LevelOne

FSW-2470

24 10/100BASE-TX + 100Base-FX slot

Web smart Switch

User's Guide

Rev.1.00-0505

FCC Warning

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

CE Mark Warning

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

Contents

INTRODUCTION 1

Features 1
Software Features 2
Package Contents 2

HARDWARE DESCRIPTION 4

Physical Dimension 4
Front Panel 4
LED Indicators 5
Rear Panel 5
Desktop Installation 6
Rack-mounted Installation 6
Power On 7

NETWORK APPLICATION 8

WEB MANAGEMENT 10

About Web-based Management 10
Preparing for Web Management 10
System Login 11
Port Status 12
Port Configuration 14
VLAN Setting 15
Trunk Configuration 16
System Configuration 17
Firmware Update 18
Change Password 19

TROUBLESHOOTING 21

TECHNICAL SPECIFICATION 23

STEP BY STEP FIRMWARE UPGRADE 25

Introduction

The LevelOne FSW-2470, 24 10/100BASE-TX + 100Base-FX slot Web smart Switch, is a multi-port Switch that can be used to build high-performance switched workgroup networks. This switch is a store-and-forward device that offers low latency for high-speed networking and allows the switch to auto-learn and store source address in a 4K-entry MAC address table. The switch is targeted at workgroup, department or backbone computing environment.

Features

- Conforms to IEEE 802.3, 802.3u and 802.3x
- Equipped with one uplink 100Base-FX slot and default button
- IEEE 802.3x flow control support
  - Flow control on full-duplex
  - Back pressure on half-duplex
- Auto-MDIX on all ports
- N-way Auto-Negotiation
- Store-and-Forward switching architecture and no-blocking full wire speed
- 5Gbps switch back plane
- 4K-entry MAC address table
- Support Port Based VLAN and Port trunk
- Port Based priority supported
- Embedded 1.25 Mbits memory buffer
- 19” rack mount design and internal power

Software Features

Management	Web interface management
Port configuration	Link speed, Link mode, Port disable/Enable, Port Flow control disable/Enable, Port Auto negotiation
VLAN	Port Based VLAN, VLAN entry up to 24 groups.
Class of Service	Support port based priority and per port provide 2 queues (high and low).
Trunk	Support one trunk group and any 10/100TX port can be assigned as trunk member. The maximum trunk member can up to 8 ports as one trunk group.
Firmware Update	TFTP firmware upgrade

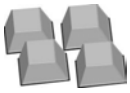
Package Contents

Unpack the contents of LevelOne FSW-2470 and verify them against the checklist below.

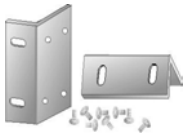
- 1 X FSW-2470, 24 10/100BASE-TX + 100Base-FX slot Web smart Switch
- Power Cord
- Four Rubber Feet
- User Manual
- Rack mount kit

FSW-2470

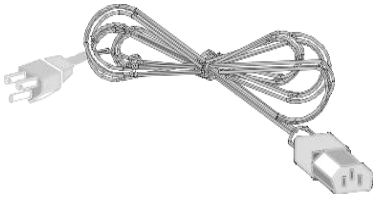
User Manual



Four Rubber Feet



Rack-mounted Kit



Power Cord

Package Contents

Compare the contents of the Switch package with the standard checklist above. If any item is missing or damaged, please contact your local dealer for service.

Hardware Description

This Section mainly describes the hardware of FSW-2470, 24 10/100BASE-TX + 100Base-FX slot Web smart Switch, and gives a physical and functional overview of this Switch.

Physical Dimension

The physical dimension of LevelOne FSW-2470 is **440mm x 120mm x 44mm (Lx W x H)**.

Front Panel

The Front Panel of the 24 10/100BASE-TX + 100Base-FX slot Web smart Switch consists LED Indicators, 24 ports auto-negotiation 10/100Mbps Ethernet RJ-45 connectors, one slot module and a default button.

- **RJ-45 Ports (Auto MDI/MDIX):** 24 ports auto-negotiation 10/100 Mbps Ethernet RJ-45 connectors

[**Auto MDI/MDIX** means that you can connect to another switch or workstation without changing straight through or crossover cabling.]

- **Module (Optional):** 1 port 100FX(SC) and 1 port 100FX(SC, 30Km) module.
- **Reset Button:** for system reset and factory default.
  - **System reset:** press **3** seconds and release.
  - **Factory default:** press **5** seconds and release.

The Front view of the 24 10/100BASE-TX + 100Base-FX slot Web smart Switch

LED Indicators

The LED Indicators gives real-time information of systematic operation status. The following table provides descriptions of LED status and their meaning.

LED	Status	Description
Power (POW)	Green	Power On
	Off	Power is not connected
LK/ACT	Green	The port is connecting with the device.
	Blinks	The port is receiving or transmitting data.
	Off	No device attached.
FD/COL	Amber	The port is operating in Full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	In half-duplex mode

The Description of LED Indicators

Rear Panel

The 3-pronged power plug is located at the rear Panel of the 24 10/100BASE-TX + 100Base-FX slot Web smart Switch. The Switch will work with AC in the range 100-240V AC, 50-60Hz.

The Rear Panel of 24 10/100BASE-TX + 100Base-FX slot Web smart Switch

Desktop Installation

Set the Switch on a sufficiently large flat space with a power outlet nearby. The surface where you put your Switch should be clean, smooth, level and sturdy. Make sure there is enough clearance around the Switch to allow attachment of cables, power cord and allow air circulation.

Attaching Rubber Feet

1. Make sure mounting surface on the bottom of the Switch is grease and dust free.
2. Remove adhesive backing from your Rubber Feet.
3. Apply the Rubber Feet to each corner on the bottom of the Switch. These footpads can prevent the Switch from shock/vibration.

Rack-mounted Installation

The 24 10/100BASE-TX + 100Base-FX slot Web smart Switch comes with a rack-mounted kit and can be mounted in an EIA standard size, 19-inch Rack. The Switch can be placed in a wiring closet with other equipment. Perform the following steps to rack mount the switch:

1. Position one bracket to align with the holes on one side of the switch and secure it with the smaller bracket screws. Then attach the remaining bracket to the other side of the Switch.
2. After attached mounting brackets, position the Switch in the rack by lining up the holes in the brackets with the appropriate holes on the rack. Secure the Switch to the rack with a screwdriver and the rack-mounting screws.

Note: For proper ventilation, allow about at least 4 inches (10 cm) of clearance on the front and 3.4 inches (8 cm) on the back of the Switch. This is especially important for enclosed rack installation.

Power On

Connect the power cord to the power socket on the rear panel of the Switch. The other side of power cord connects to the power outlet. The internal power supply of the Switch works with voltage range of AC in the 100-240VAC, frequency 50~60Hz. Check the power indicator on the front panel to see if power is properly supplied.

Network Application

This section provides you a few samples of network topology in witch the Switch is used. In general, LevelOne FSW-2470 Web smart Switch is designed as a segment switch. That is, with its address table (4k MAC address) and high performance, it is ideal for interconnecting networking segments.

PC, workstations, and servers can communicate each other by directly connecting with 24 10/100BASE-TX + 100Base-FX slot Web smart Switch. The switch automatically learns nodes address, which are subsequently used to filter and forward all traffic based on the destination address.

By using Uplink port, the Switch can connect with another switch or hub to interconnect other small-switched workgroups to form a larger switched network.

Small Workgroup

LevelOne FSW-2470 Web smart Switch can be used as a standalone switch to which personal computers, server, printer server, are directly connect to form small workgroup.

Segment Bridge

For enterprise networks where large data broadcasts are constantly processed, this switch is an ideal solution for department users to connect to the corporate backbone.

In the illustration below, two Ethernet switches with PCs, print server, and local

server attached, are both connect to the Switch. All the devices in this network can communicate with each other through the Switch. Connecting servers to the Switch allow other users to access the data on server.

Web Management

This section introduces the configuration and functions of the Web-Based management.

About Web-based Management

Inside the CPU board of the switch exists an embedded HTML web site residing in flash memory. It offers advanced management features and allow users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer.

The Web-Based Management supports Internet Explorer 5.0. It is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

[Note] By default, IE5.0 or later version does not allow Java Applets to open sockets. The user has to explicitly modify the browser setting to enable Java Applets to use network ports.

Preparing for Web Management

The default value of the switch is as below:

IP Address: **192.168.16.1**

Subnet Mask: **255.255.255.0**

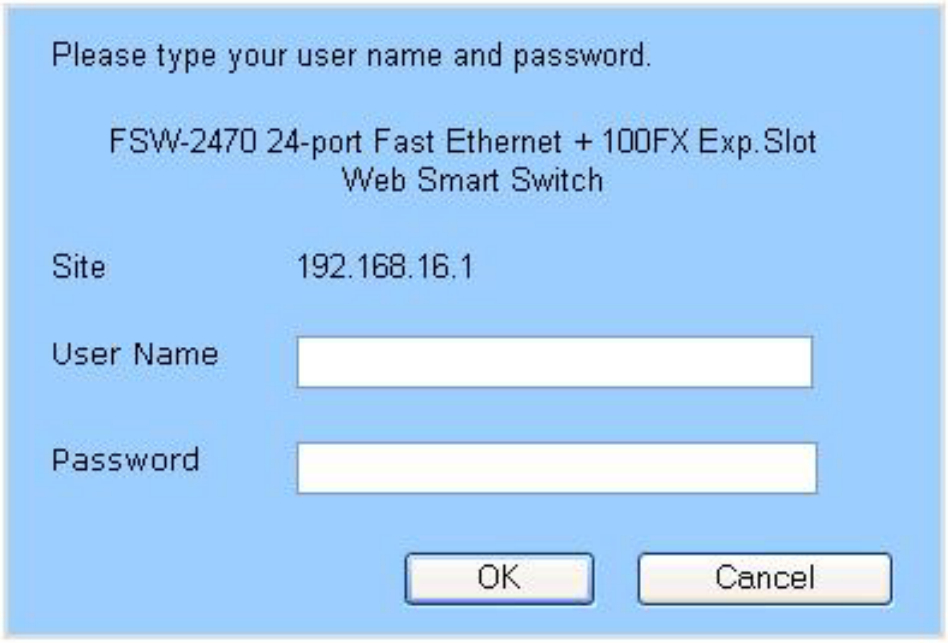
Default Gateway: **192.168.16.254**

User Name: **root**

Password: **root**

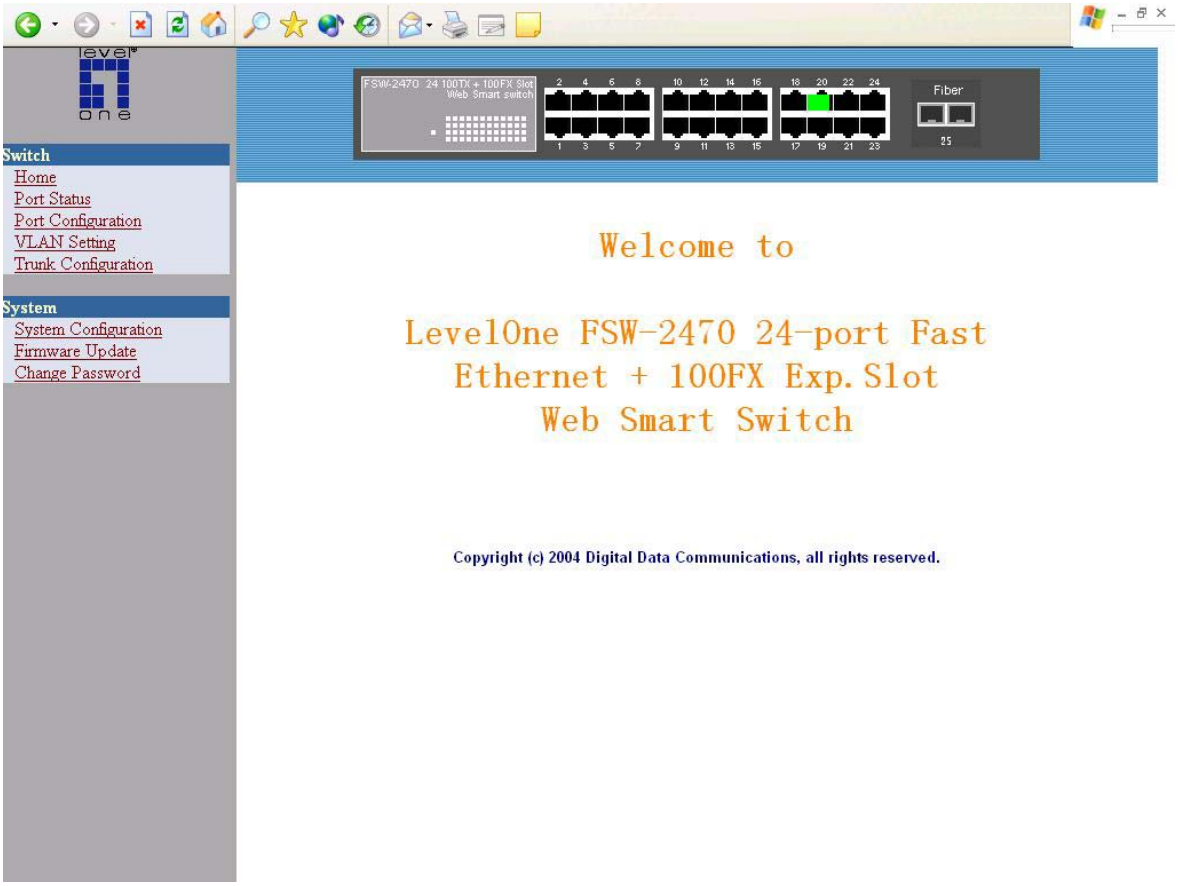
System Login

1. Install the switch on your network.
2. Launch the Internet Explorer.
3. Type http:// and the IP address of the switch. Press “**Enter**”.
4. The login screen appears.



Login Interface

5. Key in the user name and password. The default user name “**root**” and password “ **root** ”.
6. Click ”**OK**”, then the home screen of the Web-based management appears.

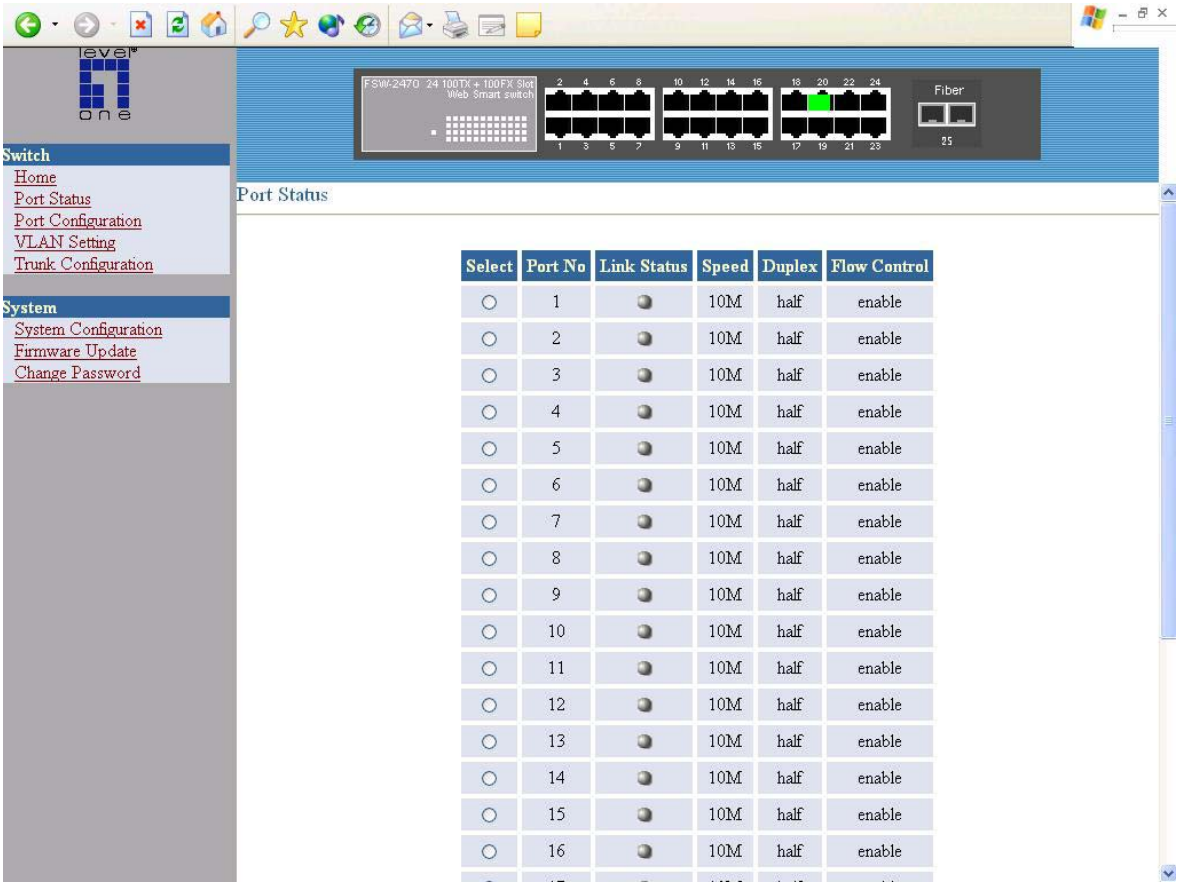


Home Interface

Port Status

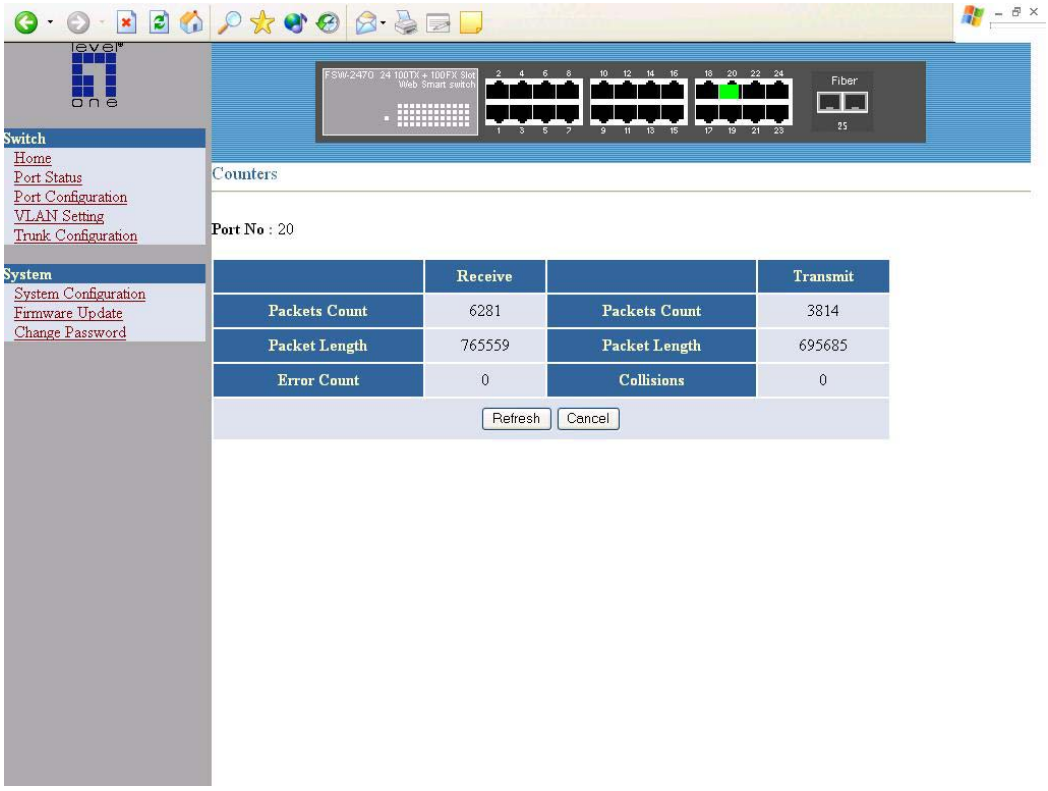
In Port status function, you can view all ports current status.

- **Link Status:** green means the port active. Gray means the port inactive.
- **Speed:** the port transmitting speed.
- **Duplex:** the port duplex mode.
- **Flow Control:** the port flow control status.



Port Status interface

Select the port and click Counters button, you can see the port counter information as the following figure shown. Click Refresh button to reset the counters. Click Cancel button will bring the screen back to previous page.



Port Counter Information Interface

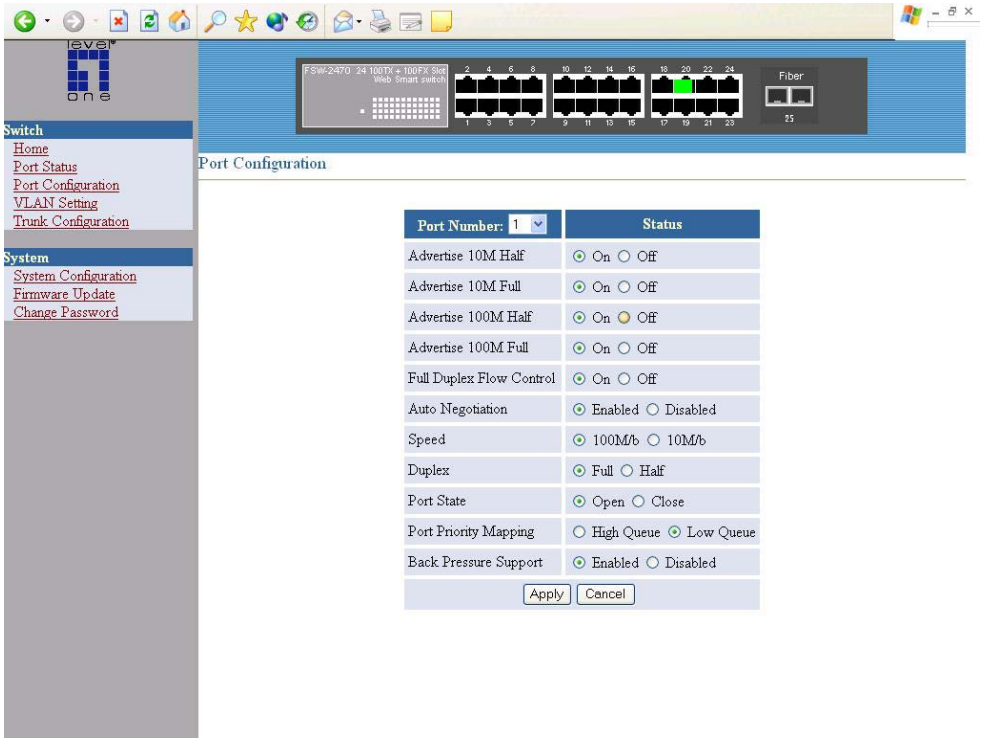
Port Configuration

You can configure speed, status, flow control, duplex mode, port base priority, port priority mapping and backpressure of each port. After configuration, click Apply button to apply the new configuration.

- **Advertise 10M Half:** when auto negotiation is enabling, you can set up the port speed is “On” or “Off”.
- **Advertise 10M Full:** when auto negotiation is enabling, you can set up the port speed is “On” or “Off”.
- **Advertise 100M Half:** when auto negotiation is enabling, you can set up the port speed is “On” or “Off”.
- **Advertise 100M Full:** when auto negotiation is enabling, you can set up the port speed is “On” or “Off”.
- **Full Duplex Flow Control:** when auto negotiation is enabling, you can set up the full duplex flow control status is “On” or “Off”.

- **Auto Negotiation:** set up the auto negotiation status. "**Enable**" means the port speed is auto negotiation and detect. The port speed has four modes and can be configured at the same time. "**Disable**" means the auto negotiation is in force status. You can configure the port speed in "**Speed**" and "**Duplex**" selection.
- **Speed:** set the port speed is 100M or 10M.
- **Duplex:** set the port in full-duplex or half-duplex mode.

  Port State: enable or disable the port function. "Close" means the port is unusable. "Open" means the port is functional.
- **Port Priority Mapping:** set the port priority level.
- **Back Pressure Support:** enable or disable back pressure function.

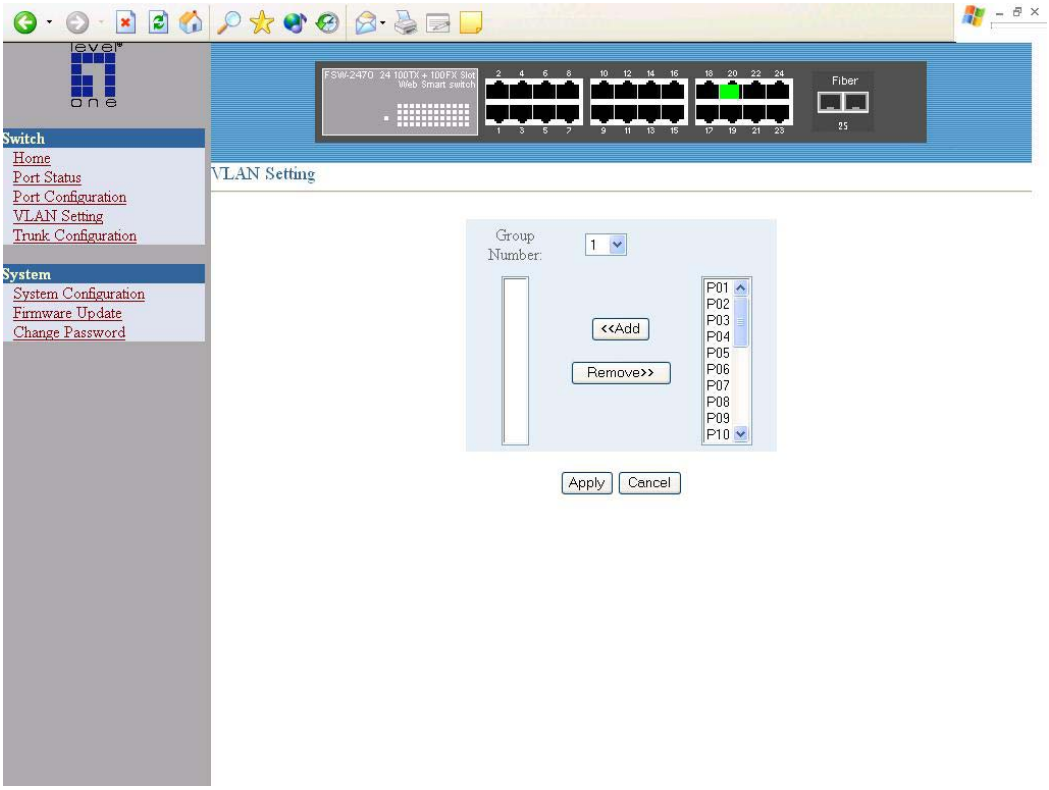


Port configuration interface

VLAN Setting

The system supports 24 VLAN groups. Select the VLAN group # and port member. Use <<Add button to add the VLAN group members and click

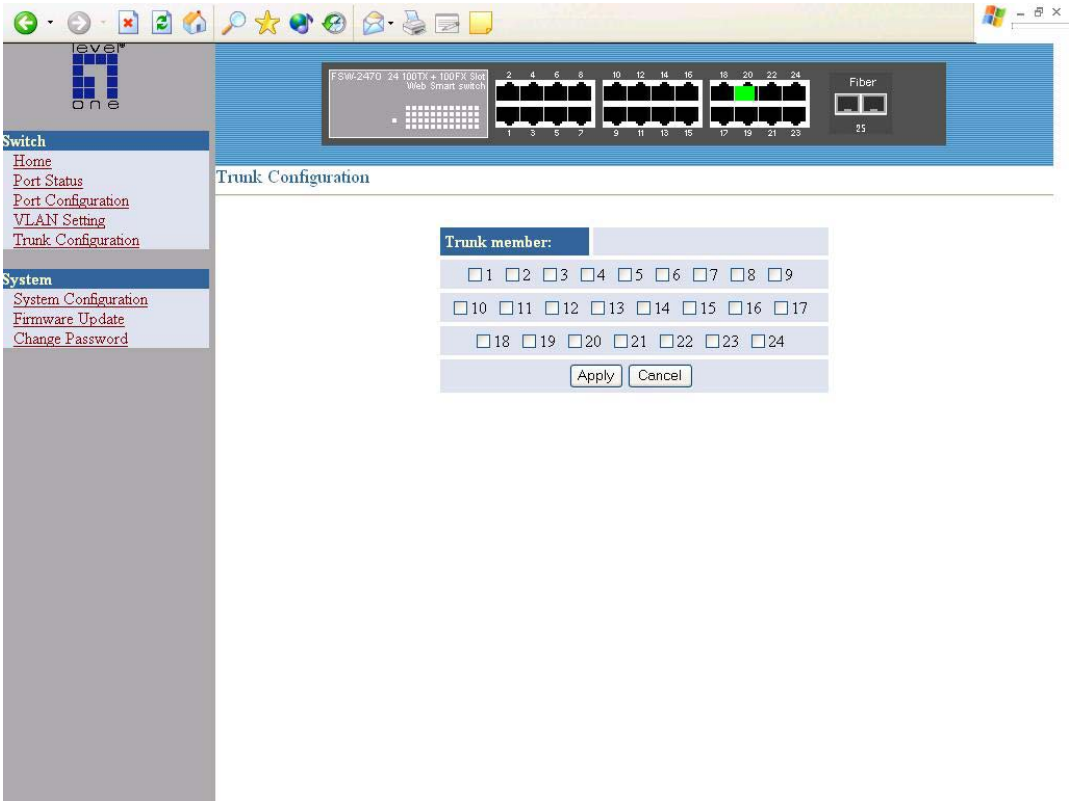
Apply button to complete the VLAN configuration. Use Remove>> button to remove unwanted group members.



VLAN Setting Interface

Trunk Configuration

The system supports only one trunk group. The trunk group supports up to 8 port members. If the port members are more than 8, it will cause the system abnormal. Mark the port number and click Apply button to apply the setting.

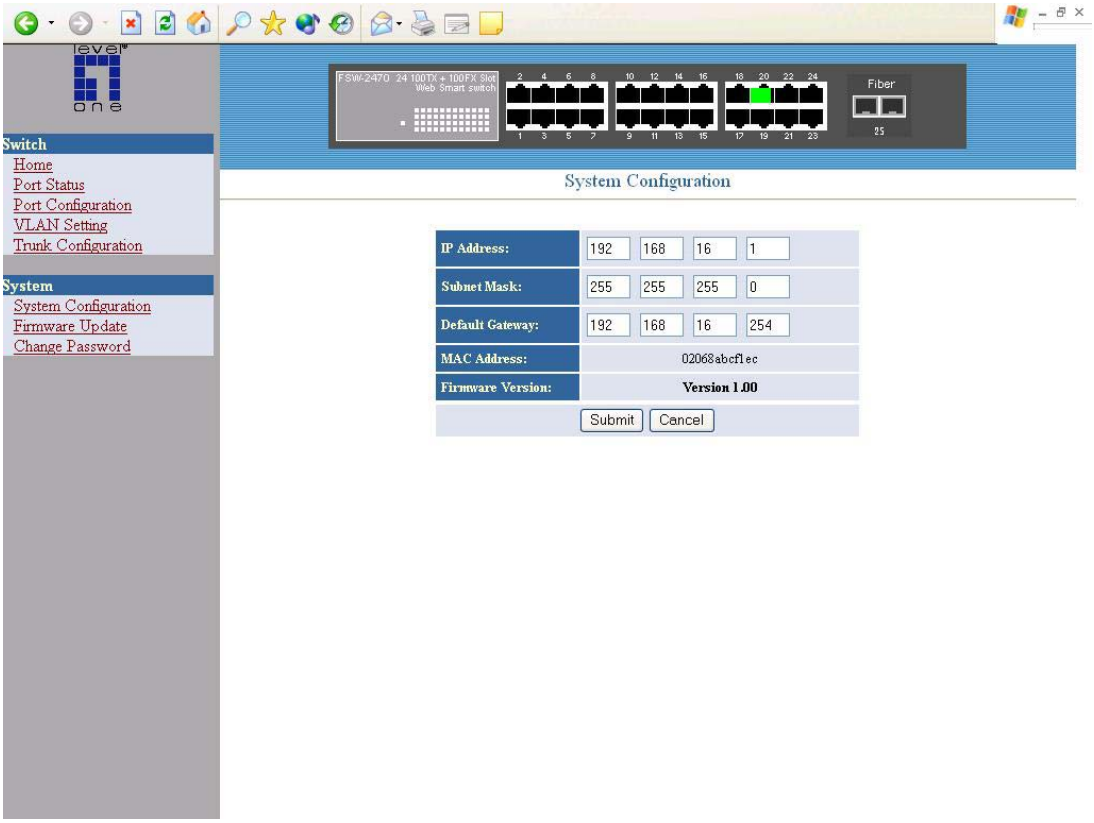


Trunk Configuration interface

[Note] The trunk members must in the same VLAN group. Otherwise, the trunk function will not operate.

System Configuration

You can configure the IP, subnet mask, and gateway. The firmware version shown on the screen may vary with the factory firmware release period. Click Submit button to apply the new configuration.



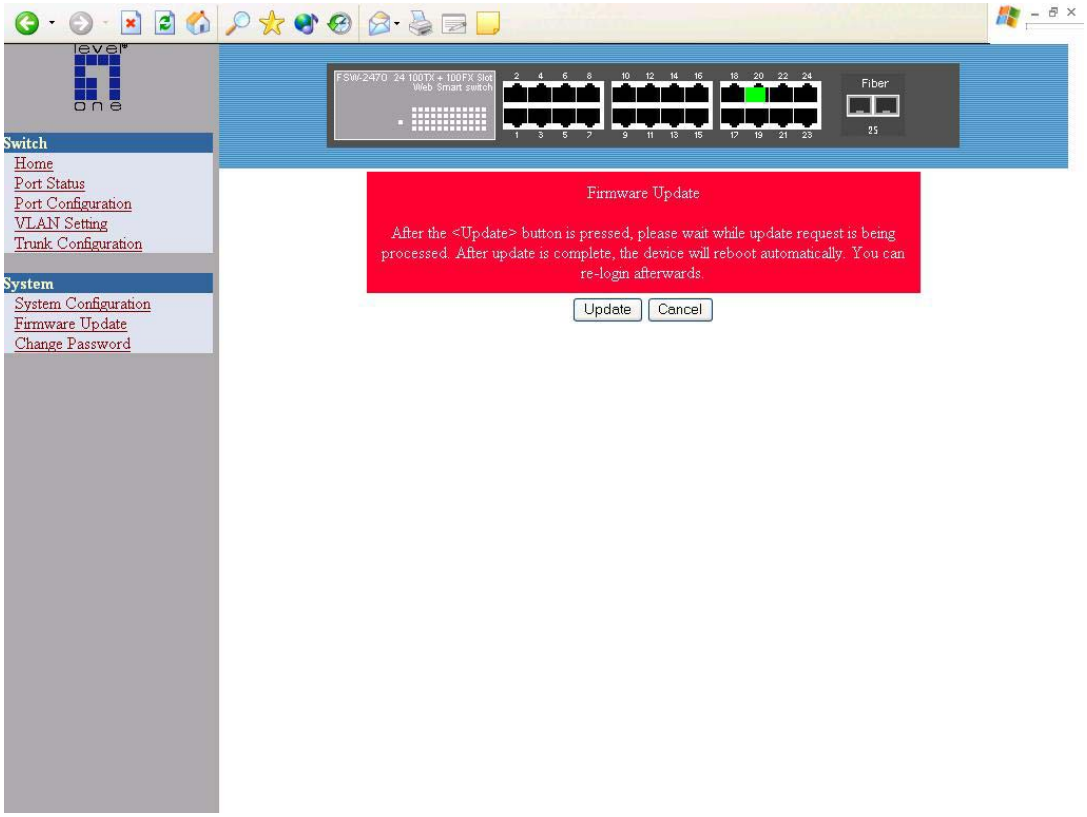
System Configuration Interface

Firmware Update

You can update the latest firmware version.

1. Contact your switch vendor for the newest firmware.
2. After you got the new firmware, save in your local hard disk.
3. Go to Internet, search for the Bootp server utility and download it.
4. Install the Bootp server utility that you found.
5. Run the Bootp server utility and set the boot file direction to where the new firmware is.
6. Go to the Firmware Update interface and click Update button to star firmware loading.
7. After updated, please power off the switch and then power on the switch.

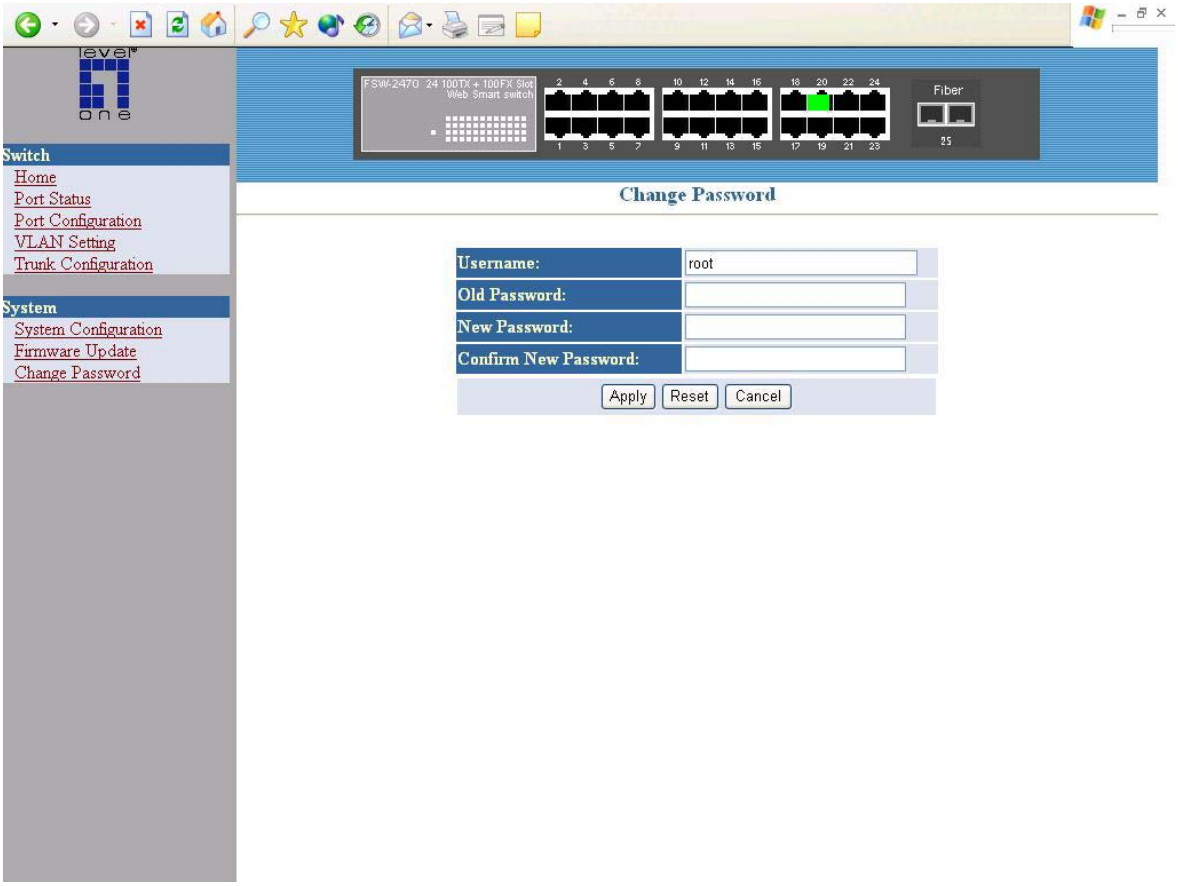
Please refer to page 25 fir step- by-step firmware upgrade instrunction.



Firmware Update Interface

Change Password

You can change the default username and password for the safety. The username and password is 8 characters length and must use the alphanumeric integer, characters or numbers. The system cannot recognize the symbol other than numbers and characters. Enter the new username and new password, click Apply button to apply the new username and password.



Change Password Interface

Troubleshooting

This section is intended to help you solve the most common problems on the FSW-2470 Web smart Switch.

Incorrect connections

The switch port can auto detect straight or crossover cable when you link switch with other Ethernet device. For the RJ-45 connector should use correct UTP or STP cable, 10/100Mbps port use 2 pairs twisted cable and Gigabit 1000T port use 4 pairs twisted cable. If the RJ-45 connector is not correct pin on right position then the link will fail. For fiber connection, please notice that fiber cable mode and fiber module should be match.

■ Faulty or loose cables

Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. IF that does not correct the problem, try a different cable.

■ Non-standard cables

Non-standard and miss-wired cables may cause numerous network collisions and other network problem, and can seriously impair network performance. A category 5-cable tester is a recommended tool for every 100Base-T network installation.

■ Improper Network Topologies

It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and too many repeaters (hubs)

between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two ends nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact your network performance.

Diagnosing LED Indicators

The Switch can be easily monitored through panel indicators to assist in identifying problems, which describes common problems you may encounter and where you can find possible solutions.

If the power indicator does turn on when the power cord is plugged in, you may have a problem with power outlet, or power cord. However, if the Switch powers off after running for a while check for loose power connections, power losses or surges at power outlet. If you still cannot resolve the problem, contact your local dealer for assistance.

■ Cabling

RJ-45 ports: use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 cable for 10Mbps connections or 100Ω Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

Technical Specification

This section provides the specifications of LevelOne FSW-2470,
24 10/100BASE-TX + 100Base-FX slot Web smart Switch.

Standard	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX/100Base-FX IEEE802.3x Flow Control and Back-pressure
Protocol	CSMA/CD
Technology	Store and forward switching architecture
LED Indicators	Per unit: Power Per port: Link/Activity, Full duplex/Collision Module: Link, Full-Duplex/Collision, TX, RX
Transfer Rate	14,880 pps Ethernet port, 148,800 pps Fast Ethernet port
Network Cable	10BASE-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100BASE-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
Back-plane	5Gbps
MAC address	4K MAC address table
Memory	1.25Mbits

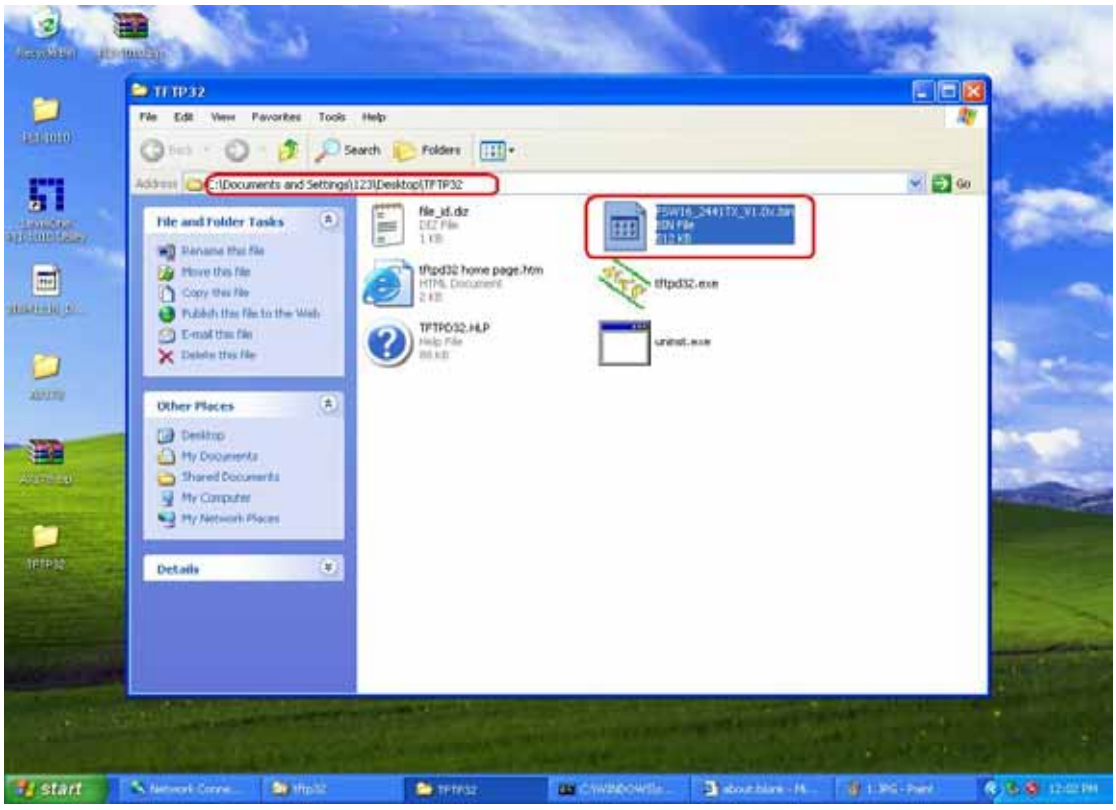
Default Button	System reset / Factory default
Power Supply	100-240 VAC, 50~60Hz, 3.3V/7A
Power Consumption	15 Watt (max.)
Operation Temp.	0℃ to 45℃ (32°F to 113°F)
Operation Humidity	10% to 90% (Non-condensing)
Storage Temp.	-10℃ to 70℃
Dimensions	440 mm (W) x 120 mm (D) x 44 mm (H)
EMI	FCC Class A, CE
Safety	UL, cUL, CE/EN60950

Step-by-Step firmware upgrade

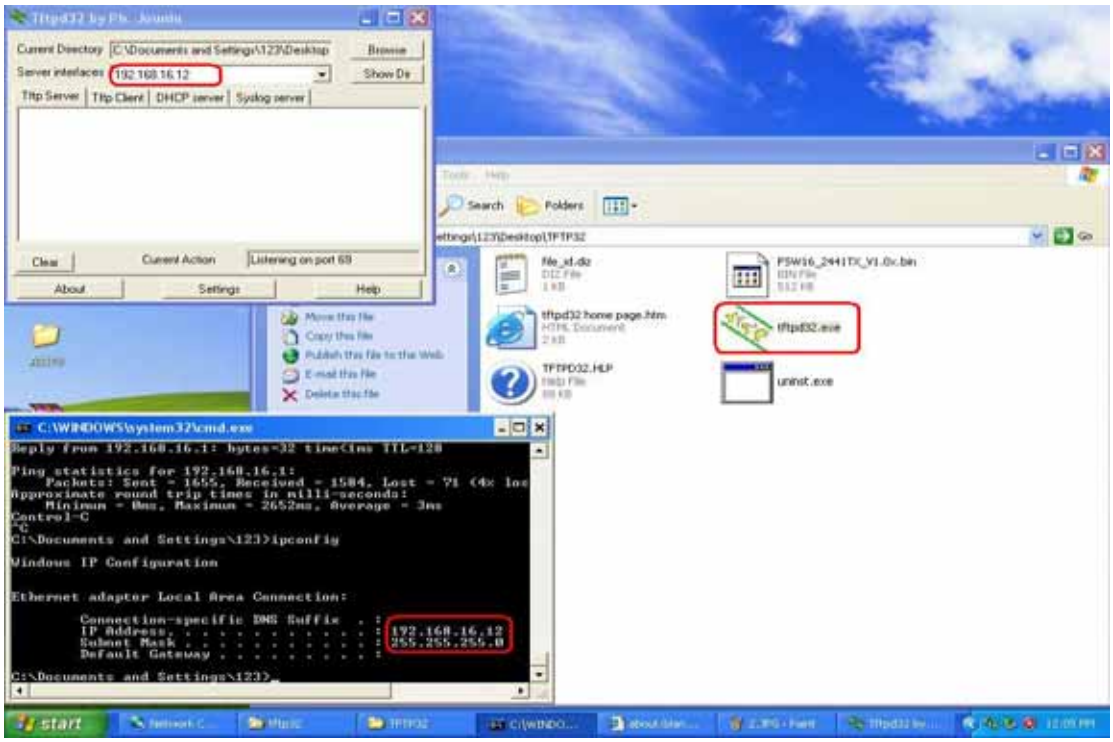
This section will guide you through the firmware upgrde by using TFTP32.

(1) Copy the TFTP32 folder to the desktop of Windows and set this PC's IP in same subnet as FSW-2470 you would like to update.

(2) Copy the F/W Bin file to TFTP32 folder



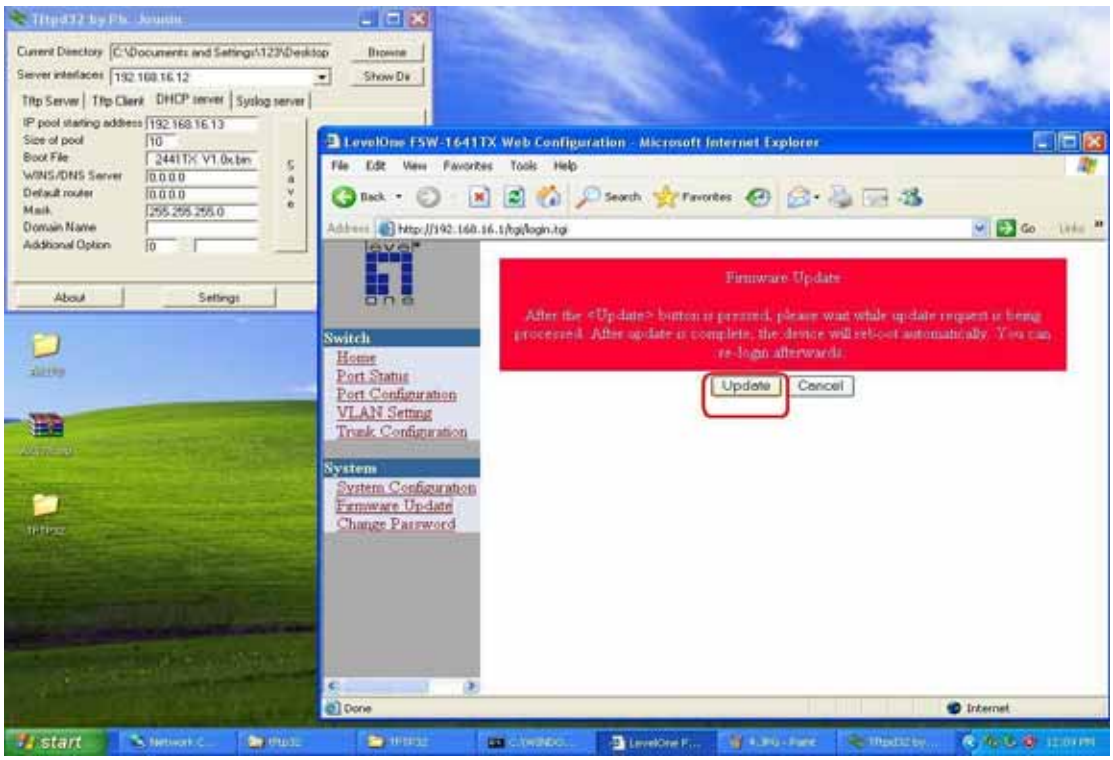
(3) Execute tfptd32.exe then the PC will be a TFTP server



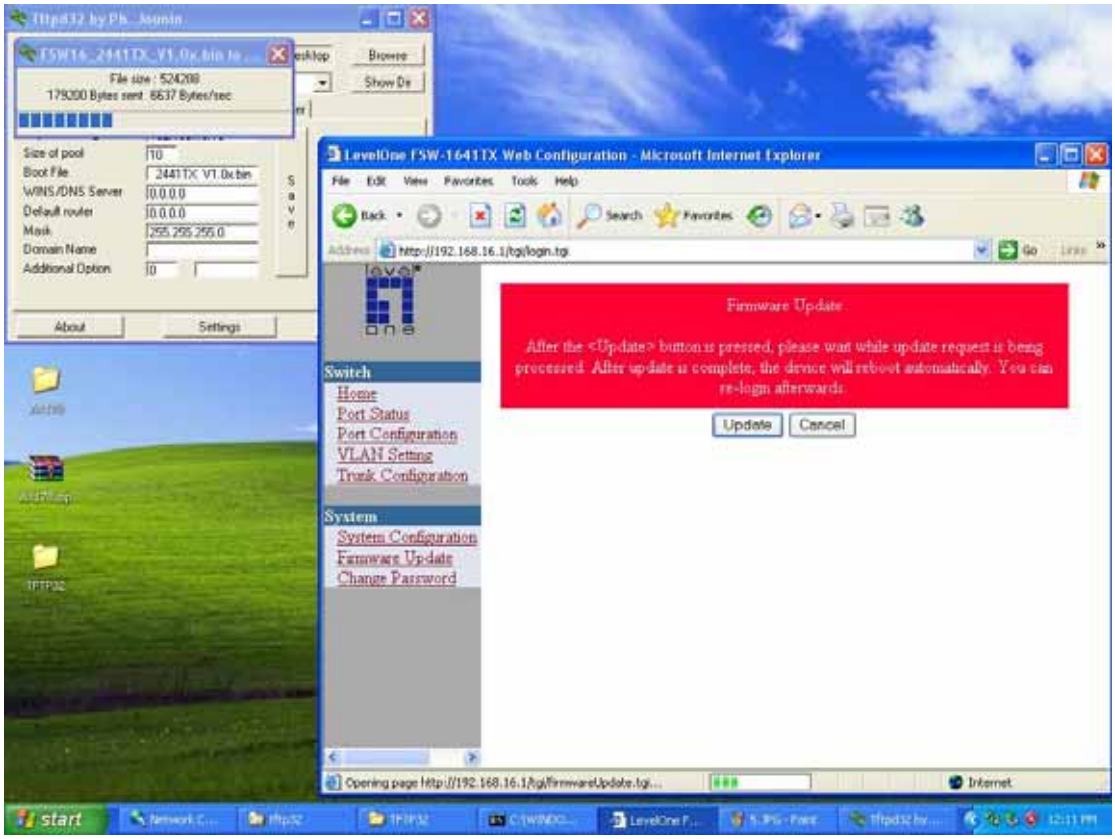
(4) Set TFTP DHCP server information:

1. IP pool starting address→ any free same subnet IP as TFTP server
2. Size of pool→ any
3. Boot file→ full file name of the F/W Bin file
4. Mask→ same as TFTP server

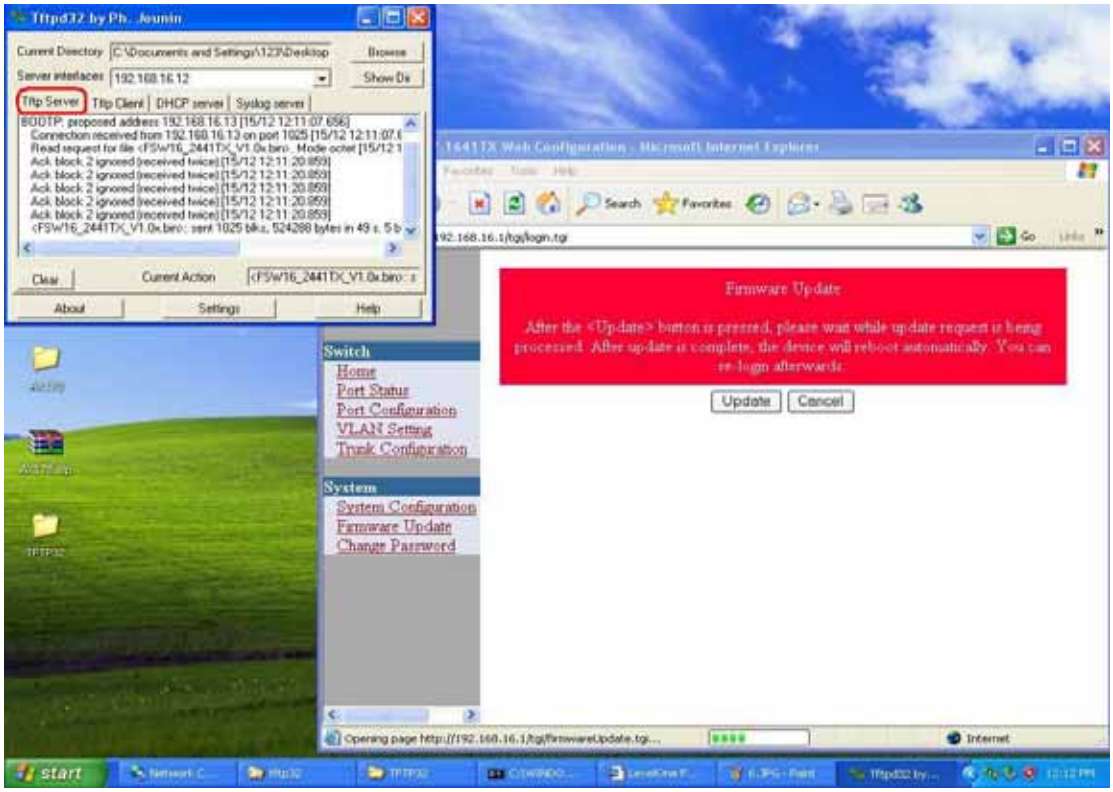
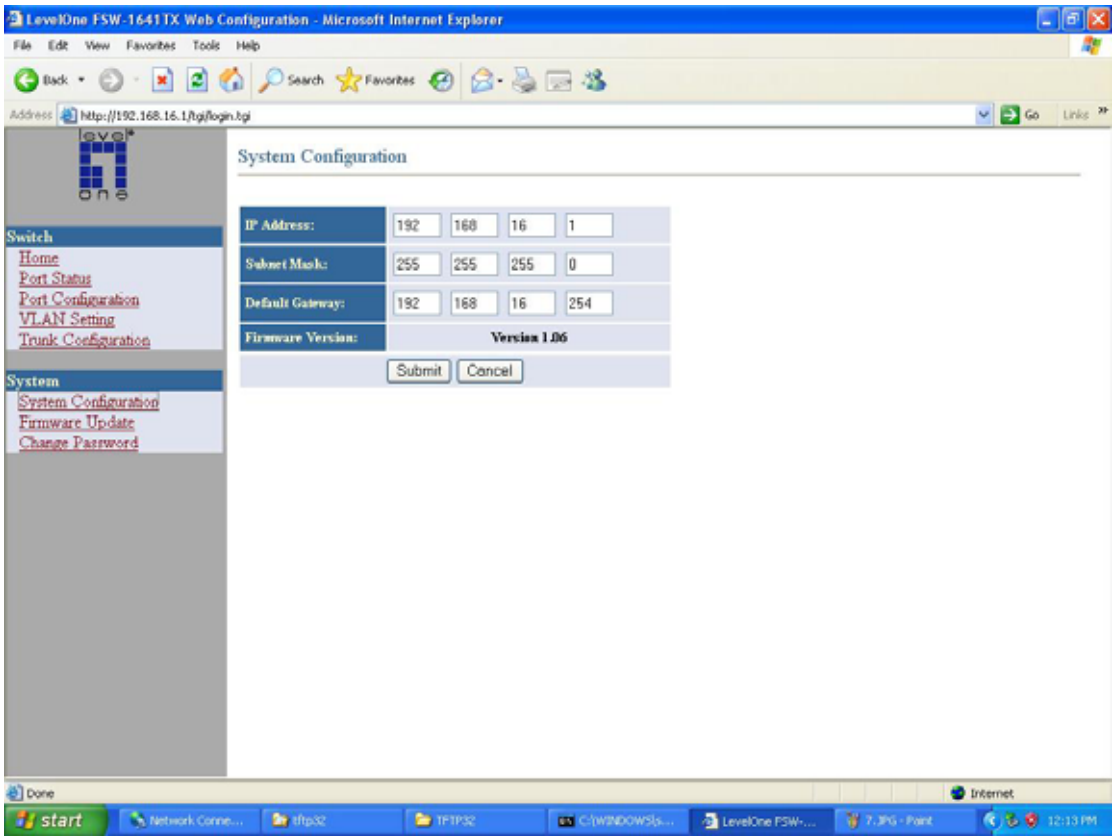
(5) Login to the web management of FSW-2470 then check the Firmware Update page, click the “Update” button for F/W update.



(6) FSW-2470 ‘s F/W is being updating.



(7) Click the TFTP server tab to make sure F/W Bin file has been transmitted to FSW-2470 completely then press the reset button of the switch 1 minute later.



(8) New F/W is updated successfully.