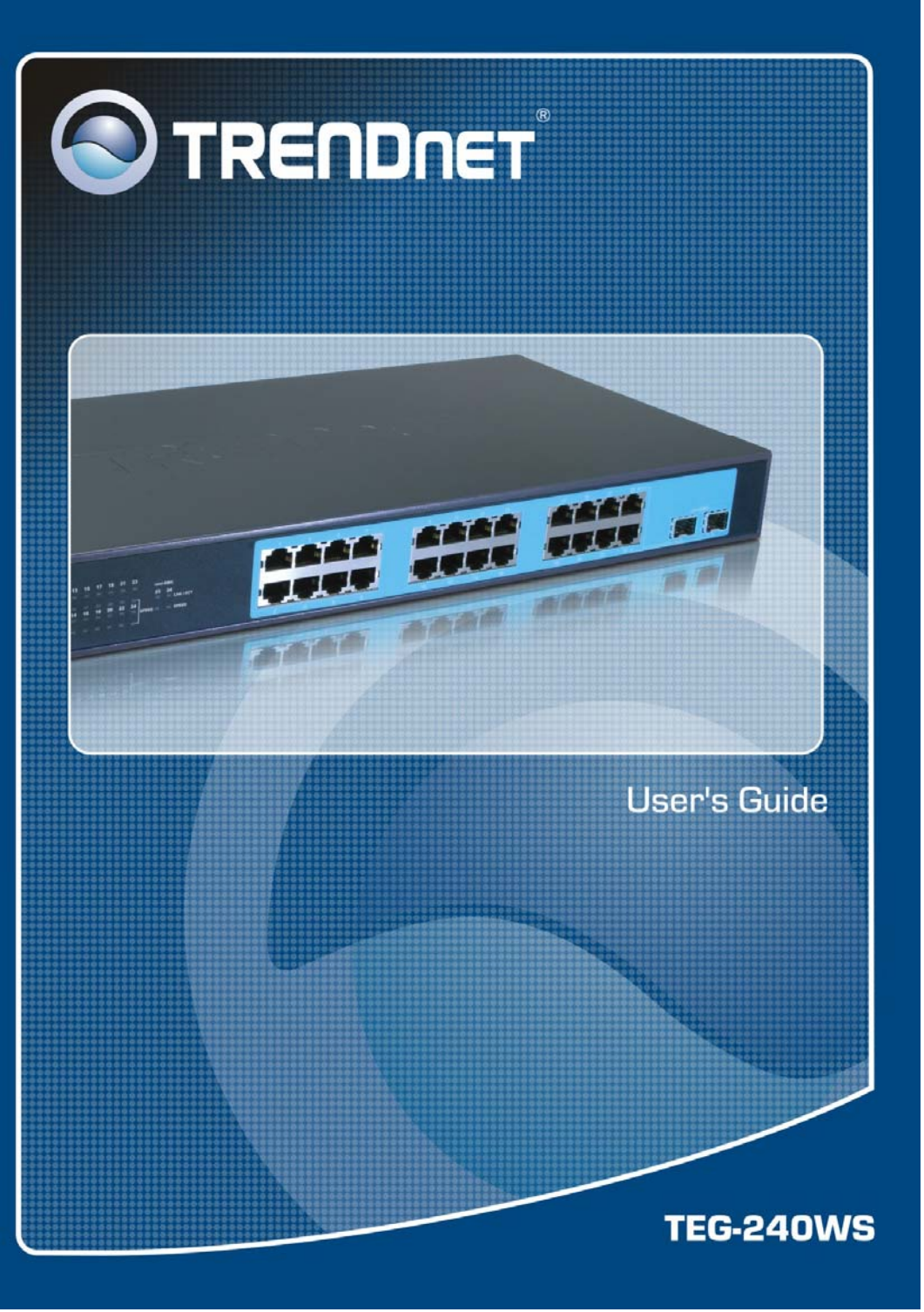

FCC Warning

This equipment has been tested and found to comply with the regulations 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 this user's guide, 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 or her own expense.

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.

VCCI Warning

This is a product of VCCI Class A Compliance.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

UL Warning

a) Elevated Operating Ambient Temperature- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

b) Reduced Air Flow- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

c) Mechanical Loading- mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

d) Circuit Overloading- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

e) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

Ver. C1-1.00

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ABOUT THIS GUIDE

Congratulations on your purchase of the TEG-240WS 24-Port 10/100/1000Mbps Gigabit Ethernet Web Smart Switch. This device integrates 1000Mbps Gigabit Ethernet, 100Mbps Fast Ethernet and 10Mbps Ethernet network capabilities in a highly flexible package.

Purpose

This guide discusses how to install your TEG-240WS 24-Port 10/100/1000Mbps Gigabit Ethernet Web Smart Switch.

Terms/Usage

In this guide, the term “Switch” (first letter upper case) refers to your TEG-240WS 24-Port 10/100/1000Mbps Gigabit Ethernet Web Smart Switch and “switch” (first letter lower case) refers to other Ethernet switches.

INTRODUCTION

This chapter describes the features of the TEG-240WS 24-Port 10/100/1000Mbps Gigabit Ethernet Web Smart Switch and some background information about Ethernet/Fast Ethernet/Gigabit Ethernet switching technology.

Gigabit Ethernet Technology

Gigabit Ethernet is an extension of IEEE 802.3 Ethernet utilizing the same packet structure, format, and support for CSMA/CD protocol, full duplex, flow control, and management objects, but with a tenfold increase in theoretical throughput over 100-Mbps Fast Ethernet and a hundredfold increase over 10-Mbps Ethernet. Since it is compatible with all 10-Mbps and 100-Mbps Ethernet environments, Gigabit Ethernet provides a straightforward upgrade without wasting a company's existing investment in hardware, software, and trained personnel.

The increased speed and extra bandwidth offered by Gigabit Ethernet is essential to coping with the network bottlenecks that frequently develop as computers and their busses get faster and more users use applications that generate more traffic. Upgrading key components, such as your backbone and servers to Gigabit Ethernet can greatly improve network response times as well as significantly speed up the traffic between your subnets.

Gigabit Ethernet enables fast optical fiber connections to support video conferencing, complex imaging, and similar data-intensive applications. Likewise, since data transfers occur 10 times faster than Fast Ethernet, servers outfitted with Gigabit Ethernet NIC's are able to perform 10 times the number of operations in the same amount of time.

In addition, the phenomenal bandwidth delivered by Gigabit Ethernet is the most cost-effective method to take advantage of today and tomorrow's rapidly improving switching and routing internetworking technologies. And with expected advances in the coming years in silicon technology and digital signal processing that will enable Gigabit Ethernet to eventually operate over unshielded twisted-pair (UTP) cabling, outfitting your network with a powerful 1000-Mbps-capable backbone/server connection creates a flexible foundation for the next generation of network technology products.

Fast Ethernet Technology

The growing importance of LANs and the increasing complexity of desktop computing applications are fueling the need for high performance networks. A number of high-speed LAN technologies have been proposed to provide greater bandwidth and improve client/server response times. Among them, 100BASE-T (Fast Ethernet) provides a non-disruptive, smooth evolution from the current 10BASE-T technology. The non-disruptive and smooth evolution nature, and the dominating potential market base, virtually guarantees cost-effective and high performance Fast Ethernet solutions.

100Mbps Fast Ethernet is a standard specified by the IEEE 802.3 LAN committee. It is an extension of the 10Mbps Ethernet standard with the ability to transmit and receive data at 100Mbps, while maintaining the CSMA/CD Ethernet protocol. Since the 100Mbps Fast Ethernet is compatible with all other 10Mbps Ethernet environments, it provides a straightforward upgrade and takes advantage of the existing investment in hardware, software, and personnel training.

Switching Technology

Another approach to pushing beyond the limits of Ethernet technology is the development of switching technology. A switch bridges Ethernet packets at the MAC address level of the Ethernet protocol transmitting among connected Ethernet or Fast Ethernet LAN segments.

Switching is a cost-effective way of increasing the total network capacity available to users on a local area network. A switch increases capacity and decreases network loading by dividing a local area network into different segments, which don't compete with each other for network transmission capacity.

The switch acts as a high-speed selective bridge between the individual segments. The switch, without interfering with any other segments, automatically forwards traffic that needs to go from one segment to another. By doing this the total network capacity is multiplied, while still maintaining the same network cabling and adapter cards.

Switching LAN technology is a marked improvement over the previous generation of network bridges, which were characterized by higher latencies. Routers have also been used to segment local area networks, but the cost of a router, the setup and maintenance required make routers relatively impractical. Today switches are an ideal solution to most kinds of local area network congestion problems.

VLAN (Virtual Local Area Network)

A VLAN is a group of end-stations that are not constrained by their physical location and can communicate as if a common broadcast domain, a LAN. The primary utility of using VLAN is to reduce latency and need for routers, using faster switching instead. Other VLAN utility includes:

Security, Security is increased with the reduction of opportunity in eavesdropping on a broadcast network because data will be switched to only those confidential users within the VLAN.

Cost Reduction, VLANs can be used to create multiple broadcast domains, thus eliminating the need of expensive routers.

Features

- 24 x 1000BASE-T Auto-negotiation Gigabit Ethernet ports
- 2 x Combo mini-GBIC (Auto-Sense) for optional mini-GBIC transceiver to extend distance, share with 2 1000BASE-T ports
- All 1000BASE-T ports support auto MDI/MDIX, so there is no need to use cross-over cables or an up-link port
- Half duplex transfer mode for connection speed 10Mbps and 100Mbps
- Full duplex transfer mode for connection speed of 10Mbps, 100Mbps and 1000Mbps
- Store-and-Forward switching scheme capability to support rate adaptation and ensure data integrity
- Up to 8K unicast addresses entities per device, self-learning, and table aging
- 512 KBytes packet buffer

- Supports IEEE 802.3x flow control for full-duplex mode ports
- Supports IEEE 802.1Q VLAN
- Supports IEEE 802.1p Priority Queues
- Supports Static Port Trunk
- Supports IGMP Snooping
- Supports Jumbo Frame
- Supports Broadcast Storm Control
- Supports Port Mirroring
- Supports Port Setting for Speed, Flow control
- Easy configuration via WEB Browser
- Easy setting via Web Management Utility
- Standard 19” Rack-mount size

UNPACKING AND INSTALLATION

This chapter provides unpacking and installation information for the Switch.

Unpacking

Open the shipping cartons of the Switch and carefully unpacks its contents. The carton should contain the following items:

- TEG-240WS Gigabit Web Smart Switch
- Multi-Language Quick Installation Guide
- CD-COM (Utility & User's Guide)
- Rack Mount Kit

If any item is found missing or damaged, please contact your local reseller for replacement

Installation

The site where you install the hub stack may greatly affect its performance. When installing, consider the following pointers:

Install the Switch in a fairly cool and dry place. See *Technical Specifications* for the acceptable temperature and humidity operating ranges.

Install the Switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.

Leave at least 10cm of space at the front and rear of the hub for ventilation.

Install the Switch on a sturdy, level surface that can support its weight,

or in an EIA standard-size equipment rack. For information on rack installation, see the next section, Rack Mounting.

When installing the Switch on a level surface, attach the rubber feet to the bottom of each device. The rubber feet cushion the hub and protect the hub case from scratching.

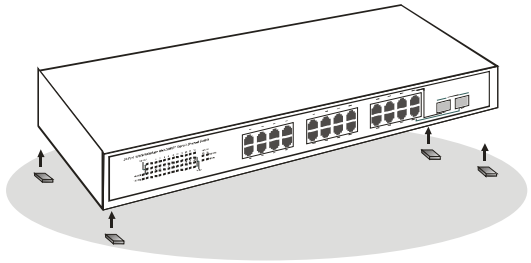


Figure 1. Attach the adhesive rubber pads to the bottom

Rack Mounting

The switch can be mounted in an EIA standard-size, 19-inch rack, which can be placed in a wiring closet with other equipment. Attach the mounting brackets at the switch's front panel (one on each side), and secure them with the provided screws.

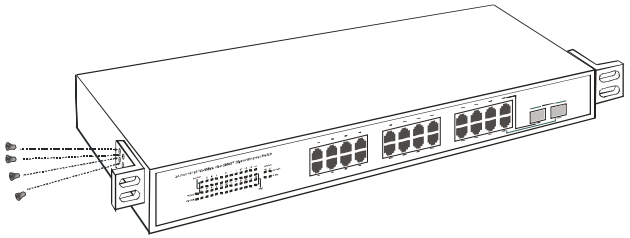


Figure 2. Combine the Switch with the provided screws

Then, use screws provided with the equipment rack to mount each switch in the rack.

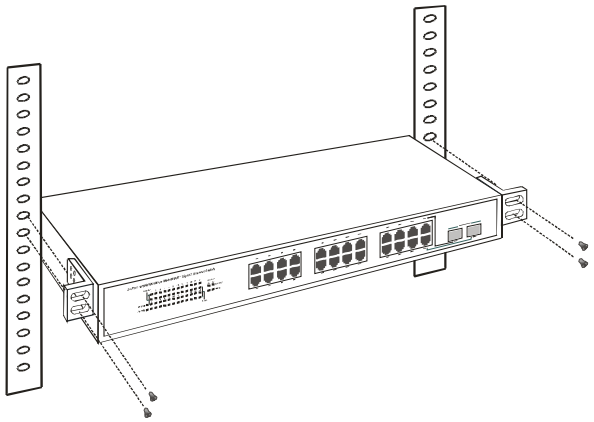


Figure 3. Mount the Switch in the rack

Connecting Network Cable

The Switch supports 1000Mbps Gigabit Ethernet that runs in Auto-negotiation mode and 10Mbps Ethernet or 100Mbps Fast Ethernet that runs both in half and full duplex mode and 1000Mbps Gigabit Ethernet runs in full duplex mode using four pairs of Category 5 cable.

These 1000BASE-T ports are Auto-MDI type port. The Switch can auto transform to MDI-II or MDI-X type, so you can just make an easy connection that without worrying if you are using a standard or crossover twisted-pair cable.

There are additional 2 ports combo mini-GBIC slot for optional mini-GBIC module.

AC Power

The Switch used the AC power supply 100-240V AC, 50-60 Hz. The power switch is located at the rear of the unit adjacent to the AC power connector and the system fan. The switch's power supply will adjust to the local power source automatically and may be turned on without having any or all LAN segment cables connected.

IDENTIFYING EXTERNAL COMPONENTS

This chapter describes the front panel, rear panel, and LED indicators of the Switch.

Front Panel

The figure below shows the front panels of the Switch.

Figure 4. Front panel

LED Indicators:

Comprehensive LED indicators display the status of the switch and the network (see the LED Indicators chapter below).

1000BASE-T Gigabit Ethernet Ports (Port 1~24):

The Switch twenty-four Gigabit twisted pair ports, supported auto negotiable 10/100/1000Mbps and auto MDI/MDIX crossover detection function, this function gives true "plug and play" capability, just need to plug-in the network cable to the hub directly and don't care if the end node is NIC (Network Interface Card) or switch and hub. These ports can operate in half-duplex mode for 10/100Mbps and full- duplex mode for 10/100/1000Mbps.

Note: When the port is set to "Forced Mode", the Auto MDI/MDIX will be disabled.

Mini-GBIC Slots (Port 23~24)

The Switch is equipped with two combo mini-GBIC ports, supported optional 1000BASE-SX/LX mini-GBIC module.

The 1000BASE-T port 23 and 24 are the same ports with the mini-GBIC port 23 and 24, when plug in the mini-GBIC module, the device will activate mini-GBIC, and the RJ45 port will be disabled.

Rear Panel

The rear panel of the Switch consists of an AC power connector and Reset button. The following shows the rear panel of the Switch.

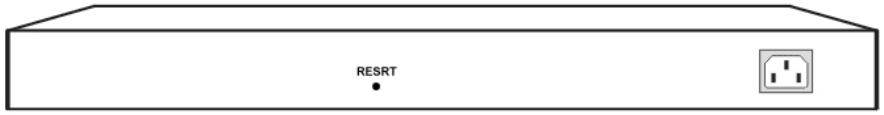


Figure 5. Rear panel

AC Power Connector:

This is a three-pronged connector that supports the power cord. Plug in the female connector of the provided power cord into this connector, and the male into a power outlet. Supported input voltages range from 100-240V AC at 50-60Hz.

Reset:

The Reset button is to reset all the setting back to the factory default.

Note: Be sure that you recorded the setting of your device, else all the setting will be erased when pressing the "Reset" button.

UNDERSTANDING LED INDICATORS

The front panel LEDs provides instant status feedback, and, helps monitor and troubleshoot when needed.

Figure 6. LED indicators

Power and System LEDs

POWER: Power Indicator

On	:	When the Power LED lights on, the Switch is receiving power.
Off	:	When the Power turns off or the power cord has improper connection.

SYSTEM: Management Indicator

Blinking	:	When the CPU is working, the System LED is blinking.
On/Off	:	The CPU is not working.

1000BASE-T Port 1~24 Status LEDs

Link/ACT: Link/Activity

On	:	When the Link/ACT LED lights on, the respective port is successfully connected to an Ethernet network.
Blinking	:	When the Link/ACT LED is blinking, the port is transmitting or receiving data on the Ethernet network.
Off	:	No link.

Speed

Green	:	When the Speed LED lights green, the respective port is connected to a 1000Mbps Gigabit Ethernet network.
Amber	:	When the Speed LED lights amber, the respective port is connected to a 100Mbps Fast Ethernet network.
Off		When the Speed LED lights off, the respective port is connected to a 10Mbps Ethernet network.

Mini-GBIC Port 23 ~ 24 Status LEDs

Link/ACT

On	:	When the fiber line connected to the mini-GBIC module is installed and connected to a network, the Link/ACT LED will lights on.
Blinking	:	When the Link/ACT LED is blinking, the port is transmitting or receiving data on the Gigabit Ethernet network.
Off	:	Fiber line or mini-GBIC module is not installed.

Speed

Green	:	When the Speed LED lights green, the respective port is connected to a 1000Mbps Gigabit Ethernet network.
Amber	:	When the Speed LED lights amber, the respective port is connected to a 100Mbps Fast Ethernet network.
Off		When the Speed LED lights off, the respective port is connected to a 10Mbps Ethernet network.

CONFIGURATION

Through the Web Browser you can configure the Switch such as VLAN, Port Trunking, Jumbo Frame… etc.

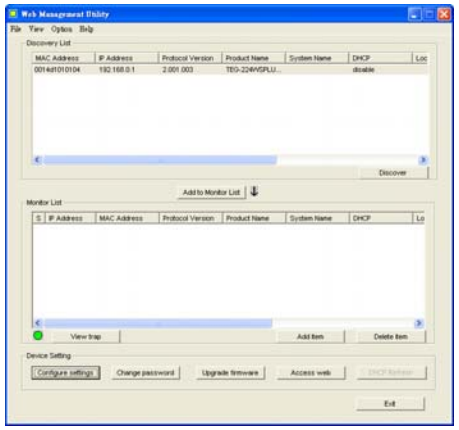
With the attached Web Management Utility, you can easily discover all the Web Management Switch, assign the IP Address, changing the password and upgrading the new firmware.

Installing the Web Management Utility

The following are step-by-step instructions for installing the Web Management utility.

1. Insert the Utility CD in the CD-ROM Drive.
2. Click **Install Utility** icon to start

3. Follow the on-screen instructions to install the utility.
4. Upon completion, go to **Program Files → TRENDnet→ Web Smart Switch Management Utility** and open the Web Management utility.



Web Management Utility

The Web Management Utility is divided into four sections, ***Discovery List, Monitor List, Device Setting*** and ***Toolbar function***, for details instruction, follow the below section.

Discovery List

This is the list where you can discover all the Web management devices in the entire network.

By pressing the ***"Discovery"*** button, you can list all the Web Management devices in the discovery list.

Double click or press the ***"Add to monitor list"*** button to select a device from the Discovery List to the Monitor List.

System word definitions in the Discovery List:

- ***MAC Address:*** Shows the device MAC Address.
- ***IP Address:*** Shows the current IP address of the device.
- ***Protocol version:*** Shows the version of the Utility protocol.
- ***Product Name:*** Shows the device product name.
- ***System Name:*** Shows the appointed device system name.
- ***DHCP:*** Shows the DHCP status of the device.
- ***Location:*** Shows where the device is located.
- ***Trap IP:*** Shows the IP where the Trap to be sent.
- ***Subnet Mask:*** Shows the Subnet Mask set of the device.
- ***Gateway:*** Shows the Gateway set of the device.

Monitor List

All the Web Smart Device in the Monitor List can be monitored; you can also receive the trap and show the status of the device.

System word definitions in the Monitor List:

- ***S:*** Shows the system symbol of the Web-Smart device, represent for device system is not alive.
- ***IP Address:*** Shows the current IP address of the device.
- ***MAC Address:*** Shows the device MAC Address.
- ***Protocol version:*** Shows the version of the Utility protocol.
- ***Product Name:*** Shows the device product name.
- ***System Name:*** Shows the appointed device system name.
- ***DHCP:*** Shows the DHCP status of the device.
- ***Location:*** Shows where the device is located.
- ***Trap IP:*** Shows the IP where the Trap to be sent.
- ***Subnet Mask:*** Shows the Subnet Mask set of the device.
- ***Gateway:*** Shows the Gateway set of the device.

View Trap: The Trap function can receive the events that happen from the Web Management Switch in the Monitor List.

There is a light indicator behind the ***"View Trap"*** button, when the light indicates in green, it means that there is no trap transmitted, and else when it indicates in red, it means that there is new trap transmitted, this is to remind us to view the trap. (Figure 7)

Figure 7. View Trap button

When the ***"View Trap"*** button is clicked, a Trap Information window will pop out, it will show the trap information including the Symbol, Time, Device IP and the Event occurred. (Figure 8)

The symbol "" represents the trap signal arise, this symbol will disappear after you review and click on the event record.

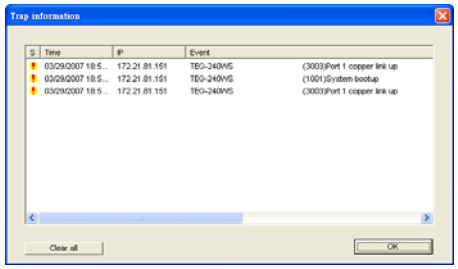


Figure 8. Trap Information

Note: In order to receive Trap information, switch has to be configured with Trap IP and Trap Events in Web browser, which are available in the Trap Setting Menu (see Page 48 for detail).

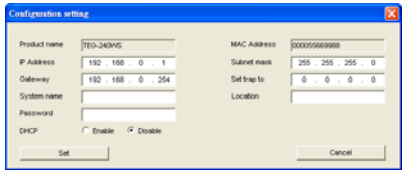
Add Item: To add a device to the Monitor List manually, enter the IP Address of the device that you want to monitor.
Delete Item: To delete the device in the Monitor List.

Device Setting

You can set the device by using the function key in the Device Setting Dialog box.

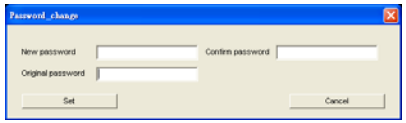
Configuration Setting: In this Configuration Setting, you can set the IP Address, Subnet Mask, Gateway, Set Trap to (Trap IP Address), System name, Location and DHCP function.

Select the device in the Discovery list or Monitor List and press this button, then the Configuration Setting window will pop out as Figure 10, after filling up the data that you want to change, you must fill up the password and press the "Set" to process the data changed immediately. The default password of this TEG-240WS 24-Port 10/100/1000Mbps Gigabit Ethernet Web Smart Switch configuration is ***"admin"***.



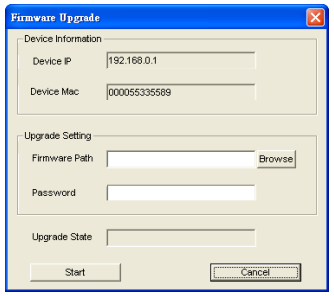
Configuration Setting

Password Change: You can use this Password Change when you need to change the password, fill in the password needed in the dialog box and press ***"Set"*** button to proceed the password change immediately.



Password Change

Firmware Upgrade: When the device has a new function, there will be a new firmware to update the device, use this function to update.



Firmware Upgrade

Access Web: Double click the device in the Monitor List or select a device in the Monitor List and press this ***"Web Access"*** button to access the device in Web browser.

DHCP Refresh: Press this ***"DHCP Refresh"*** button to refresh IP address of selected device form DHCP server.

Toolbar

The toolbar in the Web Management Utility have four main tabs, File, View, Options and Help.

In the ***"File TAB"***, there are Monitor Save, Monitor Save As, Monitor Load and Exit.

- ***Monitor Save:*** To record the setting of the Monitor List to the default, when you open the Web Management Utility next time, it will auto load the default recorded setting.
- ***Monitor Save As:*** To record the setting of the Monitor List in appointed filename and file path.

- ***Monitor Load:*** To manually load the setting file of the Monitor List.
- ***Exit:*** To exit the Web Management Utility.

In the ***"View TAB"***, there are view log and clear log function, this function will help you to show trap setting.

- ***View Log:*** To show the event of the Web Management Utility and the device.
- ***Clear Log:*** to clear the log.

In the ***"Option TAB"***, there are Refresh Time function, this function helps you to refresh the time of monitoring the device. Choose ***15 secs, 30 secs, 1 min, 2 min and 5 min*** to select the time of monitoring.

In the ***"Help TAB"***, there is About function, it will show out the version of the Web Management Utility.

Configuring the Switch

The TEG-240WS 24-Port 10/100/1000Mbps Gigabit Ethernet Web Smart Switch has a Web GUI interface for smart switch configuration. The Switch can be configured through the Web Browser. A network administrator can manage, control and monitor the switch from the local LAN. This section indicates how to configure the Switch to enable its smart functions

Login

Before you configure this device, note that when the Web Smart Switch is configured through an Ethernet connection, make sure the manager PC must be set on same the **IP network**. For example, when the default network address of the default IP address of the Web Smart Switch is ***192.168.0.1***, then the manager PC should be set at 192.168.0.x (where x is a number between 2 and 253), and the default subnet mask is 255.255.255.0.

Open Internet Explorer 5.0 or above Web browser.

Enter IP address http://192.168.0.1 (the factory-default IP address setting) to the address location.

Or through the Web Management Utility, you do not need to remember the IP Address, select the device shown in the Monitor List of the Web Management Utility to settle the device on the Web Browser. When the following dialog page appears, remain enter the default password ***"admin"*** and press Login to enter the main configuration window.

After entering the password, the main page comes up, the screen will display the device status.

Figure 9. System Information

Setup Setting

Find that there are seven items, including *Port Setting, IEEE 802.1Q VLAN Settings, Trunk Setting, Mirror Setting, IEEE 802.1p Default Priority, Broadcast Strom Control Setting, Jumbo Frame Setting* in Setup menu.

Port Settings

In Port Settings menu (Figure 10), this page will show each port's status, selected drop down menu to set each port's *Speed, and QoS priority* then press *"Apply"* button to activate changes. To refresh the information table to view the latest port setting and Link Status, press the Refresh button.

The *Link Status* in the screen will show the connection speed and duplex mode; else this dialog box will show ***Down*** when the port is disconnected.

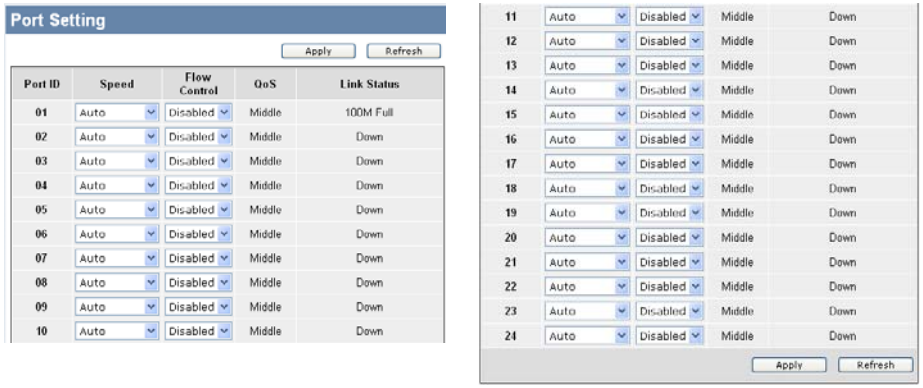


Figure 11. Port Setting

Note: The priority of Gigabit Fiber port is higher than Copper.

Speed:

The 1000BASE-T connections can operate in Forced Mode settings (1000M Full, 100M Full, 100M Half, 10M Full, 10M Half), Auto, or Disable. The default setting for all ports are Auto. The mini-GBIC (Gigabit Fiber) connections can operate in Forced Mode settings (1000M Full), Auto, or Disable

Flow Control:

This setting determines whether or not the Switch will be handling flow control. Set Flow Control to ***Enable*** for avoiding data transfer overflow. Or it sets to ***Disable***; there is either no flow control or other hardware/software management.

When the port is set to ***forced mode***, then the flow control will automatically set to ***Disable.***

QoS:

Displays each port's 802.1p QoS priority level for received data packet handling. Default setting for all ports is Middle. You can change the priority settings in ***802.1p Default Priority***.

IEEE 802.1Q VLAN

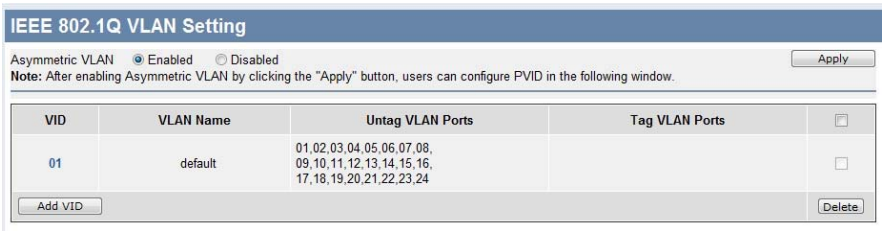
A VLAN is a group of ports that can be anywhere in the network, but communicate as though they were in the same area.

VLANs can be easily organized to reflect department groups (such as R&D, Marketing), usage groups (such as e-mail), or multicast groups (multimedia applications such as video conferencing), and therefore help to simplify network management by allowing users to move devices to a new VLAN without having to change any physical connections.

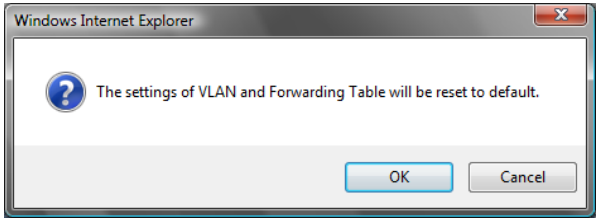
The IEEE 802.1Q VLAN Configuration page provides powerful VID management functions. The original settings have the VID as 01, named "default", and all 24 ports as "Untagged".

Asymmetric VLAN

IEEE 802.1Q Asymmetric VLAN default setting is "Disabled", you can press "Enabled" ratio button and ***Apply*** it to submit the Asymmetric VLAN function.



Enabled Asymmetric VLAN function

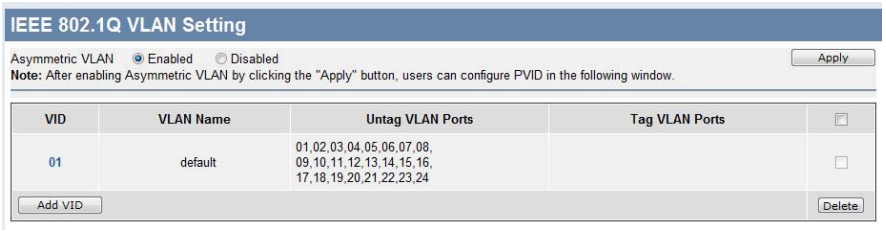


Change setting warning message

Note: The Settings of VLAN, IGMP Snooping and Forwarding Table will be reset to default.

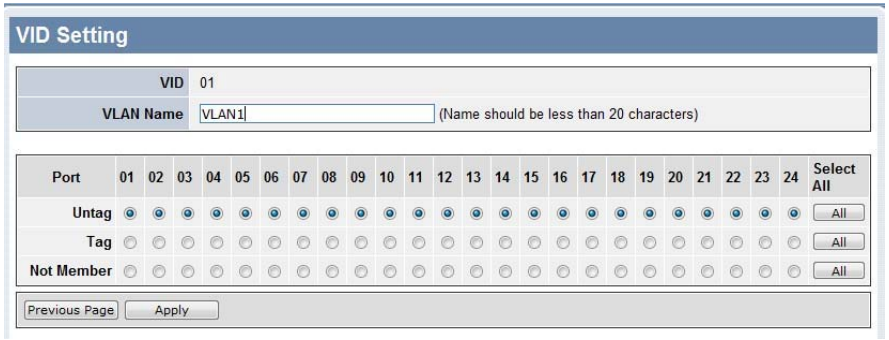
Untag Asymmetric VLAN Setting:

The IEEE 802.1Q VLAN Configuration page provides powerful VID management functions. The original default VLAN setting has the VID as 01, named "default", and contains all ports as "Untagged".



802.1Q Asymmetric VLAN Setting

Add VID: Click to create a new VID group, assigning ports 1 ~ 24 as Untag, Tag, or Not Member. A port can be "Untagged" in only one VID. To save the VID group, press Apply.



Add New VID

VID: A unique VLAN ID.

VLAN Name: A VLAN name can be setting as user wish.

Port: The switch port number.

Untag: Outgoing frames without VLAN tag.

Tag: Outgoing frames with VLAN tag.

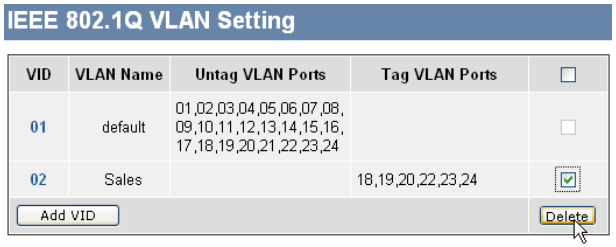
Not Member: The port number which not to be grouped.

Select All: Select all ports to be VLAN members or not VLAN members.

Cancel: To call the modifications off.

Apply: To activate and save the modifications.

Delete: Click to delete selected VID.



To change exist IEEE 802.1Q VLAN setting, press the VID to modify that IEEE 802.1Q VLAN setting.

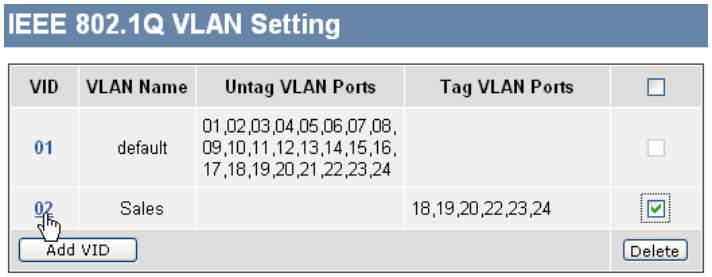
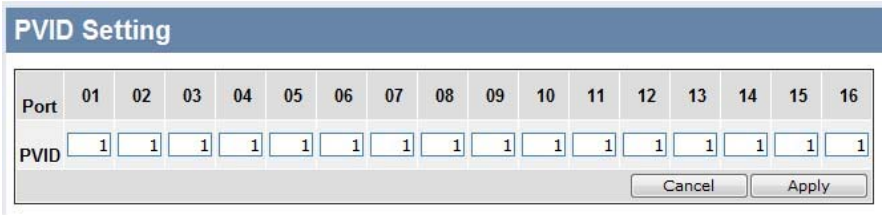


Figure 12. Modify VID

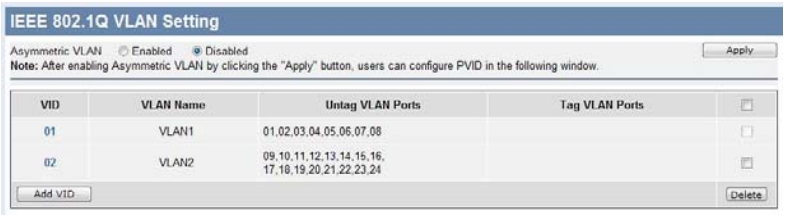
PVID settings:

While receiving an untagged frame from the port, the switch will assign a tag to the frame, using the PVID of the port as its VID.

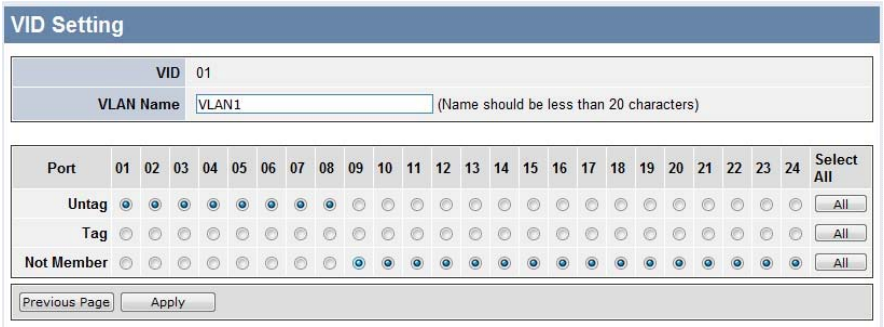


Example 1:

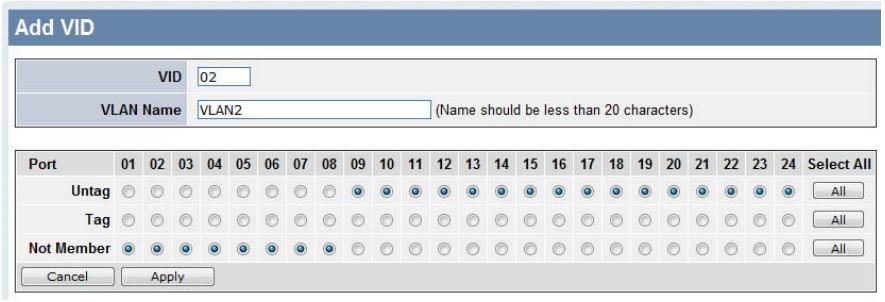
Here is an example of two VLAN groups with several ports in each group and VLAN 1 (VID 01) does not have communication with VLAN 2 (VID 02).



Step1: Set VLAN1 port 9~24 to "**Not Member**", then apply setting.

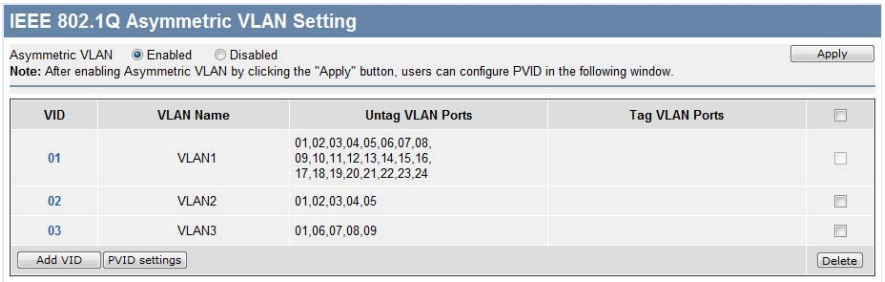


Step2: Create VID 02 and set port 9~24 to "Untag Port" member, then apply setting.



Example2:

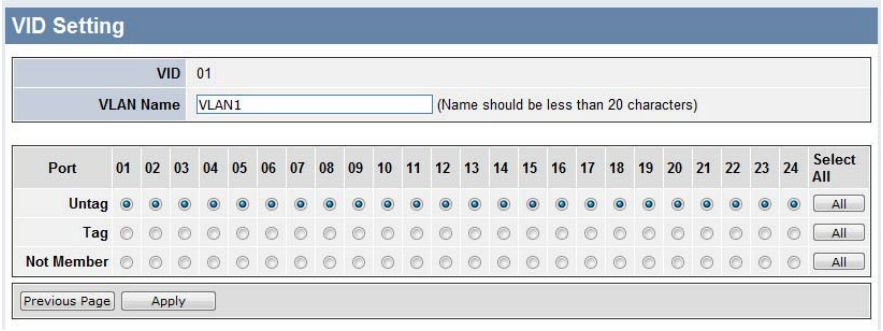
802.1Q Asymmetric VLAN settings example: Port 1~16 in VLAN 1, port1~5 in VLAN 2, port1,6~9 in VLAN 3. All VLAN1~3 have access to Internet via port 1.



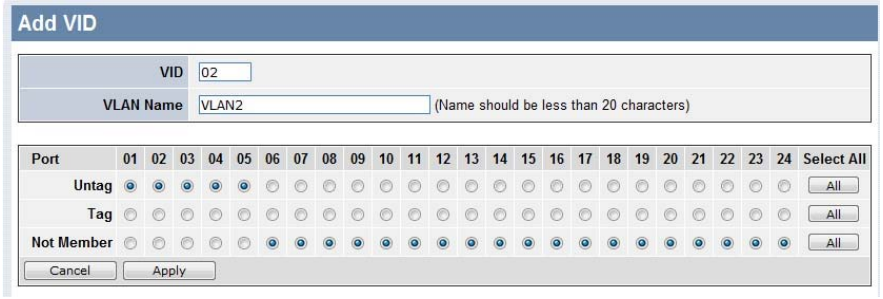
Note: The multi-need server must be support IEEE 802.1Q VLAN

Step1: Enable Asymmetric VLAN function.

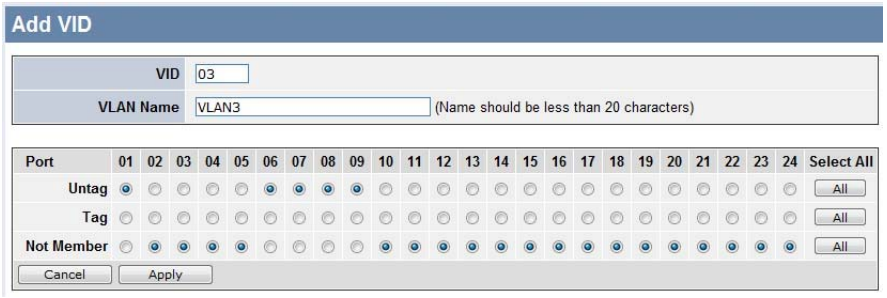
Step2: Set VLAN1 port 1~24 to "**Untag**" ports, then apply setting.



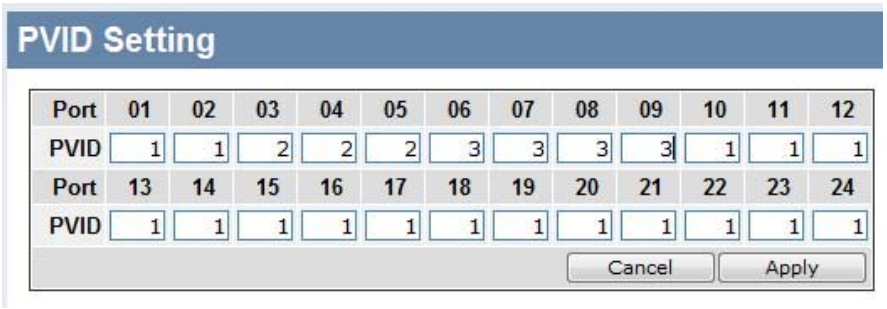
Step3: Create VID 02 and set port 1~5 to "**Untag**" ports and port 6~24 to "**Not Member**" ports, then apply setting.



Step4: Create VID03 and set port 1 and 6~9 to "**Untag**" ports, then apply setting.



Step5: Set PVID Port 3~9 PVID value to below list:



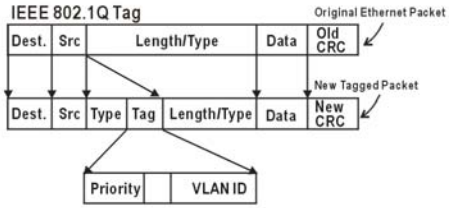
Note:

1. Untag port VLAN member can exist in different VLAN groups simultaneously when Asymmetric VLAN function enabled.
2. You must create VLAN and add VLAN member first that just can set PVID setting.
3. You must change Untag Port PVID to another existent VLAN ID that just can remove Untag port member from VLAN group

Tag VLAN Setting

The IEEE802.1Q protocol defines a new format of the frame; it adds a tag header in the original Ethernet frame, as follows:

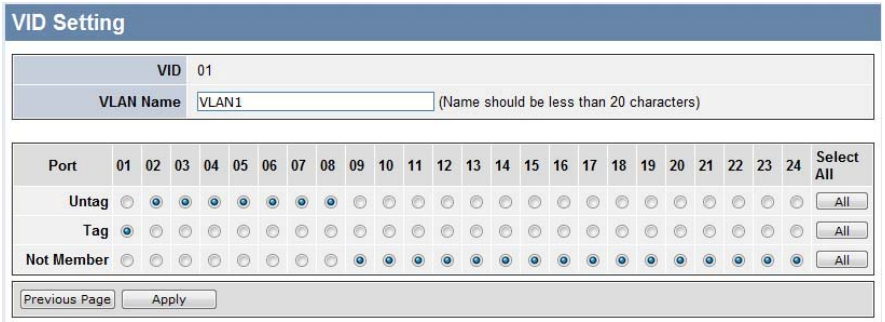
IEEE802.1Q Tag VLAN is divided by VLAN ID (VID). On receiving a frame, the switch checks the VID in the tag header of the frame to decide which VLAN it belongs to. If the receiving frame doesn't contain the tag header, the switch will assign a tag to the frame, using the PVID of the port as its VID.



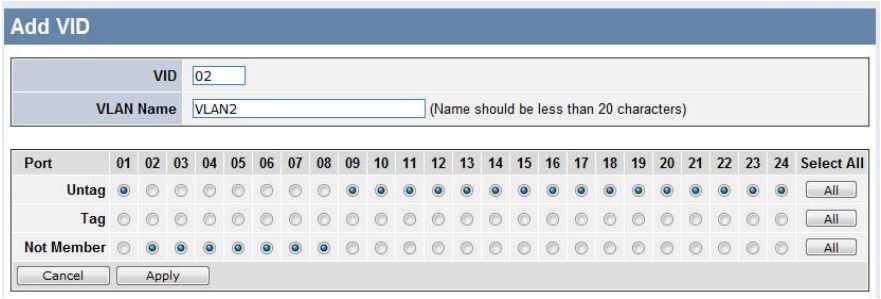
Example 3:

Create two VLAN groups for Tag ports multi-need server application setting and two VLAN clients cannot negotiate to each other. (Asymmetric VLAN function disabled)

Step1: Set VLAN1 port 1 to "**Tag**" and port 9~24 to "**Not Member**", then apply setting.



Step 2: Create VID 02 and set port 1 to "**Tag**" port and port 9~24 to "**Untag**" ports, then apply setting.



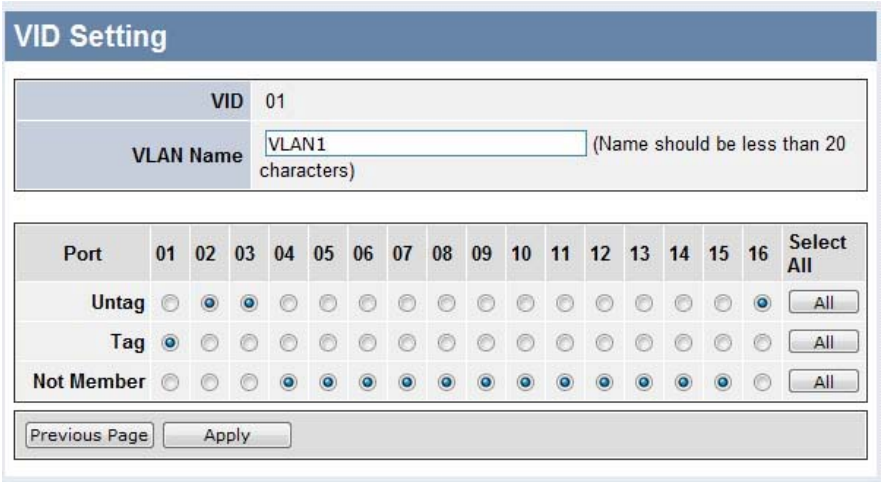
Note: The multi-need server must be support IEEE 802.1Q VLAN, the sever uplink port is port1.

Example 4:

Setting Tag VLAN on two switches. Switch 1's VLAN 1 (2 ~ 3 ports) have access to the Switch 2's VLAN 1 (2 ~ 3 ports).

The settings of VLAN group for two devices are same.

Step1: Set Switch1's VLAN1 port 1and 4~24 to "**Not Member**", then apply setting.



Step2: Set Switch2's VLAN1 member as Switch1.

Step3: Uplink two switches via Port 24.

Trunk Setting

The Trunking function enables the cascading of two or more ports for a combined larger bandwidth. Up to six Trunk groups may be created, each supporting up to 8 ports. Add a Trunking Name and select the ports to be trunked together, and click Apply to activate the selected Trunking groups.

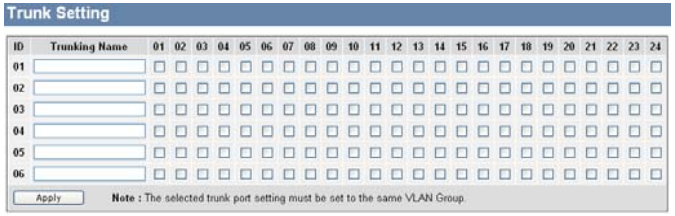


Figure 13. Trunk Configuration

Be sure that the selected trunk setting port must connect to the device with a same VLAN group.

Mirror Setting

Port Mirroring is a method of monitoring network traffic that forwards a copy of each incoming and/or outgoing packet from one port of the Switch to another port where the packet can be studied. This enables network managers to better monitor network performances.

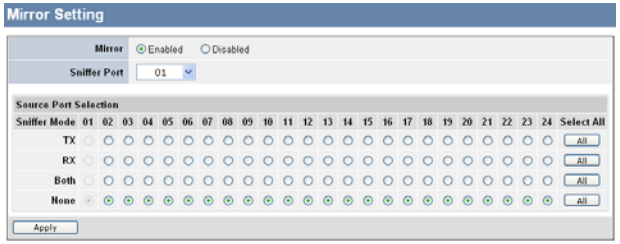


Figure 14. Mirror Setting

Selection of the Sniffer mode is as follow:

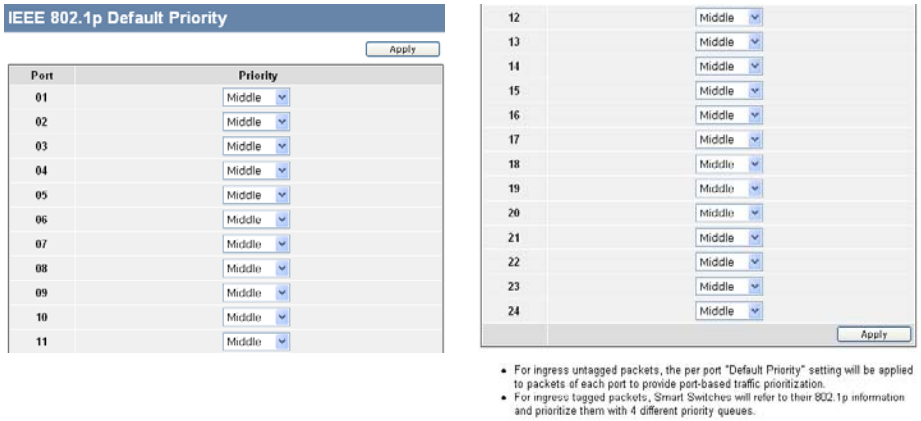
TX (transmit) mode: this mode will duplicate the data transmit from the source port and forward to the Sniffer port.

RX (receive) mode: this mode will duplicate the data that send to the source and forward to the Sniffer port.

Both (transmit and receive) mode: this mode will duplicate both the data transmit from and data that send to the source port, then it will forward to the Sniffer port.

IEEE 802.1p Default Priority

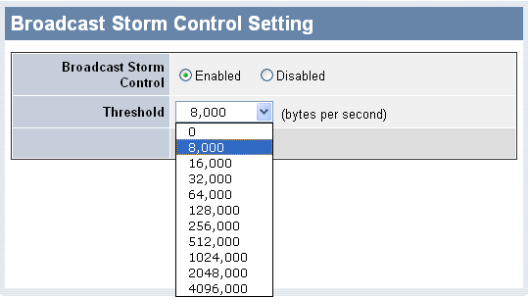
This feature displays the status Quality of Service priority levels of each port, and for packets that are untagged, the switch will assign the priority in the tag depending on your configuration.



IEEE 802.1p Default Priority Setting

Broadcast Storm Control Setting

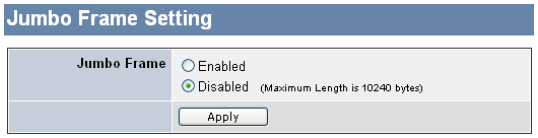
The Broadcast Storm Control feature provides the ability to control the receive rate of broadcasted packets. If Enabled (default is Disabled), threshold settings of 8,000 ~ 4,096,000 bytes per second can be assigned. Press Apply for the settings to take effect.



Broadcast Storm Control Setting

Jumbo Frame Setting

Jumbo Frames enable the transportation of identical data in fewer frames. This ensures less overhead, lower processing time, and fewer interruptions. Maximum packet length supported is 10240 bytes.



Jumbo Frame Setting

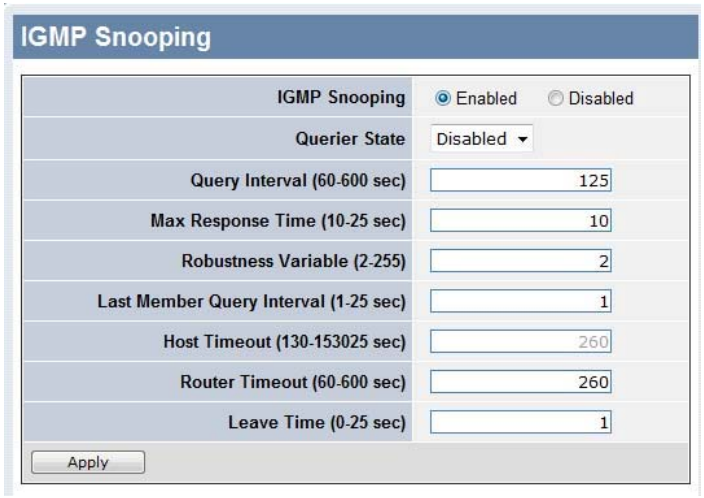
IGMP Snooping Setting

Find that there are two items, including *IGMP Global Setting and IGMP VLAN Setting* in Advanced menu.

IGMP Global Setting

With Internet Group Management Protocol (IGMP) snooping, the Web-Smart Switch can make intelligent multicast forwarding decisions by examining the contents of each frame's Layer 2 MAC header. IGMP snooping can help reduce cluttered traffic on the LAN.

With IGMP snooping enabled globally, the Web-Smart Switch will forward IP multicast traffic only to connections that have group members attached.



IGMP Global Setting

IGMP Snooping: Enable or Disable the IGMP Snooping function on the Web Smart Switch.

Querier State: Enable or Disable the Querier State of IGMP Snooping.

Query Interval (60-600 sec): The Query Interval is the interval between General Queries sent. By adjusting the Query Interval, the number of IGMP messages can increase or decrease; larger values cause IGMP Queries to be sent less often. Default is 125 seconds.

Max Response Time (10-25 sec): The Max Response Time specifies the maximum allowed time before sending a responding report. Adjusting this setting effects the "leave latency", or the time between the moment the last host leaves a group and when the routing protocol is notified that there are no more members. It also allows adjustments for controlling the frequency of IGMP traffic on a subnet. Default is 10 seconds.

Robustness Variable (1-255): The Robustness Variable allows adjustment for the expected packet loss on a subnet. If a subnet is expected to be lousy, the Robustness Variable may be increased. The Robustness Variable cannot be set zero, and SHOULD NOT be one. Default is 2 times.

Last Member Query Interval (1-25 sec): The Last Member Query Interval is the Max Response Time inserted into Group-Specific Queries sent in response to Leave Group messages, and is also the amount of time between Group-Specific Query messages. This value may be adjusted to modify the "leave latency" of the network. A reduced value results in reduced time to detect the loss of the last member of a group. Default is 1 second.

Host Timeout (130-1225 sec): This is the interval after which a learnt host port entry will be purged. For each host port learnt, a 'PortPurgeTimer' runs for 'HostPortPurgeInterval'. This timer will be

restarted whenever a report message from host is received over that port. If no report messages are received for 'HostPortPurgeInterval' time, the learnt host entry will be purged from the multicast group. Default is 260 seconds.

Router Timeout (60-600 sec): This is the interval after which a learnt router port entry will be purged. For each router port learnt, a 'RouterPortPurgeTimer' runs for 'RouterPortPurgeInterval'. This timer will be restarted whenever a router control message is received over that port. If no router control messages are received for 'RouterPortPurgeInterval' time, the learnt router port entry will be purged. Default is 125 seconds.

Leave Timer (0-25 sec): This is the interval after which a Leave message is forwarded on a port. When a leave message from a host for a group is received, a group-specific query is sent to the port on which the leave message is received. A timer is started with a time interval equal to IgsLeaveProcessInterval. If a report message is received before above timer expires, the Leave message is dropped. Otherwise the Leave message is either forwarded to the port. Default is 1 second.

IGMP VLAN Setting

To enable IGMP snooping for a given VLAN, select Enable under State then press the Edit button under Static Router Port Setting, then select the ports to be assigned for IGMP snooping for the VLAN, and press Apply for changes to take effect.

The VLAN Setting of IGMP snooping

VLAN ID	VLAN Name	State	Router Ports Setting	Multicast Entry Table
01	VLAN1	Enabled	Edit	View

Apply

Router Ports Settings

VLAN ID	1
VLAN Name	default

Static Router Ports

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Dynamic Router Ports

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Previous Page Apply

To view the Multicast Entry Table for a given VLAN, press the View button.

Multicast Entry Table

Group ID	VLAN ID	VLAN Name	Multicast Group	Multicast MAC address	Port Members
001	1	VLAN1	239.255.255.100	01-00-5e-7f-ff-64	20

Previous Page

System Setting

Find that there are nine items, including *System Information, System Setting, Trap Setting, Password Setting, Statistics, Factory Reset, Backup Setting, Firmware Upload and System Reboot* in System menu.

System Information

Press on the ***"System Information"*** to present the system information status on this screen, it will show the Product Name, Firmware Version, Protocol Version, MAC Address, System Name, Location Name, IP Address, Subnet Mask, Default Gateway, Trap IP, Login Timeout and System Up Time.

System Information

Product Name	TEG-240WS
Firmware Version	3.00.00
Protocol Version	2.001.003
MAC Address	00-00-55-66-99-88
System Name	
Location Name	
IP Address	172.21.81.151
Subnet Mask	255.255.240.0
Default Gateway	172.21.80.254
Trap IP	172.21.81.61
Login Timeout (minutes)	5
System Up Time	0 days 0 hours 15 mins 14 seconds

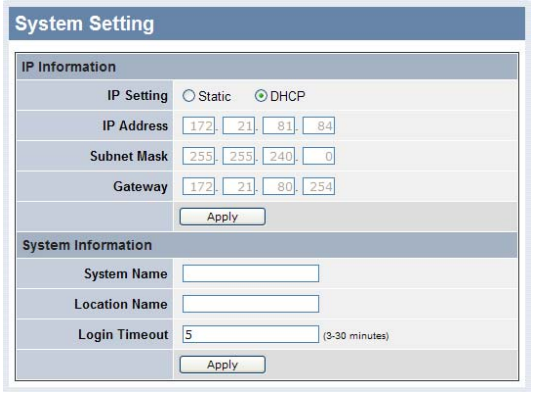
System Information

System Setting

The System Setting includes IP Information and System information. There are two ways for the switch to attain IP: Static and DHCP (Dynamic Host Configuration Protocol).

When using static mode, the IP Address, Subnet Mask and Gateway can be manually configured. When using DHCP mode, the Switch will first look for a DHCP server to provide it with an IP address, network mask, and default gateway before using the default or previously entered settings. By default the IP setting is static mode.

By entering a System Name and System Location, the device can more easily be recognized through the Web Management Utility and in other Web-Smart devices on the LAN. The Login Timeout controls the idle time-out for security purposes, when there is no action in the Web-based Utility. When the Login Timeout expires, the Web based Utility requires a re-login before using the Utility again.



System Setting

Trap Setting

By configuring the Trap Setting, it allows Web Management Utility to monitor specified events on this Web-Smart Switch. By default, Trap Setting is Disabled. When the Trap Setting is Enabled, enter the Destination IP address of the managing PC that will receive trap information.

Trap Setting

System Events: Monitoring the system's trap.

Device Bootup: a trap when booting up the system.

Illegal Login: a trap when there is using a wrong password login, and it will record from where the IP to be login.

Fiber Port Event: Monitoring the Fiber port status.

Link Up/Link Down: a trap when there is linking status happens in mini-GBIC connection.

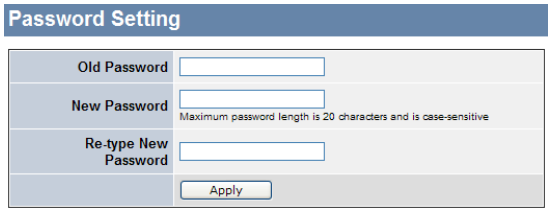
Twisted Pair Port Event: Monitoring the twisted pair port status.

Link Up/Link Down: a trap when there is linking status happens in 1000BASE-T connection.

Password Setting

Setting a password is a invaluable tool for managers to secure the Web Smart Switch. After entering the old password and the new password two times, press Apply for the changes to take effect.

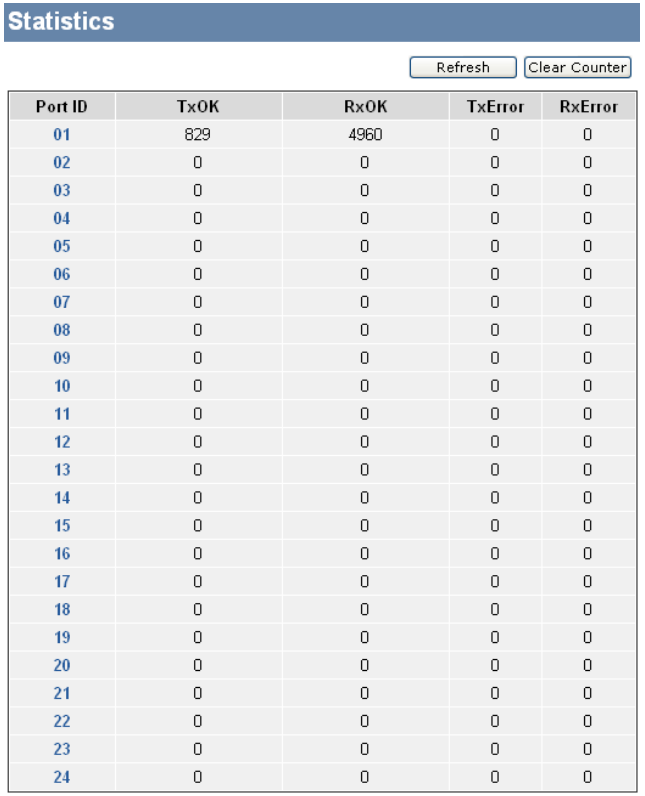
If you forget the password, press the ***"Reset"*** button in the front panel of the Switch, the current setting includes VLAN, Port Setting… etc. will be lost and the Switch will restore to the default setting.



Password Setting

Statistic

The Statistic Menu screen will show the status of each port packet count.



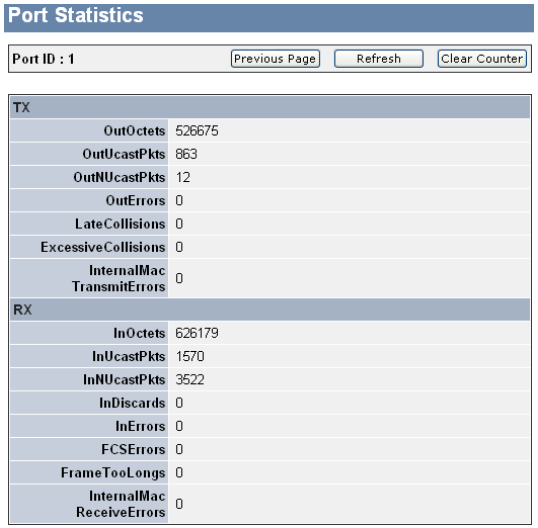
Port ID	TxOK	RxOK	TxError	RxError
01	829	4960	0	0
02	0	0	0	0
03	0	0	0	0
04	0	0	0	0
05	0	0	0	0
06	0	0	0	0
07	0	0	0	0
08	0	0	0	0
09	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0

Figure 15. Statistics

Refresh: To renew the details collected and displayed.

Clear Counter: To reset the details displayed.

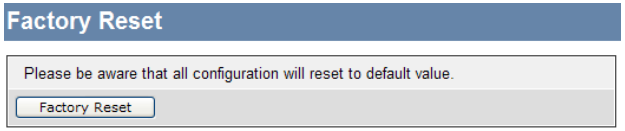
To view the statistics of individual ports, click one of the Port ID as **Error! Reference source not found.**.



Port Statistics

Factory Reset

The Factory Reset helps you to reset the device back to the default setting from the factory. All of the configuration will be reset, the IP address of the device will be set to default setting 192.168.0.1.

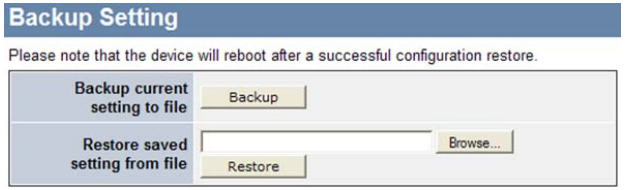


Factory Reset

Backup Setting

The backup setting help you to backup the current setting of the Switch. Once you need to backup the setting, press the ***"Backup"*** button to save the setting.

To restore a current setting file to the device, you must specify the backup file and press ***"Restore"*** button to proceed the setting of the recorded file.

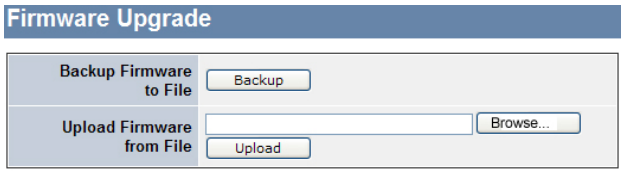


Backup Setting

Note: when restoring a recorded file, the current password will not be erased.

Firmware Upload

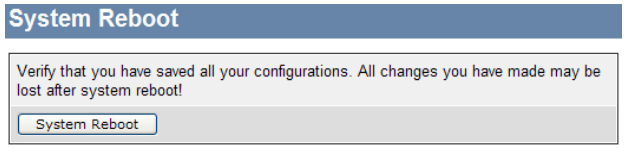
The Firmware Upload helps you to backup or upload firmware from/to the Switch. Once you need to backup the current firmware of the Switch, press the ***"Backup"*** button to save the current firmware of the Switch; To restore or upgrade firmware to the Switch, you must specify the firmware file and press ***"Upload"*** button to proceed the firmware upload.



Firmware Upload

System Reboot

Provides to a safe way to reboot the system. Ensure the configuration has been saved, or all the changes you just made may be lost after system reboot.



System Reboot

Logout

When press this function, the web configuration will go back to first Login page.

TECHNICAL SPECIFICATIONS

General	
Standards	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3x Full Duplex Flow Control IEEE 802.3z 1000BASE-SX/LX Gigabit Ethernet
Protocol	CSMA/CD
Data Transfer Rate	Ethernet: 10Mbps (half-duplex), 20Mbps (full-duplex) Fast Ethernet: 100Mbps (half-duplex), 200Mbps (full-duplex) Gigabit Ethernet: 2000Mbps (full-duplex)
Topology	Star
Network Cables	10BASET: 2-pair UTP Cat. 3, 4, 5; up to 100m 100BASE-TX: 2-pair UTP Cat. 5; up to 100m 1000BASE-T: 4-pair UTP Cat. 5; up to 100m Fiber module: Mini-GBIC Fiber module (LC-Type Cable)
Number of Ports	24 × 10/100/1000Mbps Auto-MDIX RJ-45 ports 2 × Combo mini-GBIC slots
Physical and Environmental	
AC inputs	100-240V AC, 50-60 Hz internal universal power supply
Power Consumption	35 Watts (Max)
Temperature	Operating: 0~ 40 °C, Storage: -10 ~ 70 °C
Humidity	Operating: 10% ~ 90%, Storage: 5% ~ 90%
Dimensions	440 x 210 x 44 mm (W x H x D)
Certification	CE, FCC

Performance	
Transmits Method:	Store-and-forward
RAM Buffer:	512KBytes per device
Filtering Address Table:	8K entries per device
MAC Address Learning:	Automatic update
Packet Filtering / Forwarding Rate:	10Mbps Ethernet: 14,880/pps 100Mbps Fast Ethernet: 148,800/pps 1000Mbps Gigabit Ethernet: 1,488,000/pps

Limited Warranty

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TEG-240WS - 5 Years Warranty

If a product does not operate as warranted above during the applicable warranty period, TRENDnet shall, at its option and expense, repair the defective product or deliver to customer an equivalent product to replace the defective item. All products that are replaced will become the property of TRENDnet. Replacement products may be new or reconditioned.

TRENDnet shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDnet pursuant to any warranty.

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Governing Law: This Limited Warranty shall be governed by the laws of the state of California.

Note: AC/DC Power Adapter, Cooling Fan, Cables and Power Supply carry 1-Year Warranty

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Product Warranty Registration

Please take a moment to register your product online.
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