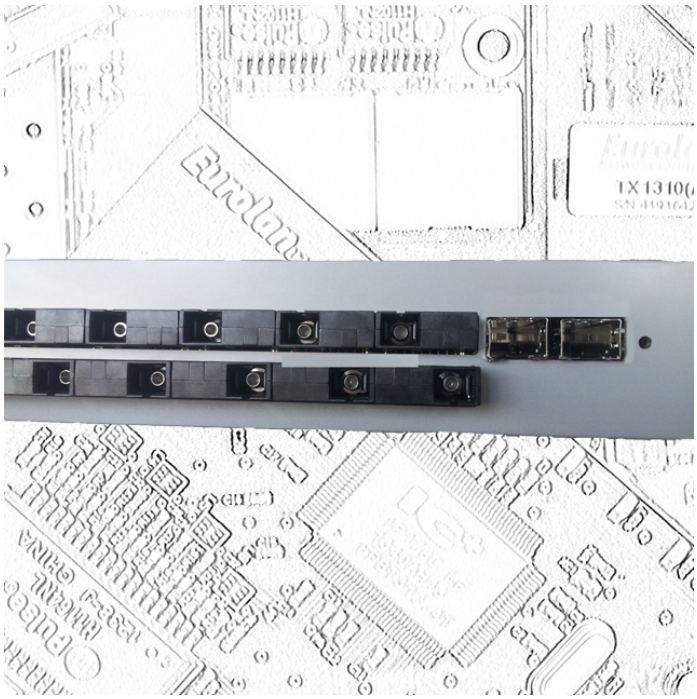
ES-2402-M

24- FO PORT 100M + 2-SFP PORT 1000M ETHERNET SWITCH

Fiber ports: BIDI TX1310/RX1550
TX1550/RX1310



The ***ES-2402-M*** is a WEB- Smart switch that integrates 2.75Mbits RAM, an 8K-entry MAC address lookup table, 24 SM, SC Fiber ports and two Gigabit SFP Ports. The ES-2402-M supports Port Based and Tag Based VLAN. For diagnostics/analysis, TX Packet/RX Packet, Collision Count/Transmit packet, Drop Packet/Receive Packet and CRC error packet/Receive Packet. Supports IGMP snooping v. 1 and v.2. Provides 4K MAC address entries, with configurable MAC address table and optional MAC address learning. Maximum packet length can be up to 1536 bytes. Broadcast storm filtering prevents network crashes caused by abnormal broadcast activity. WDM Technology- single fiber saves the Installation cost of expensive fiber cable. ES-2402-M switches are ideal for any premises FTTx, LAN-to-LAN or LAN-to-WAN fiber networking applications.

1. KEY FEATURES

- Built-in 2.75Mb RAM
- Support packet length up to 1536 Bytes
- Store & forward, share memory, non-blocking architecture
- Supports flow control
  802.3x in full duplex
  Collision/carrier_sense based backpressure in half duplex
- Provides up to 4K MAC address entries
  CRC/ direct hashing algorithm
  Programmable aging timer (55s~15.7hr) error < 4 %
  Configurable MAC address table
  Optional MAC address learning
- Supports porting mirroring function (Tx, Rx, Tx&Rx)
- Supports IGMP snooping function Version 1 and Version 2
- Supports flexible 3 trunking groups
  (Port 0 ~ port 3, port 4~ port 7, Gigabit port 1 ~ port 2)

Load balance based on (physiccal port, Destinationn MAC Address, Source MAC Address, Destination MAC Address/Source MAC Address)

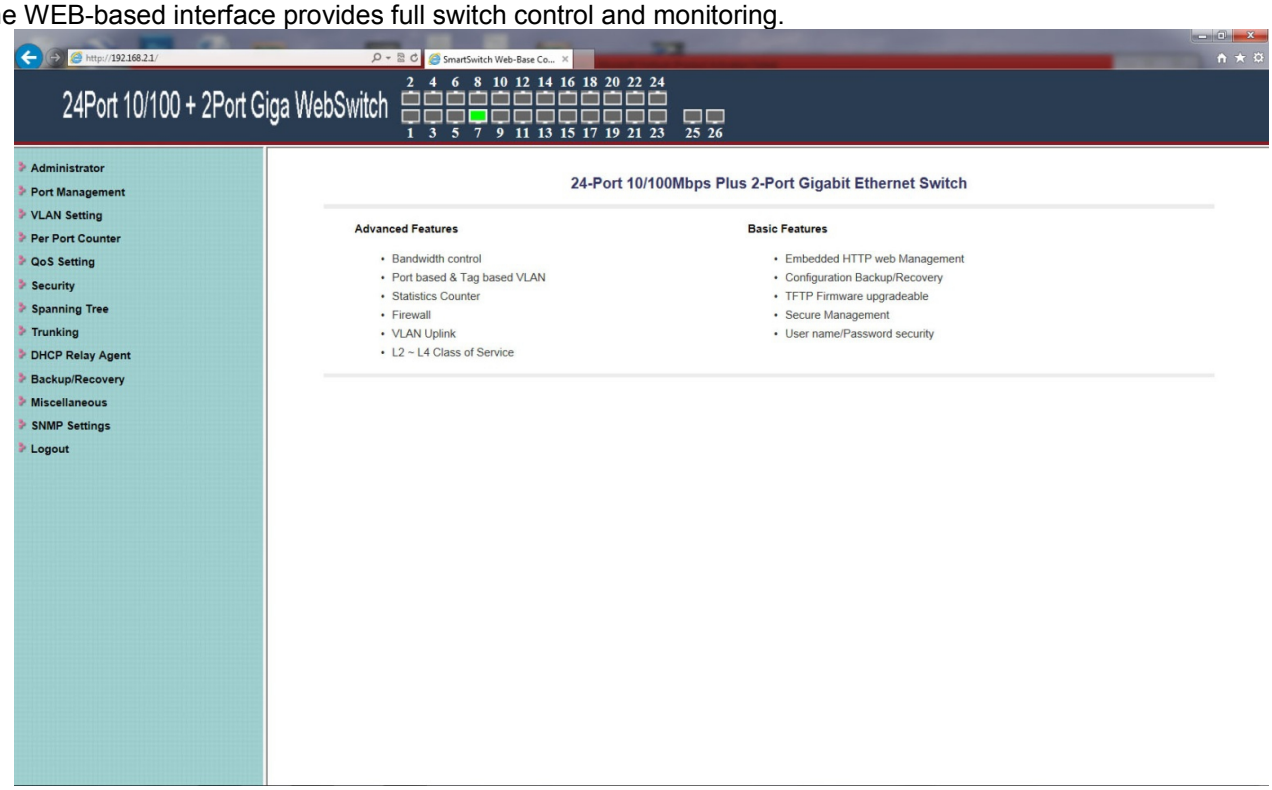
- Link failure recovery
- Supports VLAN
  Port based VLAN
  Tag based VLAN
  Add/ remove/ modify tag based on VID or physical port
- Support Class of Service
  Port based CoS
  802.1Q priority tag based
  IP TOS/DSCP based (IPv4/IPv6)
  TCP/UDP port based
  2 level of priority per port
  WRR/ First-Come-First-serve/ Strict priority
- Broadcast storm control support
  Broadcast rate control per port
  Block broadcast packet that does not belong to ARP or IP packet forwarded to
- Supports port security
  MAC address based
  IP address based
  TCP/UDP port based
- Supports Bandwidth control with/without flow control
  480 configurable levels for port 1~port 24 and (from 32kbps to 63.75 Mbps)
  508 configurable levels for Port 25 and port 26 (from 32kbps to 510 Mbps)
- Supports 5 port state for Spanning Tree protocol
  Blocking/ listening/ learning/ forwarding/disabled
  Forward BPDU to CPU port
- Status counters for each port
  RX/TX packet count
  CRC error packet count
  Dropped packet count
  Collision count

2. TECHNICAL SPECIFICATION

Standard: 802.3z and 802.3ab
Wavelength: BIDI TX1310nm/RX1550nm; TX1550nm/RX1310nm
Fiber Ports Distance: 25km
Fiber Cable: 8.3/125, 8.7/125, 9/125 or 10/125single-mode
Connectors: 2x RJ-45 Jack and 24 SC connectors
Power Supply:110 - 240VAC
Power Consumption: MAX 30W
Operating temperature: 0 to 40C
Storage temperature : -20 to 70C

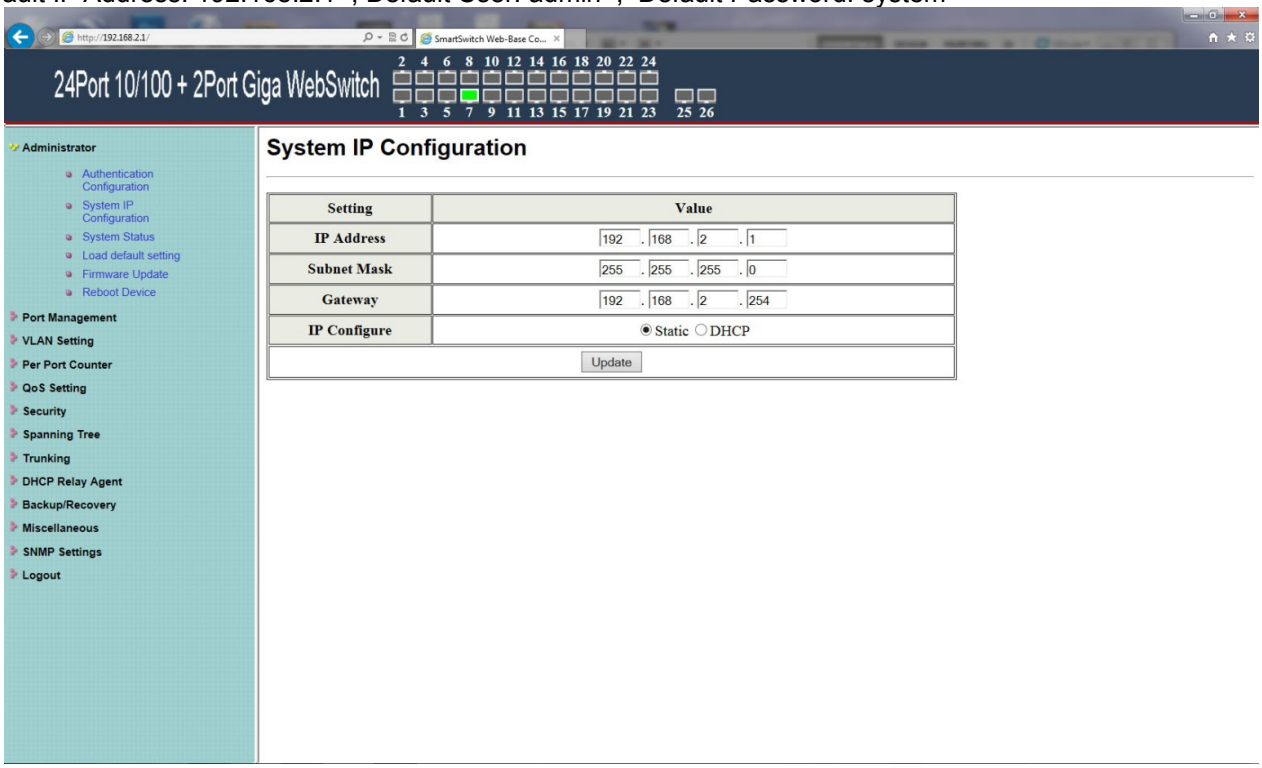
4. WEB Interface

The WEB-based interface provides full switch control and monitoring.



4.1 Default Settings

Default IP Address: 192.168.2.1 ; Default User: admin ; Default Password: system

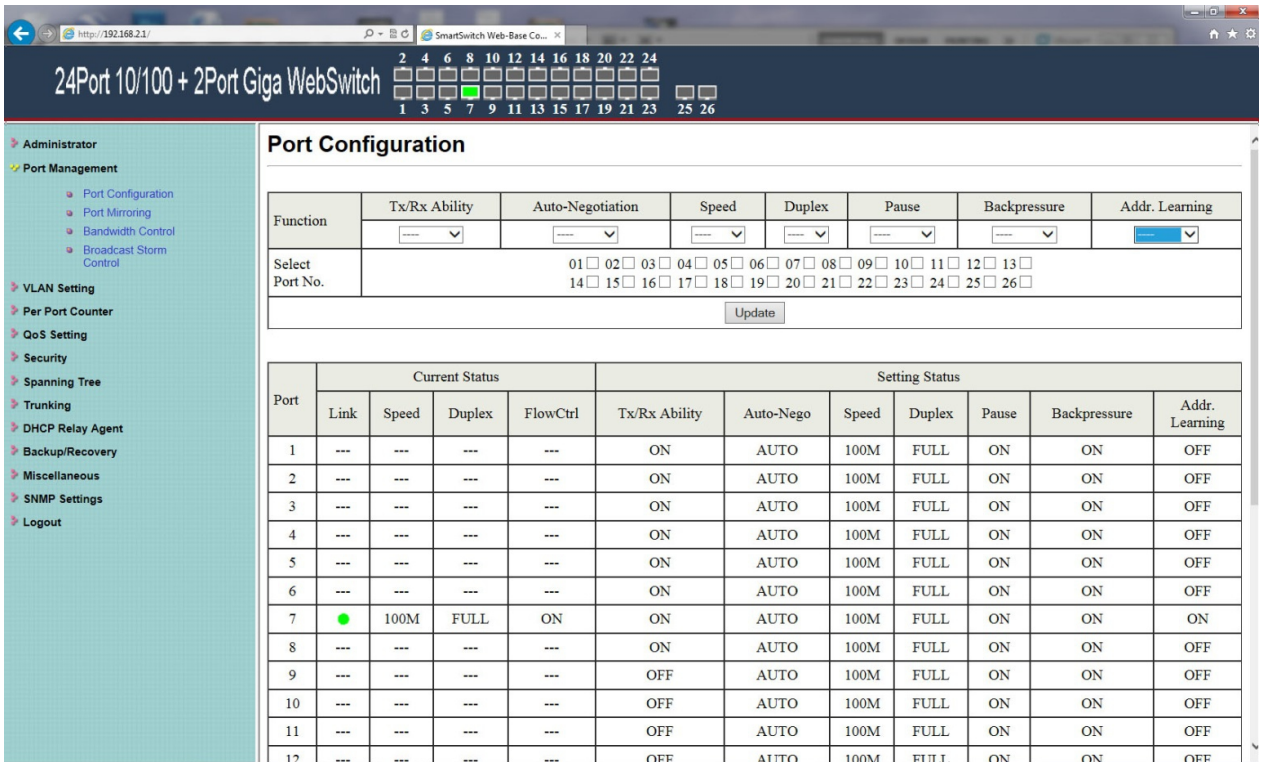


4.2 Port Configuration

- TX/RX Ability – Enable/Disable a port
- Auto-Negotiation - Enable/Disable Auto-Negotiation for a specific port
- Speed – Force 10, 100 or 1000Mbps for a specific port
- Duplex – Force Full/Half Duplex for a specific port.
- Pause – Enable/Disable for a specific port
  When operating in full duplex mode, ES-2402-M supports IEEE802.3x flow control, both symmetric pause and asymmetric pause function. Each port's flow control function can be enabled individually. When the packets in buffer reach the threshold, ES-2402-M generates a "Xoff" pause packet immediately or right after the current packet has been transmitted. When receiving a pause packet, the link partner stops transmission for a period of time defined in the pause packet. This prevents the buffer of ES-2402-M from overrun. When the packets in buffer lower than threshold, ES-2402-M generates a "Xon" pause packet to notify the link partner the receive buffer is available.
- Backpressure – Enable/Disable
  When operating in half duplex mode, the ES-2402-M supports backpressure flow control. Each port's backpressure function can be enabled individually. When the packets in buffer reach the threshold, ES-2402-M generates a jam pattern to back off the link partner. ES-2402-M supports the collision based and carrier-based backpressure. When the collision based backpressure is enabled, register, ES-2402-M generates a jam pattern only when the link partner is transmitting data and the receive buffer in ES-2402-M is not available. When detecting a collision on line, the link partner stops transmission until a back off time expires. When the carrier based backpressure is enabled, ES-2402-M transmits null packets continuously to prevent link partner's transmission when the buffer is not available.

Address Learning – Enable/Disable

ES-2402-M can handle up to 4096 MAC address entries. And it provides two kinds of hash method to maintain the MAC address table; one is the direct mapping and the other is the CRC algorithm. When the direct mapping method is selected, ES-2402-M recognizes the least significant 12 bits of the MAC address. When the CRC algorithm is used, ES-2402-M uses 48-bit MAC address to hash. The address learning function for each port can be either enabled or disabled.



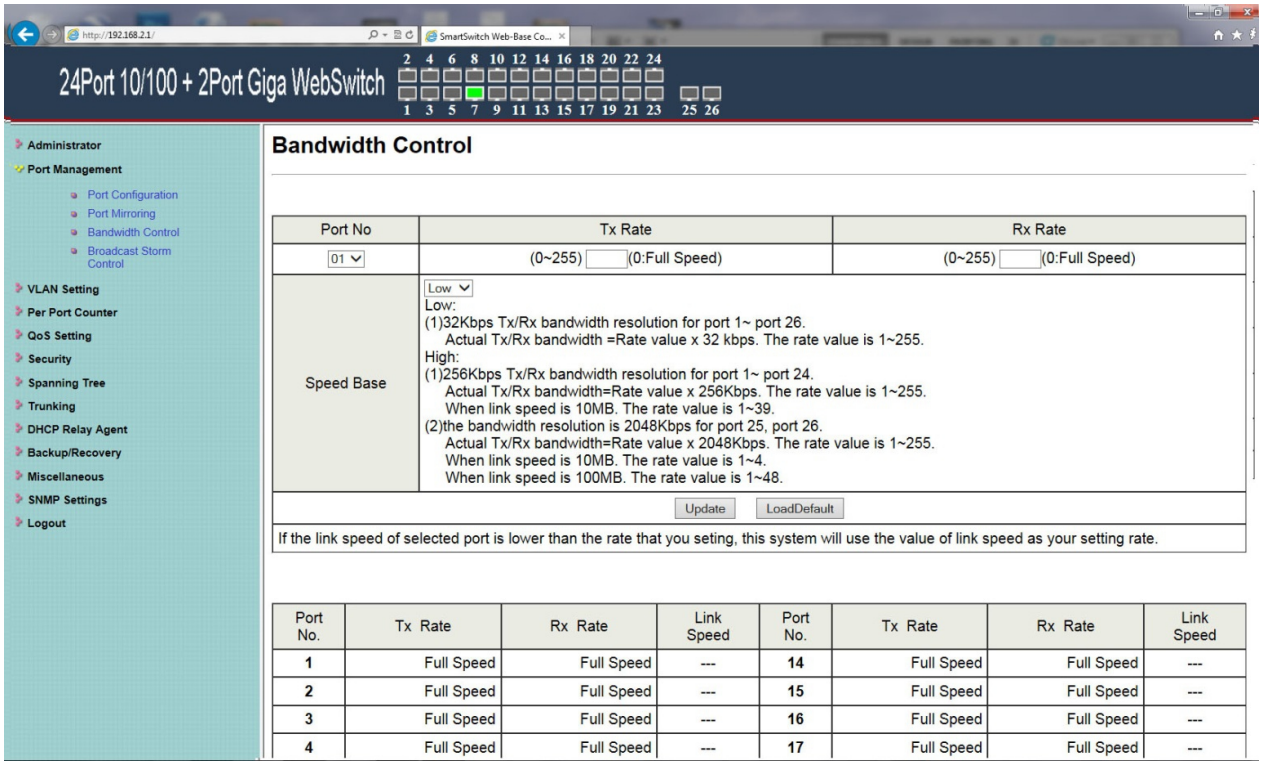
4.3 Port Mirroring

In some circumstances, the network administrator requires to monitor the network status. The port mirroring function helps the network administrator diagnose the network. A port mirroring function is accomplished by assigning monitored ports (source ports), snooping ports (destination ports) and snooping method. ES-2402-M will copy the traffic of monitored ports to all snooping ports. That is, the snooped packets for all snooping ports are the same. The ES-2402-M supports three kinds of mirroring methods: the ingress, the egress and ingress plus egress.

4.4. Bandwidth Control

ES-2402-M implements a sophisticated data rate control mechanism, which is very useful for the bandwidth-limited network. By controlling both the ingress and the egress data rate, ES-2402-M provides a variety of bandwidth configurations. It limits the maximum byte counts, by which a port can send or receive in a period of time. If the transmit byte counts or receive byte counts of a port reaches a pre-defined threshold, it will stop transmitting or receiving data.

Each port's egress/ingress data rate can be programmed individually.



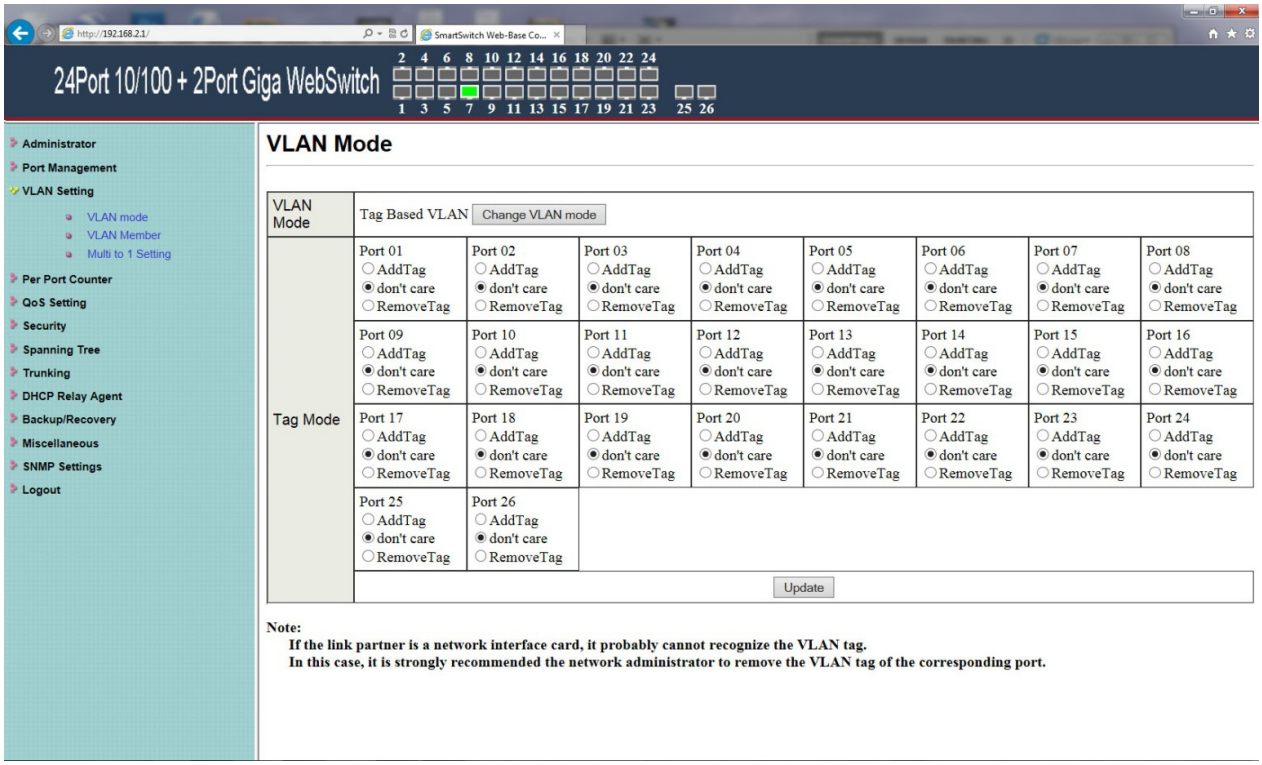
4.5 Broadcast storm control

To prevent the broadcast storm, the ES-2402-M implements a broadcast storm control mechanism. When this function is enabled, a port begins to drop the incoming broadcast packets if the received broadcast packet counts reach the defined threshold. Each port's broadcast storm protection function can be enabled individually.

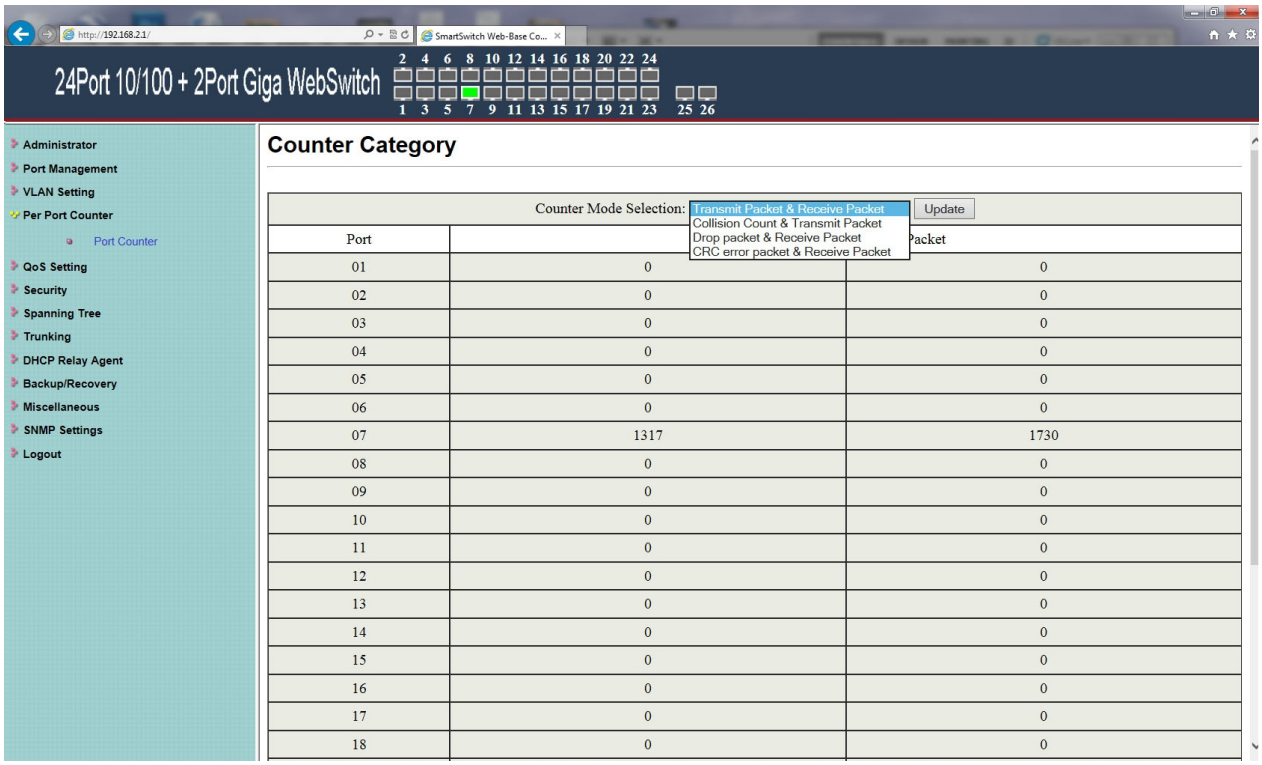
4.6. VLAN Mode

Port Based VLAN - Each port based LAN entry defines the broadcast domain of the ingress port. The overall number of port based VLAN groups that the ES-2402-M can support is 27.

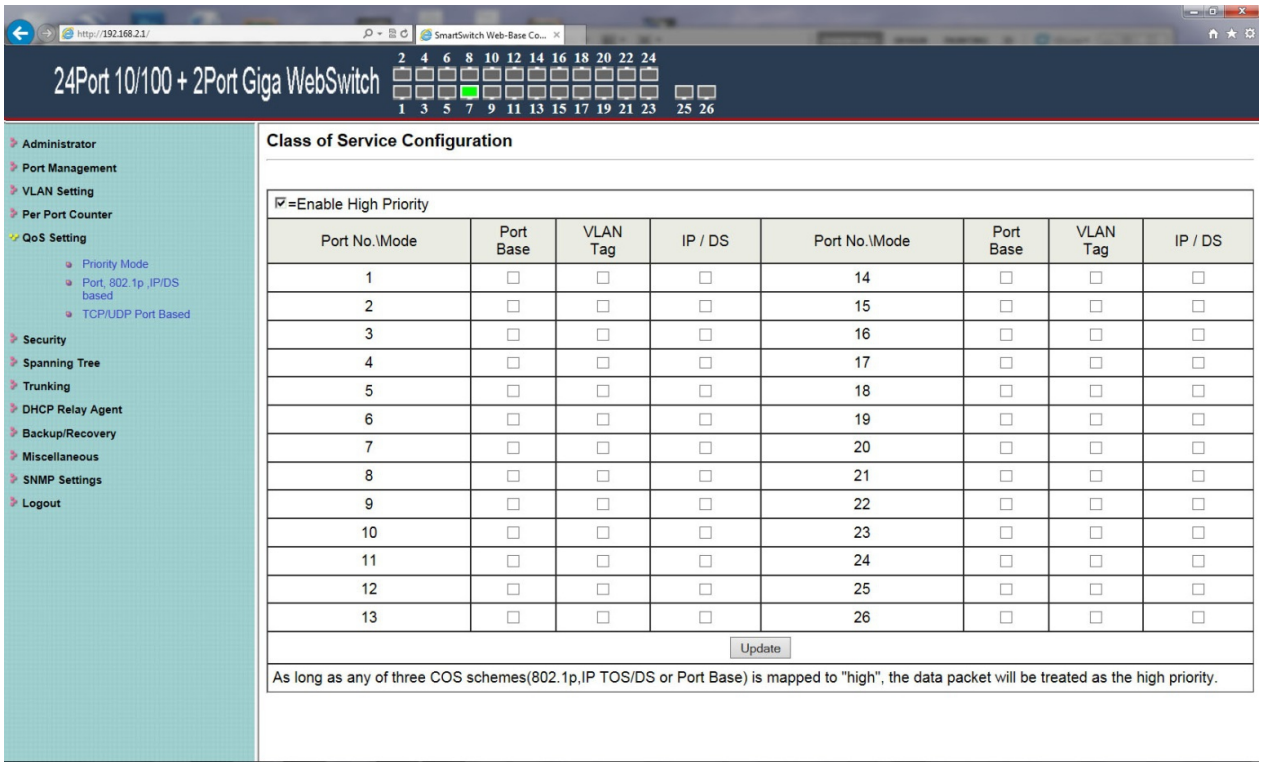
TAG Based VLAN - The ES-2402-M provides a tag based VLAN table with 32 entries; i.e. VID table entry 0~31. ES-2402-M can add, remove or modify the VLAN tag.

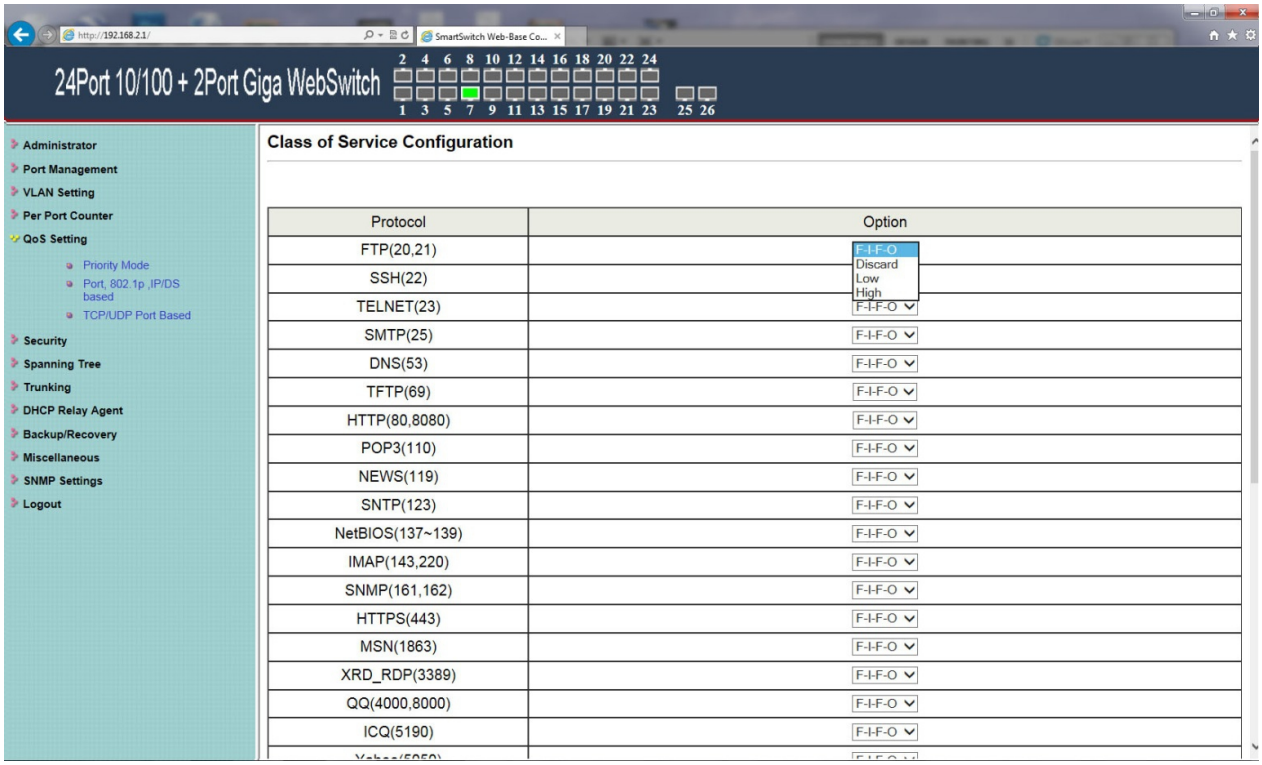


4.7. Port Counter



4.8 QoS


24Port 10/100 + 2Port Giga WebSwitch
Administrator
Port Management
VLAN Setting
Per Port Counter
QoS Setting
Priority Mode
Port, 802.1p ,IP/DS based
TCP/UDP Port Based
Security
Spanning Tree
Trunking
DHCP Relay Agent
Backup/Recovery
Miscellaneous
SNMP Settings
Logout
Class of Service Configuration
=Enable High Priority
Port No.\Mode
Port Base
VLAN Tag
IP / DS
Update
As long as any of three COS schemes(802.1p,IP TOS/DS or Port Base) is mapped to "high", the data packet will be treated as the high priority.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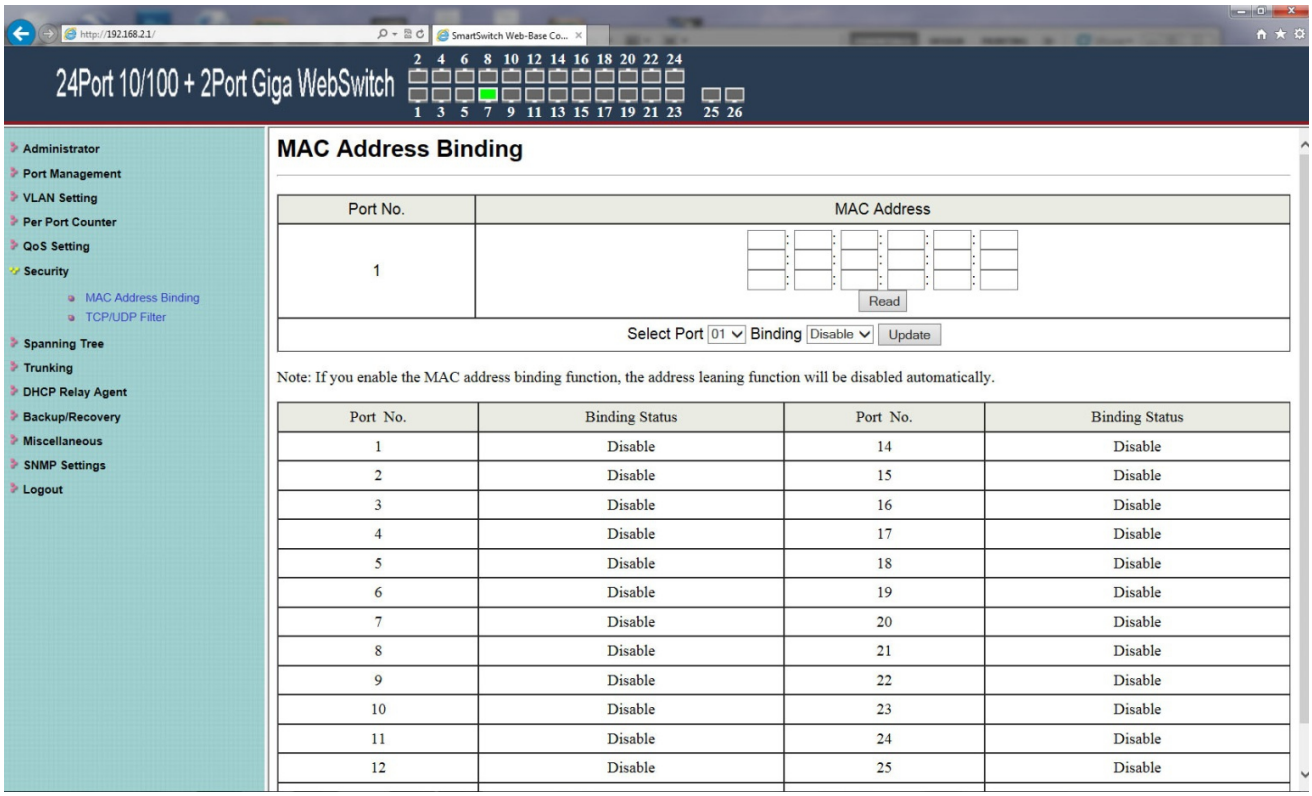
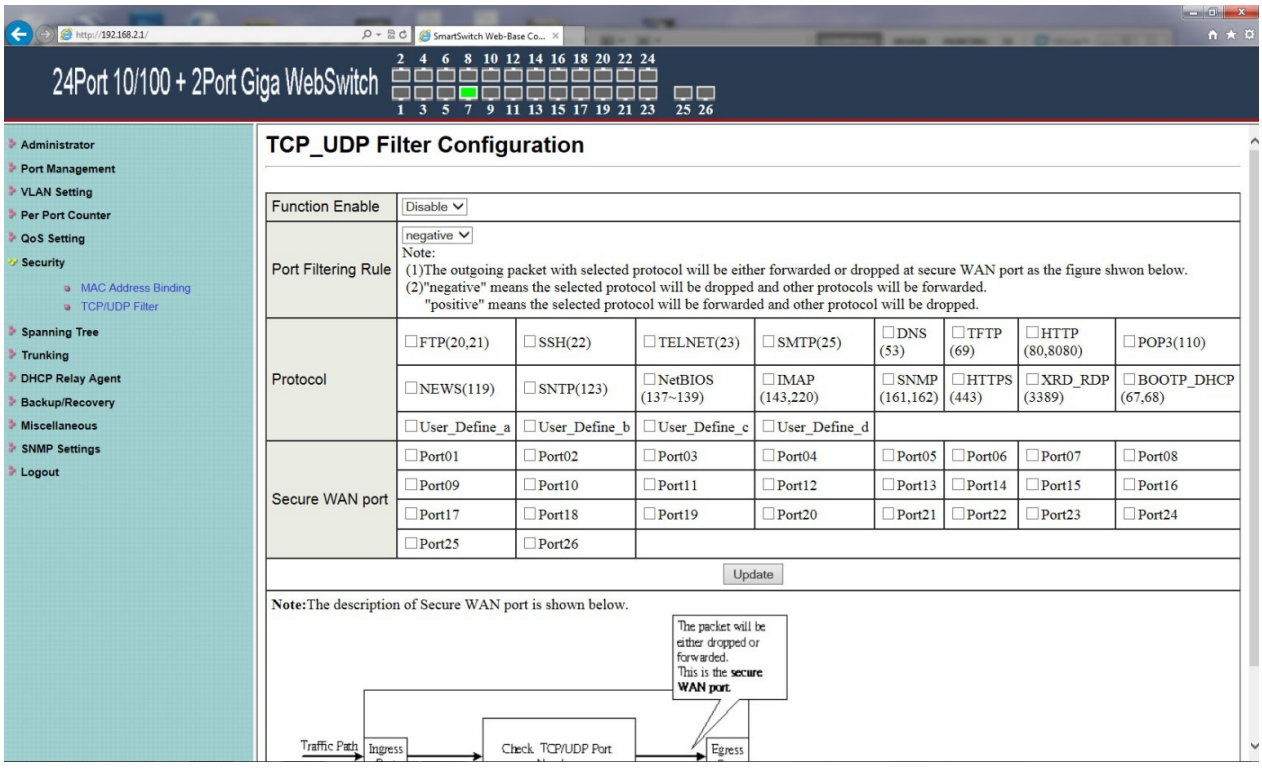
Miscellaneous
SNMP Settings
Logout
Class of Service Configuration
Protocol
Option
FTP(20,21)
SSH(22)
TELNET(23)
SMTP(25)
DNS(53)
TFTP(69)
HTTP(80,8080)
POP3(110)
NEWS(119)
SNTP(123)
NetBIOS(137~139)
IMAP(143,220)
SNMP(161,162)
HTTPS(443)
MSN(1863)
XRD_RDP(3389)
QQ(4000,8000)
ICQ(5190)
F-I-F-O
Discard
Low
High

4.9 MAC Address Binding



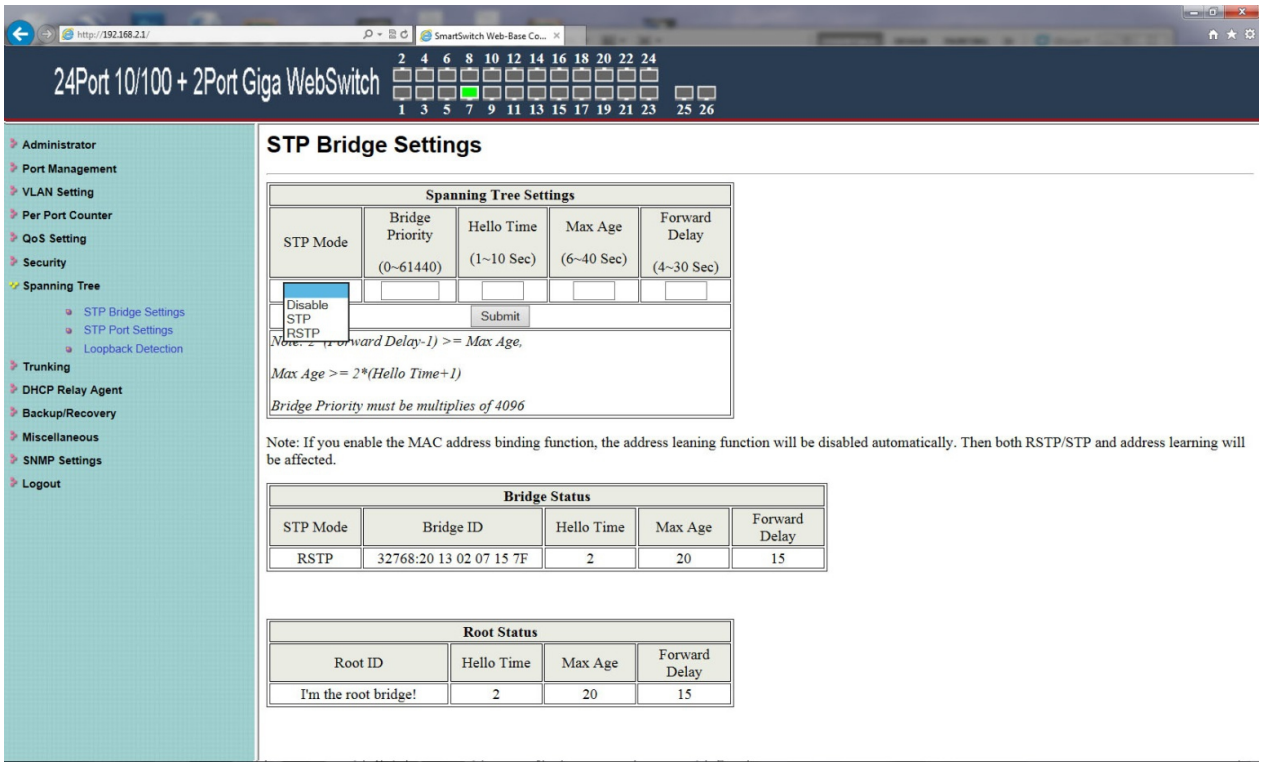
Port No.	Binding Status	Port No.	Binding Status
1	Disable	14	Disable
2	Disable	15	Disable
3	Disable	16	Disable
4	Disable	17	Disable
5	Disable	18	Disable
6	Disable	19	Disable
7	Disable	20	Disable
8	Disable	21	Disable
9	Disable	22	Disable
10	Disable	23	Disable
11	Disable	24	Disable
12	Disable	25	Disable

4.10 TCP/UDP Filter

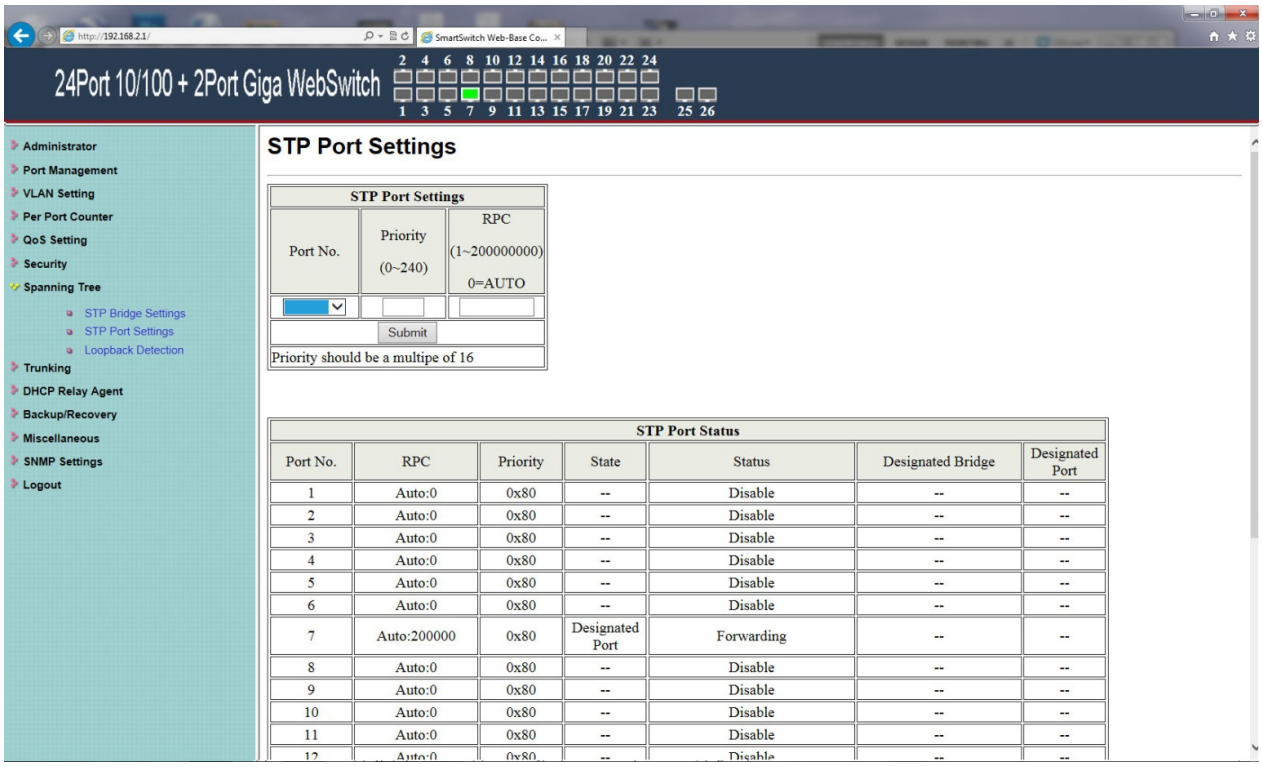


4.11 Spanning Tree

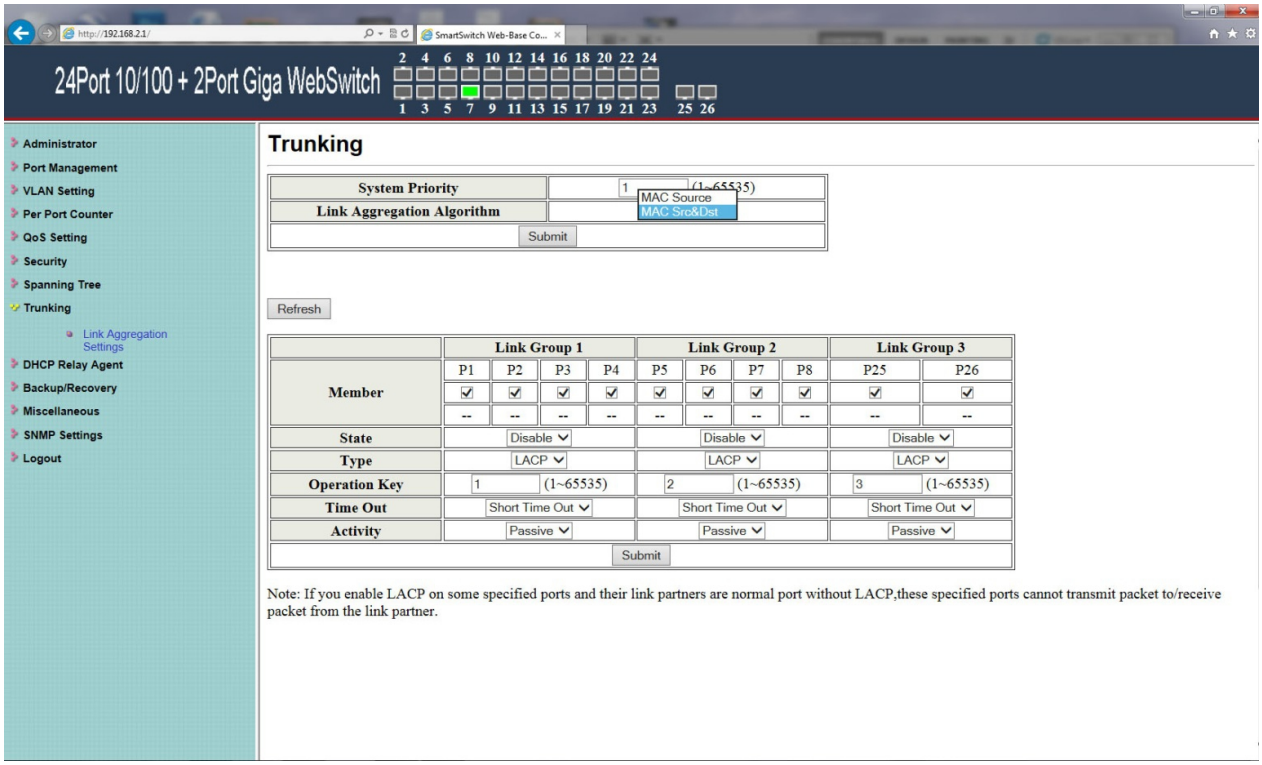
STP Bridge Settings



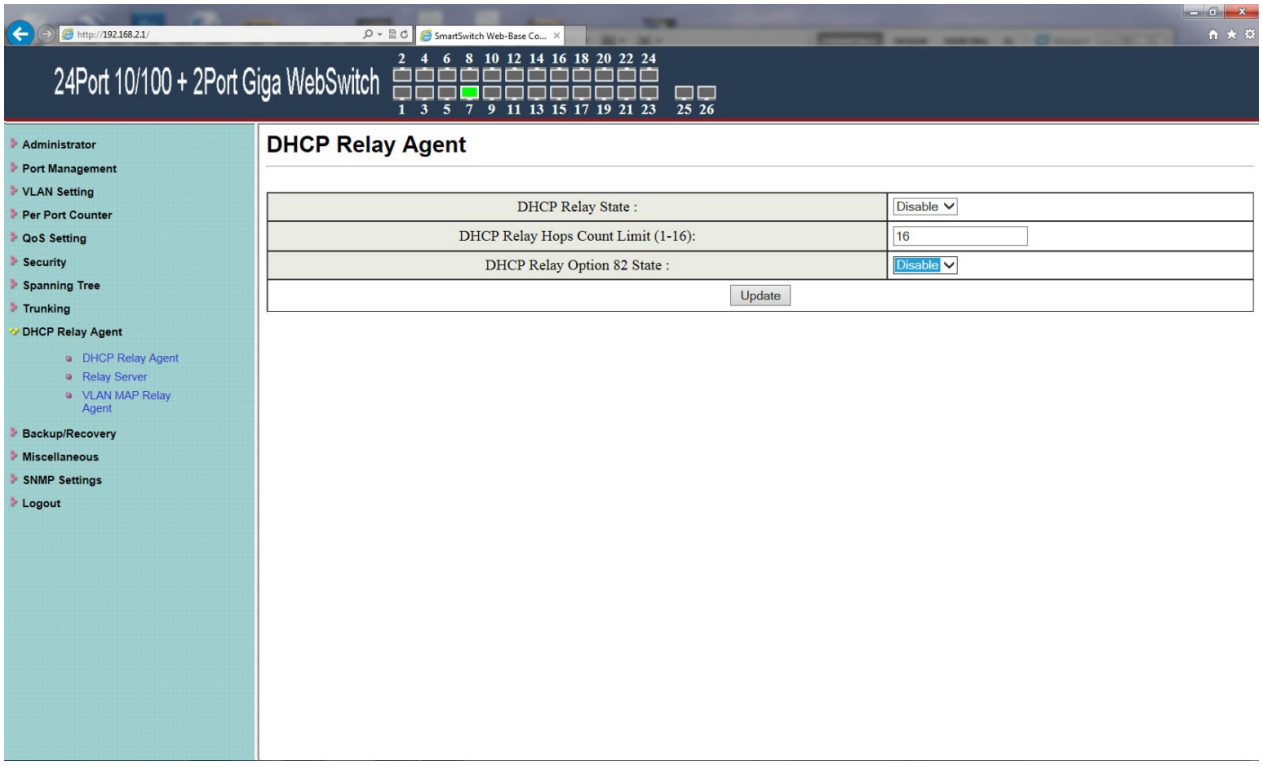
STP Port Settings



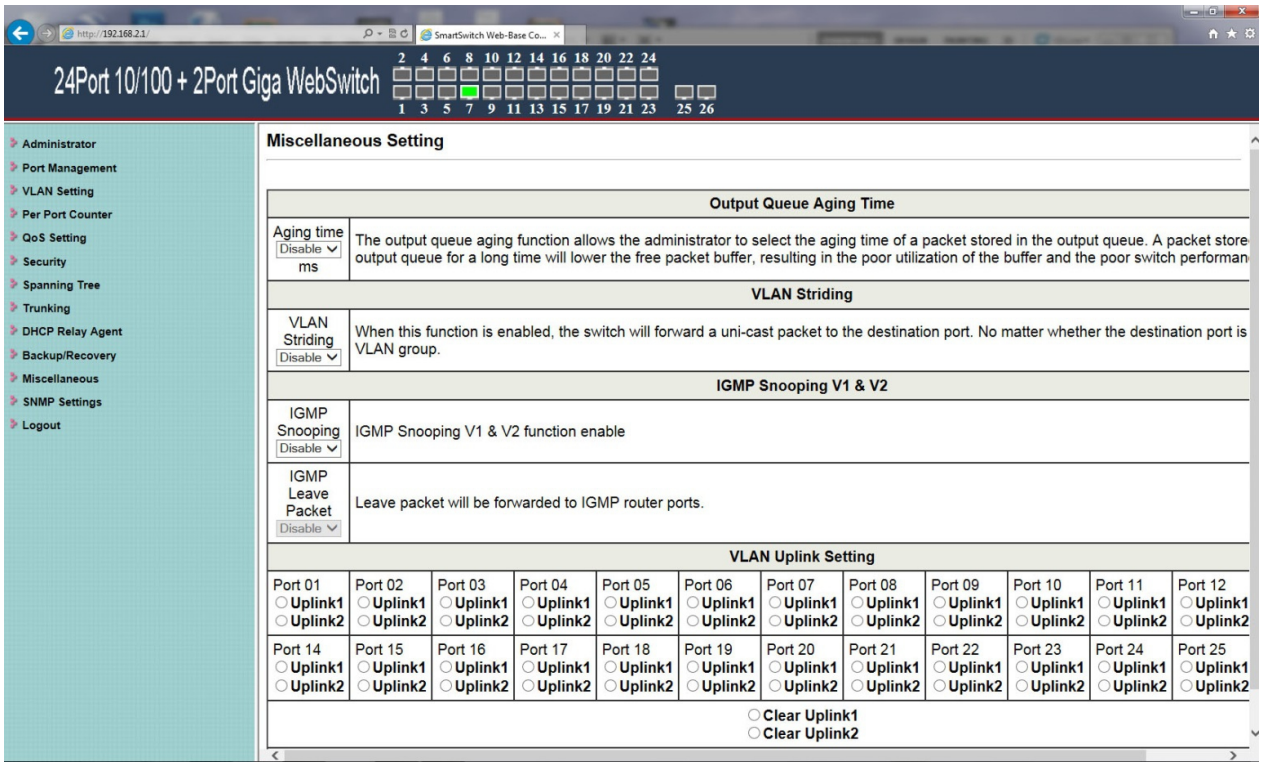
4.12 Trunking



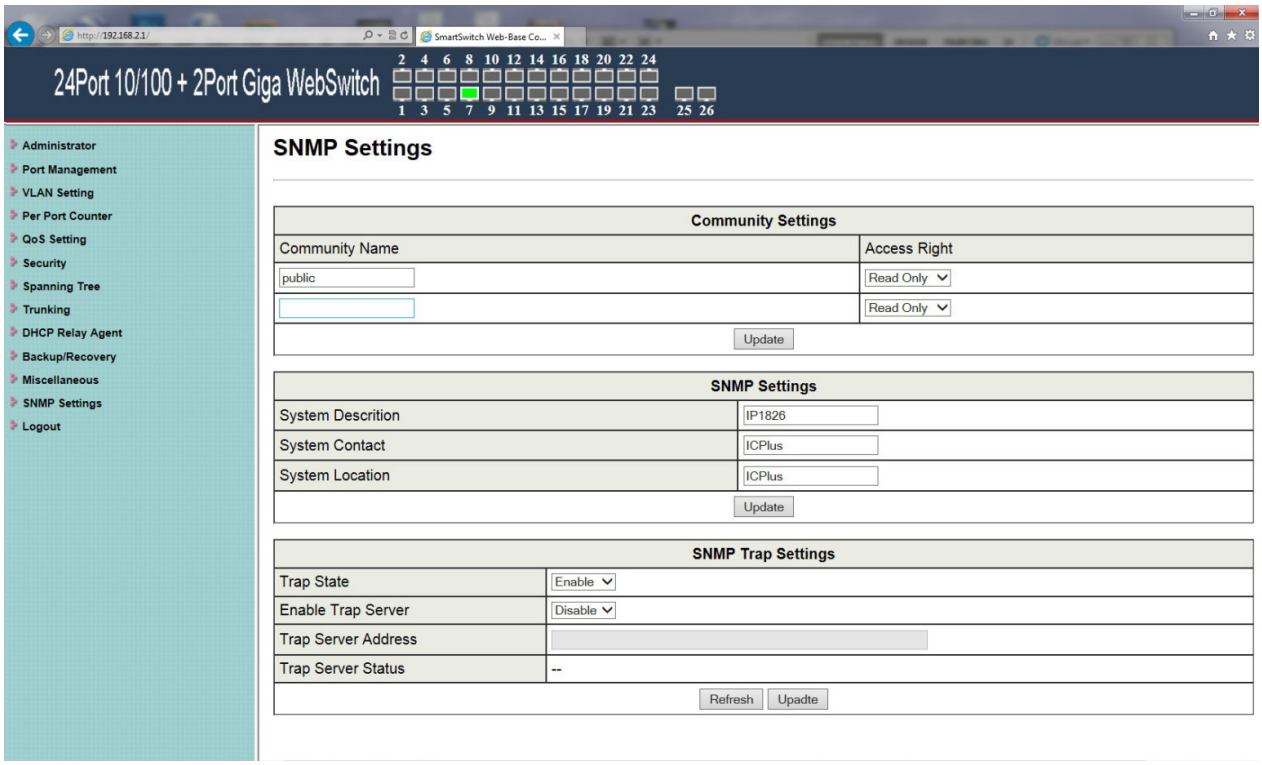
4.13 DHCP Relay Agent



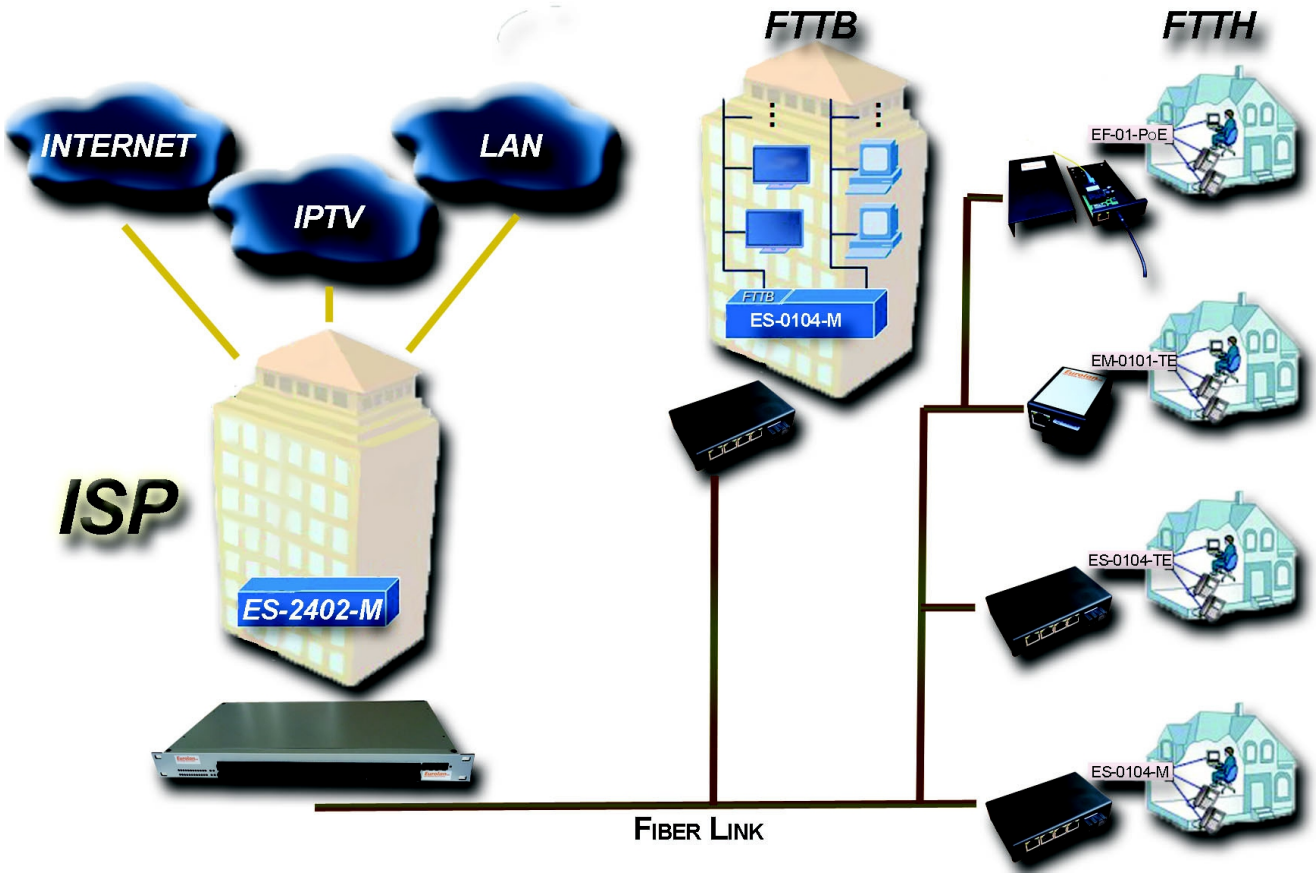
4.14 Miscellaneus



4.15 SNPM Settings



5. APPLICATION



4. ORDERING INFORMATION

There are available two options regarding the fiber ports wavelengths:

1. ES-2402-M TX1550/RX1310
2. ES-2402-M TX1310/RX1550

Rev. 1.5 Date: 15.05.2014