

# 16/24-PORT GIGABIT ETHERNET RACKMOUNT MANAGED SWITCH USER MANUAL

MODEL 523547/523554



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## FCC STATEMENTS

### FCC Warning

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.

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 and 2) This device must accept any interference received, including interference that may cause undesired operation.

### CE Mark Warning

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A for ITE, the essential protection requirement of Council Directive 89/336/EEC on the approximation of the laws of the member states relating to electromagnetic compatibility.

# 1. INTRODUCTION

Thank you for purchasing this INTELLINET NETWORK SOLUTIONS™ Gigabit Ethernet Rackmount Managed Switch, Model 523547 (16-port) or Model 523554 (24-port). With its 10/100/1000 Mbps gigabit ports and user-friendly Web-based management interface, this switch boosts networking throughput to provide a real gigabit connection that makes it possible to transfer large, high-bandwidth files with greater speed, efficiency and reliability.

Refer to this user manual for complete setup and operation instructions, and enjoy the benefits of these additional features:

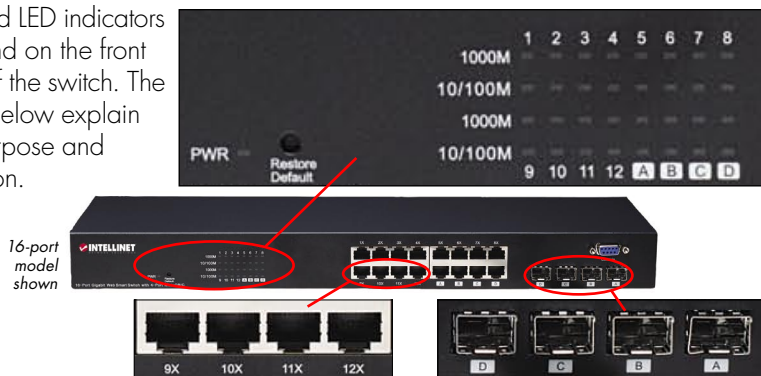
- 10/100/1000 auto-sensing ports automatically detect optimal network speeds
- 4 SFP mini-GBIC transceiver module slots (use of an SFP port automatically disables the connection of its corresponding copper port)
- All RJ-45 ports with Auto-MDIX (auto uplink) support
- Supports NWay Auto-Negotiation
- Store and forward switching architecture
- Full/half duplex operation
- IEEE 802.3x flow control for full duplex
- Zero packet loss back-pressure flow control for half duplex
- Non-blocking wire-speed forwarding and filtering
- Supports port controls (speed, flow control and maximum frame size)
- Broadcast storm control with multicast packet rate settings
- Supports VLAN (16-port version: 16 groups; 24-port version: 24 groups) and trunking (16-port version: 8 groups; 24-port version: 12 groups)
- Supports Quality of Service (QoS) with 2 priority levels
- Supports port mirroring
- Supports jumbo frames up to 9 kBytes
- Packet filtering/forwarding rates: 1,488,000 pps (1000 Mbps), 148,800 pps (100 Mbps), 14,880 pps (10 Mbps)
- Rugged metal housing for maximum durability
- Supports up to 8192 MAC address entries
- 340 kBytes buffer memory, 16-port version; 500 kBytes buffer memory, 24-port version
- Supports SNMP management
- Configuration via Web browser or RS-232 console port
- Includes 19" rackmount brackets
- Lifetime Warranty

## Package Contents

- Gigabit Ethernet Rackmount Managed Switch
- Power cable
- User manual

## FRONT PANEL

Ports and LED indicators are found on the front panel of the switch. The tables below explain their purpose and operation.



### LEDs

System LED	Status	Operation
PWR	Steady green	Power on
	Off	Power off
Port LEDs	Status	Operation
1000M	Steady green	Valid port connection at 1000 Mbps
	Blinking green	Valid port connection; data being transmitted/received
	Off	No valid link or connected at 10/100 Mbps
10/100M	Steady green	Valid port connection at 10/100 Mbps
	Blinking green	Valid port connection; data being transmitted/received
	Off	No valid link or connected at 1000 Mbps

**NOTE:** The four mini-GBIC slots (A, B, C and D) share LED indicators with the last four RJ-45 (copper) ports (i.e., ports 13–16 on the 16-port model and ports 21–24 on the 24-port model).

### Ports

The auto-negotiation feature allows ports to operate in one of the following modes:

Media	Speed	Duplex Mode
10/100/1000 Mbps copper	10 Mbps	Half/Full Duplex
	100 Mbps	Half/Full Duplex
	1000 Mbps	Full Duplex
1000 Mbps (fiber – mini-GBIC required)	1000 Mbps	Full Duplex

**NOTE:** For the last four (highest numbered) ports, when both the fiber (mini-GBIC) and copper (RJ-45) interfaces are connected, the switch automatically disables the copper port and activates the fiber interface.

## Restore Default Button

Use this button to reset the switch or restore factory default settings. To reset, press the button once. To restore factory default settings, press and hold the button for three seconds.

## REAR PANEL

### Power Receptacle

Plug the female end of the power cord firmly into the receptacle and the other end into an electrical outlet. Confirm that the power LED is lit for a normal power status.

# 2. INSTALLATION

## DEVICE INSTALLATION

The Gigabit Ethernet Rackmount Managed Switch can be placed directly on your desktop or mounted in a rack. Rackmounting facilitates orderly installation when you are going to install a series of networking devices.

Prior to use, it is recommended that the device be placed/positioned:

- with a minimum of 25 mm of clearance on the top and sides for adequate ventilation
- away from sources of electrical noise, such as radios, transmitters and broadband amplifiers
- where it cannot be affected by excessive moisture

### Desktop

1. Attach the included rubber feet to the bottom of the device to keep it from slipping. The recommended positions are marked on the switch.
2. Place the device on a level surface that can support the weight of the switch (and any other items that need to be considered).

### Rackmount

1. Disconnect any cables from the switch before proceeding with rackmounting.
2. Place the device on a hard, flat surface with the front facing you.
3. Position one of the two included mounting brackets over the mounting holes on one side of the unit.
4. Insert the screws and fully tighten them with a suitable screwdriver.
5. Repeat the two previous steps for the other side of the device.
6. Insert the switch into the rack (secure with suitable screws, if desired); reconnect cables as needed.

## NETWORK CABLE INSTALLATION

### Crossover/Straight-Through Cable

All the ports on the Gigabit Ethernet Rackmount Managed Switch support Auto-MDI/MDI-X functionality, so both crossover and straight-through cables can be used to connect to PCs, routers, additional switches and other devices.

### Cat3/4/5/5e UTP/STP Cable

Cat3/4/5/5e UTP/STP cables provide optimal performance when the proper cable is matched to the required transmit/receive speed, as indicated below.

Media	Speed	Recommended cable
10/100/1000 Mbps copper	10 Mbps	Cat3/4/5 UTP/STP
	100 Mbps	Cat5 UTP/STP
	1000 Mbps	Cat5/5e UTP/STP
1000 Mbps fiber (mini-GBIC required)	1000 Mbps	Cable type depends on the GBIC: Refer to the mini-GBIC instructions.

## 3. FUNCTIONS

### Jumbo Frames

With Jumbo Frames supported, the switch can transport data in fewer frames, which helps prevent overheads, shortens processing time and reduces the number of interruptions. **NOTE:** To enable Jumbo Frames, Flow Control should be enabled first.

### Flow Control and Back Pressure

Flow Control and Back Pressure both make it easier for lower-speed and higher-speed devices to communicate with each other, ensuring that data transmissions are correct. The 802.3x Flow Control and Back Pressure mechanisms work for full and half duplex modes, respectively. Flow Control can be enabled or disabled on a per-port basis.

### Mirror

The Mirror function lets a network administrator monitor traffic by forwarding a copy of the packets transferred by the monitored port to a "sniffer" port.

### VLAN

With VLAN support, the network can be segmented into groups to reduce collisions caused by heavy traffic among multiple devices. The switch supports both port-based and 802.1Q tag-based VLAN. Port-based VLAN classifies

incoming packets to VLANs according to their ingress port. The 802.1Q-based VLAN adds a tag to the header of the packet to classify the VLANs.

## Trunk (Aggregation)

The Trunk function integrates several ports to enlarge the bandwidth, which helps boost the backbone connectivity. The switch allows a maximum of eight (16-port) or twelve (24-port) groups, with eight members for each group.

## Quality of Service (QoS)

QoS classifies packets based on precedence, which means the packets are transmitted and received by their priorities. This helps high-bandwidth-demanded applications such as VoIP to get an unobstructed connection.

## Simple Network Management Protocol (SNMP)

This device is SNMP-supported, allowing it to be monitored or inspected by an SNMP management station.

# 4. SWITCH MANAGEMENT

Advanced management options can be accessed through a Telnet session/Internet browser over the network (in-band) or through a console port.

## MANAGING THROUGH A WEB BROWSER

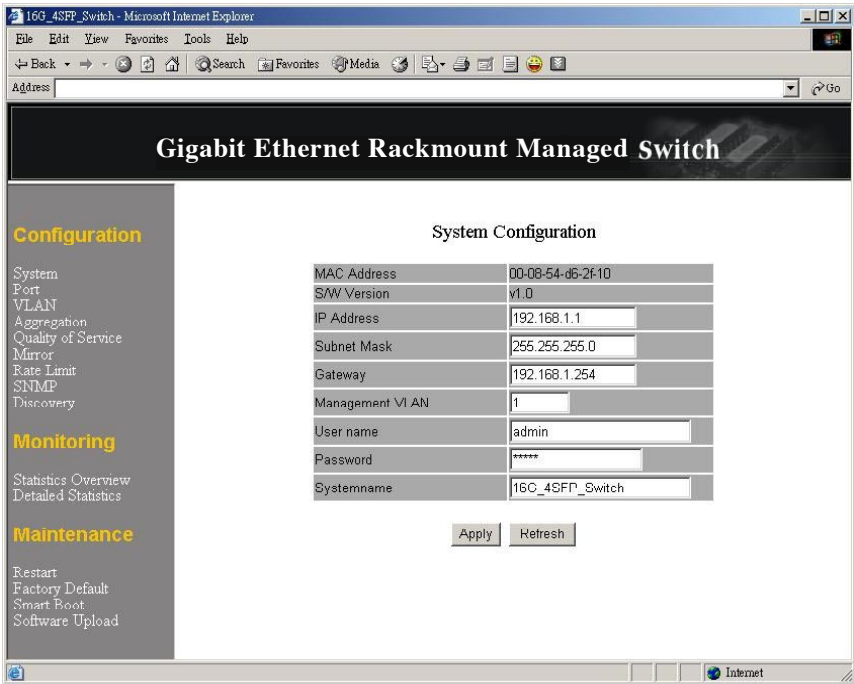
### Authentication

To access the Web-based management interface, configure the management station with an IP address and subnet mask compatible to the switch, which has the following factory default settings:

IP address: 192.168.1.1  
Subnet mask: 255.255.255.0  
Default gateway: 192.168.1.254

1. Activate your Web browser and enter the above IP address in the Address field.
2. Key in the username and password to authenticate. The factory default value for both username and password is "admin." Click "Apply."

After authentication, the System Configuration page (shown on next page) displays as the homepage. The complete Configuration menu — plus Monitoring and Maintenance links — appears on the left side of each page for access to all management functions.



## System Configuration

The System Configuration window presents the switch information and allows the configuration of the switch properties.

**MAC Address:** The MAC address of this device.

**S/W Version:** The software version of this device.

**IP Address:** Set up the IP address of the switch.

**Subnet Mask:** Set up the subnet mask of the switch.

**Gateway:** Set up the gateway of the switch.

**Management VLAN:** The VLAN group that is allowed to access the WEB-based management interface.

**Username:** The login name. (default: "admin")

**Password:** The login password. (default: "admin")

**System Name:** The name of the device.

To save the configuration of the system, click "Apply." **NOTE:** After applying a new IP address, a new login page will be started automatically. Login again to proceed to other configurations.



## Port Configuration\*

Port	Link	Mode	Flow Control	MaxFrame
1	Down	Auto Speed ▾	<input type="checkbox"/>	1518
2	Down	Auto Speed ▾	<input type="checkbox"/>	1518
3	Down	Auto Speed ▾	<input type="checkbox"/>	1518
4	Down	Auto Speed ▾	<input type="checkbox"/>	1518
5	Down	Auto Speed ▾	<input type="checkbox"/>	1518
6	Down	Auto Speed ▾	<input type="checkbox"/>	1518
7	Down	Auto Speed ▾	<input type="checkbox"/>	1518
8	100FDX	Auto Speed ▾	<input type="checkbox"/>	1518
9	Down	Auto Speed ▾	<input type="checkbox"/>	1518
10	Down	Auto Speed ▾	<input type="checkbox"/>	1518
11	Down	Auto Speed ▾	<input type="checkbox"/>	1518
12	Down	Auto Speed ▾	<input type="checkbox"/>	1518
13	Down	Auto Speed ▾	<input type="checkbox"/>	1518
14	Down	Auto Speed ▾	<input type="checkbox"/>	1518
15	Down	Auto Speed ▾	<input type="checkbox"/>	1518
16	Down	Auto Speed ▾	<input type="checkbox"/>	1518

Apply

Refresh

### Port Configuration

The Port Configuration page shows the link status of each port and allows the configuration of speed, flow control and maximum frame size for each port.

**Link:** Shows the link status of each port. The column lights green with the link speed while there is a valid connection to this port.

**Mode:** Select a speed for each port. "Auto Speed" enables auto-negotiation; "Disable" stops the port from functioning.

**Flow Control:** Check the boxes to enable FDX flow control; uncheck to disable.

**Max Frame:** Adjust the size of jumbo frames. The set length is 1518 bytes; the maximum value can be up to 9216 bytes.

\* 16-port images are used throughout this user manual. 24-port images show identical information.

To save the port configuration, click "Apply." You can also click the "Refresh" button to see the current status of each port.

## VLAN Configuration

VLAN divides the network members into groups to reduce packet collisions and improve network efficiency. The switch supports 802.1Q tag-based VLAN.

To add new VLAN groups:

1. Fill in a VLAN ID from 2 to 4094 in the "VLAN\Port" column.
2. Select the ports for each of the VLAN groups.
3. Click "Apply."

To delete a VLAN group:

1. Clear the members of the selected VLAN group by clicking those ports with checked boxes.
2. Clear the VLAN ID of the VLAN you want to remove in the "VLAN\Port" column.

Port Segmentation (VLAN) Configuration																
VLAN\Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													

**PVID:** When the VLAN-enabled switch receives a tagged packet, the packet will be sent to the port's default VLAN according to the PVID (port VLAN ID) of the receiving port. (See below.)

**Port:** Ports 1–16 or 1–24.

**Egress:** Select “tagged” in the drop-down menu to enable PVID checking and tag inserting of one port; select “untagged” to cancel. For example, if an Egress-tagged port receives an untagged frame, it will be transmitted as a PVID-tagged frame. For detailed tagging status, refer to the following table:

Untagged		Tagged	
Packet Frames In	Packet Frames Out	Packet Frames In	Packet Frames Out
Untagged	Untagged	Untagged	Tagged (PVID)
Tagged	Untagged	Tagged (VID)	Tagged (VID)
Pre-tagged	Untagged	Pre-tagged	Tagged (PVID)

PVID Configuration			
Port	Egress	PVID	Only tagged
1	Untagged	1	Disable
2	Untagged	1	Disable
3	Untagged	1	Disable
4	Untagged	1	Disable
5	Untagged	1	Disable
6	Untagged	1	Disable
7	Untagged	1	Disable
8	Untagged	1	Disable
9	Untagged	1	Disable
10	Untagged	1	Disable
11	Untagged	1	Disable
12	Untagged	1	Disable
13	Untagged	1	Disable
14	Untagged	1	Disable
15	Untagged	1	Disable
16	Untagged	1	Disable

**PVID:** Port VLAN ID (1–4094).

**Only tagged:** “Enable” blocks all un-tagged packets from accessing this port; “Disable” allows all packets to access this port.

## Aggregation/Trunk Configuration

To set up port trunk groups, click in the ports' number columns on the desired Aggregation Group row (1–8) per the configuration grid below. Click "Apply" to save each setting.

There are three aggregation modes to set up: SMAC, DMAC and XOR. SMAC mode selects the path of packets according to source MAC. DMAC mode selects paths according to destination MAC. XOR mode calculates the result of DMAC and SMAC modes to determine the path of packets.

Aggregation/Trunking Configuration																
Mode	xor ▼															
Group\Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Normal	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Group 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group 8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Quality of Service Configuration

QoS enhances communication quality by assigning precedence to classified packets. This switch has port-based, tag-based and DSCP QoS modes:

**QoS Configuration**

Port	Mode
1	Port
2	Port
3	Port
4	Port
5	Port
6	Port
7	Port
8	Port
9	Port
10	Port
11	Port
12	Port
13	Port
14	Port
15	Port
16	Port

**Port priority setting**

1	Low
2	Low
3	Low
4	Low
5	Low
6	Low
7	Low
8	Low
9	Low
10	Low
11	Low
12	Low
13	Low
14	Low
15	Low
16	Low

**Port-based mode:** Allows users to configure certain ports as high or low priority. To assign a priority level for each port:

1. Select "Port" in the Mode column for those ports that are going to perform port-based QoS. Click "Apply."
2. Click "Port priority" to display the Port Priority Setting page.
3. Click on the drop-down menu to specify priority levels.
4. Click "Apply" to execute.

**Tag-based mode:** Decides packet priority based on the tags added to the packets.

For tag-based configuration:

1. Select "Tagged" in the Mode column for those ports that are going to perform tag-based QoS. Click "Apply."

**Tag priority setting**

Port	Bit 0	Bit 1	Bit 2	Priority
Port1	0	0	0	Low
	0	0	1	Low
	0	1	0	Low
	0	1	1	Low
	1	0	0	Low
	1	0	1	Low
	1	1	0	Low
	1	1	1	Low

2. Click "Tag priority" to display the Tag Priority Setting page.
3. From the drop-down menu, select the port you are going to configure.
4. Select "high" or "low" for each Priority Tag setting.
5. Click "Apply" again to execute the configuration.

**DSCP mode:** Assigns packet priority based on the types of incoming packets (shown below), as distinguished by delay, throughput and reliability information attached to the packet.

**NOTE:** The switch distinguishes packets with DSCP precedence "000(routine)" only.

Bit 0 (Delay)	Bit 1 (Throughput)	Bit 2 (Reliability)
0 (Normal)	0 (Normal)	0 (Normal)
1 (Low)	1 (High)	1 (High)

For DSCP-based configuration:

1. Select "DSCP" in the Mode column for those ports that are going to perform DSCP-based QoS. Click "Apply."
2. Click "DSCP priority" to display the DSCP Priority Setting page.
3. Assign priorities as "high" or "low" for each precedence type.
4. Click "Apply" again to execute the configuration.

DSCP priority setting			
Bit 0	Bit 1	Bit 2	Priority
0	0	0	Low
0	0	1	Low
0	1	0	Low
0	1	1	Low
1	0	0	Low
1	0	1	Low
1	1	0	Low
1	1	1	Low

## Mirror Configuration

The Mirror function copies all the packets that are transmitted by the source port to the destination port, allowing administrators to analyze and monitor the traffic of the monitored ports.

Mirror Configuration							
Sniffer port							
port1							
Monitor port							
<input type="checkbox"/> port1	<input type="checkbox"/> port2	<input type="checkbox"/> port3	<input type="checkbox"/> port4	<input type="checkbox"/> port5	<input type="checkbox"/> port6	<input type="checkbox"/> port7	<input type="checkbox"/> port8
<input type="checkbox"/> port9	<input type="checkbox"/> port10	<input type="checkbox"/> port11	<input type="checkbox"/> port12	<input type="checkbox"/> port13	<input type="checkbox"/> port14	<input type="checkbox"/> port15	<input type="checkbox"/> port16
<input type="button" value="Apply"/> <input type="button" value="Refresh"/>							

For Mirror configuration:

1. Select the ports to be monitored by checking their Monitor Port boxes.
2. In the drop-down menu in the Sniffer Port section, select a port to serve as the administration port for monitoring the source ports.
3. Click "Apply" to activate.

## Rate Limit Configuration

Rate Limit manages the bandwidth for each port and presents the settings options for Storm Control, which limits the flow rates of broadcast and multicast transmission.

Storm Control	
Number of frames per second	
ICMP Rate	No Limit ▾
Broadcast Rate	No Limit ▾
Multicast Rate	No Limit ▾

To activate Storm Control:

1. Click on the drop-down menu to specify a speed for each frame type.
2. Click "Apply" to execute the configuration.

Rate Limit Configuration		
Port	Ingress	Egress
1	No Limit ▾	No Limit ▾
2	No Limit ▾	No Limit ▾
3	No Limit ▾	No Limit ▾
4	No Limit ▾	No Limit ▾
5	No Limit ▾	No Limit ▾
6	No Limit ▾	No Limit ▾
7	No Limit ▾	No Limit ▾
8	No Limit ▾	No Limit ▾
9	No Limit ▾	No Limit ▾
10	No Limit ▾	No Limit ▾
11	No Limit ▾	No Limit ▾
12	No Limit ▾	No Limit ▾
13	No Limit ▾	No Limit ▾
14	No Limit ▾	No Limit ▾
15	No Limit ▾	No Limit ▾
16	No Limit ▾	No Limit ▾

Apply Refresh

## SNMP Configuration

The Gigabit Ethernet Rackmount Managed Switch supports SNMP management, which allows network administrators to monitor and configure this device with SNMP software.

To enable SNMP management of the switch:

1. Select "Enable" on the drop-down menu.
2. Specify a trap IP. (A trap IP is the destination port for sending trap information, which is usually the IP address of network administrators.)
3. Enter a name in the Community Get field. This will be the password for accessing the management information base (MIB) with read-only authority.
4. Enter a name in the Community Set field. This will be the password for accessing the MIB with both read and write authority.

SNMP Configuration	
Mode	Enable ▾
Trap IP	0.0.0.0
Community Get	public
Community Set	private

Apply Refresh

## Discovery

If installing a series of switches, the Discovery management tool helps in searching for and accessing switches within the LAN.

**NOTE:** Discovery features a list of the 16 devices (maximum) for auto and manual modes.

To initiate Auto Search:

1. Click "Apply" to list the found devices.
2. Click the IP address hyperlink to access the device.

**Discovery**

**Auto Search**

---

**Manual Add**

IP Address:  Name:

To use Manual Add:

1. Enter the IP address and name in the text fields.
2. Click "Add" to add the new IP address in the table.

To use Manual Delete:

1. Check the box of the device to be removed.
2. Click "Delete."

## Statistics Overview

The Statistics Overview page is provided in order to determine the *general* transmitting and receiving status of each port (vs. the *detailed* port status explained below).

Click "Clear" to clear all statistics; click "Refresh" to renew the statistics.

**Statistics Overview for all ports**

Port	Tx Bytes	Tx Frames	Rx Bytes	Rx Frames	Tx Errors	Rx Errors
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	311209	1285	26734096	212992	0	19
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0

## Detailed Statistics

The Detailed Statistics page is provided in order to determine the *detailed* transmitting and receiving status of each port.

**Statistics for Port 1**

[Port 1](#) [Port 2](#) [Port 3](#) [Port 4](#) [Port 5](#) [Port 6](#) [Port 7](#) [Port 8](#)  
[Port 9](#) [Port 10](#) [Port 11](#) [Port 12](#) [Port 13](#) [Port 14](#) [Port 15](#) [Port 16](#)

Receive Total		Transmit Total	
Rx Packets	0	Tx Packets	0
Rx Octets	0	Tx Octets	0
Rx Broad- and Multicast	0	Tx Broad- and Multicast	0
Rx Error Packets	0	Tx Error Packets	0

Click on any of the hyperlinks above to select a particular port. Click "Clear" to clear all statistics; click "Refresh" to renew the statistics.



## Restart

To restart the system, click "Yes." The system will restart and display the Authentication window. As before, enter the username and password to continue.



A dialog box titled "Restart" with a red background. It contains the text "Are you sure you want to perform a Restart?" followed by "Yes" and "No" buttons.

## Factory Default

To restore the factory default values, click "Yes."

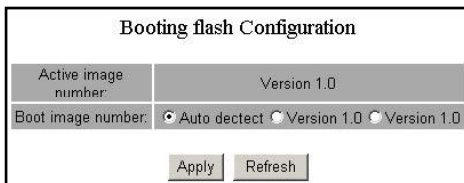
**NOTE:** The IP address of the switch will also be configured as a factory-default setting: 192.168.1.1.



A dialog box titled "Factory Default" with a red background. It contains the text "Are you sure you want to perform a Factory Default?" followed by "Yes" and "No" buttons.

## Booting Flash Configuration (Smart Boot)

The Smart Boot page presents the switch's booting flash configuration option. "Active image number" shows the current flash for booting the device. To change the booting flash, click on the flash version in the "Boot image number" row and click "Apply."



A screenshot of the "Booting flash Configuration" page. It features a table with two rows: "Active image number" (Version 1.0) and "Boot image number" (Auto detect, Version 1.0, Version 1.0). Below the table are "Apply" and "Refresh" buttons.

Booting flash Configuration	
Active image number	Version 1.0
Boot image number:	<input checked="" type="radio"/> Auto detect <input type="radio"/> Version 1.0 <input type="radio"/> Version 1.0

Apply Refresh

## Software Upload

The Software Upload page presents the option to upgrade firmware for the switch.

To perform a firmware upgrade:

1. Click "Browse."
2. Locate the firmware file.
3. Click "Upload."



A screenshot of the "Software upload" page. It features a "Browse..." button next to a text input field and an "Upload" button below it.

**NOTE:** New firmware is going to be applied on the flash that was not selected in Smart Boot; that is, the new firmware is going to be applied on the flash that is *not* designated as the booting flash. Ensure that the switch is booted with the correct flash before performing a firmware upgrade of any kind.

## MANAGING WITH COMMAND LINE INTERFACE

### Startup and Terminal Configuration

To start up the command line interface, connect a PC COM port to the RS-232 connector and activate terminal emulation software such as Windows HyperTerminal.

Terminal emulation software should be started with the following configuration:

**Data rate:** 115200 baud

**Data format:** 8 data bits, 1 stop bit and no parity

**Flow control:** none

Click on the property icon and select settings. Confirm the settings below.

“The Function, arrow, and ctrl keys act as”: Terminal keys

“Emulation”: VT100

## Login/Logout Procedures

To access the command line interface (CLI), enter a username and password for login. The default username and password are “admin”/“admin.”

**NOTE:** A new username and password is recommended to prevent unauthorized users from accessing the device.

## Command Hierarchy

After logging in, press “?” and “Enter” to display the command groups.

**System:** System commands

**Console:** Console commands

**Port:** Port commands

**VLAN:** VLAN commands

**Aggr:** Aggregation commands

**QoS:** QoS commands

**Mirror:** Mirror commands

**IP:** IP commands

**SNMP:** SNMP commands

**Ratelimit:** Rate setup commands

**Exit:** Logout commands

Press “?” or “help” to get help. The help depends on the context:

- At top level, a list of command groups will be shown.
- At group level, a list of the command syntaxes will be shown.
- If given after a command, the syntax and a description of the command will be shown.

## Entering Commands

To give any command, key in the command and press “Enter.”

As examples:

- Type “system” and press “Enter” to access the system command group.
- Type “configuration” and press “Enter” to perform a configuration.

```
System Configuration:
Systemname: 16G_4SFP_Switch
Username: admin
Password: admin
S/W Version: v1.0
MAC address: 00-08-54-d6-2f-10
```

Also, you can type “up” and press “Enter” to go back to an upper level.

## System Commands

### System Configuration [all]

Syntax: System Configuration [all]

Description: Show systemname, username, password, software version and management MAC address. Optionally show the full configuration.

[all]: Show the total switch configuration (default: system configuration only).

## System Restore Default [keepIP]

Description: Restore factory default configuration.

[keepIP]: Preserve IP configuration (default: not preserved).

## UserName [<name>]

Description: Set or show the username.

[<name>]: String of up to 16 characters (default: show username).

## System Password [<password>]

Description: Set or show the console password. The empty string ("") disables the password check.

[<password>]: Password string of up to 16 characters.

## System Systemname [<name>]

Description: Set or show the system name.

[<name>]: String of up to 16 characters (default: show systemname).

## System Reboot

Description: Reboot the switch.

## Console Commands

### Console Configuration

Description: Show configured console prompt and timeout.

### Console Timeout [<timeout>]

Description: Set or show the console inactivity timeout in seconds. The value zero disables timeout.

[<timeout>]: Timeout value: 0, 60-10,000 seconds.

### Console Prompt [<prompt\_string>]

Description: Set or show the console prompt string.

[<prompt\_string>]: Command prompt string of up to 10 characters.

## Port Commands

### Port Configuration [<portlist>]

Description: Show the configured and current speed, duplex mode, flow control mode and admin state for the port.

[<portlist>]: Port list (default: all ports).

### Port Mode [<portlist>] [<mode>]

Description: Set or show the speed and duplex mode for the port.

[<portlist>]: Port list (default: all ports).

[<mode>]: Port speed and duplex mode (default: show configured and current mode).

10hdx: 10 Mbps, half duplex.

10fdx: 10 Mbps, full duplex.

100hdx: 100 Mbps, half duplex.

100fdx: 100 Mbps, full duplex.

1000fdx: 1 Gbps, full duplex.

auto: Auto negotiation of speed and duplex.

### **Port Flow Control [<portlist>] [enable|disable]**

Description: Set or show flow control mode for the port.

[<portlist>]: Port list (default: all ports).

[enable|disable]: Enable/disable flow control (default: show flow control mode).

### **Port Admin [<portlist>] [enable|disable]**

Description: Set or show the admin state for the port.

[<portlist>]: Port list (default: all ports).

[enable|disable]: Enable or disable admin state (default: show admin state).

### **Port MaxFrame [<portlist>] [<framesize>|reset]**

Description: Set or show the maximum frame size in bytes (including FCS) for frames received on the port. Tagged frames are allowed to be 4 bytes longer than the maximum frame size. Use the reset option to return to default setting.

[<portlist>]: Port list (default: all ports).

[<framesize>|reset]: Maximum frame size [1518 – 9216] or reset to 1518 bytes (default: show maximum frame size).

**NOTE:** To make the maxframe larger than 1518, [Flow Control] should be enabled.

### **Port Statistics [<portlist>] [clear]**

Description: Show or clear statistics for the port.

[<portlist>]: Port list (default: all ports).

[clear] : Clear port statistics (default: show statistics).

## **VLAN Commands**

### **VLAN Configuration [<portlist>]**

Description: Show the VLAN egress mode, port VLAN ID and accepted frame type for the port and the permanently stored VLAN table.

[<portlist>]: Port list (default: all ports).

### **VLAN Add <vidlist> [<portlist>]**

Description: Add VLAN entry and include ports in the member set.

<vidlist>: VLAN ID list.

[<portlist>]: Port list (default: all ports).

### **VLAN Delete <vidlist>**

Description: Delete VLAN entry (all ports excluded from member set).

<vidlist>: VLAN ID list.

### **VLAN Lookup <vidlist>**

Description: Lookup VLAN entry and show port list.

<vidlist>: VLAN ID list.

## VLAN Egress [<portlist>] [untagged|tagged]

Description: Set or show the VLAN egress mode setting for the port. Egress untagged ports will strip the VLAN tag from received frames. Egress tagged ports will not strip the tag from received frames.

[<portlist>]: Port list (default: all ports).

[tagged|untagged]: (default: show egress tag setting).

## VLAN PVID [<portlist>] [<vid>|none]

Description: Set or show the port VLAN ID. Untagged frames received on the port will be classified to this VLAN ID. Frames classified to this VLAN ID will be sent untagged on the port.

[<portlist>]: Port list (default: all ports).

[<vid>|none]: Port VLAN ID, 1 – 4094 (default: show PVID). The “none” option can be used for trunk links.

## VLAN OnlyTag [<portlist>] [enable|disable]

Description: Set or show the onlytag setting of this port.

[<portlist>]: Port list (default: all ports).

[enable|disable]: Only accept tagged frame or not (default: show disable).

## Aggregation Commands

### Aggr Configuration

Description: Shows the aggregation groups and the aggregation mode.

### Aggr Delete <portlist>

Description: Delete link aggregation group.

<portlist>: Port list. Aggregations including any of the ports will be deleted.

### Aggr Lookup <portlist>

Description: Look up and display link aggregation group.

<portlist>: Port list. Aggregations including any of the ports will be shown.

### Aggr Mode [smac|dmac|xor]

Description: Set or show link aggregation traffic distribution mode.

[smac|dmac|xor]: Aggregation mode, SMAC, DMAC or XOR (default: show mode).

## QoS Commands

### QoS Configuration [<portlist>]

Description: Show the configured QoS mode and the priority setting of all ports.

[<portlist>]: Port list (default: all ports).

### QoS Mode [<portlist>] [tag|port|diffserv]

Description: Set or show the QoS mode for the port.

[<portlist>]: Port list (default: all ports).

[tag|port|diffserv]: Enable the class of service — tag, port or IP differentiated services — for the port (default: show mode).

## QoS Port [<portlist>] [<class>]

Description: Set or show the port class. In tag mode, the default class is used for untagged frames. In port mode, the default class is used as the port priority. In diffserv mode, the default class is used for non-IP frames.

[<portlist>]: Port list (default: all ports).

[<class>]: Internal class of service (default: show default class).

## QoS Tagprio [<portlist>] [<tagpriolist>] [<class>]

Description: Set or show the VLAN user priority mapping.

[<portlist>]: Port list (default: all ports).

[<tagpriolist>]: VLAN user priority list, 0 – 7 (default: all user priorities).

[<class>]: Internal class of service (default: show class).

## QoS DiffServ [<dscpno>] [<class>]

Description: Set or show the IP Differentiated Services mapping.

[<dscpno>]: IP DSCP number, 0 – 7.

[<class>]: range: low|normal|medium|high.

## Mirror Commands

### Mirror Configuration

Description: Show the mirror destination port and mirror mode for source ports.

### Mirror Port [<port>]

Description: Set or show the mirror destination port.

[<port>]: Mirror destination port (default: show mirror port).

### Mirror Source [<portlist>] [enable|disable]

Description: Set or show the source port mirror mode.

[<portlist>]: Source port list (default: all ports).

[enable|disable]: Enable/disable mirroring of frames received on port (default: show mirror mode).

## IP Commands

### IP Configuration

Description: Show IP-configured IP address, mask, gateway, VLAN ID and mode.

### IP Setup

Description: Setup or show IP configuration.

[<ipaddress>]: IP address (default: show IP configuration).

[<ipmask>]: IP subnet mask (default: subnet mask for address class).

[<ipgateway>]: Default IP gateway (default: 0.0.0.0).

[<vid>]: VLAN ID, 1 – 4094 (default: 1).

### IP Web management

Description: Activate or deactivate the Web management.

[enable|disable]: Enable/disable Web management. (default: show Web management).

## SNMP Commands

### SNMP Configuration

Description: Show the SNMP configuration.

### SNMP Community [**<get>**|**<set>**] [**<community>**]

Description: Set or show community setting for SNMP.

[**<get>**|**<set>**]: Community for get or set.

[**<community>**]: Community string.

### SNMP Setup [**enable**|**disable**]

Description: Activate or deactivate the SNMP.

[**enable**|**disable**]: Enable/disable SNMP (default: show SNMP mode).

### SNMP Trap [**<IP Address>**]

Description: Set or show SNMP traps destination.

**<IP Address>**: IP address to send traps to. (default: show trap configuration).

## Ratelimit Commands

### Ratelimit Configuration

Description: Show the Ratelimit setting.

### Ratelimit Setup **<traffic type > <option>**

Description: Set or show the ratelimit configuration. The allowed frame rates for ICMP frames, learn frames, multicasts, broadcasts and flooded unicasts are controlled using a central ratelimit.

[**<traffic type>**]: Ratelimit to set. Can be one of: [ICMP|Broadcast|Multicast] (default: show all).

[**enable**|**disable**]: Enable or disable specified ratelimit.

[**<rate>**]: Frame rate in kiloframes. Allowed values: 1k, 2k, 4k, 8k, 16k, 32k, 64k.

### Ratelimit Egress [**<portlist>**] [**enable**|**disable**] [**<rate>**]

Description: Set or show the egress configuration.

[**<portlist>**]: Port list (default: all ports).

[**enable**|**disable**]: Enable or disable egress.

[**<rate>**]: Disable or set leaky bucket rate in kbps  
[128/256/512/1024/2048/3072k] (default: show egress rate).

### Ratelimit Ingress [**<portlist>**] [**enable**|**disable**] [**<rate>**]

Description: Set or show the ingress configuration.

[**<portlist>**]: Port list (default: all ports).

[**enable**|**disable**]: Enable or disable ingress.

[**<rate>**]: Disable or set leaky bucket rate in kbps  
[128/256/512/1024/2048/3072k] (default: show ingress rate).

# 5. SPECIFICATIONS

## Standards

- IEEE 802.3 (10Base-T Ethernet)
- IEEE 802.3u (100Base-TX Fast Ethernet)
- IEEE 802.3ab (Twisted Pair Gigabit Ethernet)
- IEEE 802.1p (traffic prioritization)
- IEEE 802.1q (VLAN)
- IEEE 802.3x (flow control, for full duplex mode)
- SNMPv1 (Simple Network Management Protocol)

## General

- Media support:
  - 10Base-T Cat3, 4, 5 UTP/STP RJ-45
  - 100Base-TX Cat5 UTP/STP RJ-45
  - 1000Base-T Cat5e UTP/STP RJ-45
- Packet filter/forwarding rate:
  - 1,488,000 pps (1000 Mbps)
  - 148,800 pps (100 Mbps)
  - 14,880 pps (10 Mbps)
- Buffer memory: 340 kBytes, 16-port version: 500 kBytes, 24-port version
- MAC address table: 8192 entries
- Backplane speed: 32 Gbps, 16-port version: 48 Gbps, 24-port version
- Switch architecture: store and forward
- Ports, 16-port version
  - 16 x RJ-45 Gigabit Ethernet ports
  - 4 SFP Mini-GBIC transceiver module slots
- Ports, 24-port version
  - 24 x RJ-45 Gigabit Ethernet ports
  - 4 SFP Mini-GBIC transceiver module slots
- Modes, 16-port version
  - 16 x RJ-45 ports
  - 15 x RJ-45 ports and 1 x SFP mini-GBIC transceiver module
  - 14 x RJ-45 ports and 2 x SFP mini-GBIC transceiver modules
  - 13 x RJ-45 ports and 3 x SFP mini-GBIC transceiver modules
  - 12 x RJ-45 ports and 4 x SFP mini-GBIC transceiver modules
- Modes, 24-port version
  - 24 x RJ-45 ports
  - 23 x RJ-45 ports and 1 x SFP mini-GBIC transceiver module
  - 22 x RJ-45 ports and 2 x SFP mini-GBIC transceiver modules
  - 21 x RJ-45 ports and 3 x SFP mini-GBIC transceiver modules
  - 20 x RJ-45 ports and 4 x SFP mini-GBIC transceiver modules
- Certifications: FCC Class A, CE Mark, VCCI Class A, RoHS



## Configuration Options

- Full and half duplex per port
- Port link speed: 10 Mbps, 100 Mbps, 1000 Mbps or auto-negotiation
- Port bandwidth control: Disable/128/256/512/1024/2048/3072 kbps
- VLAN: Tag based, up to 16 groups (16-port); up to 24 groups (24-port)
- Quality of Service (QoS): 2 priority levels and port-based ratio controlling the ratio between high and low priority
- Port Mirroring for all ports with sniffer port configuration
- Port Aggregation/Trunking for all ports, 8 groups (16-port) or 12 groups (24-port)
- SNMP Management (enable/disable, trap IP, community get and set)

## LEDs

- Power
- Link/Act: 1000 Mbps, 10/100 Mbps

## Power

- Internal power supply, 100 to 240 V AC, 50/60 Hz
- Power consumption: 14.5 Watts (maximum, 16-port); 21.2 Watts (maximum, 24-port)

## Environmental

- Metal housing, 19" rackmount, 1 U
- Dimensions: 441 (W) x 130 (L) x 44 (H) mm (17.4 x 5.1 x 1.7 in.)
- Weight: 2.5 kg (5.4 lbs.)
- Operating temperature: 0° to 40°C (32° to 104°F)
- Operating humidity: 10% to 90% RH, non-condensing
- Storage temperature: -10° to 80°C (-14° to 176°F)

## Package Contents

- Gigabit Ethernet Rackmount Managed Switch
- Power cable
- User manual

# NOTES

# NOTES



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