



**QNAP**

# **QSW-M5216-1T**

## **User Guide**



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# 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.
- To avoid potential injury or damage to components, ensure that the drives and other internal system components have cooled before touching them.
- Observe electrostatic discharge (ESD) procedures to avoid potential injury or damage to components.

### Power

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

### System Battery

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

- To avoid potential battery explosion, causing injury or damage to components, ensure that you replace the existing battery with a battery of the same type.
- Dispose of used batteries properly according to local regulations or the instructions of the battery manufacturer.

### Moving Parts

- 



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

- 



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

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

## 2. Product Overview

This chapter provides basic information about your QNAP device.

### About the QSW-M5216-1T

The QSW-M5216-1T is a Layer 2 web managed switch that features sixteen 25 GbE SFP28 ports and one 10GBASE-T port for high-speed data transfer. The compact form factor allows simple branch deployment and allows you to manage switch operations using the QNAP Switch System (QSS).

### Hardware specifications


**Tip**

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

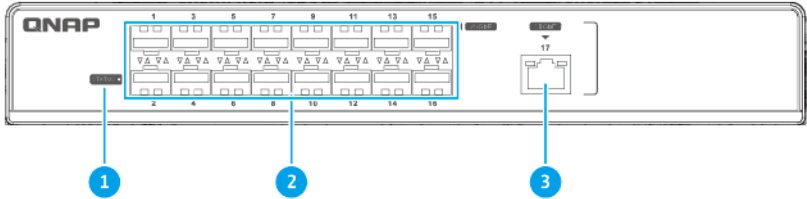
Component	QSW-M5216-1T
Processor	
CPU	Marvell ® ARMADA ® 88F6821
Frequency	Dual-core 2.0 GHz
Architecture	ARM 32-bit
Network	
25 Gigabit network interface	16 x 25G/10G/1G SFP28
10 Gigabit network interface	1 x 10G/5G/2.5G/1G/100M RJ45
Interface	
Buttons	Switch reset
Dimensions	
Form factor	Compact
Dimensions (H x W x D)	43.5 x 285 x 237.7 mm (1.71 x 11.22 x 9.36 in)
Net weight	2.15 kg (4.74 lbs)
Operating temperature	0°C to 40°C (32°F to 104°F)
Relative humidity	<ul style="list-style-type: none"> <li>• Non-condensing relative humidity: 5% to 95%</li> <li>• Wet-bulb temperature: 27°C (80.6°F)</li> </ul>

### Package contents

Item	Quantity
QSW-M5216-1T	1
Power cord	1
Screws for rackmount brackets	6
Rackmount brackets	2
Rubber feet	4
Quick Installation Guide (QIG)	1

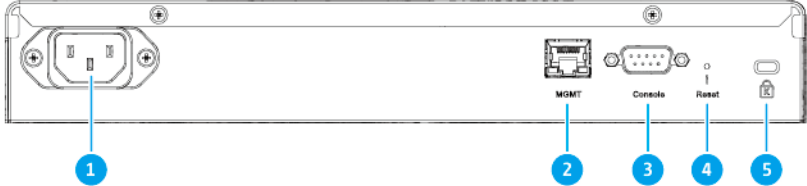
# Components

## Front panel



No.	Component	No.	Component
1	Switch status LED	3	10GBASE-T port (RJ45)
2	25 Gigabit SFP28 ports	-	-

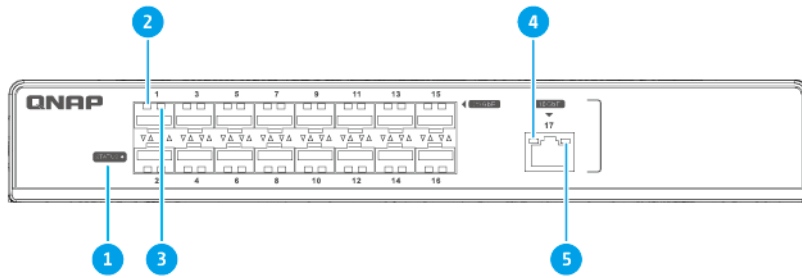
## Rear panel



No.	Component	No.	Component
1	Power input	4	Reset button

No.	Component	No.	Component
2	Management port	5	Kensington security slot
3	Console port	-	-

### Front panel LEDs



No.	Component	No.	Component
1	Switch status LED	4	10GBASE-T link (left) LED
2	25 Gigabit SFP28 link (left) LED	5	10GBASE-T link (right) LED
3	25 Gigabit SFP28 link (right) LED	-	-



## 3. Installation and Access

This chapter provides specific hardware installation and switch access steps.

### Installation requirements

Category	Item
Environment	<ul style="list-style-type: none"> <li>Room temperature: 0°C to 40°C (32°F to 104°F)</li> <li>Non-condensing relative humidity: 5% to 95%</li> <li>Wet-bulb temperature: 27°C (80.6°F)</li> <li>Flat, anti-static surface without exposure to direct sunlight, liquids, or chemicals</li> <li>Free from objects that may obstruct device ventilation or apply pressure to the device or power cord</li> </ul>
Hardware and peripherals	<ul style="list-style-type: none"> <li>Computer or NAS</li> <li>Network cable</li> </ul>
Tools	<ul style="list-style-type: none"> <li>Phillips #1 or #2 screwdriver</li> <li>Flat head screwdriver</li> <li>Anti-static wrist strap</li> </ul>

### Setting up the switch

1. Place your switch in an environment that meets the requirements.  
For details, see [Installation requirements](#).
2. Power on the switch.  
For details, see [Rear panel](#).
3. Connect the switch to a computer or network.  
For details, see [Connecting the switch to a computer or network](#).
4. Log in to QSS.

### Connecting the switch to a computer or network

You can connect the switch to a computer or local area network. For details, see the following topics:

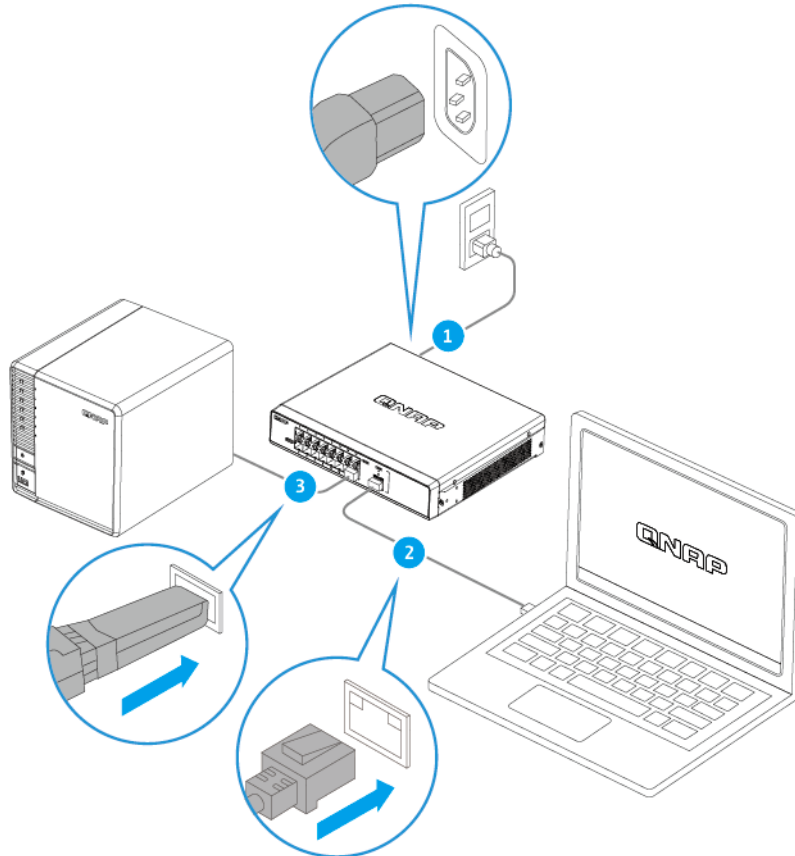
- [Connecting the switch to a computer](#)
- [Connecting the switch to a network](#)

### Connecting the switch to a computer

Connecting the switch to a QNAP NAS allows you to expand storage capacity and back up data to another NAS through network cable connections to a PoE or host port on the switch. However, you must connect the switch to a computer to configure the settings.

1. Power on the switch.

2. Connect the switch to a computer.
  - a. Connect a network cable to the host port on the switch.
  - b. Connect the network cable to a Gigabit network port on the computer.



3. Verify that the computer recognizes the switch.
  - a. Open Qfinder Pro on the host computer.



**Note**

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

- b. Locate the switch on the list.

## Connecting the switch to a network

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

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



**Note**

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

4. Locate the switch in the list and then double-click the name or IP address.  
The QSS login screen appears.
5. Enter your QSS login information.
6. Click **Log In**.

## Switch access

Method	Description	Requirements
Web browser	<p>You can access the switch using any computer on the same network if you have the following information:</p> <ul style="list-style-type: none"> <li>• Switch name (Example: http://example123/) or IP address</li> <li>• Login credentials of a valid user account</li> </ul> <p>For details, see <a href="#">Accessing the switch using a browser</a>.</p>	<ul style="list-style-type: none"> <li>• Computer that is connected to the same network as the switch</li> <li>• Web browser</li> </ul>
Qfinder Pro	<p>Qfinder Pro is a desktop utility that enables you to locate and access QNAP devices on a specific network. The utility supports Windows, macOS, Linux, and Chrome OS. For details, see <a href="#">Accessing the switch using Qfinder Pro</a>.</p>	<ul style="list-style-type: none"> <li>• Computer that is connected to the same network as the switch</li> <li>• Web browser</li> <li>• Qfinder Pro</li> </ul>

## Accessing the switch using a browser



You can access the switch using any computer on the network if you know its IP address and the login credentials of a valid user account. QNAP switches support DHCP client configuration by default for IP assignment. When connected to a network, the switch automatically obtains an IP address from a DHCP server.



### Note

- If you do not know the IP address of the switch, you can locate it using Qfinder Pro.
- If the switch is not connected to a DHCP supported network, you can access the switch web interface by changing the IP address of the computer to 169.254.100.102.
- The default IP address of the switch is 169.254.100.101.

1. Verify that your computer is connected to the same network as the switch.
2. Open a web browser on your computer.
3. Type the IP address of the switch in the address bar.  
The QSS login page appears.
4. Specify the username and password.

Default Username	Default Password
admin	<p>The MAC address of the switch image omitting any punctuation and capitalizing any letters.</p> <p> <b>Tip</b> For example, if the MAC address is 00:0a:0b:0c:00:01, the default password is 000A0B0C0001.</p> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• You can find the device MAC address with Qfinder Pro or attached to a label on the device listed as "MAC".</li> <li>• You are prompted to change the password after logging in for the first time.</li> <li>• For security reasons, QNAP strongly recommends changing the password after the first login.</li> </ul>

**5. Click Login.**

The QSS desktop appears.



**Important**

After setting up the switch, ensure that you change the IP address of the computer to the original configuration.

## Accessing the switch using Qfinder Pro



1. Install Qfinder Pro on a computer that is connected to the same network as the switch.



**Tip**

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

2. Open Qfinder Pro.  
Qfinder Pro automatically searches for all QNAP devices on the network.
3. Locate the switch in the list, and then double-click the name or IP address.  
The QSS login screen opens in the default web browser.
4. Specify the username and password.

Default Username	Default Password
admin	<p>The MAC address of the switch image omitting any punctuation and capitalizing any letters.</p> <p> <b>Tip</b> For example, if the MAC address is 00:0a:0b:0c:00:01, the default password is 000A0B0C0001.</p> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• You can find the device MAC address with Qfinder Pro or attached to a label on the device listed as "MAC".</li> <li>• You are prompted to change the password after logging in for the first time.</li> <li>• For security reasons, QNAP strongly recommends changing the password after the first login.</li> </ul>

**5. Click Login.**

The QSS desktop appears.

## 4. Basic Operations


This chapter describes basic switch operations.

### LEDs

LEDs indicate system status and related information when the switch is powered on. The following LED information applies only when the switch is connected to the network.

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

#### System Status LED

Status	Description
Green	<ul style="list-style-type: none"> <li>The device is ready.</li> <li>The firmware is updated.</li> <li>The password has been reset.</li> <li>The device has been reset to factory default settings.</li> </ul>
Flashes green	<ul style="list-style-type: none"> <li>The device is being initialized.</li> <li>The firmware is being updated.</li> </ul> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p><b>Important</b> When updating the firmware, do not remove the power cord, and do not force-exit the application.</p> </div> </div> <ul style="list-style-type: none"> <li>The device is being reset.</li> <li>The device password is being reset.</li> </ul>
Red	A fatal device error occurred.
Flashes red every 0.5 seconds	A network error occurred.
Off	<ul style="list-style-type: none"> <li>The device is powered off.</li> <li>The device is ready for password reset.</li> <li>The device is ready for factory reset.</li> </ul>

#### 25 Gigabit SFP28 link (left)

Status	Description
Green	The link speed is operating at 25 Gbps.
Flashes green	Data is being transmitted.
Off	There is no network connection.

#### 25 Gigabit SFP28 link (right)

Status	Description
Orange	The link speed is operating at 10 or 1 Gbps.
Flashes orange	Data is being transmitted.

Status	Description
Off	There is no network connection.


### 10GBASE-T RJ45 link (left)

Status	Description
Green	The link speed is operating at 10 Gbps.
Flashes green	Data is being transmitted.
Off	There is no network connection.

### 10GBASE-T RJ45 link (right)

Status	Description
Orange	The link speed is operating at 5 Gbps, 2.5 Gbps, 1 Gbps, or 100 Mbps.
Flashes orange	Data is being transmitted.
Off	There is no network connection.

## Reset button

Operation	User Action	Result
Basic system reset	Press and hold the button for 5 seconds.	<p>The following settings are reset to default:</p> <ul style="list-style-type: none"> <li>System administrator password: The default password is the first MAC address in uppercase letters without special characters. For example, if the first MAC address is 00-08-9B-F6-15-75, then the admin password would be 00089BF61575.</li> </ul> <p> <b>Note</b> You can find the first MAC address with Qfinder Pro or attached to a label on the device listed as MAC1.</p> <ul style="list-style-type: none"> <li>The admin account is automatically enabled.</li> </ul>
Advanced system reset	Press and hold the button for 10 seconds.	The default factory settings are restored.

## 5. QSS

### About QSS

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

### Getting started

1. Log in to the switch as an administrator.  
The default administrator account is `admin`.  
For details, see [Switch access](#).
2. Configure the system settings.  
For details, see [System settings](#).
3. Configure port settings and other network settings.  
For details, see [Network management](#).

### Network management

Basic network configuration of the switch includes port management, VLAN configuration, configuration of various protocols, and traffic management via quality of service (QoS) and access control lists (ACLs).

#### Dashboard

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


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

### Configuring port settings

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

Setting	Description
<b>State</b>	Enables or disables the switching port
<b>Speed</b>	Allows the port speed to be auto-negotiated or controlled using the selected speed
<b>Flow Control</b>	Enables or disables flow control for the port <ul style="list-style-type: none"> <li>• When the port speed is set to <b>Auto</b>, the maximum speed is advertised to the link partner.</li> <li>• When the port speed is fixed, flow control automatically matches the specified speed.</li> </ul>



Setting	Description
FEC	<p>Forward Error Correction (FEC) recovers lost packets on a link by sending additional parity packets</p> <ul style="list-style-type: none"> <li>• <b>All:</b> The switch automatically selects the best FEC mode (excluding the Auto-Negotiation FEC mode) to transmit and receive data packets.</li> <li>• <b>RS-FEC:</b> Reed-Solomon (RS) FEC provides enhanced data correction rates on the transmitting and receiving devices.</li> <li>• <b>BASE-R-FEC:</b> Fire-Code FEC or BASE-R-FEC offers weaker correction rates but offers lower latency compared to RS-FEC on 25 GbE switching ports.</li> <li>• <b>Auto-Negotiation:</b> Uses the clause 73 auto-negotiation function for use over electrical backplanes on a switching port. An FEC automatic negotiation (AN) request message is transmitted to determine a negotiated FEC process between the switching ports.</li> <li>• <b>Disable:</b> Disables FEC on all the switching ports.</li> </ul> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• Use <b>Auto-Negotiation</b> to automatically determine the link capabilities and eliminate manual configuration of FEC. Auto-negotiated FEC is best used when the data rate needs to be adjusted to the network situation.</li> <li>• Use <b>RS-FEC</b> when the data requires additional protection from noise and other data loss sources.</li> <li>• <b>BASE-R-FEC</b> is used for networks operating at high speeds. This is the highest speed FEC available and is most suitable for mission-critical networks and applications.</li> </ul>

6. Click **Save**.

QSS saves the settings.

## Adding a VLAN

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

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

1. Log in to QSS.
2. Go to **Configuration > VLAN**.
3. Click **Add**.  
The **Add VLAN** window opens.
4. Specify a VLAN ID.
5. Select ports to include in the VLAN.

**Note**

Only tagged ports can belong to multiple VLANs.

6. Click **Save**.

QSS adds the VLAN.

## Adding a link aggregation group (LAG)

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

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

**Warning**

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

1. Log in to QSS.
2. Go to **Configuration > Link Aggregation**.
3. Identify a group.
4. Click .  
The **Edit Group** window opens.
5. Configure the group settings.

Setting	Description
<b>Mode</b>	<p>Controls the link aggregation mode for the group</p> <ul style="list-style-type: none"> <li>• <b>LACP:</b> Uses IEEE 802.3ad protocol to send Link Aggregation Control Protocol Data Units (LACPDU) to connected devices to establish a link aggregation. This allows you to control the bundling of several physical links into a logical link.</li> <li>• <b>Static:</b> Establishes link aggregation without the LACP protocol</li> </ul> <p> <b>Important</b> Ensure that you configure the LAG before connecting cables to the switch to avoid creating a data loop.</p>
<b>Port Configuration</b>	<p>Specifies which ports are included in the group</p> <p> <b>Note</b> Ensure that you configure the same settings for all the member ports in a LAG.</p>

6. Click **Save**.

QSS updates the group settings.

**Note**

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


## Managing Rapid Spanning Tree Protocol (RSTP) settings



RSTP provides rapid convergence of the spanning tree and builds a loop-free topology for the switch network. RSTP allows you to enable backup links in case an active link fails.

**Note**

- RSTP is disabled by default.
- The default bridge priority for the switch is 32768.

### Enabling or disabling RSTP

1. Log in to QSS.
2. Go to **Configuration > RSTP > RSTP Configuration**.
3. Next to **RSTP**, click  to enable the RSTP function.
4. Identify a port.
5. Enable or disable RSTP on the port.

Toggle State	Description
	Click to enable the RSTP function.
	Click to disable the RSTP function.

6. Click **Save**.

QSS saves the setting.

### Setting bridge priority

You can configure the RSTP bridge priority of the switch in the RSTP configuration field.

1. Log in to QSS.
2. Go to **Configuration > RSTP > RSTP Configuration**.
3. Enable RSTP.

**Note**

For details, see [Enabling or disabling RSTP](#).

4. Select the RSTP bridge priority from the drop-down list.

**Note**

- The default bridge priority is 32768.

- For root bridge priority, QNAP recommends setting the value to zero.

5. Click **Save**.



QSS updates the RSTP bridge priority.

## Enabling or disabling LLDP

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

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

1. Log in to QSS.
2. Go to **Configuration > LLDP > LLDP Configuration**.
3. Enable or disable LLDP.

Toggle State	User Action
	Click to enable the LLDP function.
	Click to disable the LLDP function.

4. Click **Save**.

QSS saves the setting.

## Adding a static MAC address

To improve frame forwarding efficiency between LAN ports, the network switch maintains a MAC address table that maps MAC addresses to LAN ports of connected devices. You can manually add a MAC address to the table, which allows the switch to retain the MAC entry even after a reboot.

1. Log in to QSS.
2. Go to **Configuration > LLDP > MAC Address Table**.
3. Click **Add**.  
The **Add Static MAC Address** window opens.
4. Configure the MAC address settings.
  - a. Specify a VLAN ID.
  - b. Specify a MAC address.
  - c. Select a switching port or LAG.
5. Click **Save**.  
The **Add Static MAC Address** window closes.

QSS adds the MAC address.

## Configuring the dynamic MAC address aging timer

The **MAC Address Table** registers the source MAC addresses of all incoming traffic. The aging timer deletes a MAC address entry from the table if there has been no incoming traffic from that MAC address after the specified period.


1. Log in to QSS.
2. Go to **Configuration > LLDP > MAC Address Table** .
3. Specify the dynamic MAC address aging time.
4. Click **Save**.


QSS saves the dynamic MAC address aging time.

## Configuring IGMP snooping

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

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

1. Log in to QSS.
2. Go to **Configuration > IGMP Snooping** .
3. Click  .  
QSS enables IGMP snooping.
4. Configure the IGMP snooping settings.

Setting	Description
<b>IGMP querier</b>	Uses the switch to send periodic query packets to multicast groups to avoid multicast traffic loss
<b>Multicast flood blocking</b>	Blocks multicast flooding from unknown sources
<b>Router port</b>	Specifies which ports to use as the router port for the switch After receiving an IGMP packet, QSS forwards the control packets through the selected router ports.  <div style="display: flex; align-items: center;">  <div> <p><b>Note</b> If you do not specify a router port, QSS automatically assigns a port to be used as a router port.</p> </div> </div>
<b>Fast leave</b>	Specifies the ports that support Fast Leave After receiving an IGMP leave message, QSS stops forwarding specific multicast traffic to the selected Fast Leave ports.

5. Click **Save**.

QSS saves the IGMP snooping settings.

## Managing access control list (ACL) entries


Access control lists allow you to handle network traffic in a switch by using controlled rule sets. Each ACL rule is a user-created set of conditions that the switch uses to determine whether a data packet can pass through

the network. If the data packet matches an existing ACL rule, the switch then uses the rule to determine whether to permit or deny the packet. If there is no matching ACL rule or there are no ACL rules, the switch applies a default rule.

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

### Adding an IP address–based ACL rule

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

Setting	User Action
<b>ACL No.</b>	This value must be from 1 to 255
<b>Source</b>	
<b>IP Address</b>	Specify the IP address of an incoming connection
<b>Subnet Mask</b>	Specify the subnet mask used by an incoming connection
<b>Destination</b>	
<b>IP Address</b>	Specify the IP address being accessed by a source connection
<b>Subnet Mask</b>	Specify the subnet mask being accessed by a source connection  <div style="display: flex; align-items: center;">  <div> <p><b>Important</b> If a source is not specified, set the subnet mask to 255.255.255.255. If set to 255.255.255.0, the entry will be configured for the whole subnet.</p> </div> </div>
<b>Port</b>	Select specific ports to apply the ACL rule, or select <b>All</b> to apply the rule to all ports.
<b>Permission</b>	Specify the type of permission type used for this ACL entry <ul style="list-style-type: none"> <li>• <b>Allow:</b> Allows access for the configured IP addresses</li> <li>• <b>Deny:</b> Restricts access for the configured IP addresses</li> </ul>



#### Note

If the source or destination field is left blank, the permission setting is applied to all connections.

5. Click **Save**.

QSS adds the IP address–based ACL rule.

### Adding a MAC address–based ACL rule

1. Log in to QSS.
2. Go to **Configuration > ACL > By MAC Address** .
3. Click **Add**.

The **Add ACL - MAC Address** window opens.

4. Configure the ACL settings.


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

5. Click **Save**.

QSS adds the MAC address-based ACL rule.

## Configuring QoS settings

Quality of service (QoS) enables the switch to examine incoming packets and classify them into groups to prioritize certain traffic over others. You can classify these packets based on the type of traffic, source, or destination address. QSS allows you to configure and enable traffic policies on the switch ports using two QoS classification techniques, Differentiated Services Code Point (DSCP) and class of service (CoS).

1. Log in to QSS.
2. Go to **Configuration > QoS > QoS**.
3. Identify a port or LAG.
4. Under **DSCP**, click . DSCP is enabled on the switch port.
5. Specify a CoS value to assign to incoming packets.



### Note

- When DSCP is enabled on a port, incoming packets are tagged with the specified CoS value. The packets are then processed in order of priority according to their CoS value and which queue the CoS value is mapped to.
- QSS uses CoS 802.1p priority tag values which range from 0 to 7. By default, they are each mapped to the queue of the same number, where queue 0 receives the lowest priority and queue 7 the highest priority. To change the default mappings, see [Mapping CoS values to queues](#).
- QSS does not override the CoS values of incoming packets that have already been assigned CoS values.

6. Click **Save**.

QSS saves the QoS settings.

## Mapping CoS values to queues

QSS supports 8 queues for each switch port. Different queues receive different priority in the network traffic, where queue 0 receives the lowest priority and queue 7 receives the highest priority.

By default, CoS values 0-7 each map to the queue of the same number. Therefore, a data packet with CoS value 0 would be put in queue 0 and processed last, after data packets with higher CoS values have been processed. However, you can change this default mapping by assigning different queues to the CoS values. You can also assign the same queue to more than one CoS value.

1. Log in to QSS.
2. Go to **Configuration > QoS > CoS Mapping** .
3. Assign a queue for each CoS value.
4. Click **Save**.

QSS saves the mappings.

## Mapping DSCP values to queues

Differentiated Services Code Point (DSCP) is a field in the header of an IP packet that is used to provide QoS optimization. You can map DSCP values to queues to determine the priority of incoming IP packets based on their DSCP values.

Queue 0 receives the lowest priority, while queue 7 receives the highest priority.

By default, QSS assigns the following queues to the following DSCP value ranges.

DSCP Values	Queue
0-7	0
8-15	1
16-23	2
24-31	3
32-39	4
40-47	5
48-55	6
56-63	7

1. Log in to QSS.
2. Go to **Configuration > QoS > DSCP Mapping** .
3. Assign a queue number to each DSCP value.
4. Click **Save**.

QSS saves the mappings.

## System management



The **System** section of the QSS navigation menu provides access to device configuration options.



## System settings

The **System Settings** menu contains system configuration options such as system information, IP information, password settings, secure connection settings, and time settings for the switch.

### Changing the switch name

1. Log in to QSS.
2. Go to **System > System Settings > System Information** .
3. Click .
4. Specify the switch name.  
Requirements:
  - Length: 1–32 characters
  - Valid characters: A–Z, a–z, 0–9
  - Valid special characters: Hyphen (-)
5. Click  to confirm the switch name.


QSS updates the switch name.

### Updating the switch password

1. Log in to QSS.
2. Go to **System > System Settings > Password** .
3. Specify a new password.



#### Tip

Click  to make the password visible.

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

4. Click **Save**.

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

### Configuring switch IP settings

1. Log in to QSS.
2. Go to **System > System Settings > IP** .
3. Select a management access mode.

- **In-band Management:** Allows users to access QSS through the ports on the switch that are also used for network traffic management.
- **Out-of-band Management:** Allows users to access QSS through a dedicated management port without being affected by network congestion or malfunction.

#### 4. Configure the network management settings.

Interface	Description
<b>Automatically obtain IP &amp; DNS</b>	Automatically assigns an IP address and other network configuration parameters to the switch.
<b>Manually set the IP &amp; DNS</b>	
<b>IP Address</b>	An IP address that is permanently assigned to the switch.
<b>Subnet</b>	A 32-bit number that is used to divide an IP network into smaller subnetworks.
<b>Gateway</b>	An IP address assigned to the device that connects your local network to the internet.
<b>DNS</b>	A server that translates domain names into IP addresses.

#### 5. Click **Save**.

QSS saves the IP settings.

## Configuring time settings



### Note

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

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

1. Log in to QSS.
2. Go to **System > System Settings > Time**.
3. Specify the time zone.
4. Specify the time configuration.

Setting	Description
<b>Manual configuration</b>	Specify the date and time.
<b>Synchronize with internet time server</b>	Ensure that your device is connected to the internet, and then specify the following information: <b>Server:</b> Specify the Network Time Protocol (NTP) server. Examples: time.nist.gov, time.windows.com

#### 5. Configure the Daylight Savings Time (DST) settings.

- **Disable:** Disables the DST settings

- **Adjust the system clock automatically:** Allows the internal clock of the switch to configure the DST settings.
- **Adjust the system clock manually:** Allows you to manually configure the starting time, ending time, and the offset settings.

6. Click **Save**.

QSS updates the time settings.

## Backing up system settings

1. Log in to QSS.
2. Go to **System > System Settings > Backup & Restore** .
3. Click **Backup**.

The device exports the system settings as a BIN file and downloads the file to your computer.

## Restoring system settings



### Warning

If the selected backup file contains user or user group information that already exists on the device, the system will overwrite the existing information.

1. Log in to QSS.
2. Go to **System > System Settings > Backup & Restore** .  
A file explorer window opens.
3. Click **Browse**.
4. Select a valid BIN file that contains the device system settings.
5. Click **Restore**.

QSS restores the switch settings.

## Resetting the switch password




### Note

- You can also reset the switch password by pressing and holding the physical reset button for 5 seconds.
- The default "admin" account is automatically enabled after the system reset.

1. Log in to QSS.
2. Go to **System > System Settings > Backup & Restore** .
3. Click **Password Reset**.

QSS resets the switch password.

Default Username	Default Password
admin	<p>The MAC address of the switch image omitting any punctuation and capitalizing any letters.</p> <p> <b>Tip</b> For example, if the MAC address is 00:0a:0b:0c:00:01, the default password is 000A0B0C0001. You can find the MAC address using Qfinder Pro. It is also printed on a sticker on the device as "MAC".</p>

## Resetting the switch to factory settings

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



### Tip

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

1. Log in to QSS.
2. Go to **System > System Settings > Backup & Restore** .
3. Click **Factory Reset**.  
A confirmation message appears.
4. Click **Yes**.

QSS resets the switch to the factory default settings.



### Note

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

## Enabling secure connection (HTTPS)

1. Log in to QSS.
2. Go to **System > System Settings > HTTPS** .
3. Select **Enable Secure Connection (HTTPS)**.
4. Select a TLS version.



### Note

Select the latest version of TLS to maximize system security. Ensure that your system meets the TLS requirements to avoid compatibility issues.

5. Optional: Select **Force secure connections (HTTPS) only**.





### Note

After enabling this setting, you can only access the web administration page via HTTPS.

6. Click **Save**.

QSS saves the secure connection settings.

## Restarting the switch

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

QSS restarts the switch.

## Viewing information on the switch

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

The screen provides the following information.

Information	Description
Switch name	Displays the default or modified name of the switch
Model name	Displays the model name of the switch
MAC address	Displays the MAC address of the switch
IP address	Displays the DHCP or static IP address of the switch
System up time	Displays how long the system has been operational
Current firmware version	Displays the firmware image version of the switch

## Downloading diagnostic logs

You can remotely monitor switch events (including system, LLDP, and IGMP snooping events) by recording and downloading diagnostic logs.

1. Log in to QSS.
2. Go to **System > System Settings > Diagnostic Logs** .
3. Select the services for which you wish to download logs.



### Note

By default, system logs are included in the downloaded logs.

4. Specify a period for collecting logs.
5. Click **Start**.  
QSS starts collecting the logs of the selected services.
6. Click **Download**.

QSS downloads the compressed file to your device.

## Firmware management


QNAP recommends keeping your device firmware up to date. This ensures that your device can benefit from new QSS software features, security updates, enhancements, and bug fixes.

You can update the switch firmware using one of the following methods:

Update Method	Description
Using <b>Check for Updates</b>	Firmware updates are automatically detected by QSS and installed onto your device. For details, see <a href="#">Checking for live updates</a> .
Using <b>Firmware Update</b>	You can check for firmware updates on the <a href="#">QNAP website</a> , download updates to a computer, and manually install updates onto your device. For details, see <a href="#">Updating the firmware manually</a> .

## Firmware update requirements

Your device must meet the following requirements to perform a firmware update:

Requirement	Description
Hardware equipment	<ul style="list-style-type: none"> <li>A computer</li> <li>Ethernet cables</li> </ul> <div style="border-left: 2px solid #0070C0; padding-left: 10px; margin-top: 10px;"> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>A computer is required when updating the firmware manually or using Qfinder Pro.</li> <li>QNAP recommends updating the firmware using wired Ethernet connections to ensure your network connection remains stable during the firmware update process.</li> </ul> </div>
Back up system settings	QNAP recommends backing up the system settings to your computer before updating the firmware. For details, see <a href="#">Backing up system settings</a> .
Administrator privileges	You must be a switch administrator or have administrator privileges to update the firmware.
Stop switch operations	Updating the firmware may disrupt ongoing switch services and operations. QNAP recommends stopping all switch operations before the firmware update. The switch must be restarted for the firmware update to take effect.
Device model name	Ensure that you have the correct switch model name. You can find the switch model name using one of the following methods: <ul style="list-style-type: none"> <li>Locate the model name on a sticker on the bottom or rear of your device.</li> <li>View the model name on the QSS top banner.</li> <li>Go to <b>System &gt; Firmware Update &gt; Live Update &gt; Model name</b> .</li> </ul>
Firmware version	If you are manually updating the firmware using <b>Firmware Update</b> or Qfinder Pro, ensure the selected firmware version is correct for your device model.

## Checking for live updates



### Warning

- To prevent data loss, QNAP recommends backing up all data on your device before updating the firmware. For details, see [Backing up system settings](#).
- Do not power off your device during the firmware update process.



### Important

- Make sure you review [Firmware update requirements](#) before updating the firmware.
- The update may require several minutes or longer, depending on your hardware configuration and network connection.

1. Log in to QSS.
2. Go to **System > Firmware Update > Live Update**.
3. Click **Check for update**.  
QSS checks for available firmware updates. You can choose to update QSS if there is an available update.
4. Click **Update System**.  
A confirmation message appears.
5. Click **Update**.

QSS updates the firmware.

## Updating the firmware manually



### Warning

- To prevent data loss, QNAP recommends backing up all data on your device before updating the firmware. For details, see [Backing up system settings](#).
- Do not power off your device during the firmware update process.



### Important

- Make sure you review [Firmware update requirements](#) before updating the firmware.
- The update may require several minutes or longer, depending on your hardware configuration and network connection.

1. Download the device firmware.
  - a. Go to <http://www.qnap.com/download>.
  - b. Select the product type.
  - c. Select your device model.
  - d. Read the release notes and confirm the following:
    - The device model matches the firmware version.

- Updating the firmware is necessary.
  - Check for any additional firmware update setup instructions.
2. Ensure that the product model and firmware are correct.
  3. Select the download server based on your location.
  4. Download the firmware package.
  5. Click **Browse**.
  6. Select a folder.
  7. Save the downloaded firmware package.
  8. Extract the firmware image file.
  9. Log in to QSS.
  10. Go to **System > Firmware Update > Firmware Update** .
  11. Click **Browse** and then select the extracted firmware image file.
  12. Click **Update System**.  
A confirmation message window appears.
  13. Click **Update**.
- QSS updates the firmware and the device restarts immediately.



## 6. Support and Other Resources

QNAP provides the following resources:

Resource	URL
Documentation	<a href="https://download.qnap.com">https://download.qnap.com</a>
Service Portal	<a href="https://service.qnap.com">https://service.qnap.com</a>
Downloads	<a href="https://download.qnap.com">https://download.qnap.com</a>
Community Forum	<a href="https://forum.qnap.com">https://forum.qnap.com</a>

## 7. Glossary

### **Qfinder Pro**

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

### **QSS**

QNAP switch management operating system

## 8. Notices

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- e. Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

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END OF TERMS AND CONDITIONS

## CE Notice



This device 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

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VCCI-A

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D33B77  
RoHS

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**SJ/T 11364-2006**



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印刷电路板	0	0	0	0	0	0
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Make sure the fiber-optic Small Form-factor Pluggable (SFP) module complies with CNS 15016-2 or IEC 60852-1 certifications and Class 1 Laser specifications.

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