24-Port 10/100/1000Mbps with 16-Port SFP

Web Smart Ethernet Switch

GSW-2416SF

User's Manual

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Revision

PLANET 24-Port 10/100/1000Mbps with 16-Port SFP Web Smart Ethernet Switch User's Manual

FOR MODEL: GSW-2416SF

REVISION: 1.0 (JUNE.2006)

Part No.: EM_GSW2416SFV1 (2080-A82050-000)

TABLE OF CONTENTS

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1. INTRODUCTION

1.1 Checklist

Check the contents of your package for following parts:

- GSW-2416SF x1
- User's manual CD x1
- Quick installation guide x1
- Power cord x 1
- RS232 cable x1
- Rubber feet x 4
- Two rack-mounting brackets with attachment screws x1

If any of these pieces are missing or damaged, please contact your dealer immediately, if possible, retain the carton including the original packing material, and use them against to repack the product in case there is a need to return it to us for repair.

1.2 About the Switch

The PLANET GSW-2416SF is a 24-Port 10/100/1000Mbps Web Smart non-blocking wire-speed performance Ethernet Switch. With a 48Gbps internal switching fabric, the Switch can handle extremely large amounts of data in a secure topology linking to a backbone or high capacity servers. The GSW-2416SF could recognize up to 8K MAC Address table and provides 400KB on-chip frame buffer. They offer wire-speed packet transfer performance without risk of packet loss. With high data throughput, the GSW-2416SF provides the most convenient for user to upgrade their network to Gigabit environment.

All RJ-45 copper interfaces support 10/100/1000Mbps Auto-Negotiation for optimal speed detection through RJ-45 Category 6, 5 or 5e cables. Also, all the ports support Auto-MDI/MDI-X that can automatically detect the type of connection to any Ethernet device without requiring special straight or crossover cables. 24-Port TP by default and together with 16-SFP (Small Form-factor Pluggable), shared with port#9 to port #24, make the switch be a 16-Port Gigabit Fiber Switch with mini GBIC fiber-optic module installed that shall provide long distance fiber connectivity.

The GSW-2416SF provides Smart management functions through the Web management interface. Functions such as per port speed, duplex, IEEE 802.3x flow-control settings and 802.1p QoS settings, Trunking and Port-Base VLAN, all can be found in the friendly user interface of your web browser. These features provide a cost-effective way to manage the devices from Internet whenever you are at work or at home.

1.3 Features

- Complies with IEEE 802.3, 10Base-T, IEEE 802.3u, 100Base-TX and IEEE 802.3ab, 1000Base-T, IEEE 802.3z, 1000Base-SX/LX Ethernet standard
- 24-Port 10/100/1000Mbps Ethernet ports
- 16-Port SFP (Small Form-factor Pluggable) for 3.3V mini GBIC module, shared with port#9 to #24
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- Hardware based 10/100Mbps, half/full duplex and 1000Mbps full duplex mode, flow control and auto-negotiation
- IEEE 802.3x flow control for full duplex operation and backpressure for half duplex operation
- Integrated address look-up engine, support 8K absolute MAC addresses
- Remote Web management interface
- 9K Jumbo frame support
- Port-based VLAN, Port Trunk, QoS support
- Automatic address learning and address aging
- Supports Auto-MDI/MDI-X function

- ◆ Support CSMA/CD protocol

- ◆ 100~240VAC, 50~60Hz universal Power input

- ◆ FCC, CE class A compliant

1.4 Specification

Model	GSW-2416SF
10/100/1000Base-T Ports	24 port RJ-45 10/100/1000Mbps, Auto Negotiation, Auto-MDI/MDI-X
SFP Ports	16 port 3.3VC mini-GBIC SFP 1000Mbps full-duplex; shared with port#9 to ort 24
LED Display	One power, 1-24 port RJ-45, LNK/ACT, 9-16 port SFP (mini-GBIC),LNK/ACT
Console	DB-9 RS-232
Switch architecture	Store and forward
MAC address	8K MAC address table with Auto learning function
Switch fabric	48Gbps
Throughput	35.7Mpps
Flow Control	Back pressure for half duplex, IEEE 802.3x Pause Frame for full duplex
Jumbo Frame	Up to 9KB
Management	Console / web management interfaces
IEEE 802.1p Port priority	Allow to assign low and high priority on each port
Port Trunk	Three trunk groups with up to 4-port per trunk
VLAN	Up to 24 port-based VLAN
Management VLAN	Yes
Power	AC 100~240V, 50/60Hz,
Power consumption	Max. 130 watts, 443 BTU/hr
Temperature	Operating: 0~50 degree C, Storage -40~70 degree C
Humidity	Operating:10% to 90%, Storage: 5% to 95% (Non-condensing)
Dimension (W x D x H)	440 x 200 x 44 mm (1U height)
EMI	FCC Part 15 Class A, CE
Standard Compliance	IEEE 802.3 (Ethernet) IEEE 802.3u (Fast Ethernet) IEEE 802.3ab(Gigabit Ethernet) IEEE 802.3z (Gigabit Ethernet, 1000Base-SX/LX) IEEE 802.3x (Flow control) IEEE 802.1p QoS

2. HARDWARE DESCRIPTION

This product provides both Copper and Fiber connecter at same switch – 24 Ports TP and 16 Ports SFP (shared with Port #9 to 24), and automatically distinguishes the speed of incoming connection.

This section describes the hardware features of GSW-2416SF. For easier management and control of the Switch, familiarize yourself with its display indicators, and ports. Front panel illustrations in this chapter display the unit LED indicators. Before connecting any network device to the GSW-2416SF, read this chapter carefully.

2.1 Front Panel

The Front Panel of the GSW-2416SF Web Smart Ethernet Switch consists of 24x Auto-Sensing 10/100/1000Mbps Ethernet RJ-45 Ports and 16x SFP(Small Form-factor Pluggable) Ports. The LED Indicators are also located on the front panel of the GSW-2416SF. And one console port at Front panel for switch management.
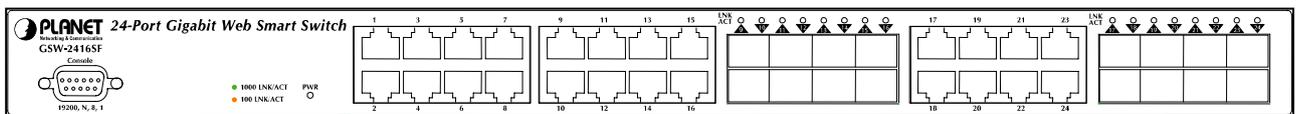

Figure 2-1: GSW-2416SF Switch front panel

2.1.1 LED indicators

System

LED	Color	Function
PWR	Green	Lights to indicate that the Switch has power.

Per 10/100/1000Mbps port

LED	Color	Function
1000 LNK/ACT	Green	Lights to indicate that the Switch is successfully connecting to the network at 1000Mbps. Blinks to indicate the Switch is receiving or sending data.
100 LNK/ACT	Amber	Lights to indicate that the Switch is successfully connecting to the network at 100Mbps. Blinks to indicate the Switch is receiving or sending data.

Per SFP Interface

LED	Color	Function
SFP LNK/ACT	Green	Lights to indicate that the Switch is successfully connecting to the network at 1000Mbps through SFP interface. Blinks to indicate the Switch is receiving or sending data.

2.2 Rear Panel

The rear panel of the GSW-2416SF indicates an AC inlet power socket, which accepts input power from 100 to 240V AC, 50-60Hz, and 1A max. And one I/O power switch at rear panel for power management.
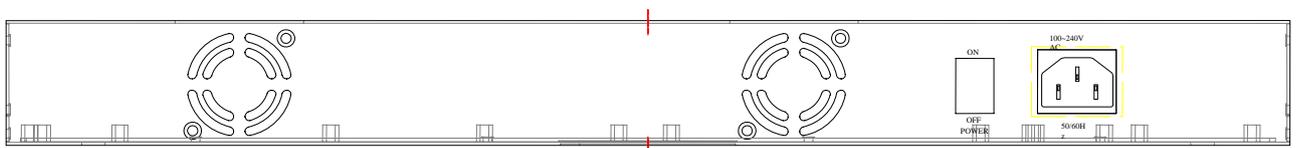

Figure 2-2: GSW-2416SF Switch rear panel

1. The device is a power-required device, it means, it will not work till it is powered. If your networks should active all the time, please consider using UPS (Uninterrupted Power Supply) for your device. It will prevent you from network data loss or network downtime.

2. In some area, installing a surge suppression device may also help to protect your GSW-2416SF from being damaged by unregulated surge or current to the GSW-2416SF.

2.3 Hardware Installation

This part describes how to install your Web Smart Ethernet Switch and make connections to the Switch. Please read the following topics and perform the procedures in the order being presented. To install your Switch on a desktop or shelf, simply completed the following steps.

2.3.1 Desktop Installation

To install a Switch on a desktop or shelf, simply completed the following steps:

Step 1: Attached the rubber feet to the recessed areas on the bottom of the Switch.

Step 2: Place the Switch on a desktop or shelf near an AC power source.

Step 3: Keep enough ventilation space between the Switch and the surrounding objects.

✎ *Notice:*

When choosing a location, please keep in mind the environmental restrictions discussed in Chapter 1, Section 4, Specification.

Step 4: Connect your Switch to network devices.

   A. Connect one end of a standard network cable to the 10/100/1000 RJ-45 ports on the front of the GSW-2416SF Switch.

   B. Connect the other end of the cable to the network devices such as printer servers, workstations or routers…etc.

✎ *Notice:*

Connection to the Switch requires UTP Category 5/5e/6 network cabling with RJ-45 tips. For more information, please see the Cabling Specification in **Appendix A**.

Step 5: Supply power to the Switch.

   A. Connect one end of the power cable to the Switch.

   B. Connect the power plug of the power cable to a standard wall outlet then power on the Switch.

When the Switch receives power, the Power LED should remain solid Green.

2.3.2 Rack Mounting

To install the Switch in a **19-inch** standard rack, follow the instructions described below.

Step 1: Place your Switch on a hard flat surface, with the front panel positioned towards your front side.

Step 2: Attach a rack-mount bracket to each side of the Switch with supplied screws attached to the package. Figure 2-3 shows how to attach brackets to one side of the Switch.
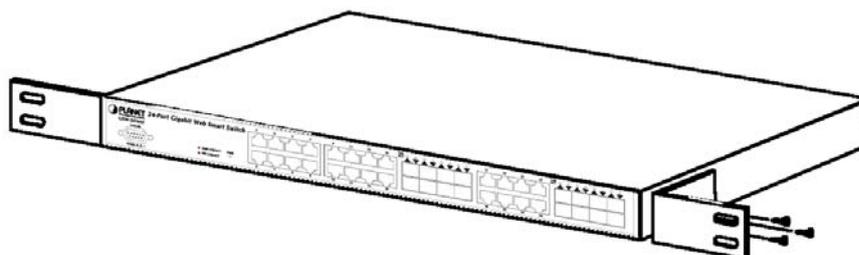
**Figure 2-3** Attaching the brackets to the Switch

Caution:

You must use the screws supplied with the mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

Step 3: Secure the brackets tightly.

Step 4: Follow the same steps to attach the second bracket to the opposite side.

Step 5: After the brackets are attached to the Switch, use suitable screws to securely attach the brackets to the rack, as shown in Figure 2-4.
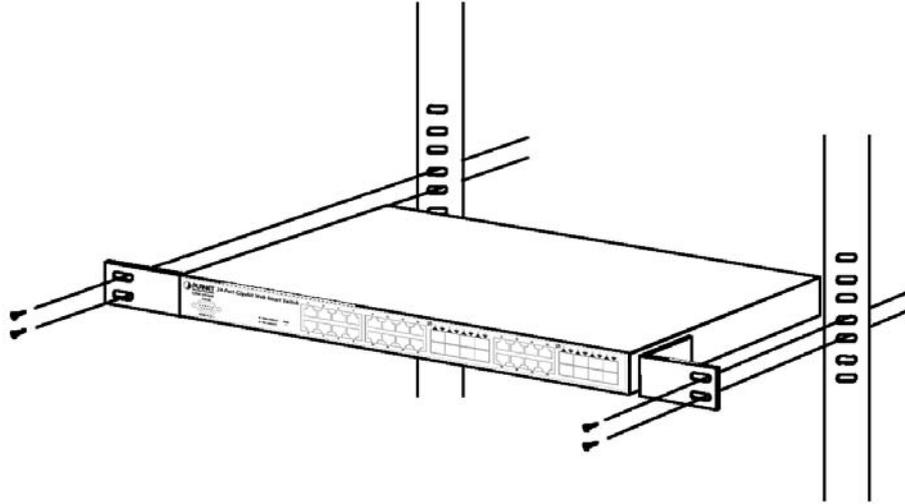
Figure 2-4 Mounting the Switch in a Rack

Step 6: Proceed with the steps 4 and steps 5 of section **2.3.1 Desktop Installation** to connect the network cabling and supply power to your Switch.

3. SWITCH MANAGEMENT

This chapter describes how to manage the GSW-2416SF. Topics include:

- Overview

- Management methods

- Assigning an IP address to the GSW-2416SF

- Logging on to the GSW-2416SF

3.1 Overview

This chapter gives an overview of switch management. The GSW-2416SF provides a user-friendly, command line under **console interface** and Simply **WEB browser interface**. Using these interfaces, you can perform various switch configuration and management activities, including:

- **Port** configuration
- **VLAN** Add/Remove/Assign
- **Flow Control** Enable/Disable
- **Port Trunk** Create/Assign (WEB GUI supported)
- **System IP address** setting.
- Management **account** and **password** setting.
- Port status/static monitoring
- System **reboot** and reload **factory default**.

Please refer to the following Chapter 4 and 5 for the details.

3.2 Management Methods

There are two ways to manage the GSW-2416SF:

- Local Console Management via the Switch serial port.

- Web Management via a network or dial-up connection.

3.2.1 Local Console Management

You can manage the GSW-2416SF locally by connecting a VT100 terminal, or a personal computer or workstation with terminal emulation software, to the Switch serial port. The terminal or workstation connects to the Switch serial port using a null modem cable that has the appropriate connectors on each end.

This management method is ideal when:

- The network is unreliable.

- The Network Manager does not have direct network connection.

The serial port of the Switch default setting is set to **19200** baud using a character format of **8** data bits, **no** parity, and **1** stop bit.

Therefore, configure the terminal or workstation to use these settings before you log on to the GSW-2416SF. You can change this default setting, if desired, after you log on.

3.2.2 Web Management

You can manage the GSW-2416SF remotely by having a remote host with web browser, such as Microsoft Internet Explorer or Netscape Navigator.

Using this management method:

The GSW-2416SF must have an Internet Protocol (IP) address accessible for the remote host.

3.3 Assigning an IP Address to the Switch

To manage the GSW-2416SF remotely through the web browser with a Management Station, you must assign an IP address to the GSW-2416SF.

To set the IP address, please use **"set ip xxx.xxx.xxx.xxx mmm.mmm.mmm.mmm ggg.ggg.ggg.ggg"** command. For example, to configure the switch with the following IP settings:

    IP Address: 192.168.0.100

    Subnet Mask: 255.255.255.0

    Default Gateway: 192.168.0.254

    Press the following command and press **<Enter>**

        set ip 192.168.0.100 255.255.255.0 192.168.0.254

If the IP is successfully configured, the switch will apply the new IP address setting immediately. You can access the web interface of GSW-2416SF through the new IP address.

3.4 Logging on to the GSW-2416SF

When you log on to the GSW-2416SF console port for the first time, a sign-on string appears and you are prompted for a console login user name and password.

```
[TF33x power-on selftest]
[Memory test (0x0000~0x3FFF)]:
writing 0xAA to memory->reading 0xAA from memory->pass!!
writing 0x55 to memory->reading 0x55 from memory->pass!!
TF33xFU:check Magic Code...[ok]

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100

login: _
```

The factory default login username is **admin** without password.

✎ *Notice:*

1. For security reason, please change and memorize the new password after this first setup.

2. Only accept command in lowercase letter under console interface.

4. CONSOLE INTERFACE

4.1 CONNECT TO PC

RS-232 serial cable

Use the bundled RS-232 serial cable and attach the 9-pin female connector to the male connector on the GSW-2416SF. Plug the other side of this cable to your PC.

Hyper Terminal

In Windows 98/2000/ME/XP, launch **"HyperTerminal"**, create a new connection, and adjust settings as below:

- Emulation: **VT-100 compatible**
- Baud per second: **19200**
- Data bits: **8**
- Parity: **None**
- Stop bits: **1**
- Flow Control: **None**

To gain a demo, please see the Figure 4-1.
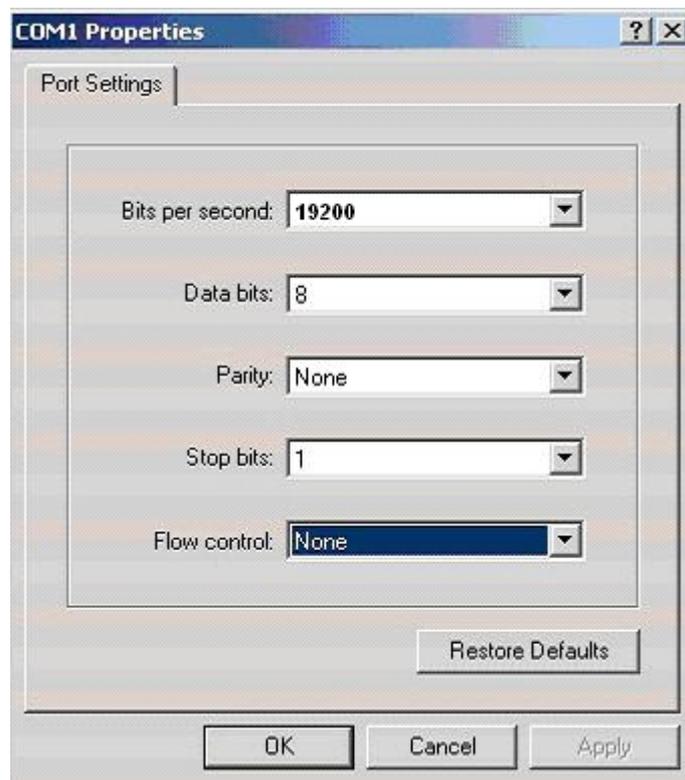
Figure 4-1 Port Settings for console interface

4.2 Login in

Login is required to access the console interface after the self-test completes successfully. The factory default user name is "**admin**" without password. You may change the password by use **"set pass"** command. Please always enter the correct user name and password. (See Figure 4-2)

Figure 4-2 GSW-2416SF login screen

4.3 Main Menu screen

After login the GSW-2416SF, the main menu screen shows as below.

Figure 4-3 GSW-2416SF Main Menu screen

4.4 Getting Started

4.4.1 General Guidelines

The GSW-2416SF allows users to configure the device via command line under console interface. Please type **"help"** or **"?"** for all available commands in the"**GSW-2416SF>"** prompt. The screen of available commands in Figure 4-4 appears, and the detail description shown in Table 4-1.

```
GSW-2416SF> help

show port
show static [n]
show vlan
show ip
show version
show flowControl
show vlantag
show vlanaware
show priority
show pvid
show vid
set port [n]
set vlan [n]
set flowControl [n] enable/disable
set vlantag [n] enable/disable
set vlanaware [n] enable/disable
set priority [n] [m]
set pvid [n] [m]
set vid [n] [m]
set ip xxx.xxx.xxx.xxx mmm.mmm.mmm.mmm ggg.ggg.ggg.ggg
set pass [oldpass] [newpass]
factory default
reboot
logout

GSW-2416SF> _
```

Figure 4-4 GSW-2416SF available commands screen

Command	Description
show port	Show all port current status of GSW-2416SF.
show static [n]	Show per port TX/RX static of GSW-2416SF.
show vlan	Show current VLAN group status of GSW-2416SF.
show ip	Show current IP subnet address and default gateway information of GSW-2416SF.
show version	Show current Software and Hardware versions of GSW-2416SF.
show flowcontrol	Show current flow control status on each port of GSW-2416SF.
show vlantag	Show current VLAN Tagged status on each port of GSW-2416SF.
show vlanaware	Show current VLAN aware status on each port of GSW-2416SF.
show priority	Show current priority status of GSW-2416SF.
show pvid	Show current PVID value on each port of GSW-2416SF.
show vid	Show current VLAN ID of each VLAN Group of GSW-2416SF.
set port [n]	Set per port auto-negotiation, speed duplex mode, and admin down of GSW-2416SF.
set vlan [n]	Assign port to specific VALN Group of GSW-2416SF.

set flowcontrol [n] enable/disable	Enable/Disable the flow control function to specific port [n] of GSW-2416SF.
set vlantag [n] enable/disable	Enable/Disable the VLAN Tagging to specific egress port of GSW-2416SF.
set vlanaware [n] enable/disable	Enable/Disable VLAN-Aware function to specific port of GSW-2416SF.
set priority [n] [m]	Allow to configure the priority setting of GSW-2416SF.
set pvid [n] [m]	Assign PVID on each port of GSW-2416SF.
set vid [n] [m]	Assign VLAN ID [m] to specific VLAN Group [n]
set IP xxx.xxx.xxx.xxx, mmm. mmm, mmm, mmm, ggg.ggg.ggg.ggg	Assign IP address, subnet mask, gateway of GSW-2416SF.
set pass [oldpass] [newpass]	Change the default password of GSW-2416SF, the maximum length is 8 characters.
factory default	Reset the GSW-2416SF to factory default mode.
reboot	Reboot the GSW-2416SF.
logout	Logout console interface of GSW-2416SF.

Table 4-1 Detail description of GSW-2416SF available commands

✎ **Notice:** Only accept command in lowercase letter under console interface.

4.4.2 Show command

From the main menu screen (see Figure 4-3), input **"show"** and press enter. The show command list screen in Figure 4-5 appears.

Figure 4-5 Show command list screen

This show command list contains eleven items:

    show port : Please refer to **chapter 4.4.2.1**.

    show static [n] : Please refer to **chapter 4.4.2.2**.

    show vlan : Please refer to **chapter 4.4.2.3**.

    show ip : Please refer to **chapter 4.4.2.4.**

    show version : Please refer to **chapter 4.4.2.5**.

show flowcontrol : Please refer to **chapter 4.4.2.6.**

show vlantag : Please refer to **chapter 4.4.2.7.**

show vlanaware : Please refer to **chapter 4.4.2.8.**

show priority : Please refer to **chapter 4.4.2.9.**

show pvid : Please refer to **chapter 4.4.2.10.**

show vid : Please refer to **chapter 4.4.2.11.**

4.4.2.1 Show port

Display the status on each port of GSW-2416SF, this command allows you to view the port status of the Switch and the correct usage is shown as below:

Show port: to view all port status of GSW-2416SF. The screen in Figure 4-6 appears.

Figure 4-6 All port Status screen

4.2.2.2 Show static [n]

Display the traffic static on specific port of GSW-2416SF, the content include the following items :
- TX OK: Number of transmitted packets.
- RX OK: Number of received packets.
- TX Error: Number of transmitted packets with error (CRC error etc).
- RX Error: Number of received packets with error (CRC error etc).

Show static [n]: n is the Port ID, n=1-24. To view one specific port static of GSW-2416SF, the port static screen in Figure 4-7 appears.

```
GSW-2416SF> show static ?

Invalid port number, please set the port to 1-24

GSW-2416SF> show static 1

Port1 Statics:
 - TX OK:      55
 - RX OK:      79
 - TX Error:   0
 - RX Error:   0

GSW-2416SF>
```

Figure 4-7 Per port static screen

✍ *Notice:*

The TX/RX packets counted with error might because:
- Packet with a bad FCS.
- Packets were less than 64 bytes or greater than 1522 bytes.
- Packets were dropped due to lack of resources.

4.4.2.3 Show vlan [n]

Display one specific VLAN group status of GSW-2416SF. GSW-2416SF supports up to 24-port based VLAN Groups and the correct usage is shown as below:

Show vlan   to view all VLAN Group and port member assigned status.

Show vlan [n]   **n=1-24**, to view one specific VLAN Group and port member assigned status.

 [n] is the VLAN Group ID.

The specific VLAN Group status screen in Figure 4-8 appears.

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

GSW-2416SF> show vlan 2

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

GSW-2416SF> show vlan 3

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

GSW-2416SF> show vlan 4

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

GSW-2416SF> show vlan 5

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

GSW-2416SF> _
```

Figure 4-8 VLAN group status screen

4.4.2.4 Show ip

Display the current IP address, netmask and gateway of GSW-2416SF. The IP subnet address information screen in Figure 4-9 appears.

Figure 4-9 IP subnet address information screen

4.4.2.5 Show version

Display the system information of GSW-2416SF, such as current software version and issued hardware version.

The version information screen in Figure 4-10 appears.

Figure 4-10 System information screen

4.4.2.6 Show flowcontrol

Display the flow control status on all ports of GSW-2416SF, this command allows you to view per port flow control status of the Switch.

Enabled – 802.3x flow control is enabled on Full-Duplex mode or Backpressure is enabled on Half-Duplex mode..

Disabled – No flow control or backpressure function on no matter Full-Duplex or Half-Duplex mode.

The flow control status screen in Figure 4-11 appears.

```
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> show flowControl

Port  FlowControl       Port  FlowControl
----------------       ----------------
Port 1    Enable        Port13    Enable
Port 2    Enable        Port14    Enable
Port 3    Enable        Port15    Enable
Port 4    Enable        Port16    Enable
Port 5    Enable        Port17    Enable
Port 6    Enable        Port18    Enable
Port 7    Enable        Port19    Enable
Port 8    Enable        Port20    Enable
Port 9    Enable        Port21    Enable
Port10    Enable        Port22    Enable
Port11    Enable        Port23    Enable
Port12    Enable        Port24    Enable

GSW-2416SF> _
```

Figure 4-11 All ports flow control status screen

4.4.2.7 Show vlantag

Display the VLAN Tagging behavior on all ports of GSW-2416SF.

Enabled - traffic is transmitted as tagged frames.

Disabled -traffic is transmitted as untagged frames.

The all ports VLAN Tagging status screen in Figure 4-12 appears.

```
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> show vlantag

Port   VLAN Tag         Port   VLAN Tag
---------------         ---------------
Port 1    Enable        Port13   Disable
Port 2    Enable        Port14   Disable
Port 3    Enable        Port15   Disable
Port 4    Enable        Port16   Disable
Port 5    Enable        Port17   Disable
Port 6    Enable        Port18   Disable
Port 7    Enable        Port19   Disable
Port 8    Enable        Port20   Disable
Port 9    Disable       Port21   Disable
Port10    Disable       Port22   Disable
Port11    Disable       Port23   Disable
Port12    Disable       Port24   Disable

GSW-2416SF> _
```

Figure 4-12 All ports VLAN Tagging status screen

4.4.2.8 Show vlanaware

Display current VLAN-aware status on each port of GSW-2416SF.

Enabled – Tagged Frame remain original VID while leaving tagged port.

Disabled - Tagged Frame wouldn't remain original VID while leaving tagged port.

The VLAN-aware status screen in Figure 4-13 appears.

```
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> show vlanaware

Port    VLAN Aware      Port    VLAN Aware
----------------        ----------------
Port 1   Enable         Port13  Disable
Port 2   Enable         Port14  Disable
Port 3   Enable         Port15  Disable
Port 4   Enable         Port16  Disable
Port 5   Enable         Port17  Disable
Port 6   Enable         Port18  Disable
Port 7   Enable         Port19  Disable
Port 8   Enable         Port20  Disable
Port 9  Disable         Port21  Disable
Port10  Disable         Port22  Disable
Port11  Disable         Port23  Disable
Port12  Disable         Port24  Disable

GSW-2416SF>
```

Figure 4-13 The VLAN-aware status screen

4.4.2.9 Show priority

Display the current priority status of GSW-2416SF.The allowed priority values are from 0-7. The priority status display screen in Figure 4-14 appears.

```
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> show priority

Port  Priority      Port  Priority
--------------      --------------
Port 1   7          Port13   0
Port 2   0          Port14   0
Port 3   0          Port15   0
Port 4   0          Port16   0
Port 5   0          Port17   0
Port 6   0          Port18   0
Port 7   0          Port19   0
Port 8   0          Port20   0
Port 9   0          Port21   0
Port10   0          Port22   0
Port11   0          Port23   0
Port12   0          Port24   0

GSW-2416SF>
```

Figure 4-14 Display 802.1p priority status screen.

4.4.2.10 Show pvid

Display the current per port PVID of GSW-2416SF. The Allowed PVID values are form 0-4095. The per port PVID display screen in Figure 4-15 appears.

```
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> show pvid

Port    PVID       Port     PVID
--------------     --------------
Port 1      1      Port13      0
Port 2      2      Port14      0
Port 3      3      Port15      0
Port 4      4      Port16      0
Port 5      5      Port17      0
Port 6      1      Port18      0
Port 7      1      Port19      0
Port 8      1      Port20      0
Port 9      0      Port21      0
Port10      0      Port22      0
Port11      0      Port23      0
Port12      0      Port24      0

GSW-2416SF>
```

Figure 4-15 Display PVID screen

4.4.2.11 Show vid

Display the current VLAN ID of each VLAN Group, the VLAN Groups and ID mapping status display screen in Figure 4-16 appears.

```
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> show vid

VLAN Group     VID        VLAN Group     VID
------------------        ------------------
     1           1            13          0
     2           2            14          0
     3           3            15          0
     4           0            16          0
     5           0            17          0
     6           0            18          0
     7           0            19          0
     8           0            20          0
     9           0            21          0
    10           0            22          0
    11           0            23          0
    12           0            24        4095

GSW-2416SF> _
```

Figure 4-16 VLAN ID of each VLAN Group status screen

4.4.3 Set command

From the main menu screen (see Figure 4-3), input **"set"** and press enter. The set command list screen in Figure 4-17 appears.

```
PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> set
set port [n]
set vlan [n]
set flowcontrol [n] enable/disable
set vlantag [n] enable/disable
set vlanaware [n] enable/disable
set priority [n] [m]
set pvid [n] [m]
set vid [n] [m]
set ip xxx.xxx.xxx.xxx mmm.mmm.mmm.mmm ggg.ggg.ggg.ggg
set pass [oldpass] [newpass]

GSW-2416SF> _
```

Figure 4-17 Set command list screen

This set command list contains ten items:

Set port [n]: Please refer to **chapter 4.4.3.1.**

Set vlan [n]: Please refer to **chapter 4.4.3.2.**

Set flowcontrol [n] enable/disable: Please refer to **chapter 4.4.3.3.**

Set vlantag [n] enable/disable: Please refer to **chapter 4.4.3.4**

Set vlanaware [n] enable/disable: Please refer to **chapter 4.4.3.5**

Set priority [n] [m]: Please refer to **chapter 4.4.3.6**

Set pvid [n] [m]: Please refer to **chapter 4.4.3.7**

Set vid [n] [m]: Please refer to **chapter 4.4.3.8**

Set ip xxx.xxx.xxx.xxx.mmm.mmm.mmm.mmm.ggg.ggg.ggg.ggg: Please refer to **chapter 4.4.3.9**

Set pass [oldpass] [newpass]: Please refer to **chapter 4.4.3.10**

4.4.3.1 Set port [n]

This command allows configuring per port parameters of GSW-2416SF. the correct usage is shown as below:

Set port [n]: n=1-24, to configuring per port parameters of GSW-2416SF.

Default setting: **(1) Auto Speed**

The configuring per port parameters screen in Figure 4-18 appears and the detail description shown in table 4-2.

```
System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> set port 1

Please select mode (1)Auto Speed
                   (2)10 Half
                   (3)10 Full
                   (4)100 Half
                   (5)100 Full
                   (6)1000 Full
                   (7)Disabled
                   _
```

Figure 4-18 Port Configuration screen

Object	Description
(1) Auto Speed	Setup Auto negotiation of each port.
(2) 10 Half	Force sets 10Mbps/Half-Duplex mode for specific port.
(3) 10 Full	Force sets 10Mbps/Full-Duplex mode for specific port.
(4) 100 Half	Force sets 100Mbps/Half-Duplex mode for specific port.
(5) 100 Full	Force sets 100Mbps/Full-Duplex mode for specific port.
(6) 1000 Full	Force sets 10000Mbps/Full-Duplex mode for specific port.
(7) Disable	Disable or Shutdown the specific port

Table 4-2 Descriptions of the Port Configuration screen Objects

4.4.3.2 Set vlan [n]

This command allows configuring up to 24-port based VLAN Groups of GSW-2416SF. The correct usage is shown as below:

Set vlan [n]: n=1-24, to configuring 24 VLAN Groups of GSW-2416SF. **[n]** is the VLAN Group ID. And the following message appears:

Please input port number (1-24), exit press enters: Add/Remove port to the current VLAN Group, "*" means port had been assign to the VLAN Group.

Default setting: **none**

The configuring VLAN Groups screen in Figure 4-19 appears. (Assign port 1, port 6 and port 7 to VLAN Group 1)

Figure 4-19 VLAN members Configuration screen

✍ *Notice:*

Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

4.4.3.3 Set flowcontrol

This command allows configuring per port flow control function of GSW-2416SF. The correct usage is shown as below:

Set flowcontrol [n] enable/disable

> **[n]**=1-24, **n** is the specific Port ID.
>
> **Enable** – 802.3x flow control is enabled on Full-Duplex mode or Backpressure is enabled on Half-Duplex mode.
>
> **Disable** – No flow control or backpressure function on no matter Full-Duplex or Half-Duplex mode.

Default setting: **Enable**

The configuring per port flow control screen in Figure 4-20 appears.

Figure 4-20 Flow Control port Configuration screen

4.4.3.4 Set vlantag

This is an additional function of VLAN configuration.

This command allows configuring per port VLAN Tagged/Untagged status. When adding a VLAN to selected port, it tells the switch whether to keep or remove the tag from a frame on egress. The correct usage is shown as below:

Set vlantag [n] enable/disable

> **[n]**=1-24, **n** is the specific Port ID.

> **Enable** – keep the tag from a frame on egress.

> **Disable** – Remove the tag from a frame on egress.

Default Setting: **Disable**

The configuring per port VLAN Tagging screen in Figure 4-21 appears.


```
login: admin
password:

GSW-2416SF> set vlantag 1 enable


Port    VLAN Tag        Port    VLAN Tag
--------------          --------------
Port 1   Enable         Port13  Disable
Port 2   Disable        Port14  Disable
Port 3   Disable        Port15  Disable
Port 4   Disable        Port16  Disable
Port 5   Disable        Port17  Disable
Port 6   Disable        Port18  Disable
Port 7   Disable        Port19  Disable
Port 8   Disable        Port20  Disable
Port 9   Disable        Port21  Disable
Port10   Disable        Port22  Disable
Port11   Disable        Port23  Disable
Port12   Disable        Port24  Disable

GSW-2416SF> _
```

Figure 4-21 Per Port VLAN Tagging Configuration screen

🖎 *Notice:*

Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

4.4.3.5 Set vlanaware

This is an additional function of VLAN configuration.

This command allows disable or enable per port vlan aware function of GSW-2416SF. The correct usage is shown as below:

Set vlanaware [n] enable/disable

> **[n]**=1-24, **n** is the specific Port ID.

> **Enabled** – Tagged Frame remain original VID while leaving tagged port.

> **Disabled** - Tagged Frame wouldn't remain original VID while leaving tagged port.

Default Setting: **Disable**

The vlan-aware mode setting screen in Figure 4-22 appears

```
login: admin
password:

GSW-2416SF> set vlanaware 1 enable


Port    VLAN Aware      Port    VLAN Aware
----------------        ----------------
Port 1    Enable        Port13  Disable
Port 2   Disable        Port14  Disable
Port 3   Disable        Port15  Disable
Port 4   Disable        Port16  Disable
Port 5   Disable        Port17  Disable
Port 6   Disable        Port18  Disable
Port 7   Disable        Port19  Disable
Port 8   Disable        Port20  Disable
Port 9   Disable        Port21  Disable
Port10   Disable        Port22  Disable
Port11   Disable        Port23  Disable
Port12   Disable        Port24  Disable

GSW-2416SF>
```

Figure 4-22 VLAN aware Configuration screen

✎ *Notice:*

Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

4.4.3.6 Set priority

This command configures the default 802.1p port priority assigned for untagged packets for a specific port of GSW-2416SF. The correct usage is shown as below:

Set priority [n] [m]

　　[n]=1-24, **n** is the specific Port ID of GSW-2416SF.

　　[m] = 0-7, m is 802.1p priority.

Default Setting: **0**

The per port priority setting screen in Figure 4-23 appears. (Set Port 1 with priority "7")

```
login: admin
password:

GSW-2416SF> set priority 1 7

Set priority of port1 to 7 successfully!


Port  Priority      Port  Priority
-------------       -------------
Port 1    7         Port13   0
Port 2    0         Port14   0
Port 3    0         Port15   0
Port 4    0         Port16   0
Port 5    0         Port17   0
Port 6    0         Port18   0
Port 7    0         Port19   0
Port 8    0         Port20   0
Port 9    0         Port21   0
Port10    0         Port22   0
Port11    0         Port23   0
Port12    0         Port24   0

GSW-2416SF> _
```

Figure 4-23 Priority Configuration screen

4.4.3.7 Set pvid

This is an additional function of VLAN configuration.
This command allows assign PVID for selected port of GSW-2416SF. The correct usage is shown as below:

Set pvid [n] [m]

   [n]=1-24, **n** is the specific Port ID of GSW-2416SF.

   [m] = 1-4095, 0 reserved for management purpose; **m** is allowed VLAN ID.

Default Setting: **0**

To remote control the GSW-2416SF, the connect port have to set with PVID=0

The PVID setting screen in Figure 4-24 appears. (Example: Set Port 1 with PVID=3)

```
login: admin
password:

GSW-2416SF> set pvid 1 3

Set PVID of port1 to 3 successfully!


Port    PVID       Port    PVID
--------------     --------------
Port 1      3      Port13     0
Port 2      0      Port14     0
Port 3      0      Port15     0
Port 4      0      Port16     0
Port 5      0      Port17     0
Port 6      0      Port18     0
Port 7      0      Port19     0
Port 8      0      Port20     0
Port 9      0      Port21     0
Port10      0      Port22     0
Port11      0      Port23     0
Port12      0      Port24     0

GSW-2416SF>
```

Figure 4-24 PVID Configuration screen

✎*Notice:*
Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

4.4.3.8 Set vid

This command allows assign VLAN ID for specific VLAN Group of GSW-2416SF. The correct usage is shown as below:

Set vid [n] [m]

   [n]=1-24, **n** is the specific VLAN Group of GSW-2416SF.

   [m] = 0-4095, m is allowed VLAN ID.

Default Setting: **0**

The VID setting screen in Figure 4-25 appears. (Example: Set VALN Group 2 with VLAN ID=3)

```
login: admin
password:

GSW-2416SF> set vid 2 3

Set VID of VLAN Group2 to 0 successfully!


VLAN Group      VID        VLAN Group      VID
-----------------          -----------------
      1           0              13           0
      2           3              14           0
      3           0              15           0
      4           0              16           0
      5           0              17           0
      6           0              18           0
      7           0              19           0
      8           0              20           0
      9           0              21           0
     10           0              22           0
     11           0              23           0
     12           0              24           0

GSW-2416SF>
```

Figure 4-25 VID Configuration screen

✎ *Notice:*

Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

4.4.3.9 Set ip xxx.xxx.xxx.xxx.mmm.mmm.mmm.mmm.ggg.ggg.ggg.ggg

This command allows assign IP address, netmask and gateway of GSW-2416SF. The correct usage is shown as below:

set ip 192.168.0.1 255.255.255.0 192.168.0.254 and press **<Enter>**

After the setting be completed, you can use the new IP address to access the WEB UI of GSW-2416SF.

Default Setting:

> **IP:** 192.168.0.100
>
> **Netmask:** 255.255.255.0
>
> **Default Gateway:** 192.168.0.254

The IP subnet address setting screen in Figure 4-26 appears.

```
writing 0xAA to memory->reading 0xAA from memory->pass!!
writing 0x55 to memory->reading 0x55 from memory->pass!!
TF33xFU:check Magic Code...[ok]

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.1.100


login: admin
password:

GSW-2416SF> set ip 192.168.1.100 255.255.255.0 192.168.1.254

The IP sets to 192.168.1.100
The netmask sets to 255.255.255.0
The gateway sets to 192.168.1.254

GSW-2416SF>
```

Figure 4-26 IP subnet address configuration screen

4.4.3.10 Set pass

This command allows assign password of GSW-2416SF. The correct usage is shown as below:

set pass [oldpass] [newpass]

Default Setting: **no password**

✍ *Notice:* The symbol "**[**" and "**]**" are required for both old password and new password. And once the setting be completed, the next time login have to use the new password.

The password setting screen in Figure 4-27 appears. (Example: Setting new password =" test ")

```
[TF33x power-on selftest]
[Memory test (0x0000~0x3FFF)]:
writing 0xAA to memory->reading 0xAA from memory->pass!!
writing 0x55 to memory->reading 0x55 from memory->pass!!
TF33xFU:check Magic Code...[ok]

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.1.100


login: admin
password:

GSW-2416SF> set pass [] [test]

Change password from [] to [test] successfully!

GSW-2416SF> _
```

Figure 4-27 Password configuration screen

✍ *Notice:*

1. For security reason, please change and memorize the new password after this first setup.

2. The maximum length is 8 characters.

4.4.4 Factory default

This command allows rest GSW-2416SF to factory default mode. The factory default screen in Figure 4-28 & 4-29 appears.

```
Set to default trunk
Set to default magic code

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> factory default

Set default OK!!!
The system will restart.
The system reboots now...


Reset System...
```

Figure 4-28 Factory default screen

```
[TF33x power-on selftest]
[Memory test (0x0000~0x3FFF)]:
writing 0xAA to memory->reading 0xAA from memory->pass!!
writing 0x55 to memory->reading 0x55 from memory->pass!!
TF33xFU:check Magic Code...[ok]
Set to default IP
Set to default netmask
Set to default gateway
Set to default username and password
Set to default VLAN
Set to default aggregation
Set to default port mode
Set to default flow control
Set to default VLAN Awareness
Set to default VLAN Tag
Set to default VLANID
Set to default PVID
Set to default VLAN Priority
Set to default trunk
Set to default magic code


System Initial now...
```

Figure 4-29 Factory default screen

4.4.5 Reboot

This command allows reboot GSW-2416SF, the reboot screen in Figure 4-30 & 4-31 appears.

```
Set to default VLANID
Set to default PVID
Set to default VLAN Priority
Set to default trunk
Set to default magic code

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> reboot
The system reboots now...


Reset System...
```

Figure 4-30 Switch reboot screen

```
[TF33x power-on selftest]
[Memory test (0x0000~0x3FFF)]:
writing 0xAA to memory->reading 0xAA from memory->pass!!
writing 0x55 to memory->reading 0x55 from memory->pass!!
TF33xFU:check Magic Code...[ok]

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100


login:
```

Figure 4-31 Switch reboot screen

4.4.6 Logout

This command provides logout the GSW-2416SF, the screen in Figure 4-32 appears.

```
[TF33x power-on selftest]
[Memory test (0x0000~0x3FFF)]:
writing 0xAA to memory->reading 0xAA from memory->pass!!
writing 0x55 to memory->reading 0x55 from memory->pass!!
TF33xFU:check Magic Code...[ok]

System Initial now...


PLANET GSW-2416SF
Software: 1.0 (BLD20060523)
Hardware: 1.0
MAC: 00-11-22-33-44-55
IP: 192.168.0.100


login: admin
password:

GSW-2416SF> logout

login:
```

Figure 4-32 GSW-2416SF Logout screen

4.5 Firmware Update

This section will show you how to use X-modem to update the firmware of GSW-2416SF.

Firmware update requirements

- GSW-2416SF switch
- Latest firmware version
- VT100 terminal, or a personal computer or workstation with terminal emulation software
- RS-232/DB9 null modem cable

Update procedure:

1. After login the GSW-2416SF, enter "**update**" in the"**GSW-2416SF>**" prompt. Then the message will ask you to use the Xmodem to send the firmware file. The firmware update screen in Figure 4-33 appears:

```
GSW-2416SF> update
please wait ......

GSW-2416SF>
press 'T' or ,'t' to update firmware by TFTP...

(Default) press 'H' or ,'h' to update firmware by HTTP...

current tick:00000114 sec
upg_mode:0
[sys_init():->
wait state:reg.0x706d = 0x28
ip inspc.:reg.0x7001 = 0x3f
done<-]

EEPROM Init...
Write EE_TEST ==0x7cf u8EEData1=0xaa
Read EE_TEST ==0x7cf u8EEData1=0xaa
[EEPROM 24c16 found!]
EEPROM: Data valid
Restore Configuration from EEPROM to Device...
Show MY MAC Address(from 24c16): (0x00:11:22:33:44:55)
Show MY IP Address(from 24c16): (192.168.0.100)
TF33xFU: httpd init
My Ip: 192.168.0.100
My Mac:  0:11:22:33:44:55
TF33xFU:device[SM 29C31004T]
TF33xFU:Sector-based(512 sectors) Flash Erase (512K)...OK

TF33xFU:1K-based Blank Checking...ok

Please Transfer Firmware ......C
```

Figure 4-33 Firmware Update

2. Select and send the firmware file by your terminal emulation software. As the screens show in Figure 4-34 and Figure 4-35:

✎ *Notice:*

1. Make sure that you had selected the correct firmware file that just for the GSW-2416SF and read the release note before you run the update procedure.

2. Don't power off the switch while updating firmware or unexpected result occurred.
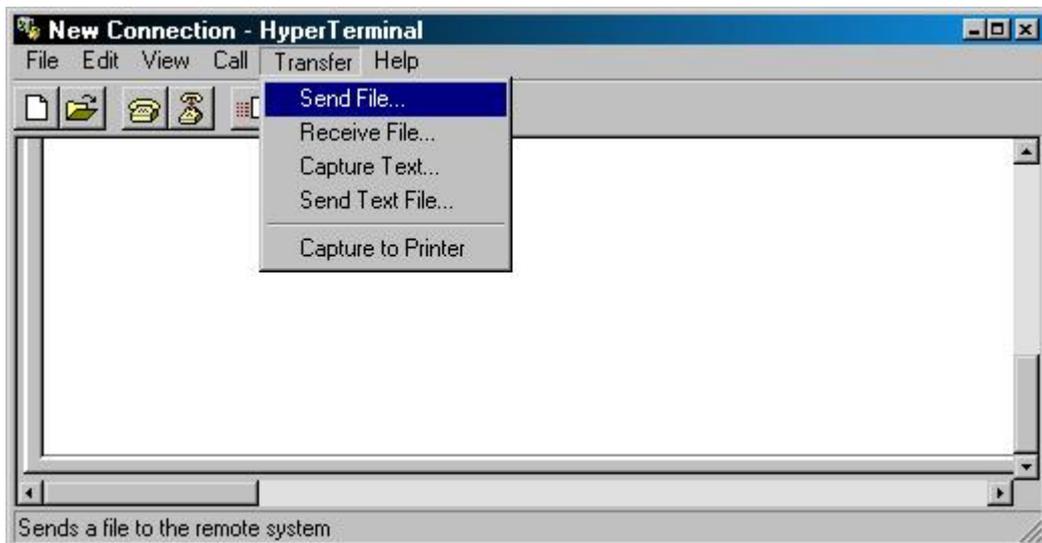
Figure 4-34 Firmware Update
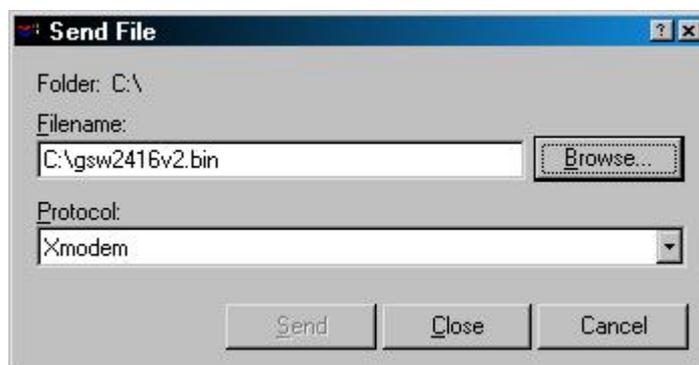
Figure 4-35 Xmodem transmit

After the file send be completed, the system will reboot automatically to the login screen. You can check if the Software version been updated. The screen in appears:
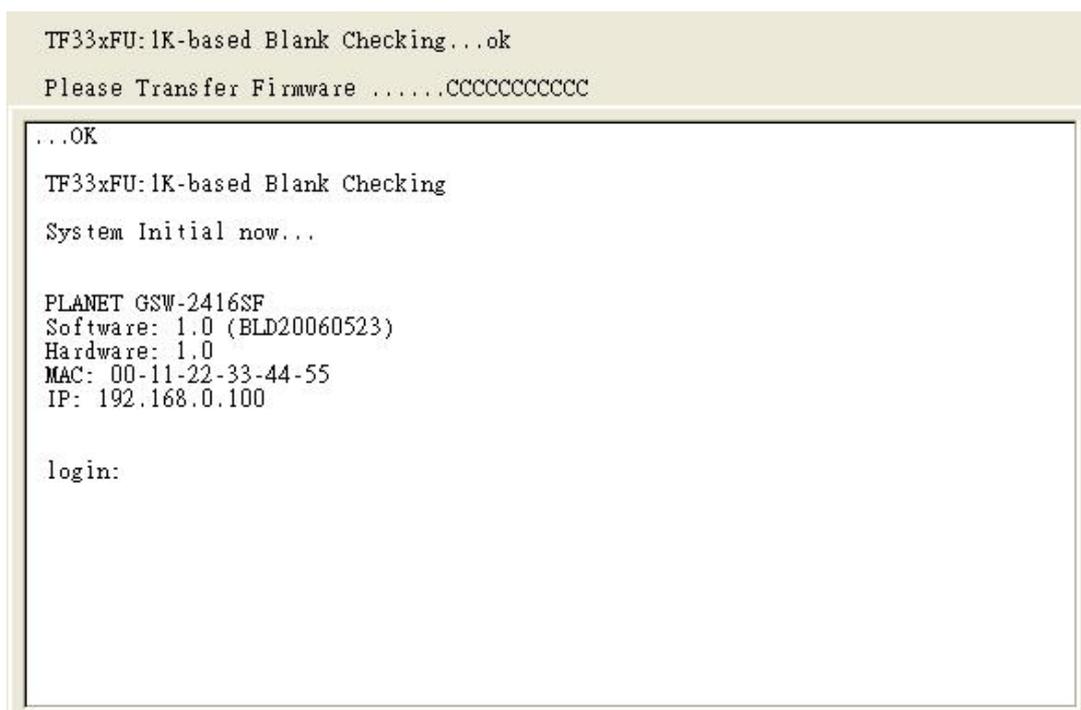
Figure 4-36 System reboot screen

5. WEB MANAGEMENT

Before login the Web interface of GSW-2416SF, please setup the **"IP Address"** with local serial console port (RS232 port) and use this IP address to configure GSW-2416SF through the **Web** interface.

Or modify your PC's IP domain to the same with GSW-2416SF then use the default IP address (*192.168.0.100*) to remote configure GSW-2416SF through the **Web** interface.

5.1 Login in to the Switch

To access the Web-browser interface you must first enter the user name, the default user name is **"admin"** without password**.** You will see the following screen comes out on the Web browser program:

Figure 5-1 The GSW-2416SF login Web Page screen

After the User name and Password is entered, you will see the web main menu screen.

Figure 5-2 The web main menu screen of GSW-2416SF

5.2 Port Config

This section provides current ports status and detail setting of each port of GSW-2416SF. The screen in Figure 5-3 appears and Table 5-1 describes the port configuration object of switch.

Figure 5-3 GSW-2416SF Port Configuration Web Page screen

✎ *Notice:*

Due to VID value "**0**" is reserved for **management** purpose, the management linked port have to configured with **PVID=0.** For example: The management PC connected to Port-24 of the switch via Ethernet. Port-24 has to be configured with PVID=0, and the management has to be configured within the same domain as the switch.

Object	Description
Port	Indicate port 1 to port 24.
Mode	Allow configuring the port speed and operation mode. Draw the menu bar to select the mode. ● Auto Speed - Setup Auto negotiation. ● 10 half - Force sets 10Mbps/Half-Duplex mode. ● 10 Full - Force sets 10Mbps/Full-Duplex mode. ● 100 half - Force sets 100Mbps/Half-Duplex mode. ● 100 full - Force sets 100Mbps/Full-Duplex mode. ● 1000 full - Force sets 10000Mbps/Full-Duplex mode. ● Disable - Shutdown the port manually.
Flow Control	Allow **Enable** or **Disable** flow control for selected port. Enable – 802.3x flow control is enabled on Full-Duplex mode or Backpressure is enabled on Half-Duplex mode. Disable – No flow control or backpressure function on no matter Full-Duplex or Half-Duplex mode
VLAN aware * Additional function	Allow **Enable** or **Disable** VLAN aware for selected port. **Enable** – Tagged Frame remain original VID while leaving tagged port. **Disable** - Tagged Frame wouldn't remain original VID while leaving tagged port.
VLAN tag * Additional function	Allow **Enable** or **Disable** VLAN Tag for selected port. When adding a VLAN to selected port, it tells the switch whether to keep or remove the tag from a frame on egress. **Enable -** Outgoing frames with VLAN-Tagged. **Disable -** Outgoing frames without VLAN-Tagged.
VLAN priority	Allow assign 802.1p priority for selected port. The range for the priority is **0-7** (0~3 for low priority; 4~7 for high priority)
PVID * Additional function	Allow assign PVID for selected port. The range for the PVID is **1-4095 ;** 0 reserved for management purpose The PVID will be inserted into all untagged frames entering the ingress port. The PVID must as same as the VLAN ID that the port belong to VLAN group, or the untagged traffic will be dropped.

Table 5-1 Descriptions of the Port Configuration screen Objects

Click "**Apply**" button to affect the configured function.

✍ *Notice:*

Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

VLAN Tag:

Tagged-based VLAN is an IEEE 802.1Q specification standard. Therefore, it is possible to create a VLAN across devices from different switch venders. IEEE 802.1Q VLAN uses a technique to insert a "tag" into the Ethernet frames. Tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.

To set the outgoing frames are VLAN-Tagged frames or untagged.

Tag: outgoing frames with VLAN-Tagged.

UnTag: outgoing frames without VLAN-Tagged.

PVID:

Set the PVID that will be assigned to untagged traffic on a given port. This feature is useful for accommodating devices that you want to participate in the VLAN but that don't support tagging. The switch each port allows user to set one PVID, the range is 0~4095, default VLAN ID is 0. The PVID must as same as the VLAN ID that the port belong to VLAN group(See chapter 5.3 – VLAN Setup), or the untagged traffic will be dropped.

5.3 VLAN Setup

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. It allows you to isolate network traffic so only members of the VLAN receive traffic from the same VLAN members. 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 plug into the same switch physically.

The GSW-2416SF switch supports Port-Base VLAN setting in web management page. In the default configuration, VLAN support is "disable".

5.3.1 VLAN Group and member settings

This section provides current status and member setting of each VLAN group of GSW-2416SF, the screen in Figure 5-4 appears.

Figure 5-4 GSW-2416SF VLAN Settings Web Page screen

1. Enter VLAN ID for the selected VLAN group. There are maximum 24 VLAN groups to provide configured and the range for the VLAN ID is **1-4095;** 0 reserved for management purpose.

2. Checked the Member box to select the members for the VLAN group.

3. After setup completed, please press **"Apply"** to take affect.

4. To setup another VLAN Group, click the VLAN Group ID button. After the web page load completed, repeat the previous steps.

5. To remove a port from specific VLAN group, just cancel the Member check Box and press "**Apply**" to take affect.

✎ *Notice:*

Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

5.3.2 VLAN setting example:

5.3.2.1 Two separate VLAN

The diagram shows how the switch handle Tagged and Untagged traffic flow for two VLANs. VLAN Group 2 and VLAN Group 3 are separated VLAN. Each VLAN isolate network traffic so only members of the VLAN receive traffic from the same VLAN members. The screen in Figure 5-5 appears and Table 5-2 describes the port configuration of switch.
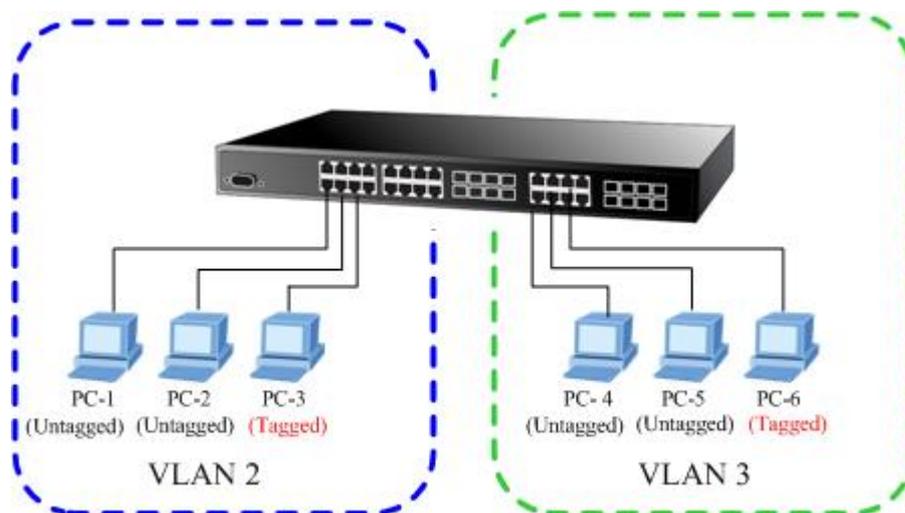
Figure 5-5 two separate VLAN diagram

VLAN Group	VID	Untagged Members	Tagged Members
VLAN Group 1	1	Port-1,Port-2	Port-3
VLAN Group 2	2	Port-4,Port-5	Port-6
VLAN Group 3	3	Port-7~Port-24	N/A

Table 5-2 VLAN and Port Configuration

The scenario described as follow:

■ **Untagged packet entering VALN 2**

1. While **[PC-1]** transmit an **untagged** packet enters **Port-1**, the switch will tag it with a **VLAN Tag=2**. **[PC-2]** and **[PC-3**] will received the packet through **Port-2** and **Port-3**.

2. [PC-4],[PC-5] and [PC-6] received no packet.

3. While the packet leaves **Port-2**, it will be stripped away it tag becoming an **untagged** packet.

4. While the packet leaves **Port-3**, it will keep as a **tagged** packet with **VLAN Tag=2**.

■ **Tagged packet entering VLAN 2**

5. While **[PC-3]** transmit a **tagged** packet with **VLAN Tag=2** enters **Port-3**, **[PC-1]** and **[PC-2]** will received the packet through **Port-1** and **Port-2**.

6. While the packet leaves **Port-1** and **Port-2**, it will be stripped away it tag becoming an **untagged** packet.

■ **Untagged packet entering VLAN 3**

1. While **[PC-4]** transmit an **untagged** packet enters **Port-4**, the switch will tag it with a **VLAN Tag=3**. **[PC-5]** and **[PC-6]** will received the packet through **Port-5** and **Port-6**.

2. While the packet leaves **Port-5**, it will be stripped away it tag becoming an **untagged** packet.

3. While the packet leaves **Port-6**, it will keep as a **tagged** packet with **VLAN Tag=3**.

✎ *Notice:*
At this example, VLAN Group 1 just set as default VLAN, but only focus on VLAN 2 and VLAN 3 traffic flow.

Setup steps

1.   VLAN Group

Set VALN Group 1 = default-VLAN with VID (VLAN ID)=1

Add two VLANs – VLAN 2 and VLAN 3

> VLAN Group 2 with VID=*2*
>
> VLAN Group 3 with VID=*3*

2.   Assign VLAN Member :

> VLAN 2: *Port-1, Port-2 and Port-3*
>
> VLAN 3: *Port-4, Port-5 and Port-6*
>
> VLAN 1: All other ports – *Port-7~Port-24*

3.   Assign PVID for each port:

> Port-1, Port-2 and Port-3: PVID=*2*
>
> Port-4, Port-5 and Port-6: PVID=*3*
>
> Port-7~Port-24: PVID=*1*

4.   Enable VLAN Tag for specific ports

> VLAN Tag Enabled: *Port-3* (VLAN-2) and *Port-6* (VLAN-3)

The Port VLAN configuration would be as the following screen in Figure 5-6.

Figure 5-6 Port Configuration Web page screen

Figure 5-7 VLAN 1 member assign Web page screen

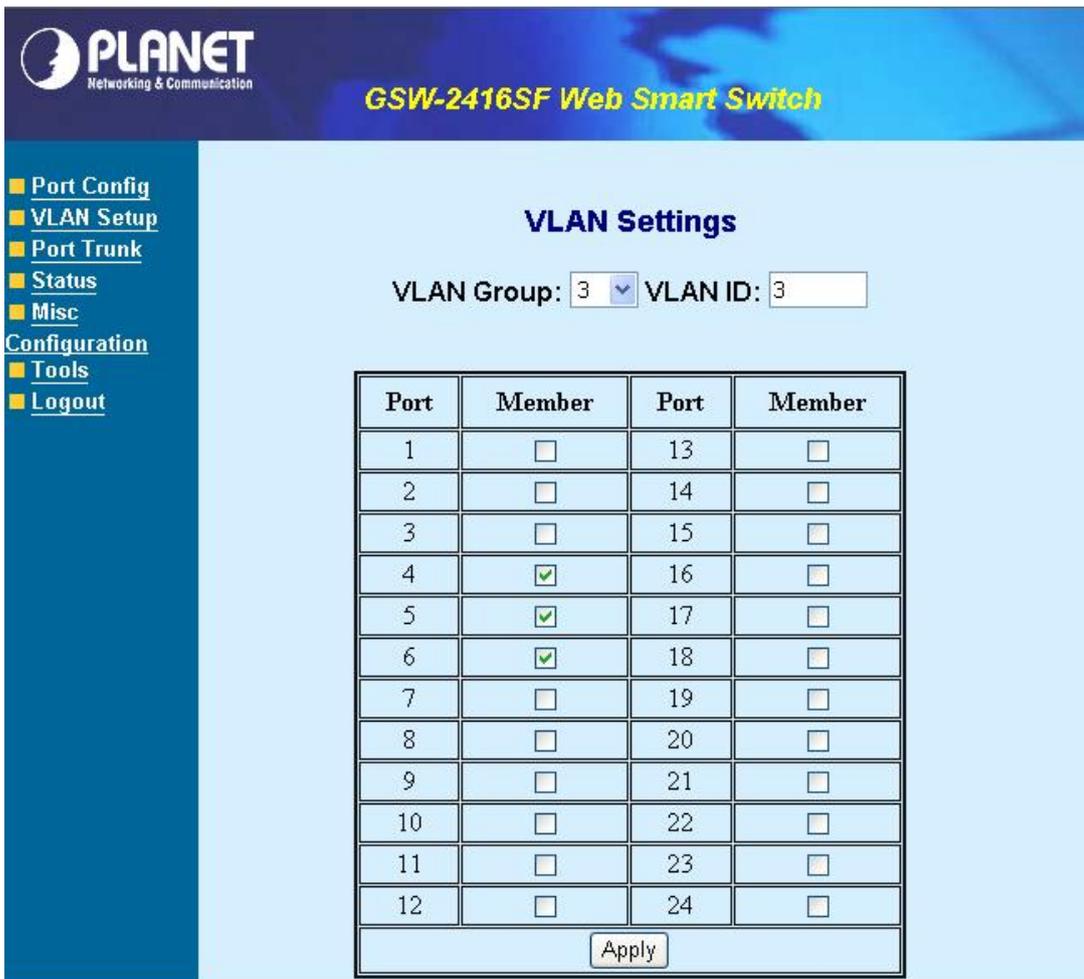**Figure 5-8** VLAN 2 member assign Web page screen

Figure 5-9 VLAN 2 member assign Web page screen

✍ *Notice:*
Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

5.3.2.2 Overlap VLAN

The scenario described as follow:

1. Port-16 is the file server port for all the workstations
2. Port-1 to Port-15 is different devices that do need to see each other

Setup steps

1. **Port Setting**

     1.1 Assign VLAN 1 as the default VLAN group for all ports

     1.2 Assign VLAN 2 for the second VLAN group with Port-1 and Port-16

     1.3 Repeat the same steps for Port-2 to Port-15. i.e. 2 & 16, 3 & 16, ..., 15 & 16

2. **PVID setup**

     2.1 Assign "1" (i.e. ID of VLAN 1) to Port-16 as its PVID (Port VLAN ID).

     2.2 Assign "2" to Port-1 as its PVID

     2.3 Repeat above steps for Port-2 to Port-15 with its PVID, i.e. 3 (Port-2), 4 (Port-3), to 16 (Port-15)

After the above steps Port-1 to Port-15 is being separated physically due to it belongs to different VLAN groups (different VLAN). However, they all can access Port-16 due to Port-16 is using PVID 1 to communicate with port 1 to port 15.

✍ *Notice:*
Change VLAN settings for every time, you have to **reboot** the switch to apply new settings.

5.4 Port Trunk Setup

This section allows you to disable or enable trunk function of two ports or four ports together to speed up data transmission. The GSW-2416SF provides up to 3 Trunk group, each group supports maximum 4 ports, the screen in Figure 5-10 appears.
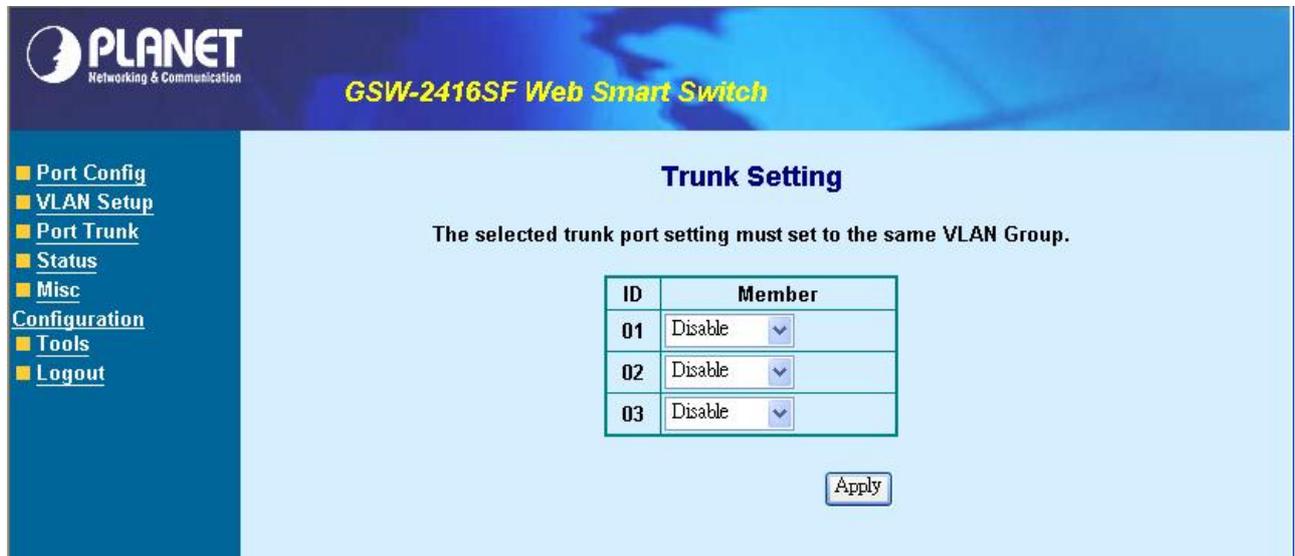

Figure 5-10 GSW-2416SF Port Trunk Setup Web Page screen

To configure the Port Trunk, with the specific Trunk ID, select Member ports to meet required. The screen in Figure 5-11 appears:
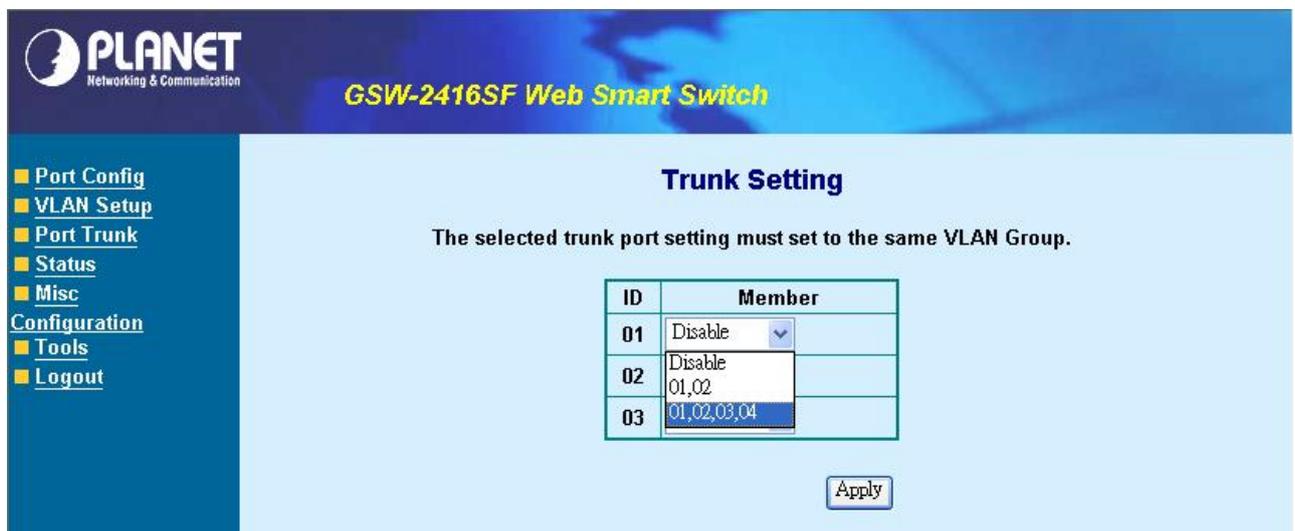

Figure 5-11 GSW-2416SF Port Trunk Setup Web Page screen

The Trunk group and members are fixed assign. Please refer to the following table:

ID	Member
01	● Disable ● 01,02 ● 01,02,03,04
02	● Disable ● 09,10 ● 09,10,11,12
03	● Disable ● 17,18 ● 17,18,19,20

✎ *Notice:*

1. After turn on the port trunk feature, port 1 and port 2 or port 17,18,19,20 should connect to another switch, such as another GSW-2416SF, that also supports port trunk feature to double the bandwidth in between. Otherwise, if the connected switch do not support port trunk, it will cause network loop and hangs the whole network.

2. The GSW-2416SF doesn't support LACP (Link Aggregation control Protocol) trunk type yet. Connect with LACP type switch the trunk function might be failed.

3. Within the same Trunk Group, the member ports have to be configured with the same settings, such as port speed and VLAN etc.

5.5 Status

5.5.1 Port Status

This section displayed the current link status of each port on GSW-2416SF. It's help the manager easy to get the connection info. The screen in Figure 5-12 appears.

Figure 5-12 GSW-2416SF Port Status Web Page screen

5.5.2 Statistics

This section displayed the current traffic statistics of each port on GSW-2416SF. The screen in Figure 5-13 appears.

The content of the statistics table include the following items:

- TX OK: Number of transmitted packets.
- RX OK: Number of received packets.
- TX Error: Number of transmitted packets with error (CRC error etc).
- RX Error: Number of received packets with error (CRC error etc).

    (The unit of the above value is "packets")

✎ *Notice:*

The TX/RX packets counted with error might because:
- Packet with a bad FCS.
- Packets were less than 64 bytes or greater than 1522 bytes.
- Packets were dropped due to lack of resources.

Figure 5-13 GSW-2416SF Port Statistics Web Page screen

There're also two buttons at the statistics web page – "**Clear**" and "**Refresh**".

Press the "**Clear**" button will clear the current traffic statistic value.

Press the "**Refresh**" button will update the latest traffic statistic value, especially for the traffic keeps on transmitting.

5.6 Misc Configuration

This section provides Misc Configuration of GSW-2416SF.

5.6.1 System Setup

This section provides System Configuration of GSW-2416SF, the screen in Figure 5-14 appears and table 5-4 descriptions the System Configuration objects of GSW-2416SF.

Figure 5-14 GSW-2416SF System Configuration Web Page screen

Object	Description
Mac address	Display Mac address of GSW-2416SF.
S/W Version	Display firmware version of GSW-2416SF.
H/W Version	Display Hardware version of GSW-2416SF
IP Address	Allow user to assign new IP address of GSW-2416SF, after setup completed. Please press **"Apply"** button and switch will take effect immediately.
Subnet Mask	Allow user to assign new Subnet Mask of GSW-2416SF, after setup completed. Please press **"Apply"** button and switch will take effect immediately.
Gateway	Allow user to assign new Gateway of GSW-2416SF, after setup completed. Please press **"Apply"** button and switch will take effect immediately.
Name	Display the administrator account of the switch. Default account is "admin"
Password	Allow user to change the password and maximum up to 8 characters Please press **"Apply"** button and switch will take effect immediately.

Table 5-4 Descriptions of the System Configuration screen Objects

Once the setup completed and the IP address of the device be changed, you might loss the web connection. Modify your PC's IP domain to the same with the new IP address of GSW-2416SF.

5.7 Tools

This section provides two management tools of GSW-2416SF- **Reboot** and **Factory Reset**.

5.7.1 Reboot

This section provides reboot GSW-2416SF, after choose this function and the following screen appears in Figure 5-15. Please press **"Warm Reboot"** button to take effect immediately. After system reboot, the manager has to **refresh** the browser and **re-login** web interface with correct username **"admin"** and password, the screen in Figure 5-16 appears.

Figure 5-15 The GSW-2416SF reboot system Web Page screen

Figure 5-16 The GSW-2416SF login Web Page screen

5.7.2 Factory Reset

This section provides reset GSW-2416SF to factory default mode, default value to as following configuration:

- Default IP address: 192.168.0.100
- Subnet mask: 255.255.255.0
- Default Gateway: 192.168.0.254
- The other setting value is back to disable or none.

After choose this function and the following screen appears in Figure 5-17.

Figure 5-17 The GSW-2416SF reset to factory default Web Page screen

Please press **"Factory Reset"** button to take effect and the switch will reboot automatically. After system reboot, the manager has to **refresh** the browser and **re-login** web interface with default username **"admin"** without password, the screen in Figure 5-18 appears.

Figure 5-18 The GSW-2416SF login Web Page screen

5.8 Logout

This section allows to logout the GSW-2416SF. Press **"Logout"** item in the Web Menu, it take effect immediately. If the manager wants to re-login, press the "**Re-Login**" button. The screen in Figure 5-19 and Figure 5-20 appears.

Figure 5-19 The GSW-2416SF Logout Web Page screen

Figure 5-20 The GSW-2416SF login Web Page screen

6.1 Address Table

The Switch is implemented with an address table. This address table composed of many entries. Each entry is used to store the address information of some node in network, including MAC address, port no, etc. This information comes from the learning process of Ethernet Switch.

6.2 Learning

When one packet comes in from any port. The Switch will record the source address, port no. And the other related information in address table. This information will be used to decide either forwarding or filtering for future packets.

6.3 Forwarding & Filtering

When one packet comes from some port of the Ethernet Switching, it will also check the destination address besides the source address learning. The Ethernet Switching will lookup the address-table for the destination address. If not found, this packet will be forwarded to all the other ports except the port which this packet comes in. And these ports will transmit this packet to the network it connected. If found, and the destination address is located at different port from this packet comes in, the Ethernet Switching will forward this packet to the port where this destination address is located according to the information from address table. But, if the destination address is located at the same port with this packet comes in, then this packet will be filtered. Thereby increasing the network throughput and availability.

6.4 Store-and-Forward

Store-and-Forward is one type of packet-forwarding techniques. A Store-and Forward Ethernet Switching stores the incoming frame in an internal buffer, do the complete error checking before transmission. Therefore, no error packets occurrence, it is the best choice when a network needs efficiency and stability.

The Ethernet Switch scans the destination address from the packet-header, searches the routing table provided for the incoming port and forwards the packet, only if required. The fast forwarding makes the switch attractive for connecting servers directly to the network, thereby increasing throughput and availability. However, the switch is most commonly used to segment existing hubs, which nearly always improves overall performance. An Ethernet Switching can be easily configured in any Ethernet network environment to significantly boost bandwidth using conventional cabling and adapters.

Due to the learning function of the Ethernet switching, the source address and corresponding port number of each incoming and outgoing packet are stored in a routing table. This information is subsequently used to filter packets whose destination address is on the same segment as the source address. This confines network traffic to its respective domain, reducing the overall load on the network.

The Switch performs "Store and forward" therefore, no error packets occur. More reliably, it reduces the re-transmission rate. No packet loss will occur.

6.5 Auto-Negotiation

The STP ports on the GSW-2416SF Switch have built-in "Auto-negotiation". This technology automatically sets the best possible bandwidth when a connection is established with another network device (usually at Power On or Reset). This is done by detect the modes and speeds at the second of both device is connected and capable of, Both 10Base-T and 100Base-TX devices can connect with the port in either Half- or Full-Duplex mode. 1000Base-T can be only connected in Full-duplex mode.

This chapter contains information to help you solve problems. If the Switch is not functioning properly, make sure the Ethernet Switch was set up according to instructions in this manual.

The Link LED is not lit
    Solution:
        Check the cable connection and remove duplex mode of the Switch.

Some stations cannot talk to other stations located on the other port
    Solution:
        Please check the VLAN, port trunking function that may introduce this kind of problem.

Performance is bad
    Solution:
        Check the full duplex status of the Ethernet Switch. If the Ethernet Switch is set to full duplex and the partner is set to half duplex, then the performance will be poor.

100Base-TX port link LED is lit, but the traffic is irregular
    Solution:
        Check that the attached device is not set to dedicate full duplex. Some devices use a physical or software switch to change duplex modes. Auto-negotiation may not recognize this type of full-duplex setting.

Why the Switch doesn't connect to the network
    Solution:
        Check the LNK/ACT LED on the switch Try another port on the Switch Make sure the cable is installed properly Make sure the cable is the right type Turn off the power. After a while, turn on power again.

How to deal forgotten password situation of GSW-2416SF?
    Solution:
    1.   Please contact Planet switch support team and the mail address is **support_switch@planet.com.tw**

A.1 Switch's RJ-45 Pin Assignments

10/100Base-TX

Contact	MDI	MDI-X
1	1 (TX +)	3
2	2 (TX -)	6
3	3 (RX +)	1
6	6 (RX -)	2
4, 5, 7, 8	Not used	Not used

A.2 1000Mbps, 1000Base-T

Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

A.3 RJ-45 cable pin assignment
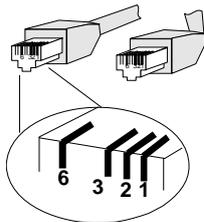
There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:

Straight Cable

1 2 3 4 5 6 7 8 SIDE 1

1 2 3 4 5 6 7 8 SIDE 2

SIDE 1	SIDE 2
1 = White/Orange	1 = White/Orange
2 = Orange	2 = Orange
3 = White/Green	3 = White/Green
4 = Blue	4 = Blue
5 = White/Blue	5 = White/Blue
6 = Green	6 = Green
7 = White/Brown	7 = White/Brown
8 = Brown	8 = Brown

Cross Over Cable

1 2 3 4 5 6 7 8 SIDE 1

1 2 3 4 5 6 7 8 SIDE 2

SIDE 1	SIDE 2
1 = White/Orange	1 = White/Green
2 = Orange	2 = Green
3 = White/Green	3 = White/Orange
4 = Blue	4 = Blue
5 = White/Blue	5 = White/Blue
6 = Green	6 = Orange
7 = White/Brown	7 = White/Brown
8 = Brown	8 = Brown

Figure A-1: Straight-Through and Crossover Cable

Please make sure your connected cables are with same pin assignment and color as above picture before deploying the cables into your network.

2080-A82050-000

$C\epsilon$