QNAP

# QSS

## QSW-M2116P-2T2S

## User Guide

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# 1. About QSS

QSS is a centralized management tool for your managed QNAP switch devices.

# 2. Switch Access

| Method | Description | Requirements |
|---|---|---|
| Web browser | You can access the switch using any computer on the same network if you have the following information:<br><br>• Switch name (Example: http://example123/) or IP address<br><br>• Logon credentials of a valid user account<br><br>For details, see Accessing the Switch Using a Browser | • Computer that is connected to the same network as the switch<br><br>• Web browser |
| Qfinder Pro | 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.<br>For details, see Accessing the Switch Using Qfinder Pro. | • Computer that is connected to the same network as the switch<br><br>• Web browser<br><br>• Qfinder Pro |

## 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.

> **Note**
> If you do not know the IP address of the switch, can locate it using Qfinder Pro.

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.

4. Specify the default username and password.

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

5. Click **Login**.
   The QSS desktop appears.

## 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/en/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 default username and password.

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

5. Click **Login**.
   The QSS desktop appears.

## 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 IP settings.
   For details, see Configuring Connection Settings.

3. Configure port settings.
   For details, see Configuring Port Settings.

4. Add and configure various network settings.
   For details, see Network Management.

# 3. Client Device Management

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

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

## Scanning for Connected Devices

1. Go to **Devices** > **MAC History** .

2. Click **Scan**.

QSS scans for connected devices.

## Sending a WoL Packet to a Device

1. Go to **Devices** > **MAC History** .

2. Identify a previously connected device.

3. Click ⏻.
   The **Send WoL Command** window opens.

4. Select a WoL configuration.

| Configuration | Description |
|---|---|
| **Wake now** | Sends a WoL command to the device immediately. |
| **Wake later** | Sends a WoL command to the device on a scheduled date.<br><br>a. Click the date.<br>A dialog box opens.<br><br>b. Select a date.<br>The dialog box closes.<br><br>c. Click the time.<br>The time picker drop-down menu opens.<br><br>d. Select a time. |

5. Click **Apply**.

QSS sends a WoL command to the device.

## Deleting a MAC Address

1. Go to **Devices** > **MAC History** .

2. Identify a previously connected device.

3. Click 🗑.
   A dialog box opens.

**4.** Click **Delete**.

QSS deletes the MAC address.

## Clearing the MAC Address History

**1.** Go to **Devices** > **MAC History** .

**2.** Click **Clear**.
A dialog box opens.

**3.** Click **Clear**.

QSS clears the MAC address history.

# 4. Network Management

This section describes how to use the QSS network settings to configure the switch. 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).

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

## Configuring Port Settings

1. Go to **Configuration** > **Ports** > **Port Configuration** .

2. Identify a port.

3. Configure the settings.

| Setting | Description |
|---|---|
| **State** | Controls the status of the port |
| **Speed** | Controls the maximum speed that the port can use |
| **Flow Control** | Controls the status of flow control on the port<br><br>• When the port speed is set to auto, the maximum speed is advertised to the link partner.<br><br>• When the port speed is fixed, Flow Control automatically matches that speed.<br><br>🛑 **Important**<br>Flow Control cannot be enabled when the port speed is set to 100Mbps FDX. |
| **Maximum Frame Size** | Controls the maximum frame size allowed for the port |

4. Click **Apply**.

QSS saves the settings.

## Managing PoE Settings

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

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

## Configuring PoE Settings

1. Go to **Configuration** > **PoE** > **Power Configuration** .

💡 **Tip**
You can monitor the maximum PoE supply that is available for each PoE port.

2. Identify a port.

3. Configure the settings.

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

4. Click **Apply**.

QSS saves the settings.

## Configuring a PoE Schedule

1. Go to **Configuration** > **PoE** > **PoE Schedule** .

2. Identify a port.

3. Click ⬭
   Scheduling is enabled for the port.

4. Configure the schedule.

   a. Click ✎.
      The **PoE Schedule Configuration** window opens.

   b. Optional: Select additional ports.
      Selected ports will also be included in the schedule.

   c. Select port operating hours.

   d. Optional: Select **Activate schedule now**.

5. Click **Save**.
   The **PoE Schedule Configuration** window closes.

6. Click **Apply**.

QSS saves the schedule.

## Managing VLAN Groups

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

## Adding a VLAN

1. Go to **Configuration** > **VLAN** .

2. Click **Add**.
   The **Add VLAN** window opens.

3. Specify a VLAN ID.

4. Select ports to include in the VLAN.
   Only tagged ports can belong to multiple VLANs.

5. Click **Save**.
   The **Add VLAN** window closes.

6. Click **Apply**.

QSS saves the settings.

## Editing a VLAN

1. Go to **Configuration** > **VLAN** .

2. Identify a VLAN.

3. Click .
   The **Edit VLAN** window opens.

4. Select ports to include in the VLAN.

5. Click **Save**.
   The **Edit VLAN** window closes.

6. Click **Apply**.

QSS saves the settings.

## Managing Link Aggregation Groups

Link Aggregation Control Protocol (LACP) allows you to combine multiple network adapters into a single logical network interface. This ensures high port reliability and 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.

## Adding a Trunking Group Using LACP

1. Go to **Configuration** > **Link Aggregation** .

2. Click **Add**.
   The **Add Group** window opens.

3. Configure the group settings.

| Setting | User Action |
|---|---|
| **Group number** | Specify the group number between 1 and 10 |

| Setting | User Action |
|---|---|
| **Mode** | Select the link aggregation mode for the group.<br><br>• **LACP**: Provides automatic failover and dynamic configuration<br><br>• **Static**: Aggregates all configurations at once on the selected link aggregation ports<br><br>⚠ **Important**<br>Enable link aggregation before connecting cables to the switch to avoid creating a data loop. |
| **Port Configuration** | Specifies which ports are included in the group<br>A maximum of 4 ports may be included in a group. |

4. Click **Save**.

QSS creates the group.

## Editing a Trunking Group

1. Go to **Configuration** > **Link Aggregation** .

2. Identify a group.

3. Click 🖊.
   The **Edit Group** window opens.

4. Click **Save**.

QSS updates the group settings.

## Managing Port Traffic

The **Traffic** section of QSS provides port traffic configuration options.

The **MAC Address Table** page gives access to unicast traffic configuration options by directing traffic to specific ports on the VLAN ID and the destination MAC address of the frame of the sending network device.

**Rate Limits** supports configuring incoming and outgoing rate-limiting options for all traffic on a port and provides bandwidth usage limitation options. When a limit enabled on a switch port, excess traffic above the configured setting is discarded by QSS.

## Adding a Static MAC Address

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

1. Go to **Configuration** > **Traffic** .

2. Specify the aging time for the MAC table.

💬 **Note**
You can configure the amount of time that an entry remains in the MAC 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 at least one port.

5. Click **Save**.
   The **Add Static MAC Address** window closes.

QSS adds the MAC address.

## Configuring Rate Limiting

1. Go to **Configuration** > **Traffic** > **Rate Limits** .

2. Identify a port.

3. Click .
   The **Configure Rate Limiting** window opens.

4. Configure the rate limits.

    **a.** Optional: Select additional ports.
   Rate limits will also apply to the additional ports.

    **b.** Specify the ingress rate.

    **c.** Specify the egress rate.

5. Click **Save**.

QSS saves the rate limits.

## Adding an Access Control List Entry

An Access Control List (ACL) controls access to specific network objects by limiting which IP address or MAC address can connect.

The **Security** page displays information about existing IP addressed-based ACL entries and provides access to configuration options.

1. Go to **Configuration** > **Security** .

2. Click **Add**.
   The **Add ACL - IP address** window opens.

3. Configure the ACL entry settings.

| Setting | User Action |
|---|---|
| **No.** | Specify the number of the ACL entry<br>This value must be from 1 to 250 |
| **Protocol** | Select the type of traffic affected by the ACL entry<br><br>  • **TCP**<br><br>  • **UDP** |
| Source | |

| Setting | User Action |
|---|---|
| **IP address** | Specify the IP address of an incoming connection |
| **Subnet mask** | Specify the subnet mask used by an incoming connection |
| **Port** | Specify the port number used by an incoming connection |
| Destination | |
| **IP address** | Specify the IP address being accessed by a source connection |
| **Subnet mask** | Specify the subnet mask being accessed by a source connection <br><br> **⚠ Important** <br> 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. |
| **Port** | Specify the port number being accessed by a source connection |
| **Permission** | Specify the type of permission type used for this ACL entry <br><br> • **Allow**: Allows access for the configured IP addresses <br><br> • **Deny**: Restricts access for the configured IP addresses |

> **⚠ Important**
> If the source or destination are left blank, the permission setting is applied to all connections.

4. Click **Save**.

QSS adds the ACL entry.

## Configuring IGMP Snooping

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

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

1. Go to **Configuration** > **IGMP Snooping** .

2. Click ⬭ .
   QSS enables IGMP Snooping.

3. Configure the IGMP settings.

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

4. Click **Apply**.

QSS saves the settings.

## Configuring QoS Settings

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

1. Go to **Configuration** > **QoS** .

2. Click ⬭ .

3. Select the QoS mode.

| Mode | Description |
| --- | --- |
| **Port-based** | Prioritizes traffic for each port |
| **VLAN-based** | Prioritizes traffic for each VLAN |

4. Configure the priority.
   Larger numbers are given greater priority.

5. Click **Apply**.

QSS saves the settings.

## Configuring Port Mirroring

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

1. Go to **Configuration** > **Port Mirroring** .

2. Click ⬭ .

3. Select the mirror type.

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

4. Select source ports.
   You can select multiple source ports at the same time.

5. Select a destination port.

6. Click **Apply**.

QSS saves the settings.

## Controlling the LLDP Status

The Link Layer Discovery Protocol (LLDP) uses periodic broadcasts to advertise device information over the network and discover neighboring devices. LLDP is a layer 2 protocol that allows systems using different network layer protocols to exchange information about each other.

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

1. Go to **Configuration** > **LLDP** .

2. Change the LLDP control status.

| Toggle Setting | Description |
|---|---|
| ⬜ | Enables the LLDP function |
| 🟢 | Disables the LLDP function |

3. Click **Apply**.

QSS saves the setting.

## Configuring Loop Protection

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

1. Go to **Configuration** > **Loop Protection** .

2. Click ⬜ .

3. Configure the settings.

| Setting | Description |
|---|---|
| **Transmission time** | Controls the time between transmitted loop protection packets<br>The value must be from 1 to 10 seconds. |
| **Shutdown time** | Controls how long to disable a port after detecting a loop<br>The value must be from 0 to 604800 seconds. |

4. Click **Apply**.

QSS saves the settings.

## Deleting a Network Setting

1. Go to **Configuration**.

2. Identify a network setting.

   > **Note**
   > Deleting network settings is applicable only to ACL rules, link aggregation, static MAC addresses, and VLANs.

3. Click 🗑 .
   A confirmation message appears.

4. Click **Delete**.

QSS deletes the network setting.

## Monitoring Network Settings

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

| Setting | User Action |
|---|---|
| **IGMP Snooping Statistics** | Go to **IGMP Snooping** > **IGMP Snooping Statistics** .<br>Displays statistical information about detected IGMP groups. |
| **LLP Remote Devices** | Go to **LLDP** > **LLDP Remote Devices** .<br>Displays the information of the LLDP-enabled port including system capabilities (bridge or router) and remote management IP address. |
| **Port Status** | Go to **Ports** > **Port Status** to view the following port status information:<br><br>• Port number<br><br>• Port link status<br><br>• Port state<br><br>• Port speed<br><br>• Flow control |
| **Port Statistics** | 1. Go to **Ports** > **Port Statistics** to view the statistics of the 2.5 GbE and 10 GbE ports.<br><br>2. Click [icon] to change the viewing option to list view.<br><br>3. Identify a port.<br><br>4. Click [icon] .<br>QSS displays a detailed list of port statistics. |
| **Power Consumption** | 1. Go to **PoE**.<br>The **Power Consumption** page opens.<br><br>2. Select the port.<br>The current power consumption of the port is displayed. |

# 5. System Management

The QSS **System Management** section provides device configuration and firmware update configuration options.

## System Settings

This screen contains system configuration options such as system information, IP information, password settings, time settings, and backup and restore settings for the switch.

## Changing the Switch Name

1. Go to **System Management** > **System Information** .

2. Click .

3. Specify the device name.
   Specify a device name containing 1 to 14 characters.
   Requirements:

   • Valid characters: A–Z, a–z, 0–9

   • Valid special characters: Hyphen (-)

4. Click  to confirm the device name.

QSS updates the switch name.

## Configuring Connection Settings

1. Go to **System Management** > **Settings** > **IP** .

2. Configure the connection settings.

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

3. Click **Apply**.

QSS updates the connection settings.

## Updating the Switch Password

1. Go to **System Management** > **Settings** > **Password** .

2. Specify a new password.

**Tip**
Click 👁 to make the password visible.

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

3.  Click **Apply**.

QSS updates the password.

## Configuring Time Settings

> **Note**
> You must configure the system time correctly to avoid the following issues.
>
> - When using a web browser to connect to the device or save a file, the displayed time of the action is incorrect.
>
> - Event logs do not reflect the exact time that events occurred.
>
> - Scheduled tasks run at the wrong time.

1.  Go to **System Management** > **Settings** > **Time** .

2.  Select a time zone.

3.  Specify the date and time format.

4.  Select the time setting.

| Option | User Action |
|---|---|
| **Date & time format** | Specify a date and time format. |
| **Time configuration** | Specify a method to synchronize the time.<br><br>• **Manual configuration**: Specify the date and time<br><br>• **Synchronize with Internet time server**: Sync the switch with the specified Internet time server<br><br>    • **Server**: Name of the Network Time Protocol (NTP) server Examples: time.nist.gov, time.windows.com<br><br>    • **Time zone**: Specify the time zone |

5.  Click **Apply**.

QSS updates the time settings.

## Managing Logs

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

1.  Go to **System Management** > **Logs** .

2.  Perform any of the following tasks.

| Task | User Action |
|---|---|
| Search log files | **a.** Locate the **Search** field. <br><br> **b.** Enter search terms. |
| Delete log files | **a.** Click **Clear**. <br> The **Clear Logs** window opens. <br><br> **b.** Click **Clear**. |

QSS performs the specified task.

## Resetting the Switch to Factory Settings

Reset to the factory defined default settings from the settings menu, or by pressing and holding the physical reset button for 10 seconds.

1. Go to **System Management** > **Settings** > **Factory Reset** .

2. Click **Factory Reset**.
   A confirmation message appears.

3. Click **Yes**.

QSS resets the switch.

## Restarting the Switch

1.
   Click  located on the upper-right corner of the page.

2. Click **Restart Switch**.
   QSS restarts the switch.

3. Click **Yes**.

QSS restarts the switch.

## Viewing the Switch Information

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

The screen provides the following information.

| Information | Description |
|---|---|
| Switch CPU | Displays the switch CPU information along with the supported software |
| PoE controller | Displays the PoE controller integrated into the switch |
| Switch CPU temperature | Displays the real time temperature of the CPU |
| System temperature | Displays the overall real time temperature of the switch |
| PoE controller temperature | Displays the real time temperature of the PoE controller |
| System fan | Displays the fan speed (in RPM) of the installed fans |

# 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 firmware using one of the following methods:

| Update Method | Description |
|---|---|
| Using **Live Update** | Firmware updates are automatically detected by QSS and installed onto your device.<br>For details, see Checking for Live Updates. |
| Using **Firmware Update** | You can check for latest device firmware updates on the QNAP website, download the firmware update to a computer, and manually install the firmware update onto your device.<br>For details, see Updating the Firmware Manually. |

# Firmware Requirements

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

| Settings | Requirements |
|---|---|
| Hardware settings | • A computer<br>Ethernet cables<br><br>**Note**<br>QNAP recommends updating the firmware using wired Ethernet connections to ensure your network connection is reliable during firmware updates. |
| Administrator privileges | You must be a switch administrator or have admin privileges to update the firmware. |
| Stop switch operations | QNAP recommends stopping all other switch operations before the firmware update. The switch must be restarted for the firmware update to take effect and may disrupt ongoing switch services or operations. |
| Device model name | Ensure you have the correct switch model name. You can find the switch model name using the following methods:<br><br>• Locate the model name on a sticker on the bottom or rear of your device.<br><br>• Log on to your device to find the model name. |
| Firmware version | If you are updating the firmware using **Firmware Update**, ensure the selected firmware version is correct for your device model. |

# Checking for Live Updates

**Warning**
Do not power off your device during the firmware update process.

**Important**

• Make sure you review through the Firmware Requirements before updating the firmware.

> • The update may require several minutes or longer, depending on your hardware configuration and network connection.

1. Go to **System Management** > **Firmware Update** > **Live Update** .

2. Click **Check for Update**.
   QSS checks for available firmware updates. You can choose to update QSS if there is an available update.

3. Click **Update System**.
   A confirmation message appears.

4. Click **Update**.

QSS updates the firmware.

## Updating the Firmware Manually

> **Warning**
> Do not power off your device during the firmware update process.

> **Important**
>
> • Make sure you review through the Firmware 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. Go to **System Management** > **Firmware Update** > **Firmware Update** .

10. Click **Browse** and then select the extracted firmware image file.

11. Click **Update System**.
    A confirmation message window appears.

12. Click **Update**.

The device restarts immediately.