C (32˚F to 104˚F)	
	Relative humidity	• Non-condensing relative humidity: 5% to 95% • Wet-bulb temperature: 27˚C (80.6˚F)	

> **Tip**
> For the list of compatible drive models, go to https://www.qnap.com/compatibility.

Package Contents

Item	Quantity
GM-1000	1
Power cord	2
Ethernet cables	2 x Cat 5e cable
Screws for 3.5-inch drives	64
Screws for 2.5-inch drives	80
Screws for M.2 SSDs	4
Quick Installation Guide (QIG)	1

Components

Enclosure

This section provides information on components on the enclosure.

Front Panel
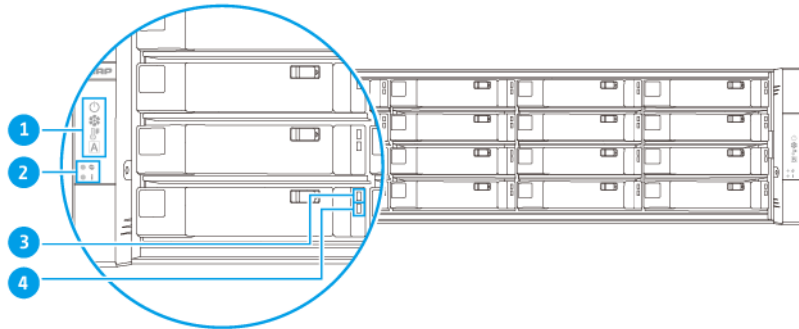
No.	Component	No.	Component
1	OLED panel	3	Drive status LED
2	Front panel LEDs	4	Drive activity LED

Front Panel Buttons
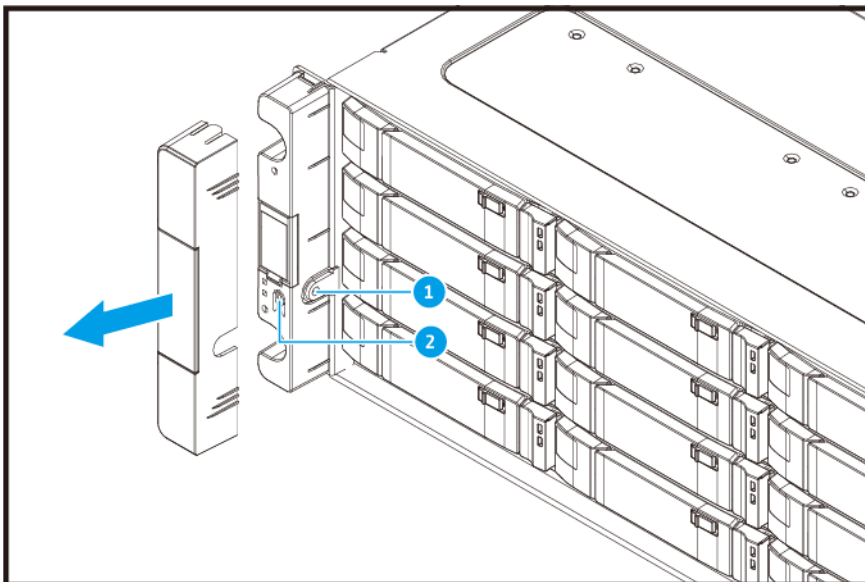
> **Note**
> Pull the panel cover to access the front panel buttons.

No.	Component	No.	Component
1	OLED panel power button	2	Power button

Operation	User Action	Result
Power on NAS	Press the power button	The node powers on. 💡 **Tip** • QNAP recommends powering on the device from the rear panel. • System startup takes 10 to 15 minutes, depending on the number of installed drives and connected devices. Check the rear panel LEDs to determine the startup status. For details, see Rear Panel LEDs.
Power on OLED display	Press the OLED button.	The OLED display powers on.
Power off OLED display	Press the OLED button.	The OLED display powers off.

Front Panel LEDs

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

For details on the location of the LEDs, see Front Panel.
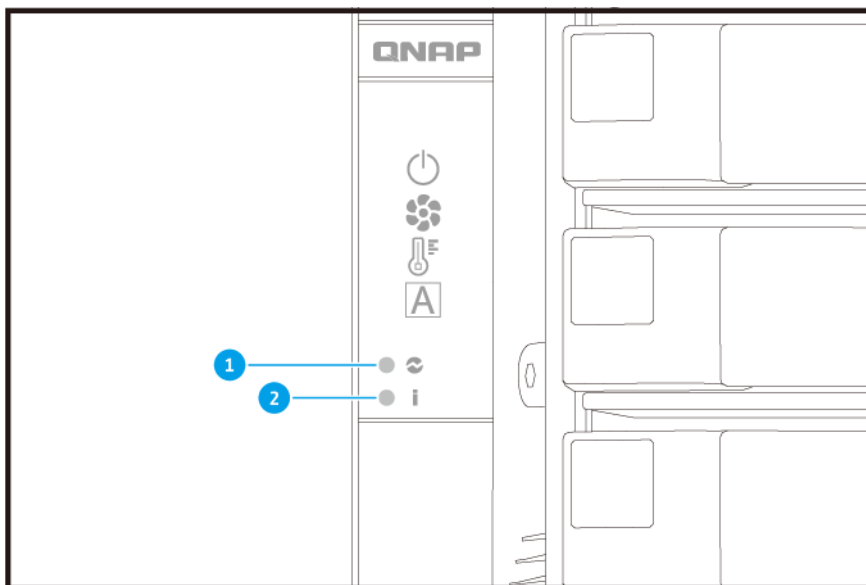
No.	Component	No.	Component
1	System power LED	2	System status LED

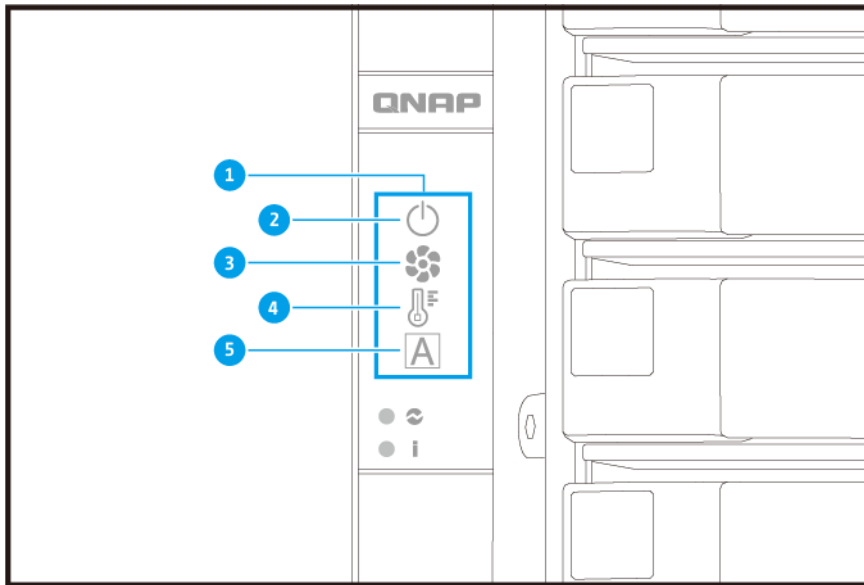| LED	Status	Description
System power	Blue	The node is powered on.
	Flashing blue	PSU errors or warnings (e.g. fan error, one or more PSU is not detected) were detected.
	Off	The power supply unit is disconnected.

LED	Status	Description
System status	Flashes green and red alternately every 0.5 seconds	• 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.
	Green	The device is ready.
	Flashes green every 0.5 seconds	• The device is not configured. • The drive is not formatted.
	Red	• 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.
	Flashes red every 0.5 seconds	The device is in degraded mode (one member drive failed in RAID 1, RAID 5, or RAID 6).
	Off	• The device is powered off. • All drives are in standby mode.

Front Panel OLED Display

The OLED display shows the status of the nodes and main components.

For details on the location of the OLED display, see Front Panel.

No.	Component	No.	Component
1	OLED panel	4	Temperature status
2	Node power status	5	Global ID
3	Fan status	-	-

Icon name	Icon	Description
Node power status		• On: The node is powered on. • Flashing: The node is booting • Highlighting: The node is shutting down • Off: The node is off
Node fan status		• On: The fan modules of the node are operating normally • Flashing: The fan modules of the node are operating incorrectly or are not installed • Off: The node is off
Node temperature status		• On: The temperature of the node is normal • Flashing: The temperature of the node is too high or too low • Off: The node is off

Icon name	Icon	Description
Node global ID	A B	• The global ID displays A or B depending on the node • The ID is always displayed

Power Supply Units
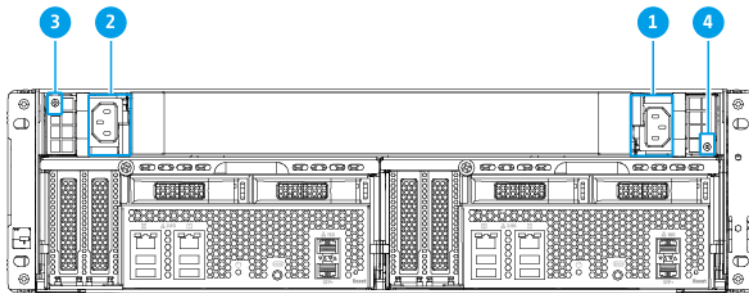
No.	Component	No.	Component
1	Power supply unit 1	3	Power supply LED
2	Power supply unit 2	4	

LED	Status	Description
Power supply	Green	The power supply unit is on
	Flashing green (1 Hz)	The power supply unit has +5VSB standby supply power
	Orange	• The power supply unit is failing • OCP is activated • OTP is activated • OVP is activated • UVP is activated • The fans are failing
	Flashing orange (1 Hz)	• The temperature is too high • The power is too strong • The current is too high • The fan is too slow • The voltage is too low
	Off	The power supply unit is off

Node

This section provides information on components on the node. These components apply to both nodes.

Rear Panel
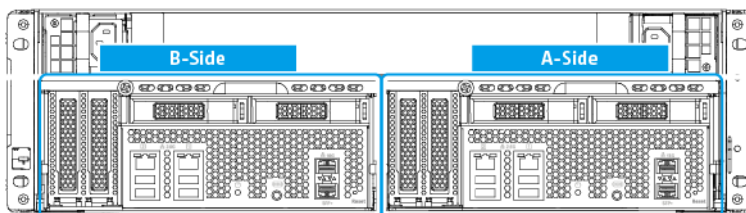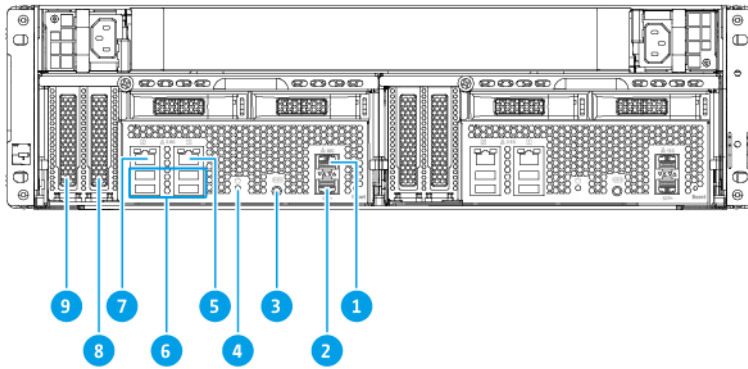
No.	Component	No.	Component
1	Ethernet port 1 (10GbE SFP+)	6	USB 3.2 Gen 2 Type-A ports
2	Ethernet port 2 (10GbE SFP+)	7	2.5 Gigabit Ethernet port 2
3	COM port **Note** This port is for engineering purposes only.	8	PCIe 3.0 x4 slot 1
4	Power button	9	PCIe 3.0 x8 slot 2
5	2.5 Gigabit Ethernet port 1	-	-

Rear Panel LEDs
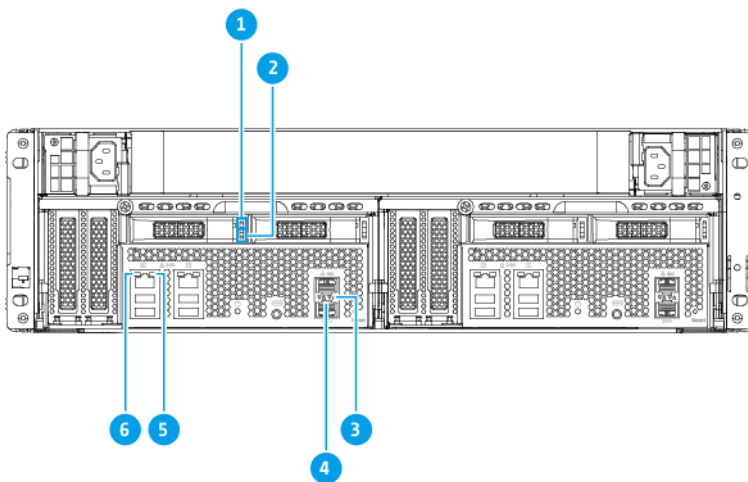
No.	Component	No.	Component
1	Drive status LED	4	10 Gigabit Ethernet speed LED
2	Drive activity LED	5	2.5 Gigabit Ethernet activity LED
3	10 Gigabit Ethernet activity LED	6	2.5 Gigabit Ethernet speed LED

LED	Status	Description
Drive status	Green	The drive is ready.
	Red	A drive read/write error occurred.
	Flashes red every 5 seconds	A drive is being located in the operating system.
	Off	• No drive detected. • The drive is not initialized.
Drive activity	Green	The drive is ready.
	Flashes green	The drive is being accessed.
	Off	No drive activity has been detected.
10 Gigabit Ethernet port speed	Green	The network connection is operating at 10 Gbps.
	Off	The network connection is not operating at 10 Gbps.
10 Gigabit Ethernet port activity	Orange	The network link is active.
	Flashing orange	The data is being transmitted.
	Off	There is no network link.
2.5 Gigabit Ethernet port speed	Green	The network connection is operating at 2.5 Gbps.
	Orange	• The network connection is operating at 1 Gbps. • The network connection is operating at 100 Mbps.
	Off	The network connection is operating at 10 Mbps.
2.5 Gigabit Ethernet port activity	Orange	A network connection has been established.
	Flashes orange	The NAS is being accessed from the network.
	Off	There is no network connection.

Storage Node Power Button

Operation	User Action	Result
Power on	Press and hold the button for 1.5 seconds.	• The OLED panel turns on. • The node powers on.
Power off	Press and hold for 5 seconds.	The node powers off.

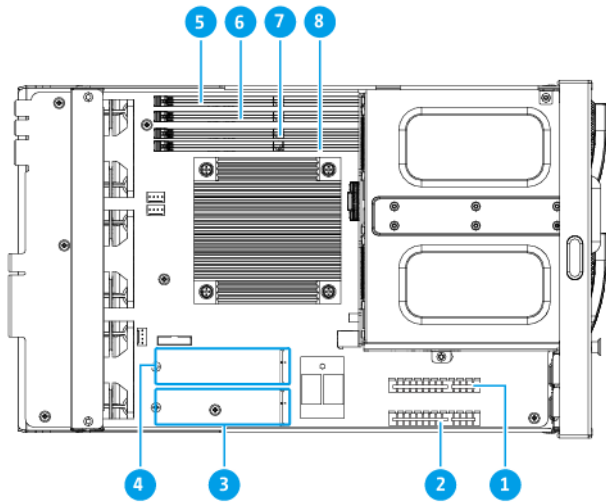| Operation	User Action	Result
Force power off	Press and hold the button for 10 seconds.	The node powers off. ⚠️ **Warning** Use this method only when the storage controller is unresponsive. This action may result in data loss.

Reset Button

Operation	User Action	Result

Basic system reset	Press and hold the button for 3 seconds.	The following settings are reset to default:
		
		• 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.
		
		💡 **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.
		
		• TCP/IP configuration:
		
		  • 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.	The default factory settings are restored. • To retrieve old data after an advanced system reset, recreate the previous folder structure on the NAS.

System Board

No.	Component	No.	Component
1	PCIe 3.0 x4 slot 1	5	Memory slot 4
2	PCIe 3.0 x8 slot 2	6	Memory slot 3
3	M.2 SSD slot 1	7	Memory slot 2
4	M.2 SSD slot 2	8	Memory slot 1

Drive Numbering
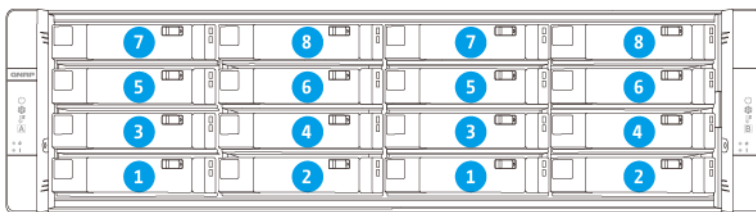
Front panel 3.5-inch drive bays
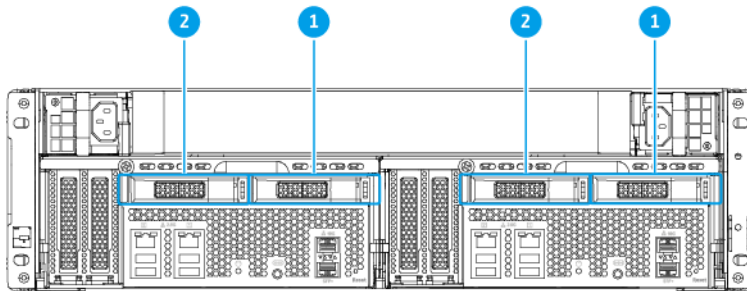
Rear panel 2.5-inch drive bays

Safety Information

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

General Instructions

- The device should be stored in a secure location with restricted access, controlled through the use of a tool, lock and key, or any means of security.

- Only qualified, skilled, and authorized persons with knowledge of all restrictions, safety precautions, and installation and maintenance procedures should have physical access to the device.

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

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

Power

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

-

  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.

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.

Installation Requirements

Category	Item
Environment	• 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 NAS ventilation or apply pressure to the NAS or power cord Restricted access • 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, trained, and authorized NAS administrators with knowledge of all restrictions, safety precautions, and installation and maintenance procedures should have physical access to the NAS.
Hardware and peripherals	• Storage drives For the list of compatible expansion cards, go to https://www.qnap.com/compatibility. • Network cable
Tools	• Phillips #1 or #2 screwdriver • Anti-static wrist strap

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 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 2.5-inch Solid-State Drives on 2.5-inch Trays

   - Installing M.2 Solid-State Drives on the System Board

   For a list of compatible drives and expansion cards, go to https://www.qnap.com/en/compatibility/.

3. Install expansion cards.
   For details, see Installing Expansion Cards.

4. Install memory modules.
   For details, see Replacing Memory Modules.

5. Connect the power cord and all applicable cables.

6. Power on the NAS.
   For details, see Front Panel Buttons.

7. Install QuTS hero.
   For details, see QuTS hero Installation.

8. 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 removing or installing the nodes, drives, expansion cards, power supply units, and memory modules.

Removing a Node

1. Power off the NAS.

2. Disconnect the power cord from the electrical outlet.

3. Disconnect all cables and external attachments.

4. Remove the node.

   a. Loosen the screw.
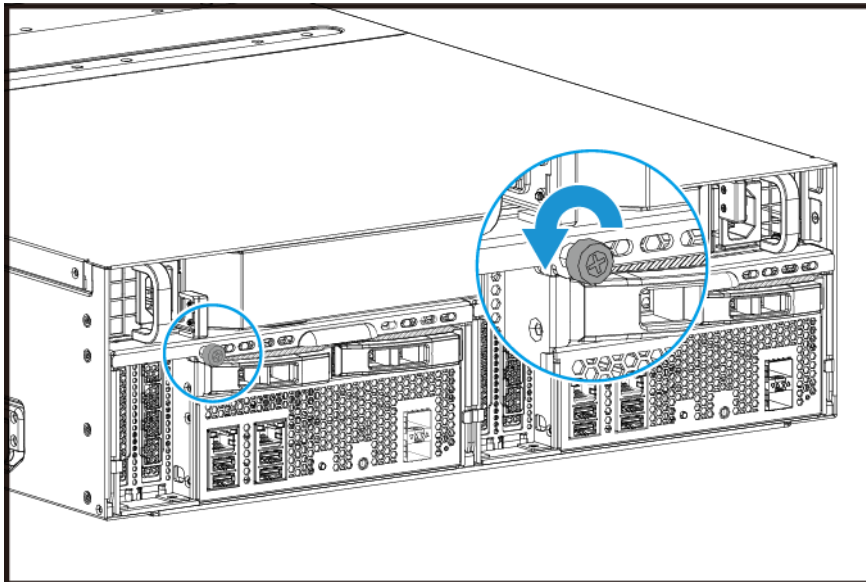
   b. Pull the handle to pull out the node.
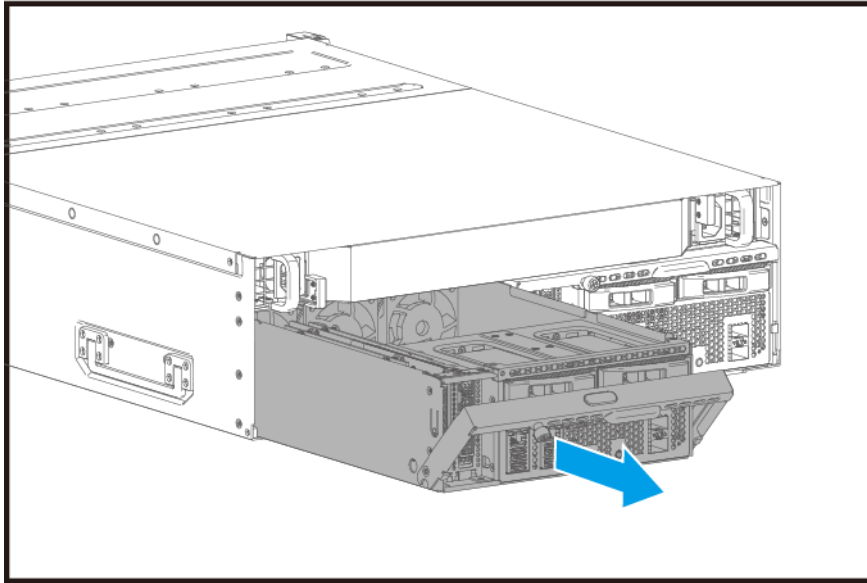
Installing a Node

1. Load the node into the NAS.

    a. Insert the node into the chassis.

    b. Push the handle up.
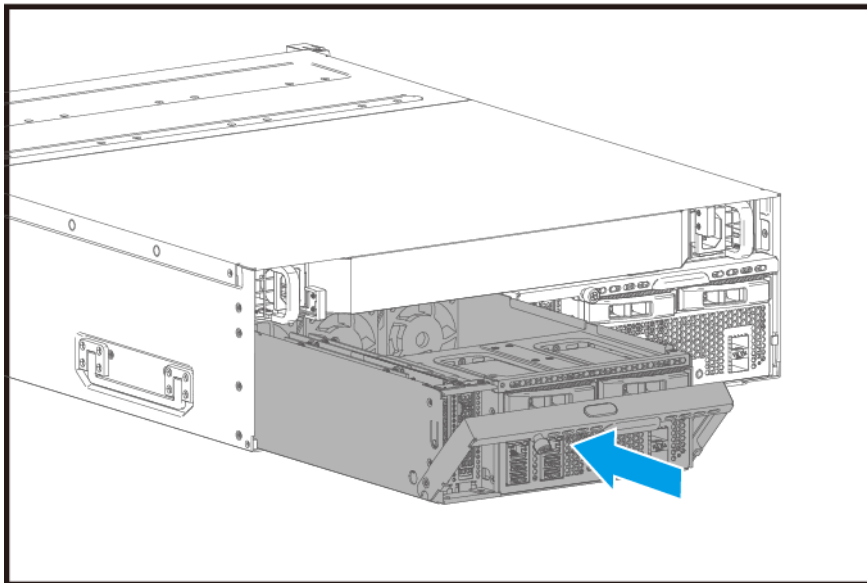
2. Tighten the screw.
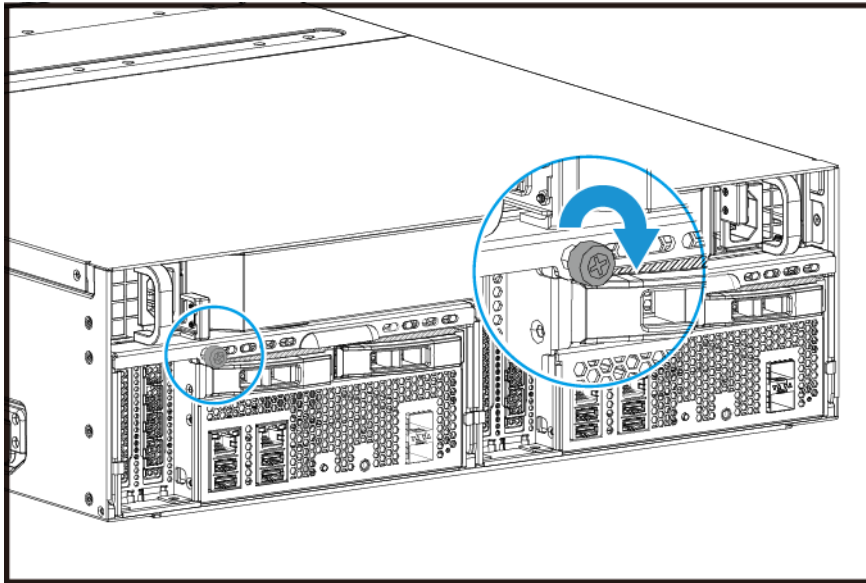
3. Connect all cables and external attachments.

4. Connect the power cord to the electrical outlet.

5. Power on the NAS.

Drive Installation

The GM-1000 is compatible with 3.5-inch hard drives, 2.5-inch hard drives, 2.5-inch sold-state drives, and M.2 solid-state drives.

Installing 3.5-inch Hard Drives on 3.5-inch Trays

Warning

- Installing a drive deletes all data on the drive.

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

-

  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. Remove the drive tray.

    a. Slide the lock to the left.

    b. Push the button to release the tray handle.

    c. Pull the tray out.
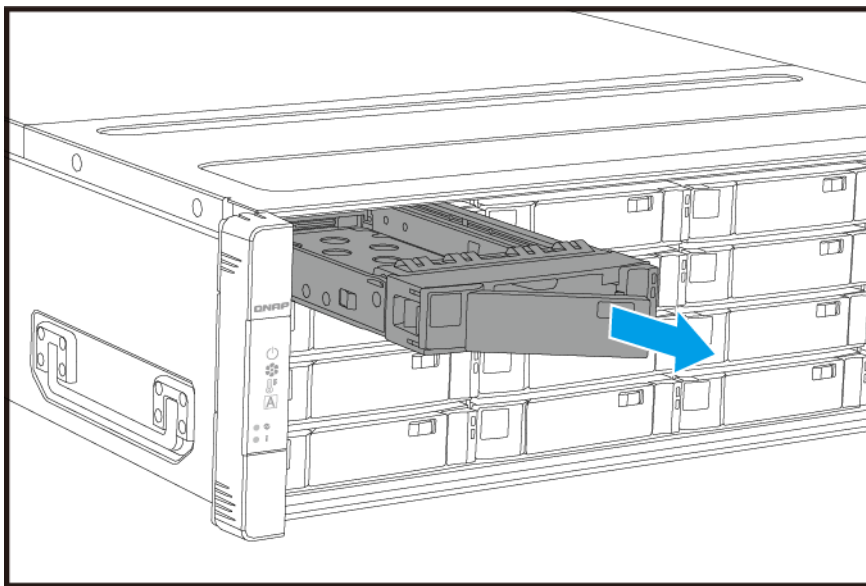
3. Install a drive on the tray.

    a. Place the drive on the tray so that the holes on the sides of the drive are aligned with the holes on the sides of the tray.

    b. Attach the screws.

4. Load the tray into the bay.

    a. Insert the tray into the bay.

    b. Push the handle.

    c. Slide the lock to the right.

5. Power on the NAS.

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

Warning

- Installing a drive deletes all data on the drive.

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

-

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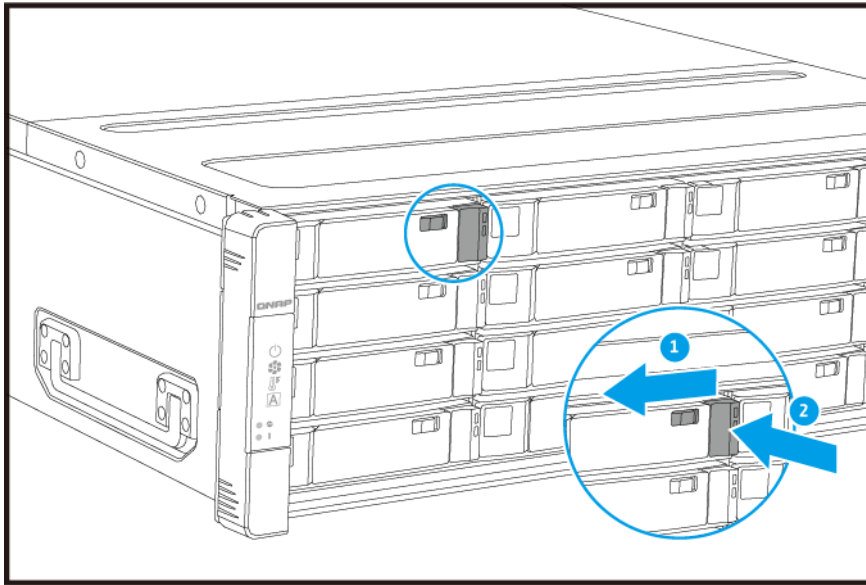
-

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

1. Power off the NAS.

2. Remove the drive tray.
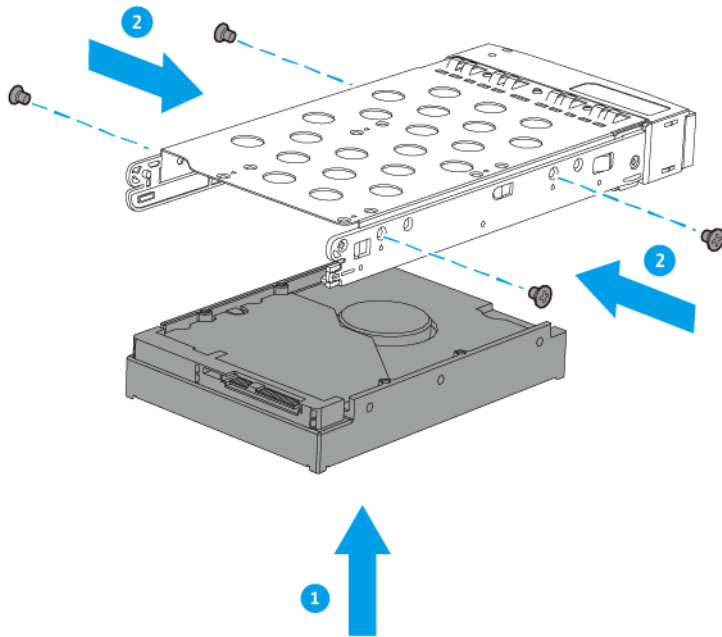
   a. Slide the lock to the left.

   b. Push the button to release the tray handle.

   c. 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. Push the handle.

c. Slide the lock to the right.

5. Power on the NAS.

Installing 2.5-inch Solid-State Drives on 2.5-inch Trays

⚠️ **Warning**

- Installing a drive deletes all data on the drive.

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

-

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. Remove the drive tray.
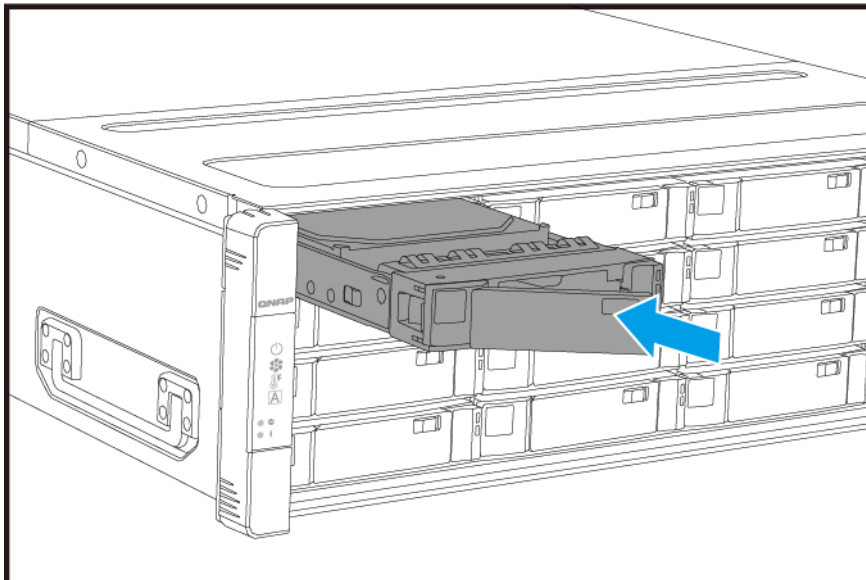
a. Pull the handle to release the tray.

b. Pull the tray out.
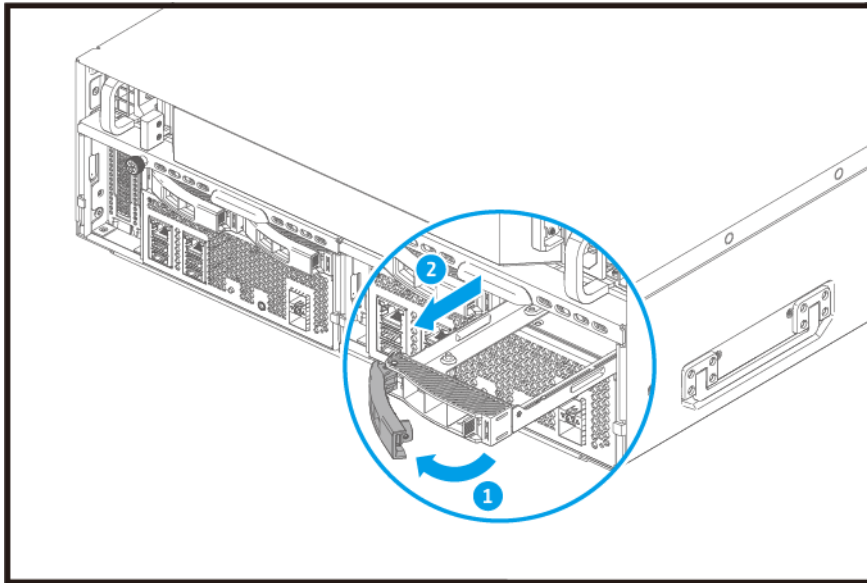
3. Install a drive on the tray.

   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.
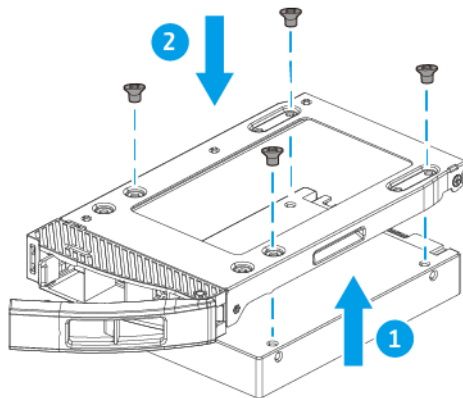
4. Load the tray into the bay.

   a. Insert the tray into the bay.

   b. Push the handle.
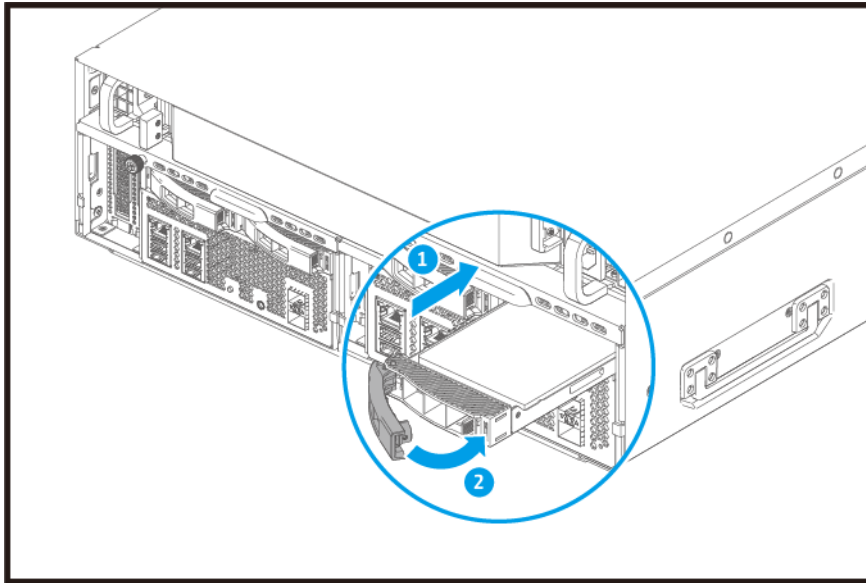
5. Power on the NAS.

Installing M.2 Solid-State Drives on the System Board

The GM-1000 has two M.S SSD slots on the system board. For a list of compatible M.S. SSDs, go to http://www.qnap.com/compatibility.

> ⚠️ **Warning**
>
> - Only qualified personnel should perform the following steps. Failure to follow instructions can result in serious injury or death.
>
> - Observe electrostatic discharge (ESD) procedures to avoid damage to components.
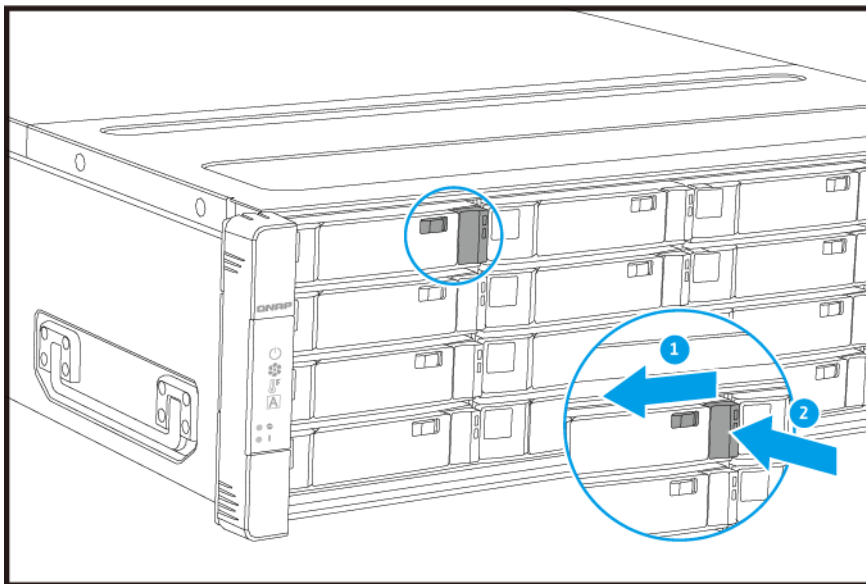>
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>
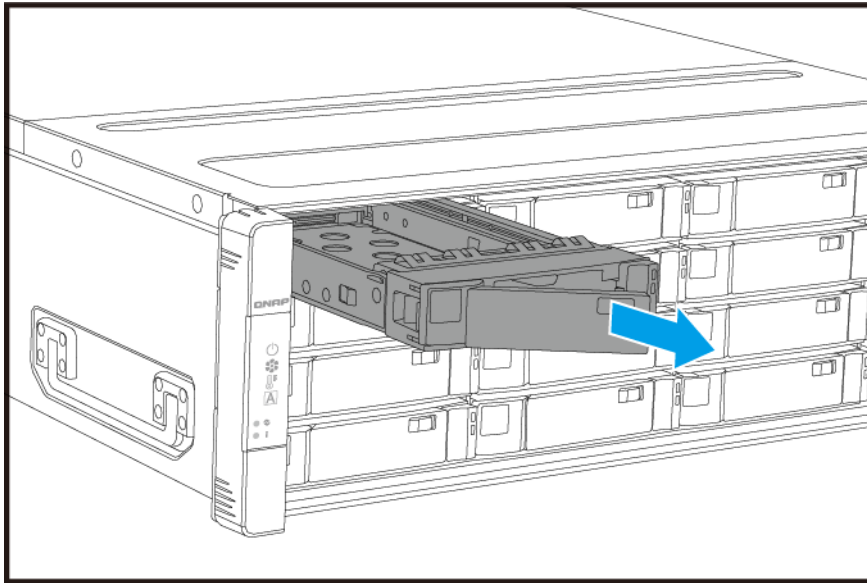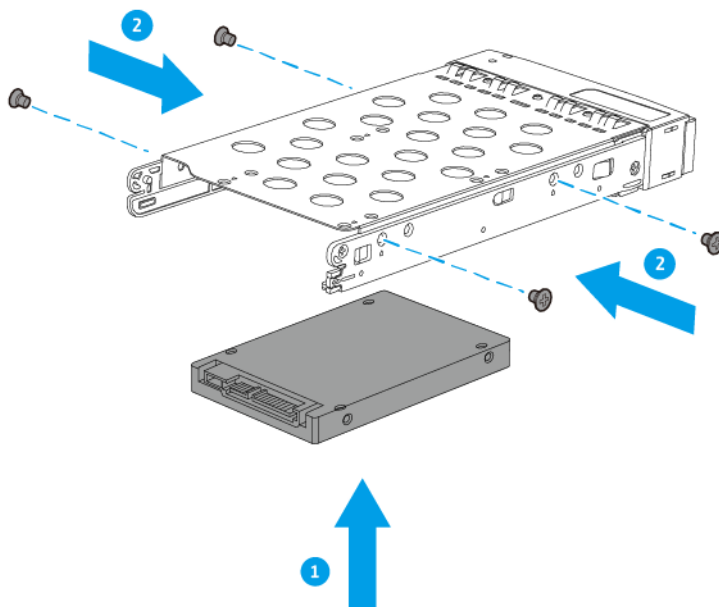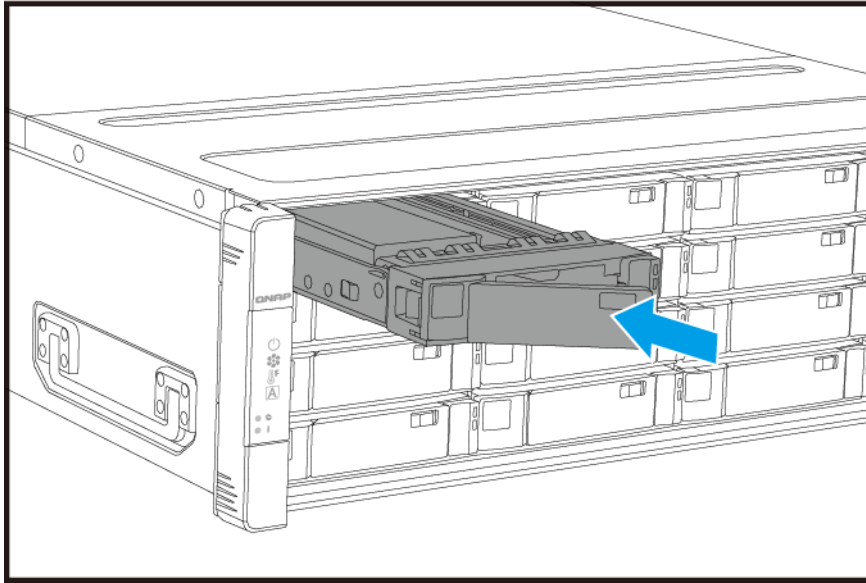>   **Moving fan blades:** Keep your hands and other body parts away from moving fan blades.
>
> -
>
>
>   **Other moving components:** Keep your hands and other body parts away from other moving components.

1. Remove the node.
   For details, see Removing a Node.

2. Install the M.2 SSD.

   a. Insert the M.2 SSD into the slot.

b. Attach the screw.

3. Install the node.
For details, see Installing a Node.

Installing Expansion Cards

The GM-1000 supports selected expansion cards, some of which require QNAP PCIe brackets. QNAP-branded expansion cards purchased from the company website are shipped with the brackets necessary to fit the GM-1000.

⚠️ **Warning**

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

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

-

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

-

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

1. Check the expansion cards and brackets supported by your model on the QNAP website.

   a. Go to www.qnap.com/compatibility.

   b. Click **Search by NAS**.

   c. Specify the number of bays and the specific model of your NAS.

   d. Under **Category**, select the component or device type.

   e. Locate a specific component or device model in the list.

   f. Optional: Click the corresponding **Note** icon to view more information.

2. Remove the node.
   For details, see Removing a Node.

3. Remove the PCIe cover.

   a. Remove the screw that secures the cover to the bracket.

   b. Pull the cover away from the slot.
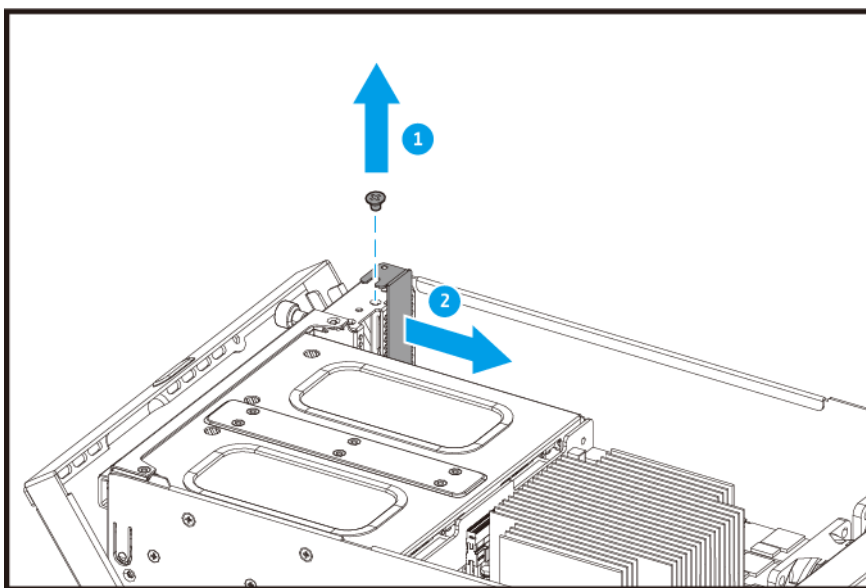
4. Optional: Attach the QNAP bracket to the expansion card.

   a. Remove all screws of the existing bracket.
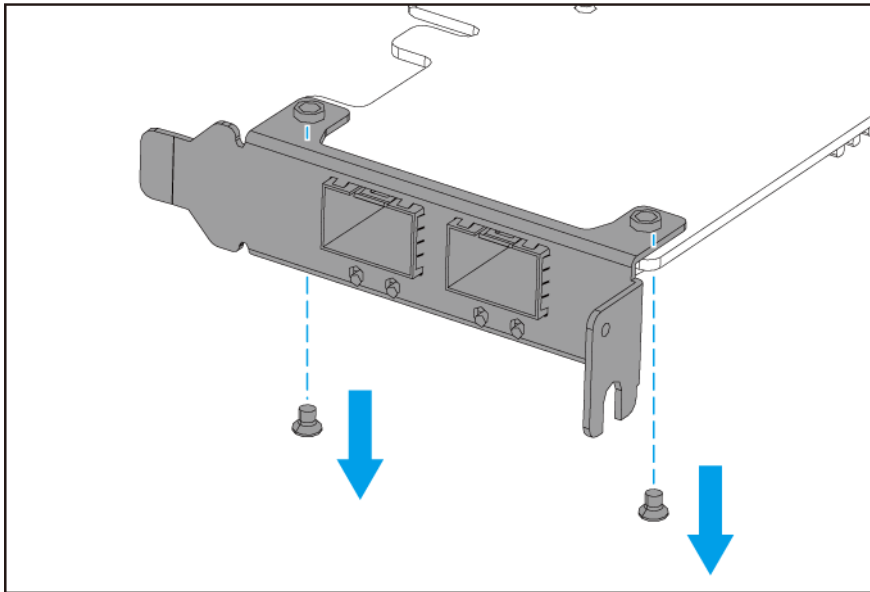
   b. Carefully pull the bracket away from the card.

   c. Attach the QNAP bracket to the card using the same screws.
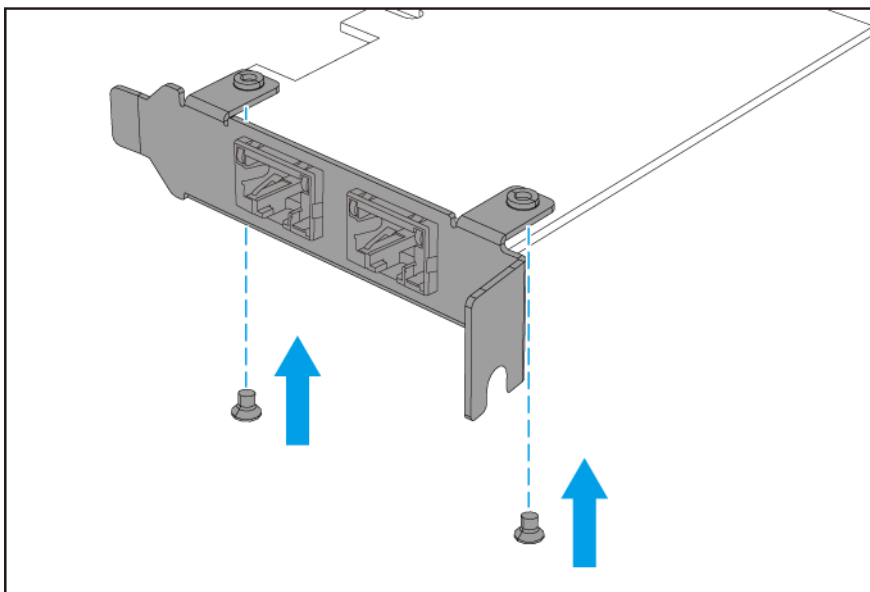
   d. Verify that the bracket does not move.

5. Install the expansion card.

   a. Hold the card by the edges.

   b. Insert the card into the slot.

   c. Attach the screw.
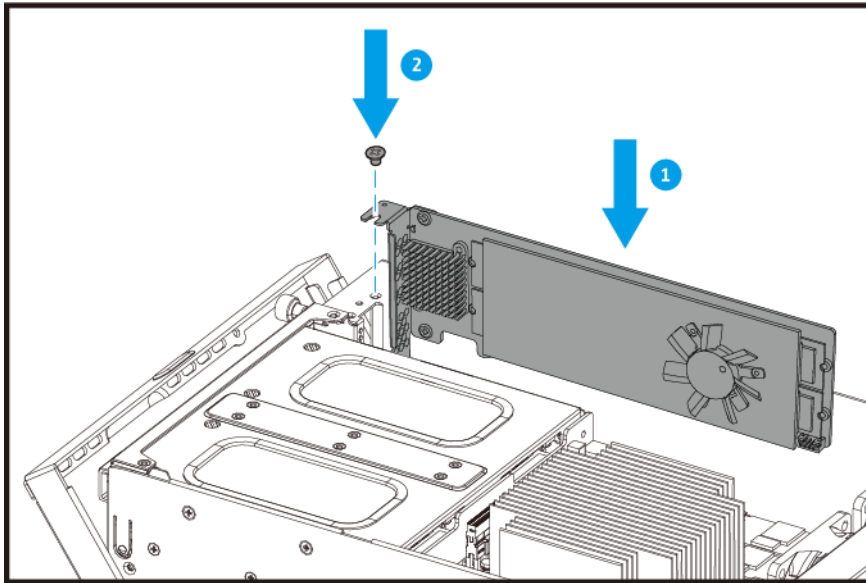
6. Install the node. For details, see Installing a Node.

Replacing Memory Modules

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

Use only QNAP modules of the same type and capacity to maintain system performance and stability. You can purchase QNAP memory modules from authorized resellers.

> **Important**
> For best results, QNAP recommends installing modules in pairs.
>
> - Ensure that each pair uses identical modules.
>
> - Install the pairs in sequence and follow the assigned slots for each pair.
>
> - When installing only one module, use slot 1.
>
> For details on slot numbering, see System Board.

Module Pair	Slot Number
First pair	Slots 2 and 4
Second pair	Slots 1 and 3

Memory Slot	Channel
1	Channel A, DIMM1
2	Channel A, DIMM2
3	Channel B, DIMM1
4	Channel B, DIMM2

> **Warning**

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

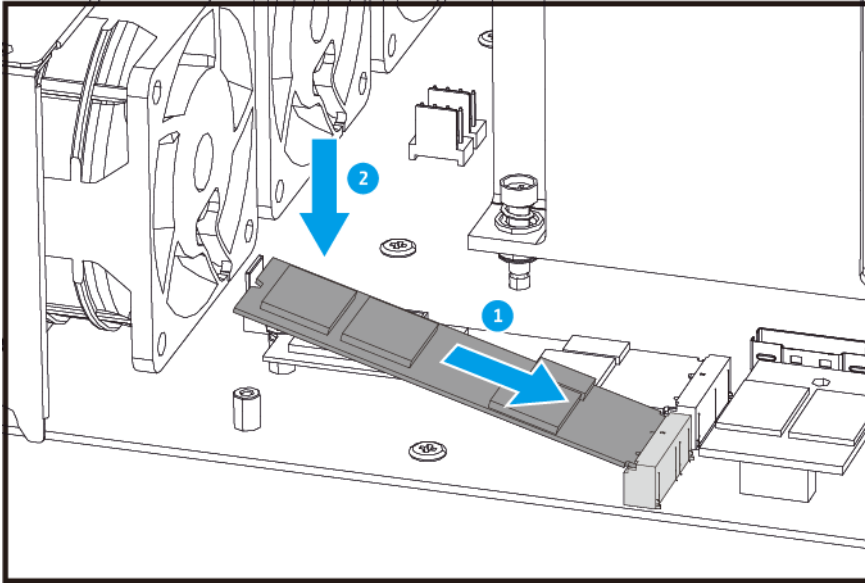- Observe electrostatic discharge (ESD) procedures to avoid damage to components.

-

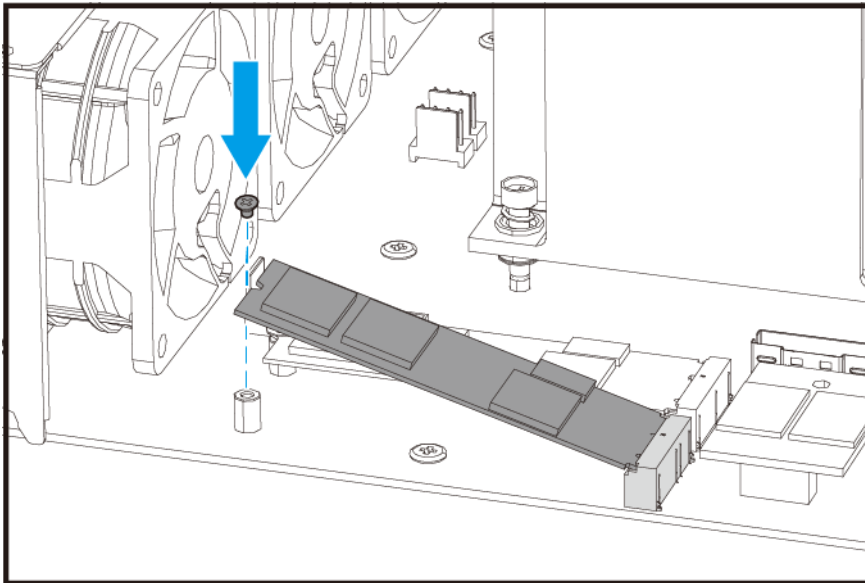**Moving fan blades:** Keep your hands and other body parts away from moving fan blades.

-

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

1. Remove the node.
   For details, see Removing a Node.

2. Optional: Remove an existing module.

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

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

   b. Hold the module by the edges.

   c. Carefully slide the module out of the slot.
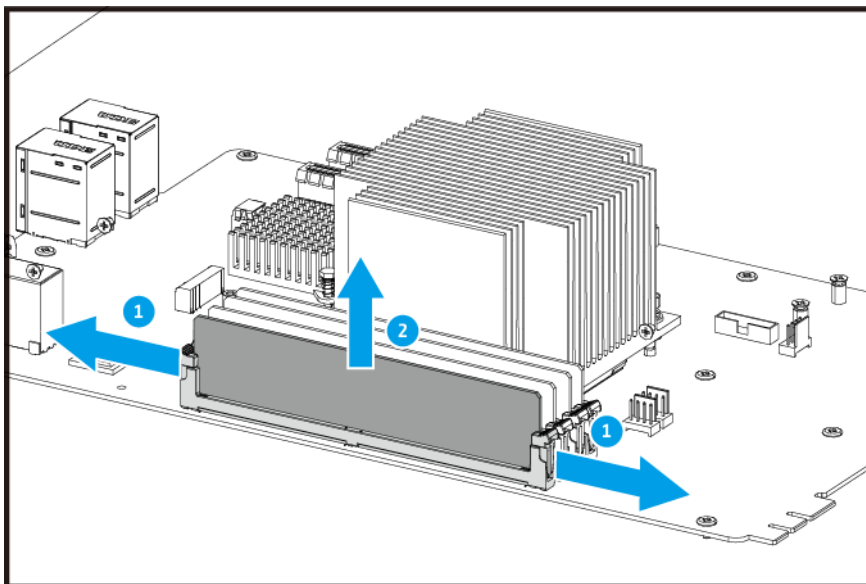
3. Install a new module.

   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.
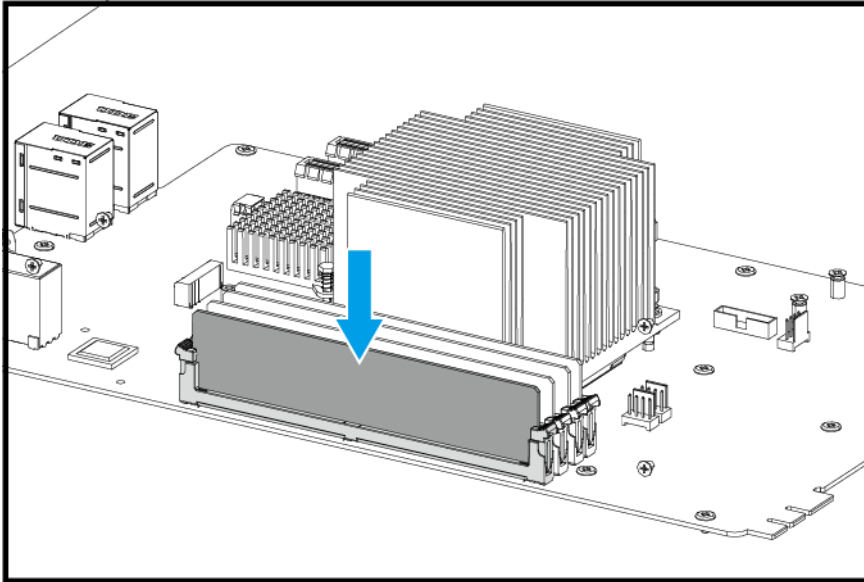
4. Install the node.
   For details, see Installing a Node.

5. Verify that the module is recognized by the NAS.

    a. Log on to QuTS as administrator.

    b. Go to **Control Panel** > **System** > **System Status** > **Hardware Information** .

    c. Check the value for **Total memory**.

Hot-swapping Redundant Power Supply Units

> ⚠️ **Warning**
>
> The NAS 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.

1. Power off the node.

2. Disconnect the power cord from the electrical outlet and the PSU that you are replacing.

3. Firmly press the latch toward the handle and then pull the PSU out.
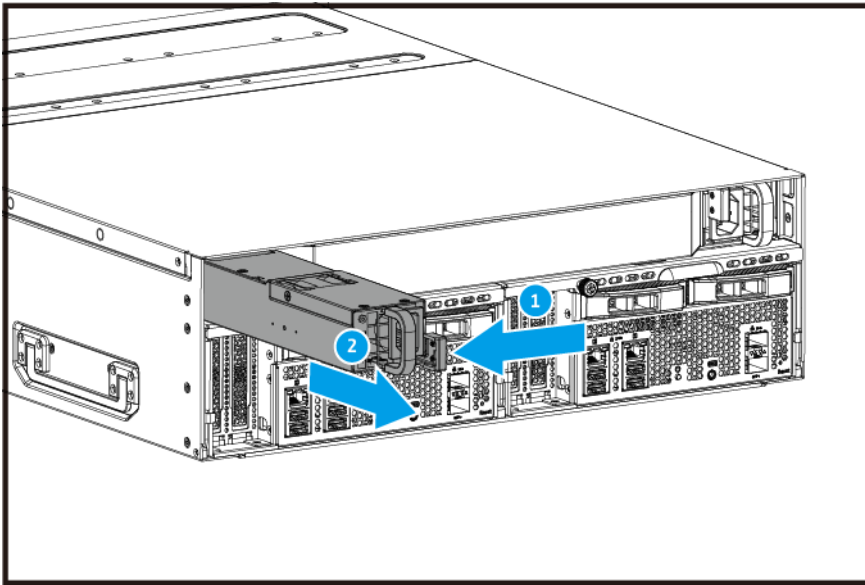
4. Insert the new PSU.
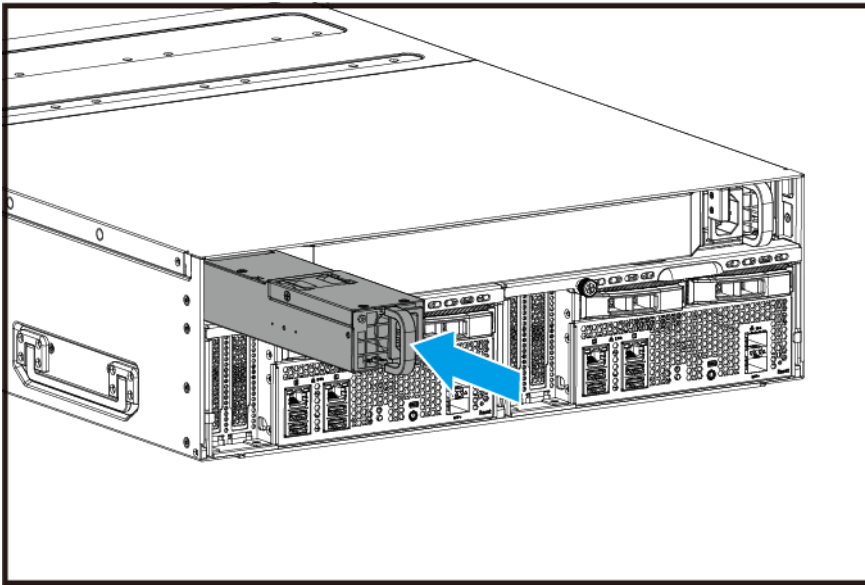
5. Connect the power cord to the PSU and the electrical outlet.

6. Power on the storage controller.

Installing Expansion Units

The GM-1000 supports SAS expansion units, SATA expansion units, SATA JBOD expansion units, and USB expansion units. For details, 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
REXP-1620U-RP	• Uses a SAS 12 Gbps (SFF-8644) interface • Supports SAS/SATA HDD/SSD	• SAS-12G2E storage expansion card • mini-SAS SFF-8644 cable • RAIL-A03-57
REXP-1220U-RP	• Uses a SAS 12 Gbps (SFF-8644) interface • Supports SAS/SATA HDD/SSD	• SAS-12G2E storage expansion card • mini-SAS SFF-8644 cable • RAIL-A03-57
REXP-1610U-RP	• Uses a SAS 6 Gbps (SFF-8644) interface • Supports SATA/HDD/SSD	• SAS-12G2E storage expansion card • mini-SAS SFF-8644 cable • RAIL-A03-57
REXP-1210U-RP	• Uses a SAS 6 Gbps (SFF-8644) interface • Supports SATA/HDD/SSD	• SAS-12G2E storage expansion card • mini-SAS SFF-8644 cable • RAIL-A03-57
TL-D400S	• Uses a SAS 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD	• 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter
TL-D800S	• Uses a SAS 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD	• 2 x SFF-8088 connector cables • QXP-800eS-A1164 host bus adapter
TL-D1600S	• Uses a SAS 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD	• 4 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS host bus adapter
TL-R400S	• Uses a SAS 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD	• 1 x SFF-8088 connector cable • QXP-400eS-A1164 host bus adapter • RAIL-B02
TL-R1200S-RP	• Uses a SAS 6 Gbps (SFF-8088) interface • Supports SATA/HDD/SSD	• 3 x SFF-8088 to SFF-8644 connector cables • QXP-1600eS host bus adapter • RAIL-B02

Expansion Unit Model	Description	Required Accessories
TR-002	• Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives	USB 3.2 Gen 2 Type-A to Type-C cable
TR-004	• Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA drives	USB 3.2 Gen 2 Type-A to Type-C cable
TR-004U	• Uses a USB 3.2 Gen 1 Type-C interface • Supports SATA drives	• USB 3.2 Gen 1 Type-A to Type-C cable • RAIL-B02
TL-D800C	• Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives	USB 3.2 Gen 2 Type-A to Type-C cable
TL-R1200C-RP	• Uses a USB 3.2 Gen 2 Type-C interface • Supports SATA drives	• USB 3.2 Gen 2 Type-A to Type-C cable • RAIL-B02

Connecting SAS Expansion Units

1. Install a storage expansion card on the PCIe slot.
   For details, see Installing Expansion Cards.

2. Connect the expansion units to the NAS using the following topology.
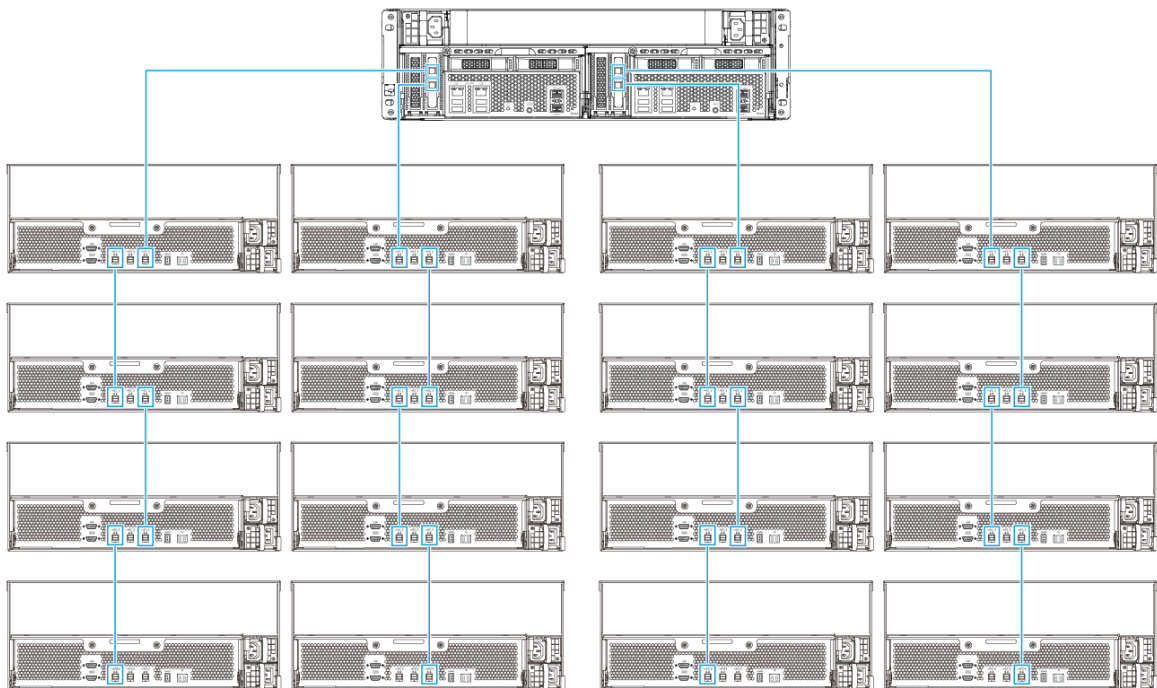
3. Power on the expansion units.

4. Verify that the expansion units are recognized by the NAS.

    a. Log on to QuTS hero as administrator.

    b. Go to **Main Menu** > **Storage & Snapshots** > **Overview** > **Storage** > **System** .

    c. Verify that the expansion units are listed.

Connecting SATA Expansion Units

1. Power off the NAS.

2. Install a host bus adapter on the PCIe slot.

> **Note**
> The QNAP QXP host bus adapter is required for connecting the SATA JBOD enclosure to a host device. Third-party host bus adapters are not compatible with QNAP JBOD enclosures. For details, see Installing Expansion Cards.

3. Connect the expansion units to the NAS using the following topology.
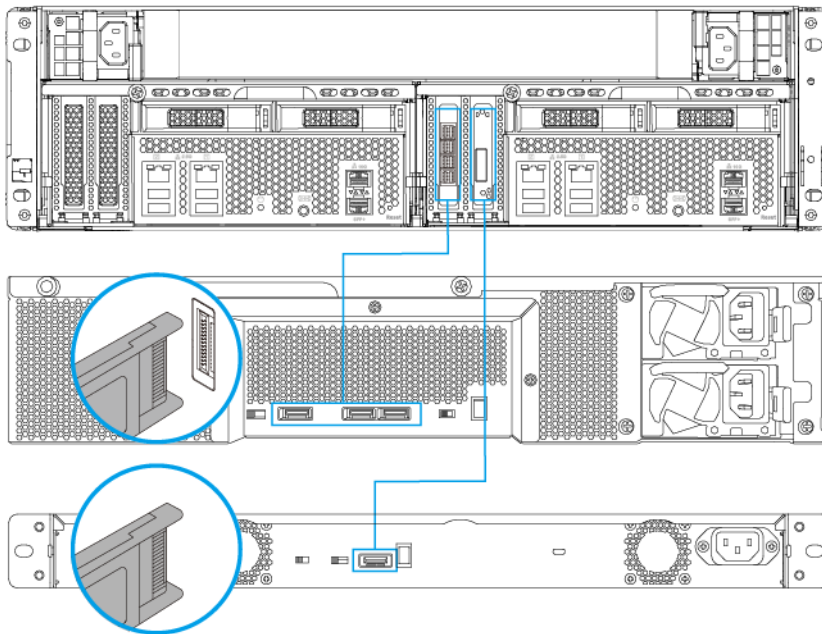
4. Power on the SATA JBOD expansion units.

5. Power on the NAS.

6. Verify that the expansion units are recognized by the NAS.

    a. Log on to QuTS hero as administrator.

   b. Go to **Main Menu** > **Storage & Snapshots** > **Overview** > **Storage** > **System** .

   c. Verify that the expansion units are listed.

Connecting USB Expansion Units

To connect the GM-1000 to USB expansion units, USB Type-A to USB Type-C cables are required. For required accessories details, see Installing Expansion Units.

1. Connect the expansion unit to the NAS.

   a. Connect the USB cable to a USB 3.2 Gen 1 Type-A port on the NAS.
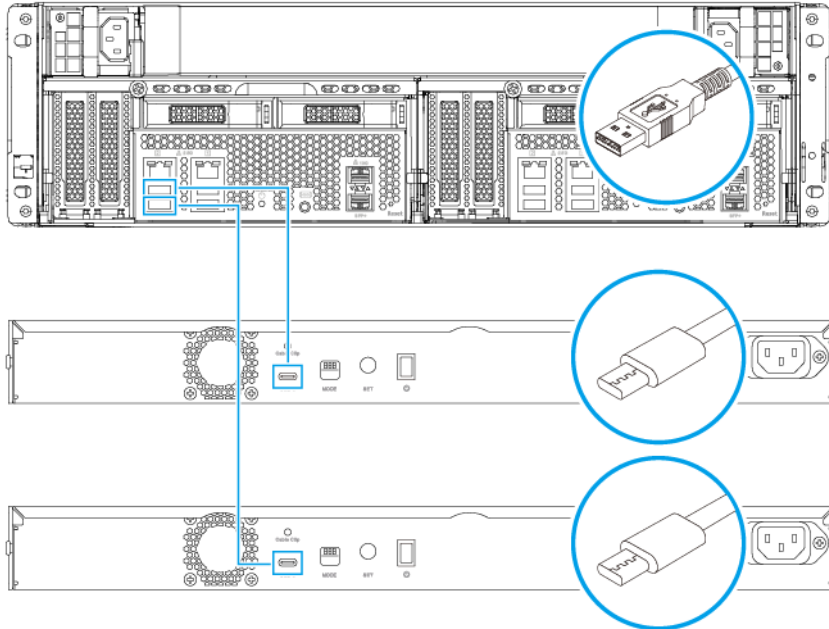
2. Power on the expansion units.

3. Verify that the expansion units are recognized by the NAS.

   a. Log on to QuTS hero as administrator.

   b. Go to **Main Menu** > **Storage & Snapshots** > **Overview** > **Storage** > **System** .

   c. Verify that the expansion units are listed.

QuTS hero Installation

The GM-1000 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)	If the NAS is connected to your local area network, you can do the following: • Locate the NAS using Qfinder Pro. • Complete the steps in the Smart Installation Guide wizard. For details, see Installing QuTS hero Using Qfinder Pro.	• Computer • Network cable • Qfinder Pro installer
Cloud installation	If the NAS is connected to the internet, you can do the following: • Scan the QR code on the NAS. • Specify the Cloud Key. • Log into your myQNAPcloud account. For details, see Installing QuTS hero Using the Cloud Key	• Computer or mobile device • myQNAPcloud account • Cloud Key

Installing QuTS hero Using Qfinder Pro

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

> **Note**
> You can revert to the QTS operating system anytime. For details, see QuTS hero user guide.

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 QuTS hero.

16. Click **Confirm**.
    QuTS hero is installed.

Installing QuTS hero Using the Cloud Key

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

> **Note**
> You can revert to QTS operating system anytime. For details, see QuTS hero user guide.

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 https://install.qnap.com/.

    • Scan the QR code on the NAS using a mobile device.

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

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

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

The installation wizard opens in the default web browser.

5. Create an account or sign in to myQNAPcloud.

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

6. Specify the myQNAPcloud device name for the NAS.

Note

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

- 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. Click **Start Smart Installation Guide**.

9. 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.

10. Click **Next**.

11. 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.

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

13. Select **Obtain an IP address automatically (DHCP)**.
You can also choose the Static IP Address configuration option to meet your networking needs. You can only apply one network configuration method.

14. Click **Next**.
The **Cross-platform file transfer service** screen appears.

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

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

17. Review the settings.

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

> **Warning**
> Clicking **Confirm** deletes all data on the drive before installing QuTS hero.

19. Click **Confirm**.
    QuTS hero is installed.

4. 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 1: One member drive fails

- RAID 5: One member drive fails

- RAID 6: One or two 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 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 & Snapshots** > **Storage Space** .

11. Locate the volume that contains the new drive and then verify that the status is `Rebuilding`.

Support and Other Resources

QNAP provides the following resources:

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

5. Glossary

Cloud Key

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

QuTS hero

QNAP NAS operating system featuring ZFS file system

6. 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.

Disclaimer

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QNAP products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications.

In no event shall QNAP's liability exceed the price paid for the product from direct, indirect, special, incidental, or consequential damages resulting from the use of the product, its accompanying software, or its documentation. QNAP makes no warranty or representation, expressed, implied, or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaims its quality, performance, merchantability, or fitness for any particular purpose. QNAP reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity.

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.

Should you return any components of the package of QNAP products such as NAS (Network Attached Storage) for refund or maintenance, make sure they are carefully packed for shipping. Any form of damages due to improper packaging will not be compensated.

All the features, functionality, and other product specifications are subject to change without prior notice or obligation. Information contained herein is subject to change without notice.

Further, the ® or ™ symbols are not used in the text.

BSMI Notice

D33B77
RoHS

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

CE Notice

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.

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

SJ/T 11364-2006

本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。						
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						

VCCI Notice

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI–A