ES2446-51

24-port Gigabit PoE+ with 4 Combo SFP Rack-mount Web Smart PoE Switch

User's Manual

EverFocus®

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Release Date: March, 2015

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EVERFOCUS ELECTRONICS CORPORATION

ES2446-51

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Safety Precautions

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if the equipment is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
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- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE Mark Warning

This is a Class-A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Chapter
1

1.Introduction

1.1 Product Overview

The switch is 24-port 10/100/1000M PoE+ with 4 Combo SFP Rack-mount Web Smart PoE Switch, the switch supports IEEE 802.3at Power over Ethernet standard, maximum 400W power consumption per system. The switch also provides exceptionally smart Web management features, such as VLAN, QoS, RSTP, IGMP Snooping, LACP, IEEE 802.1X, Storm Control…etc.

The switch is standard 19” rack-mount design to fit into the rack environment. With these features, the switch is a superb choice for medium or large network environment to strengthen its network connection and efficiency.

1.2 General Features

- 24-Port 10/100/1000BaseT(X) PoE+ with 4 Combo SFP Open Slots
- IEEE 802.3at, up to 30W per port
- Maximum 400W power consumption
- 48Gbps Non-Blocking Switching Performance
- 500 Kbits Packet Buffer
- 8K MAC Address Table, Up to 12.2K Jumbo Frame
- Web-based Configuration and Management
- 802.1Q VLAN, QoS, Link Aggregation, RSTP, IGMP Snooping and IEEE 802.1X

1.3 Software Features

- VLAN: 16, VLAN ID: 1~ 4094
- Rapid Spanning Tree Protocol
- IGMP Snooping V1&V2
- LACP/Trunk: up to 8 groups

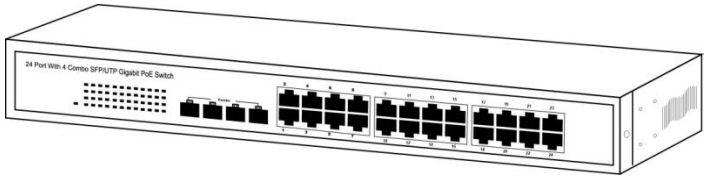
- Quality of Service: up to 4 queues, 802.1p
- PoE Control: PoE Port Enabled/Disable, Status
- IEEE 802.1X, Source IP Filter
- Storm Control: Broadcast, Multicast, Flood Unicast
- Port: Port State, Speed/Duplex, Flow Control
- Rate Limiting, Port Mirroring
- Management: Web GUI, SNMP, Password protection, Configuration upload/download, Firmware upgrade

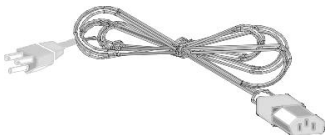
Note: Please see the most updated datasheet for the detail product specification. You can check the web site or contact the sales of the supplier.

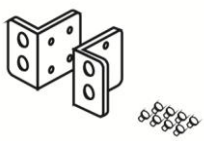
1.4 Package Contents

Before you start to install this switch, please verify your package that contains the following items:

1. One Switch
2. One Power Cord
3. User Manual CD
4. One pair Rack-mount kit + 8 Screws







Chapter

2

2. Hardware Description

This part primarily presents hardware of the web-smart switch, physical dimension, appearance, front panel, rear panel and LED indicator.

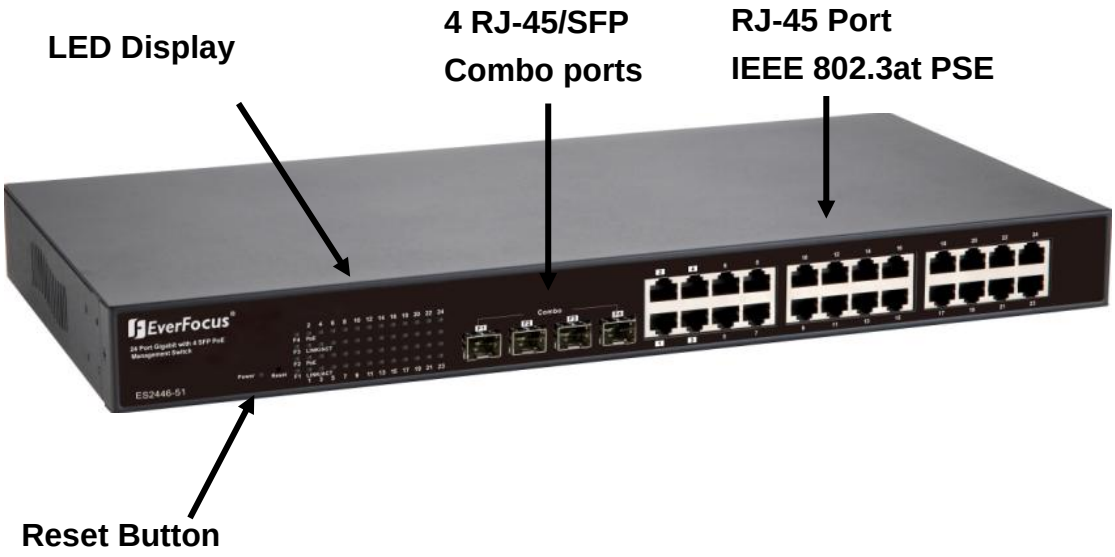
2.1 Dimensions

44 × 440 × 331 mm (H × W × D)/4.7kg

2.2 Appearance & Front Panel

The front Panel of the web-smart Switch consists of 24 gigabit RJ-45 ports, 4 of the gigabit RJ-45 ports (Port 1~4) combo with 4 gigabit SFP open slot. The LED Indicators are also located on the front panel.

Appearance



Front Panel

Note 1: The SFP ports are shared with normal RJ-45 ports 1,2,3 and 4. For example: The RJ-45 Port 1 can not be used when SFP Port 1 link up.

Note 2: Click the Reset button for 5 seconds, the system configuration will be reset to default.

2.3 LED Indicators

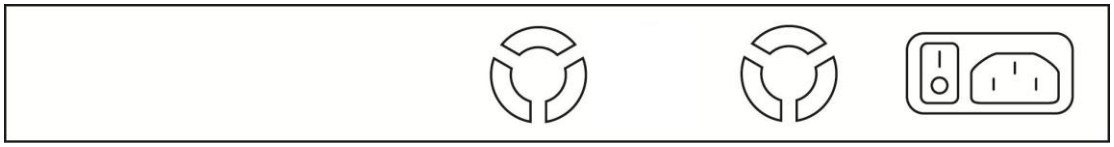
The LED Indicators present real-time information of systematic operation status. This table provides description of LED status and the meaning.

Table 1-1 LED Indicators

LED	Status	Description
Power	On	Power on
	Off	Disconnect to Power Source
Link/ ACT	On	Link
	Flashing	Data activating
	Off	No device is attached
PoE	On	Port is linked to Power Device
	Off	No Power Device is connected

2.4 Rear Panel

The 3-pronged power plug is placed at the rear panel of the switch right side shown as below. This is reserved for AC Power Input.



2.5 Hardware Installation

The switch is usually mounted in the 19” rack, the rack is usually installed in IT room or other secured place. The switch supports AC power input and rackmount mounting. Make sure all the power cables, Ethernet cables, screws and the air circulation are well prepared and installed as below description.

The port 1~24 are the copper ports, it requests UTP/STP cable. These port are also PoE ports, choose CAT 5/5E or above for the PoE application.

The port 1~4 are the combo SFP ports, shared with the copper port 1~4. Please purchase the suitable fiber transceiver from your supplier and connect the fiber cable for the link.

Ethernet cable Request

The wiring cable types for data transmission are as below.

10 Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable, EIA/TIA-568 100-ohm (Max. 100m)

100 Base-TX: 2-pair UTP/STP Cat. 5 cable, EIA/TIA-568 100-ohm (Max. 100m)

1000 Base-T: 4-pair UTP/STP Cat. 5 cable, EIA/TIA-568 100-ohm (Max. 100m)

The wiring cable types for data transmission and power delivery in any speed are Cat. 5 or above.

SFP Installation

While install the SFP transceiver, make sure the SFP type of the 2 ends is the same and the transmission distance, wavelength, fiber cable can meet your request. It is suggested to purchase the SFP transceiver with the switch provider to avoid any incompatible issue.

The way to connect the SFP transceiver is to Plug in SFP fiber transceiver fist. The SFP transceiver has 2 plug for fiber cable, one is TX (transmit), the other is RX (receive). Cross-connect the transmit channel at each end to the receive channel at the opposite end.

PD Installation plan

When planning the PD installation, please share the PD load to the different ports.

Internal Power Supply 1: Maximum 130W for Port 1~8 + System (max. 20W)

Internal Power Supply 2: Maximum 130W for Port 9~16

Internal Power Supply 2: Maximum 130W for Port 17~24

You can check the power consumption of the PD device or check the Web GUI of the switch to see the percentage of the power usage of the ports.

Rackmount Installation

Attach the brackets to the device by using the screws provided in the Rack Mount kit.

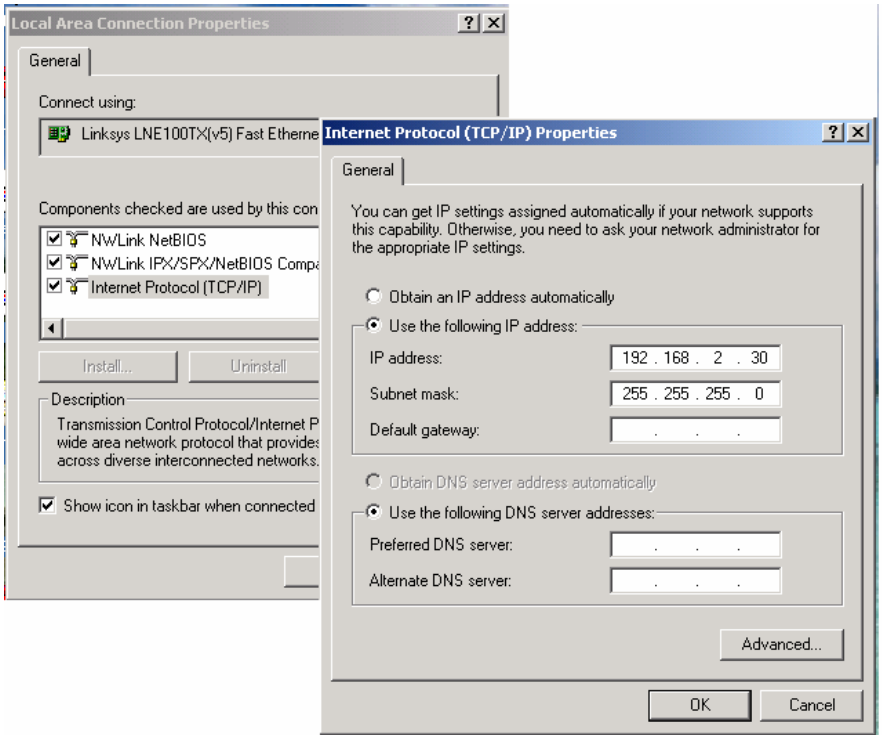
Mount the device in the 19" rack by using four rack-mounting screws provided by the rack manufacturer.

3. Preparation for Web Interface

The web management page allows you to use a standard web-browser such as Microsoft Internet Explorer, Google Chrome or Mozila Firefox, to configure and interrogate the switch from anywhere on the network.

Before you attempt to use the web user interface to manage switch operation, verify that your Switch is properly installed on your network and that every PC on this network can access the switch via the web browser.

1. Verify that your network interface card (NIC) is operational, and that your operating system supports TCP/IP protocol.
2. Wire the switch power and connect your computer to the switch.
3. The switch default IP address is 192.168.2.1. The Switch and the connected PC should locate within the same IP Subnet.
4. Change your computer's IP address to 192.168.2.XX or other IP address which is located in the 192.168.2.x (For example: IP Address: 192.168.2.30; Subnet Mask: 255.255.255.0) subnet.

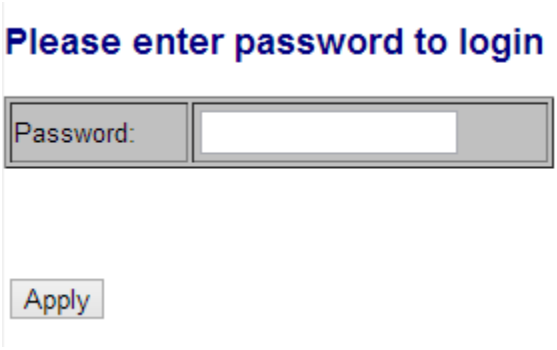


5. Launch the web browser and Login.

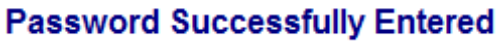
6. Launch the web browser (Internet Explorer or Mozila Firefox) on the PC.
7. Type **http://192.168.2.1** (or the IP address of the switch). And then press **Enter**.
8. The login screen will appear next.
9. Key in the password. Default password is no password. Click “Apply” directly.

Login Screen

The figure shows the login screen.
The factory default password is no password, just click the **Apply** button to login directly.

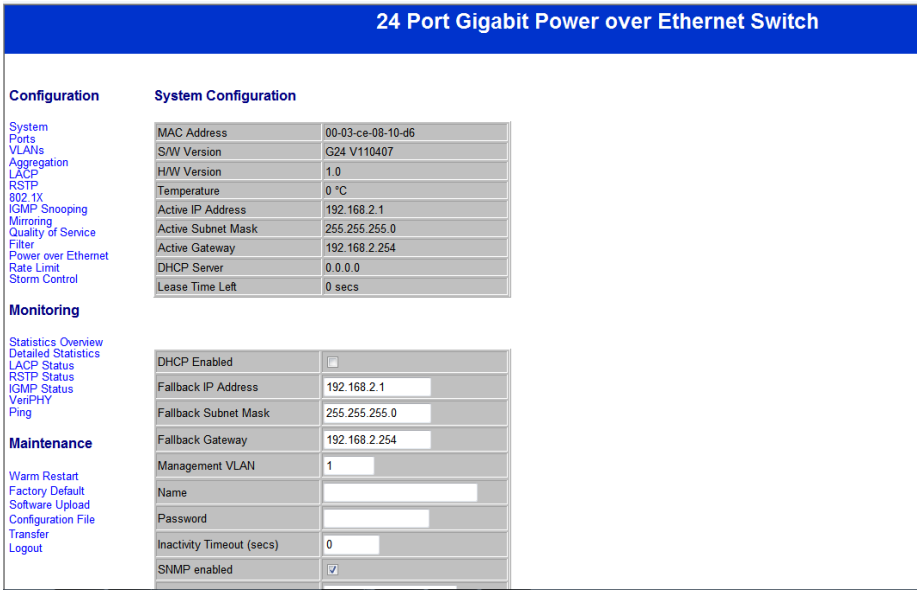


After the login process is completed. The web interface comes out the sign “Password successfully entered”.



Note: To secured your switch’s security, please go to the System Configuration page and setup the new password.

Below is the main screen, the left side of the web shows the function list and the right side of the web shows the configuration parameters.



Trouble Shooting

If you can't login the switch, the following steps can help you to identify the problem.

1. Switch to DOS command mode and type the "***ipconfig***" to check the NIC's setting. Type the "***ping 192.168.2.1***" to verify a normal response time.
2. Check the security & firewall settings of your computer.
3. Try different Web-browser, like the Mozila.

Chapter

4

4. Web UI Configuration

This part instructs user how to set up and manage the switch through the web user interface. Please follow the description to understand the procedure.

4.1 Configuration

This part shows how to configure the switch settings.

4.1.1 System Configuration

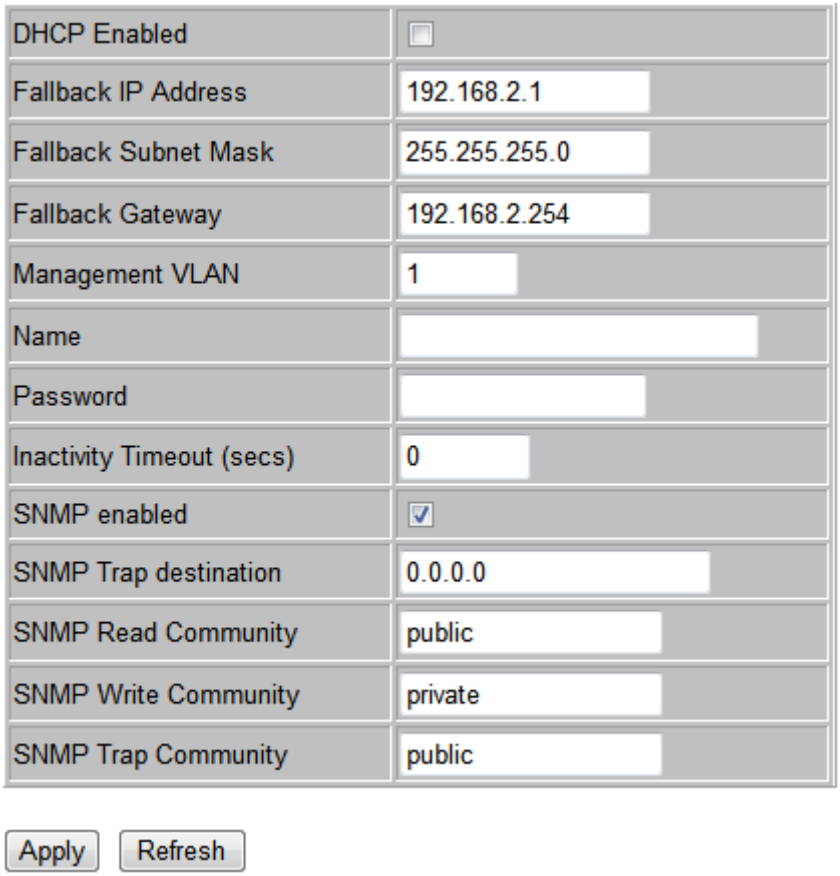
This page shows system configuration information. User can configure information as below:

System Configuration

MAC Address	00-03-ce-08-10-d6
S/W Version	G24 V110407
H/W Version	1.0
Temperature	0 °C
Active IP Address	192.168.2.1
Active Subnet Mask	255.255.255.0
Active Gateway	192.168.2.254
DHCP Server	0.0.0.0
Lease Time Left	0 secs

- MAC Address: Displays the unique hardware address assigned by manufacturer (default).
- S/W Version: Displays the switch's firmware version.
- H/W Version: Displays the switch's Hardware version.
- Active IP Address: The current active IP address of the switch.
- Active Subnet mask: The current active subnet mask of the IP Address.
- Active Gateway: The current active Gateway of the switch.

- DHCP Server: The IP of the DHCP Server. Display after DHCP Client enabled.
- Lease Time Left: The least received from the DHCP server. Display after the DHCP Client enabled.



- DHCP Enabled: Click the box to enable DHCP Client mode.
- Fallback IP address: Manually assign the IP address that the network is using. The default IP is 192.168.2.1
- Fallback Subnet Mask: Assign the subnet mask to the IP address
- Fallback Gateway: Assign the network gateway for industrial switch. The default gateway is 192.168.2.254.
- Management VLAN: ID of a configured VLAN (1-4094) through which you can manage the switch. By default, all ports on the switch are members of VLAN 1. However, if the management VLAN is changed, the management station must be attached to a port belonging to this VLAN.
- Name: Type in the new user name information.
- Password: Type in the new password (The default value is no password).
- SNMP Enabled: Enables or disables SNMP on the switch. Supports SNMP version

1and 2c management clients.

- SNMP Trap Destination: IP address of the trap manager to receive notification messages from this switch. Traps indicating status changes are issued by the switch to specified trap managers. You must specify trap managers so that key events are reported by this switch to your management station.
- SNMP Read Community: A community string that acts like a password and permits access with Read privilege to the SNMP database on this switch. Authorized management stations are only able to retrieve MIB objects.
- SNMP Write Community: A community string that acts like a password and permits access with Write privilege to the SNMP database on this switch. Authorized management stations are able to modify the value of the MIB objects.
- SNMP Trap Community: Community string sent with the notification operation.

4.1.2 Ports

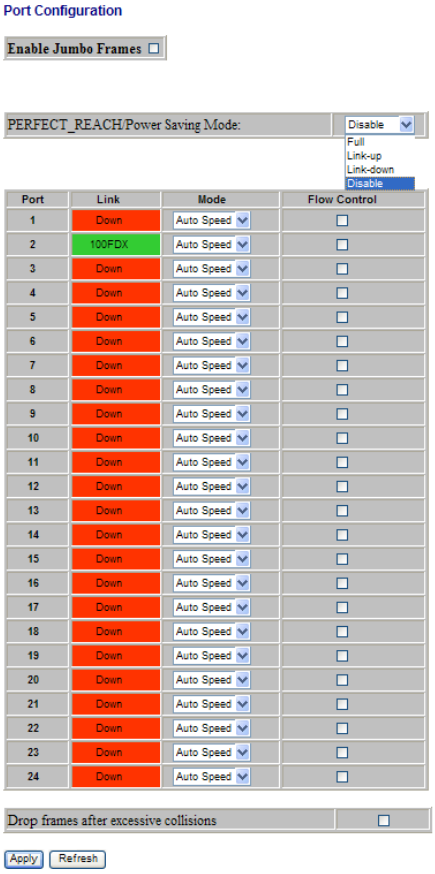
In Port Configuration, you can set and view the operation mode for each port.

- Enable Jumbo Frames: This switch provides more efficient throughput for large sequential data transfers by supporting jumbo frames on Gigabit Ethernet ports up to 12.2KB. Compared to standard Ethernet frames that run only up to 1.5 KB, using jumbo frames significantly reduces the per-packet overhead required to process protocol encapsulation fields.

- Power Saving Mode: Adjusts the power provided to ports based on the length of the cable used to connect to other devices. Only sufficient power is used to maintain connection requirements.

- Mode: Allows user to manually set the port speed such as Auto, 10 half, 10 Full, 100 Half, 100 Full, 1000 Full or Disabled. User may press Apply button to complete the configuration procedure.

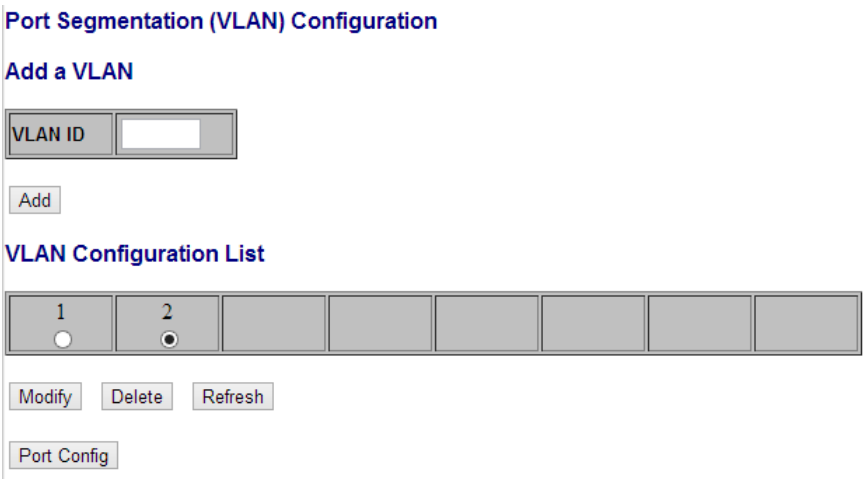
- Flow Control: Allows user to manually enable or disable the Flow Control feature. Click the checkbox of the specific ports you and press Apply button to complete the configuration procedure.



4.1.3 VLAN

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain, which would allow you to isolate network traffic, so only the members of the same VLAN will receive traffic from the ones of the same VLAN. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

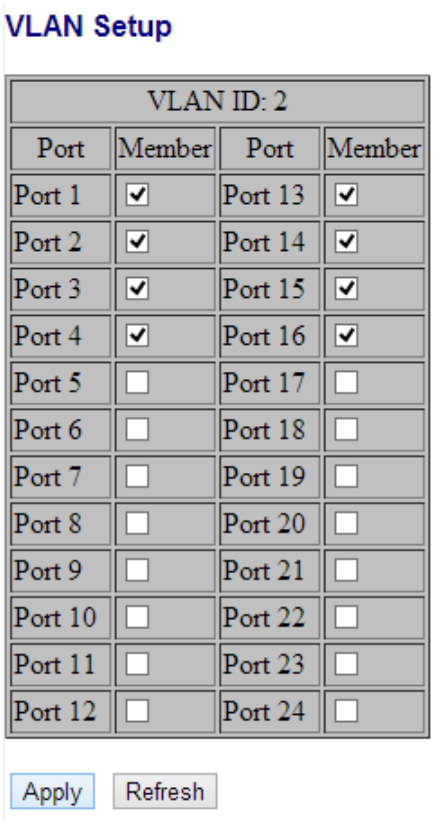
Port Segmentation (VLAN) Configuration



- VLAN ID: ID of configured VLAN (1-4094, no leading zeroes). Type the new ID and click Add. The web UI is directed to the VLAN Setup screen.
- VLAN Configuration List: Lists all the current VLAN groups created for this system. Up to 16 VLAN groups can be defined. VLAN 1 is the default untagged VLAN.

VLAN Setup Configuration

The screen allows user to select the member ports of the VLAN you added. Select the ports and click “Apply” to activate.

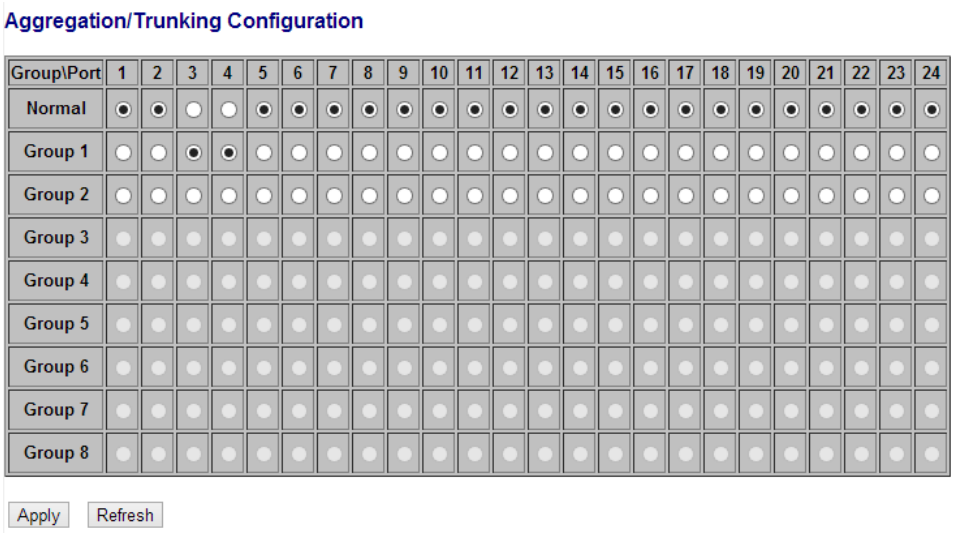


4.1.4 Aggregation

Port trunk allows multiple links to be bundled together and act as a single physical link for increased throughput. It provides load balancing, and redundancy of links in a switched inter-network. Actually, the link does not have an inherent total bandwidth equal to the sum of its component physical links. Traffic in a trunk is distributed across an individual link within the trunk in a deterministic method that called a hash algorithm. The hash algorithm automatically applies load balancing to the ports in the trunk. A port failure within the trunk group causes the network traffic to be directed to the remaining ports. Load balancing is maintained whenever a link in a trunk is lost or returned to service.

Aggregation / Trunking Configuration

To assign the ports to a trunk, click the required trunk number ports, then click Apply.
Below example figure show Port 3 and 4 are the member ports of the Trunk Group 1.

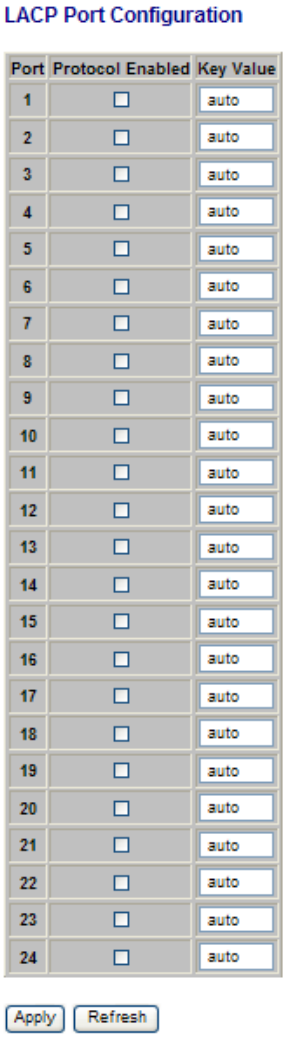


4.1.5 LACP

IEEE 802.3ad Link Aggregation Control Protocol (LACP) increases bandwidth by automatically aggregating several physical links together as a logical trunk and providing load balancing and fault tolerance for uplink connections. Once the port is configured as Static Aggregation port, the area will become gray. It means a port can only be the member of the Aggregation or LACP.

LACP Port Configuration

- Port: The port ID.
- Protocol Enabled: Enables LACP Protocol on the associated port.
- Key Value: Configures a port's LACP administration key. The port administrative key must be set to the same value for ports that belong to the same link aggregation group (LAG). If this administrative key is not set when an LAG is formed (i.e., it has the null value of 0), this key will automatically be set to the same value as that used by the LAG.

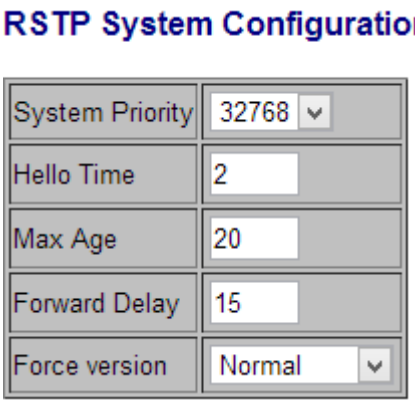


4.1.6 RSTP

IEEE 802.1w Rapid Spanning tree protocol (LACP) provides a loop-free network and redundant links to the core network with rapid convergence to ensure faster recovery from failed links, enhancing overall network stability and reliability.

RSTP System Configuration

- System Priority: This parameter configures the spanning tree priority globally for this switch. The device with the highest priority becomes the STP root device. However, if all devices have the same priority, the device with the lowest MAC address will then become the root device. Number between 0 - 61440 in increments of 4096. Therefore, there are 16 distinct values.
- Hello Time: Interval (in seconds) at which the root device transmits a configuration message (BPDU frame). Number between 1-10 (default is 2).
- Max Age – The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. That also means the maximum life time for a BPDU frame. Number between 6-40 (default is 20).
- Forward Delay: The maximum time (in seconds) the root device will wait before changing states (i.e., discarding to learning to forwarding). Number between 4 – 30 (default is 15).
- Force Version: Set and show the RSTP protocol to use. Normal - use RSTP, Compatible - compatible with STP.



RSTP Port Configuration

- Port: The port ID. Aggregations mean any configured trunk group.
- Protocol Enabled: Click on the tick-box to enable/disable the RSTP protocol for the port.
- Edge: Expect the port to be an edge port (linking to an end station) or a link to another STP device.

- Path Cost: This parameter is used by the STP to determine the best path between devices. Therefore, lower values should be assigned to ports attached to faster media, and higher values assigned to ports with slower media. Set the RSTP path cost on the port. Number between 0 - 200000000. The default value is “auto”, it means the system will automatically generate path cost.

RSTP Port Configuration

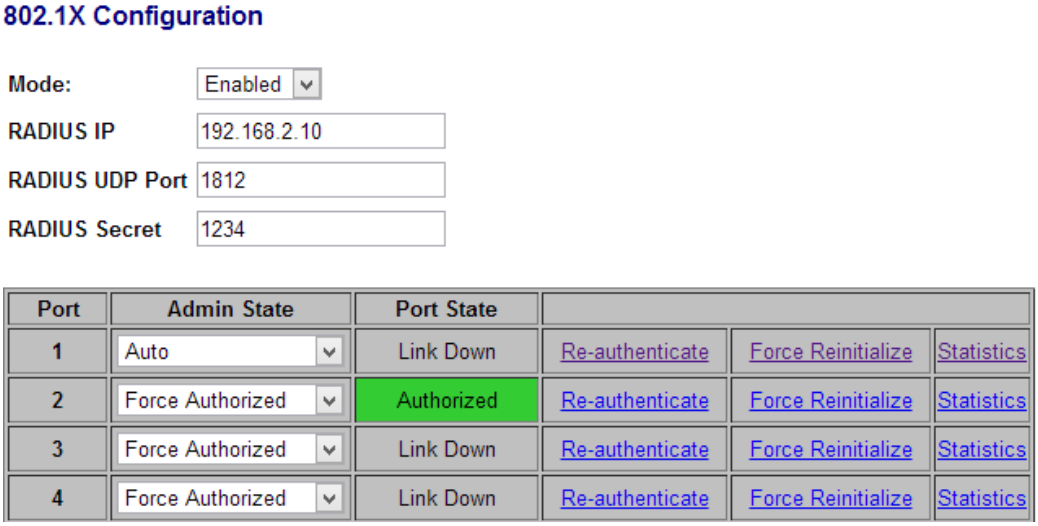
Port	Protocol Enabled	Edge	Path Cost
Aggregations	☐		
1	☐	☑	auto
2	☐	☑	auto
3	☐	☑	auto
4	☐	☑	auto
5	☐	☑	auto
6	☐	☑	auto
7	☐	☑	auto
8	☐	☑	auto
9	☐	☑	auto
10	☐	☑	auto
11	☐	☑	auto
12	☐	☑	auto
13	☐	☑	auto
14	☐	☑	auto
15	☐	☑	auto
16	☐	☑	auto
17	☐	☑	auto
18	☐	☑	auto
19	☐	☑	auto
20	☐	☑	auto
21	☐	☑	auto
22	☐	☑	auto
23	☐	☑	auto
24	☐	☑	auto

Apply Refresh

4.1.7 802.1X Configuration

IEEE802.1X provides a security standard for network access control, especially in Wi-Fi wireless networks. 802.1X holds a network port disconnected until authentication is completed. The switch uses Extensible Autentication Protocol over LANS to exchange authentication protocol client identity with the client, and forward it to another remote RADIUS authentication server to verify access rights. The EAP packet from the RADIUS server also contains the authentication method to be used. The client can reject the authentication method and request another, depending on the configuration of the client software and the RADIUS server. Depending on the authenticated results, the port is either made available to the user, or the user is denied access to the network.

The RADIUS servers make the network a lot easier to manage for the administrator by gathering and storing the user lists.



- Mode: By default, 802.1x is disabled. To use EAP for security, select enabled and set the 802.1X Global Settings for the Radius Server and applicable authentication information.
- RADIUS server IP: The IP Address of the external Radius Server, you need to specify an RADIUS server to enable 802.1X authentication.
- RADIUS UDP Port: The UDP port used for the communication between the switch and RADIUS server.
- RADIUS Secret: The Key used for the communication between the switch and RADIUS server.
- Port: The port ID

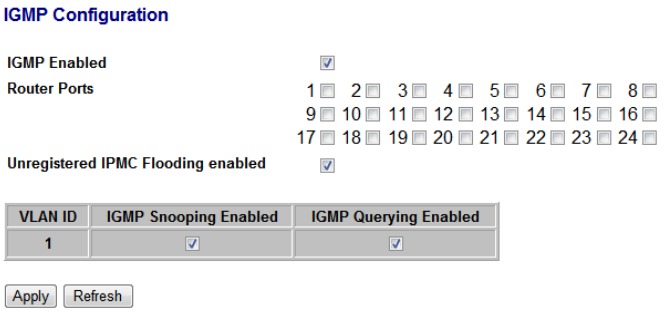
- Admin State: There are 3 types, Auto, Force Authorized and Force Unauthorized.
  Auto: Select Auto when you enabled the IEEE 802.1X. If the client is successfully authorized, the port is authorized to be used as well. Otherwise, the port can't be used.
  Force Authorized: The default value. No matter the IEEE 802.1X is enabled or not, the port is always authorized to be used.
  Force Unauthorized: No matter the IEEE 802.1X is enabled or not, the port is always unauthorized to be used.
- Port State: It indicates the state of the port. Authorized means the port is successfully authorized by the RADIUS server or the port is configured as "Force Authorized".
- Others: Re-authenticate allows restart the authentication process, Force Reinitialize reinitializes the process and the Statistics displays the IEEE 802.1X counters and information of each port.

4.1.8 IGMP Snooping

IGMP Snooping is the process of listening to IGMP network traffic. IGMP Snooping, as implied by the name, is a feature that allows a layer 2 switch to "listen in" on the IGMP conversation between hosts and routers by processing the layer3 IGMP packets sent in a multicast network.

When IGMP Snooping is enabled in a switch it analyzes all IGMP packets between hosts connected to the switch and multicast routers in the network. When a switch hears an IGMP report from a host for a given multicast group, the switch adds the host's port number to the multicast list for that group. And, when the switch hears an IGMP Leave, it removes the host's port from the table entry.

Prevents flooding of IP multicast traffic, and limits bandwidth intensive video traffic to only the subscribers.



IGMP Configuration

- IGMP Enabled: When enabled, the switch will monitor network traffic to determine which hosts want to receive multicast traffic.
- Router Ports: Set if ports are connecting to the IGMP administrative routers.
- Unregistered IPMC Flooding enabled: Set the forwarding mode for unregistered (not-joined) IP multicast traffic. The traffic will flood when enabled, and forward to router-ports only when disabled.
- IGMP Snooping Enabled: When enabled, the port will monitor network traffic to determine which hosts want to receive the multicast traffic.
- IGMP Querying Enabled: When enabled, the port can serve as the Querier, which is responsible for asking hosts if they want to receive multicast traffic.

4.1.9 Mirroring

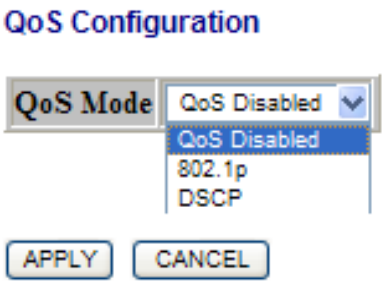
Port Mirroring is used on a network switch to send a copy of network packets seen on one switch port (or an entire VLAN) to a network monitoring connection on another switch port. This is commonly used for network appliances that require monitoring of network traffic, such as an intrusion-detection system.

Mirroring Configuration

- Port to Mirror to: The port that will “duplicate” or “mirror” the traffic on the source port. Only incoming packets can be mirrored. Packets will be dropped when the available egress bandwidth is less than ingress bandwidth.
- Ports to Mirror: Select the ports that you want to mirror from this section of the page. A port will be mirrored when the “Mirroring Enabled” check-box is checked.

4.1.10 QoS

In QoS Mode, select QoS Disabled, 802.1p, or DSCP to configure the related parameters.



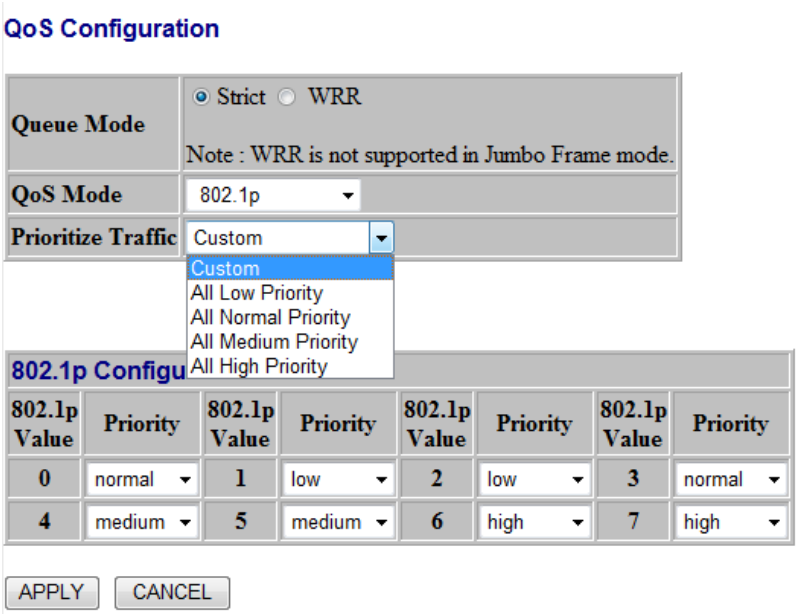
QoS Mode: QoS Disabled

When the QoS Mode is set to QoS Disabled, the QoS is disabled.

QoS Mode: 802.1p

Packets are prioritized using the 802.1p field in the VLAN tag. This field is three bits long, representing the values 0 - 7. When the QoS Mode is set to 802.1p, the 802.1p Configuration table appears, allowing you to map each of the eight 802.1p values to a local priority queue (low, normal, medium or high). The default settings are shown below.

When the QoS Mode is set to 802.1p, the 802.1p Configuration table is displayed as shown below. The Custom Prioritize Traffic is the default and suggested value.

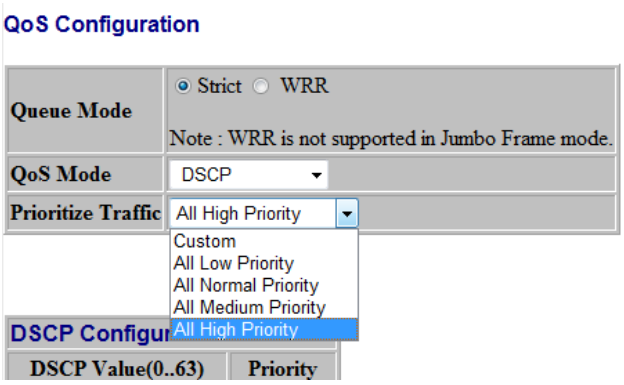


QoS Mode: DSCP

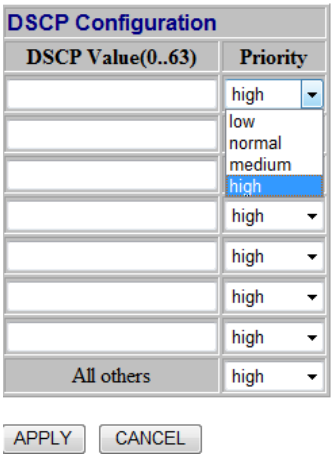
DSCP: Packets are prioritized using the DSCP (Differentiated Services Code Point) value. The Differentiated Services Code Point (DSCP) is a six-bit field that is contained within an IP (TCP or UDP) header. The six bits allow the DSCP field to take any value in the range 0 - 63. When QoS Mode is set to DSCP, the DSCP Configuration table is displayed, allowing you to map each of the DSCP values to a hardware output queue (low, normal, medium or high). The default settings map all DSCP values to the high priority egress queue.

User can use the Prioritize Traffic drop-down list to quickly set the values in the DSCP Configuration table to a common priority queue. Use Custom if you want to set each value individually.

When the QoS Mode is set to DSCP, the DSCP Configuration table is displayed as shown below.



Type the DSCP Value and Priority mapping in below screen.



Queue Mode:

- Strict: Services the egress queues in sequential order, transmitting all traffic in the higher priority queues before servicing lower priority queues.
- WRR: Weighted Round-Robin shares bandwidth at the egress ports by using scheduling weights with default values of 1, 2, 4, 8 for queues 0 through 7, respectively. (This is the default selection.)

※Note: WRR can only be selected if Jumbo Frame mode is disabled on the Port Configuration page

4.1.11 Filter Configuration

There are 3 mode that you can choose for filter configuration:
Disabled: this mode is disabled, no any protection here.
Static: The IP address you typed here can't access the switch.
DHCP: The IP address retrieve from the DHCP server can't access the switch.

Filter Configuration

Port	Source IP Filter			DHCP Server Allowed
	Mode	IP Address	IP Mask	
1	Static	192.168.2.10	255.255.255.0	☐
2	Disabled			☑

4.1.12 PoE (Power over Ethernet) Configuration

PoE technology is a system to pass electrical power safely, along with data, on Ethernet cabling. Power is supplied in common mode over two or more of the differential pairs of sires found in the Ethernet cables and comes from a power supply within a PoE enabled networking device such as Switch or can be injected into a cable run with a midspan power supply.

This screen shows all the PoE 's status when connect or disconnect to the PD devise.

- PoE Enabled: POE of the port is able to supply power to the attached PD (Powered Device)
- PD Class: Detect the class of PD
- Delivering Power (W): Output power from the switch to the PD.
- Current (mA): The status of the port current.
- Power Budget Percentage of PoE power has been used. Per 8 port share 130W power budget. You can see the percentage change in this screen.

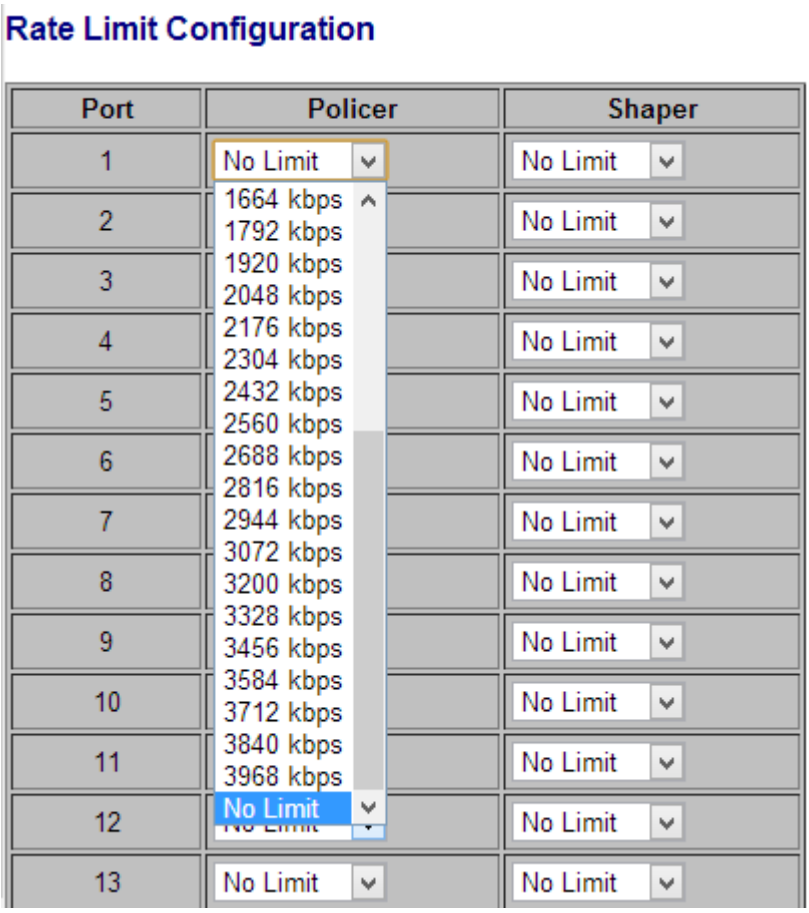
PoE (Power over Ethernet) Configuration

Port	PoE Enabled	PD Class	Delivering Power [W]	Current [mA]	Power Budget [%] (Per 8 port total power = 130W)
1	☑	--	0	0	10.1
2	☑	3	9.5003	188.124	
3	☑	--	0	0	
4	☑	--	0	0	
5	☑	--	0	0	
6	☑	0	3.6042	71.37	
7	☑	--	0	0	
8	☑	--	0	0	
9	☑	--	0	0	0
10	☑	--	0	0	
11	☑	--	0	0	
12	☑	--	0	0	
13	☑	--	0	0	

The green are shows the status of the connected PD. To protect the system and better product life, lower than 80% Power Budget is suggested.

4.1.13 Rate Limit Configuration

Type of Port: You can define the certain port as Policer and Shaper before you set up the rate limit.
Drop-down menu:
No Limit: This drop-down menu allows you to specify that the selected port will have no bandwidth limit.
Rate (kbps): This drop-down menu also allows you to select the data rate in Kbits per second, this can limit for the selected port. The value is between 128kbps – 3968kbps.



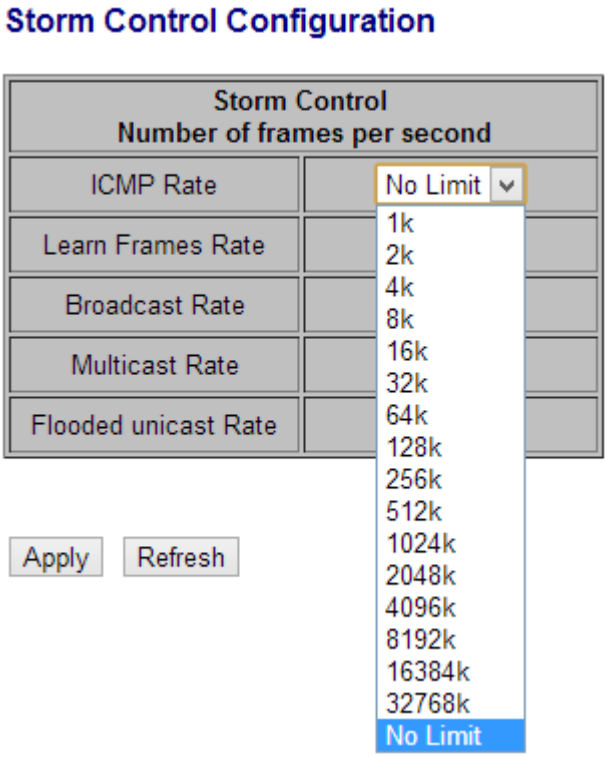
4.1.14 Storm Control

Broadcast storms may occur when a device on your network is malfunctioning, or if application programs are not well designed or properly configured. If there is too much broadcast traffic on your network, performance can be severely degraded or everything can come to complete halt.

You can protect your network from broadcast storms by setting a threshold for broadcast traffic for each port. Any broadcast packets exceeding the specified threshold will then be dropped.

Storm Control Configuration

There are three type of traffic which can be rate limited, including broadcast, multicast frame and Flooded Uncast Rate.



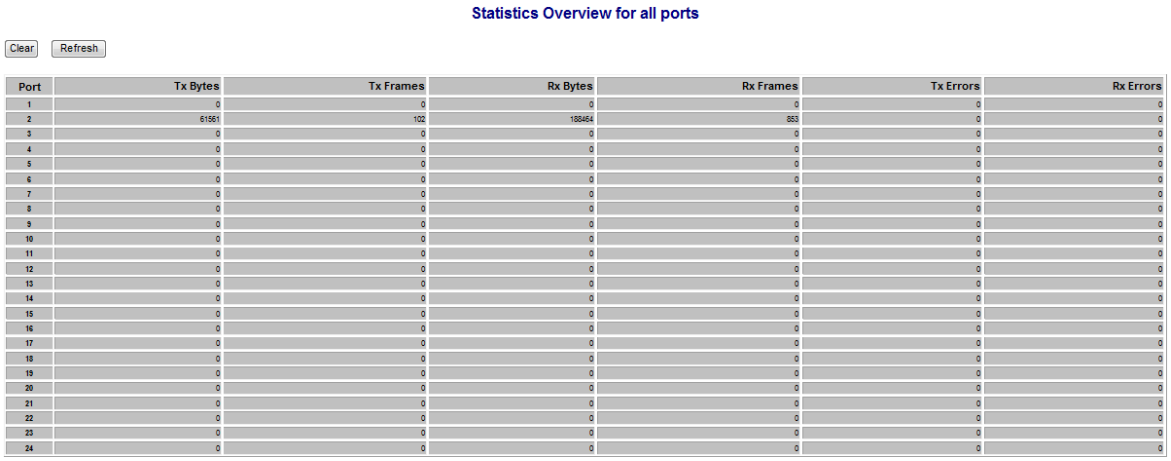
- Enable Rate Limit: Click the check box and the rate to enable storm control.
- Rate (number of frames per second): The Rate field is set by a single drop-down list. The same threshold is applied to every port on the switch. When the threshold is exceeded, packets are dropped, irrespective of the flow-control settings.
- ICMP Rate: This can prevent user to continue ping the switch and waste the CPU resource.
- Learn Frame Rate: By default, the switch perform wire-speed learning on all ports. However, if some kind of unknown source MAC is classified as a “learn frame” and is redirect to CPU. These packets will be filtered after enabled this command.
- Broadcast: Broadcast Traffic.
- Multicast: Unknown Multicast Traffic. Before IGMP Snooping Enabled, all the Multicast are flooded and will be filtered by this command.
- Flooded Unicast Rate: The source MAC is not yet leant by the switch are unknown Unicast. This command can help limit such traffic.

4.2 Monitorning

4.2.1 Statistic Overview

Statistic Overview for all ports

User can mirror traffic from any source port to a target port for real-time analysis the following figures shows clearly the statistics overview.



Statistics Overview for all ports

Clear Refresh

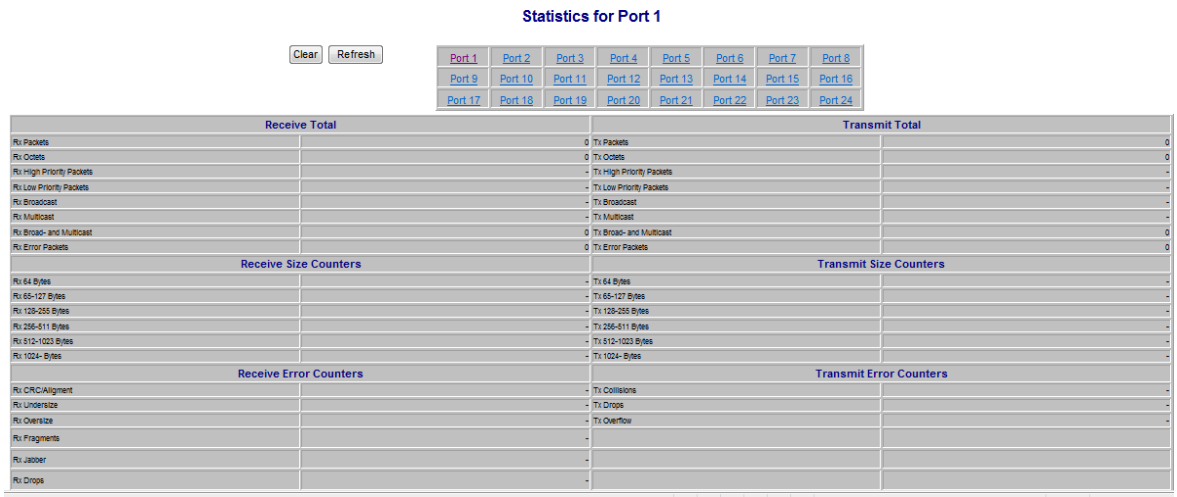
Port	Tx Bytes	Tx Frames	Rx Bytes	Rx Frames	Tx Errors	Rx Errors
1	0	0	0	0	0	0
2	61561	102	188464	853	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0

4.2.2 Detailed Statics

To view the statistics of individual ports, click one of the linked port numbers for details.

Clear: To renew the details collected and displayed.

Refresh: To reset the details displayed.



Statistics for Port 1

Clear Refresh

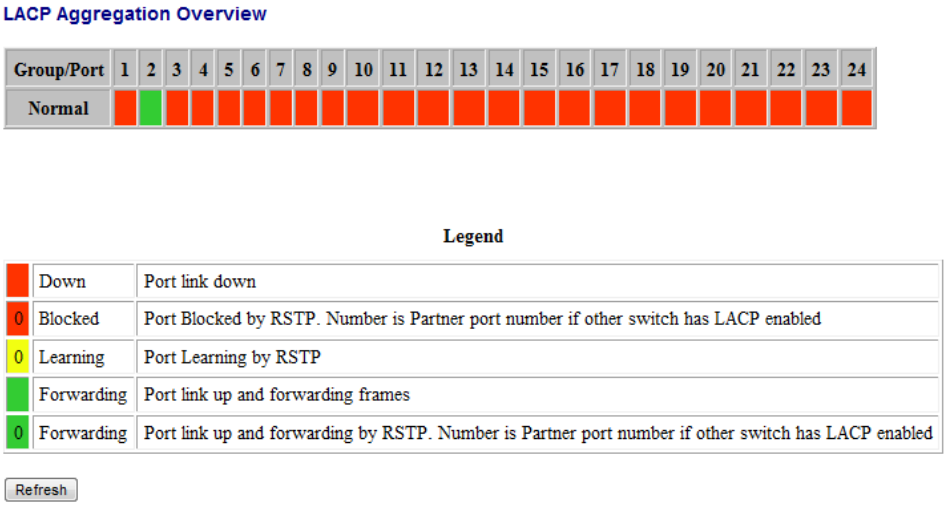
Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8
Port 9 Port 10 Port 11 Port 12 Port 13 Port 14 Port 15 Port 16
Port 17 Port 18 Port 19 Port 20 Port 21 Port 22 Port 23 Port 24

Receive Total		Transmit Total	
Rx Packets	0	Tx Packets	0
Rx Octets	0	Tx Octets	0
Rx High Priority Packets	-	Tx High Priority Packets	-
Rx Low Priority Packets	-	Tx Low Priority Packets	-
Rx Broadcast	-	Tx Broadcast	-
Rx Multicast	-	Tx Multicast	-
Rx Broad- and Multicast	0	Tx Broad- and Multicast	0
Rx Error Packets	0	Tx Error Packets	0
Receive Size Counters		**Transmit Size Counters**	
Rx 64 Bytes	-	Tx 64 Bytes	-
Rx 65-127 Bytes	-	Tx 65-127 Bytes	-
Rx 128-255 Bytes	-	Tx 128-255 Bytes	-
Rx 256-511 Bytes	-	Tx 256-511 Bytes	-
Rx 512-1023 Bytes	-	Tx 512-1023 Bytes	-
Rx 1024- Bytes	-	Tx 1024- Bytes	-
Receive Error Counters		**Transmit Error Counters**	
Rx CRC/Allgment	-	Tx Collisions	-
Rx Undersize	-	Tx Drops	-
Rx Oversize	-	Tx Overflow	-
Rx Fragments	-		
Rx Jabber	-		
Rx Drops	-		

4.2.3 LACP Status

LACP Aggregation Overview

LACP allows for the automatic detection of links in a Port Trunking Group


LACP Aggregation Overview

Group/Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Normal																								

Legend

	Down	Port link down
0	Blocked	Port Blocked by RSTP. Number is Partner port number if other switch has LACP enabled
0	Learning	Port Learning by RSTP
	Forwarding	Port link up and forwarding frames
0	Forwarding	Port link up and forwarding by RSTP. Number is Partner port number if other switch has LACP enabled

Refresh

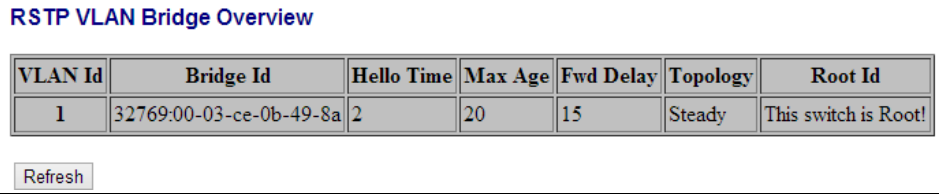
- Port: The port number.
- Port Active: Shows if the port is a member of an active LACP group.
- Partner Port Number: A list of the ports attached at the remote end of this LAG link member.
- Operational Port Key: Current operational value of the key used by this LAG.

LACP Port Status

Active LACP ports are capable of processing and sending LACP control frames. This allows LACP compliant devices to negotiate the aggregated link so the group may be changed dynamically as needs requires.

4.2.4 RSTP Status

RSTP VLAN Bridge Overview


RSTP VLAN Bridge Overview

VLAN Id	Bridge Id	Hello Time	Max Age	Fwd Delay	Topology	Root Id
1	32769:00-03-ce-0b-49-8a	2	20	15	Steady	This switch is Root!

Refresh

Figure 3-4

- Hello Time: Interval (in seconds) at which the root device transmits a configuration message.
- Max Age: The maximum time (in seconds) a device can wait without receiving a configuration message before attempting to reconfigure. All device ports (except for designated ports) should receive configuration messages at regular intervals. Any port that age out STA information (provided in the last configuration message) becomes the designated port for the attached LAN. If it is a root port, a new root port is selected from among the device ports attached to the network.
- Fwd Delay: The maximum time (in seconds) the root device will wait before changing states (i.e., discarding to learning to forwarding). This delay is required because every device must receive information about topology changes before it starts to forward frames. In addition, each port needs time to listen for conflicting information that would make it return to a discarding state; otherwise, temporary data loops might result.
- Topology: Indicates if spanning tree topology is steady or undergoing reconfiguration. (The time required for reconfiguration is extremely short, so no values other that “steady” state are likely to be seen in this field.)
- Root ID : The priority and MAC address of the device in the Spanning Tree that this switch has accepted as the root device, and the port connected to the root device.

RSTP Port Status

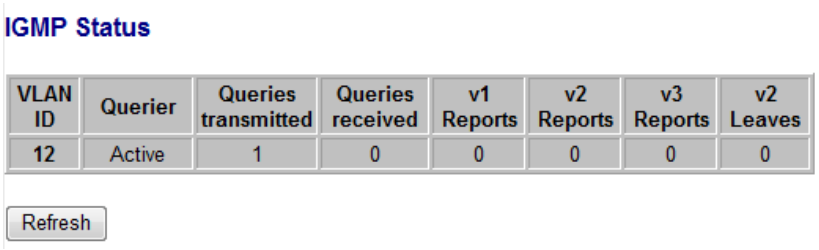
- Port/Group: The number of a port or the ID of a static trunk.
- Path Cost: The cost for a packet to travel from this port to the root in the current Spanning Tree configuration. The slower the media, the higher the cost.
- Edge Port: Shows if this port is functioning as an edge port, either through
- manual selection (see the RSTP Port Configuration table) or auto-detection. Note that if the switch detects another bridge connected to this port, the manual setting for Edge Port will be overridden, and the port will instead function as a point-to-point connection.
- P2P Port: Shows if this port is functioning as a Point-to-Point connection to exactly one other bridge. The switch can automatically determine if the interface is attached to a point-to-point link or to shared media. If shared media is detected, the switch will assume that it is connected to two or more bridges.
- Protocol: Shows the spanning tree protocol functioning on this port, either RSTP or STP (that is, STP-compatible mode).

4.2.5 IGMP Status

IGMP Status

IGMP Status shows the IGMP Snooping statistics for the whole switch.

- VLAN ID: VLAN ID number.
- Querier: Show whether Querying is enabled.
- Queries transmitted: Show the number of transmitted Query packets.
- Queries received: Show the number of received Query packets.
- v1 Reports: Show the number of received v1 Report packets.
- v2 Reports: Show the number of received v2 Report packets.
- v3 Reports: Show the number of received v2 Report packets.
- v3 Leave: Show the number of v3 leave packets received.



4.2.6 Ping

This command sends ICMP echo request packets to another node on the network.

Ping Parameters

- Target IP Address: IP address of the host
- Count: Number of packets to send. (Range: 1-20)
- Time Out: setting the time period of host will be Ping

Use the ping command to see if another site on the network can be reached.
The following are some results of the **ping** command:

- Normal response: The normal response occurs in one to ten seconds, depending on network traffic.
- Destination does not respond: If the host does not respond, a “timeout” appears in ten seconds.
- Destination unreachable: The gateway for this destination indicates that the destination is unreachable.
- Network or host unreachable: The gateway found no corresponding entry in the route table.

Press <Esc> to stop pinging.

Ping Parameters

Target IP address	192.168.2.10
Count	10
Time Out (in secs)	1

Apply

Ping Results	
Target IP address	192.168.2.10
Status	Test complete
Received replies	10
Request timeouts	0
Average Response Time (in ms)	5

Refresh

4.3 Maintenance

4.3.1 Warm Restart

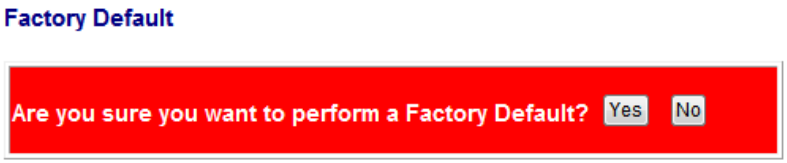
Press Yes button to restart the switch, the reset will be complete when the power lights stop blinking.

Warm Restart

Are you sure you want to perform a Warm Restart? Yes No

4.3.2 Factory Default

Forces the switch to restore the original factory settings. To reset the switch, select "Reset to Factory Defaults" from the drop-down list and click Apply. The LAN IP Address, Subnet Mask and Gateway IP Address will be reset to their factory.

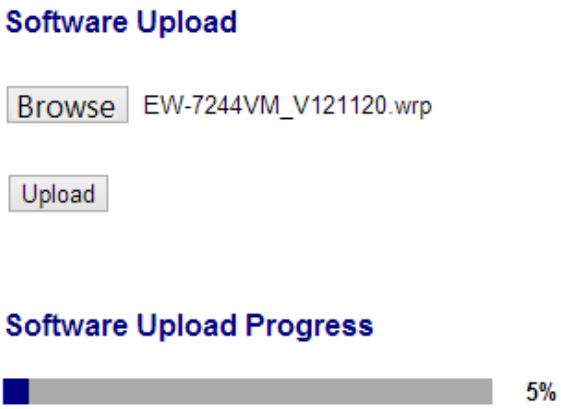


If you forgot the password, you can press the Reset button on the front panel for 5 seconds. Then the system will be reset to default configuration.

4.3.3 Software upload

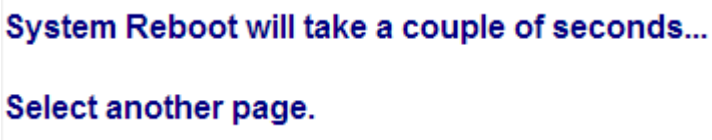
Select “Upgrade Firmware” from the Tools drop-down list then click on the “Browse” button to select the firmware file. Click the APPLY button to upgrade the selected switch firmware file. User can download firmware files for user’s switch from the Support section of your local supplier.

Figure: Browse and Upload new software.



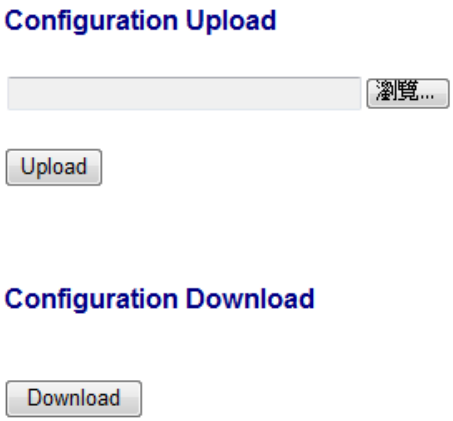
The “Software successfully loaded” screen allows you to activate the new software.

After click Yes, the follow message is displayed.



4.3.4 Configuration File Transfer

Configuration file transfer allows you to save the switch's current configuration or restore a previously saved configuration back to the device. Configuration files can be saved to any location on the web management station. To upload the configuration file to save a configuration or "Download" to restore a configuration. Use the Browse button to choose a file location on the web management station, or to find a saved configuration file.



4.3.5 Logout

The administrator has write access for all parameters governing the onboard agent. User should therefore assign a new administrator password as soon as possible, and store it in a safe place.

4.4 Revision History

Edition	Date	Modifications
V1.1	Jan. 31, 2013	● Update the product information. ● Revise the Web GUI description of the features. ● Add revision history

Chapter

5

5. Specification

Model Name	ES2446-51
Standards	Ethernet: IEEE 802.3 10BaseT, IEEE 802.3u 100BaseTX, IEEE 802.ab 1000BaseT, IEEE 802.3z 1000BaseSX/LX IEEE 802.3x Full-duplex and Flow Control IEEE 802.1Q VLAN IEEE 802.3ad Link Aggregation Control Protocol IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1X Port-based Network Access Control IEEE 802.3at Power Over Ethernet (PoE+)
Features	Number of Ports: 24 10/100/1000M RJ-45 Ports: 24 ports with IEEE 802.3at PoE+ Gigabit SFP: 4, Combo with 4 10/100/1000M RJ-45 MAC Address: 8K Buffer Memory: 500 Kb Switching Capacity: 48Gbps Jumbo Frames: 12.2 KB Transmission Method: Store and Forward
Smart Features	VLAN: 16, VLAN ID: 1~ 4094 Rapid Spanning Tree Protocol IGMP Snooping V1&V2 LACP/Trunk: up to 8 groups Quality of Service: up to 4 queues, 802.1p PoE Control: PoE Port Enabled/Disable, Status IEEE 802.1X, Source IP Filter Storm Control: Broadcast, Multicast, Flood Unicast Port: Port State, Speed/Duplex, Flow Control Rate Limiting, Port Mirroring Management: Web GUI, SNMP, Password protection Configuration upload/download, Firmware upgrade

Filtering/Forwarding Rates	1000Mbps port – 1,488,000pps 100Mbps port - 148,800pps, 10Mbps port - 14,880pps
Transmission Media	10BaseT Cat. 3, 4, 5 UTP/STP, 100BaseTX Cat. 5 UTP/STP 1000BaseT Cat. 5E UTP/STP
Led Indicators	Per Port: Link/Act; Per Unit: Power
Power Input	100~240V/AC, 50~60Hz
Power Output	53V /DC Per Port Output
Power Consumption	400 Watts (Max)
Dimensions	44 x 440 × 331 mm (H x W x D)
Weight	4.7 kg
Operating Temperature	0 to 40℃
Storage Temperature	-20 to 90℃
Humidity	10 to 90% RH (non-condensing)
Certifications	FCC Class A, CE

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Your EverFocus product is designed and manufactured with high quality materials and components which can be recycled and reused.
This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.
Please, dispose of this equipment at your local community waste collection/recycling centre.
In the European Union there are separate collection systems for used electrical and electronic product.
Please, help us to conserve the environment we live in!

Ihr EverFocus Produkt wurde entwickelt und hergestellt mit qualitativ hochwertigen Materialien und Komponenten, die recycelt und wieder verwendet werden können.
Dieses Symbol bedeutet, dass elektrische und elektronische Geräte am Ende ihrer Nutzungsdauer vom Hausmüll getrennt entsorgt werden sollen.
Bitte entsorgen Sie dieses Gerät bei Ihrer örtlichen kommunalen Sammelstelle oder im Recycling Centre.
Helfen Sie uns bitte, die Umwelt zu erhalten, in der wir leben!

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