

**DGS-1210-10P/16/24/48**

# WEB UI REFERENCE GUIDE WEB SMART SWITCH





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## **About This Guide**

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This guide provides instructions to install the D-Link Gigabit Web Smart Switch DGS-1210-10P/16/24/48, how to use the SmartConsole Utility, and to configure Web-based Management step-by-step.



**Note:** The model you have purchased may appear slightly different from the illustrations shown in the document. Refer to the Product Instruction and Technical Specification sections for detailed information about your switch, its components, network connections, and technical specifications.

This guide is mainly divided into four parts:

1. Hardware Installation: Step-by-step hardware installation procedures.
2. Getting Started: A startup guide for basic switch installation and settings.
3. Smart Console Utility: An introduction to the central management system.
4. Configuration: Information about the function descriptions and configuration settings.

## **Terms/Usage**

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In this guide, the term “Switch” (first letter capitalized) refers to the Smart Switch, and “switch” (first letter lower case) refers to other Ethernet switches. Some technologies refer to terms “switch”, “bridge” and “switching hubs” interchangeably, and both are commonly accepted for Ethernet switches.



A **NOTE** indicates important information that helps a better use of the device.



A **CAUTION** indicates potential property damage or personal injury.

## **Copyright and Trademarks**

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## 1 Product Introduction

Thank you and congratulations on your purchase of D-Link Web Smart Switch Products.

D-Link's next generation Web Smart Ethernet switch series blends plug-and-play simplicity with exceptional value and reliability for small and medium-sized business (SMB) networking. All models are housed in a new style rack-mount metal case with easy-to-view front panel diagnostic LEDs, and provides advance features including four combo 100/1000BASE-X SFP slots for fiber connection, network security, traffic segmentation, QoS and versatile management.

**Flexible Port Configurations.** Four port densities are available for selection: 10, 16, 24, and 48 Gigabit Ethernet ports. Supporting auto-detection of MDI/MDIX, these switches bring inexpensive and easy Ethernet connection to the desktops. DGS-1210-10P provides 2 and other switches provide 4 combo SFP slots, which supports both 1000M and 100M fiber connections with appropriate fiber transceivers. The first eight ports of DGS-1210-10P also support up to 15.4 or 30 watts PoE power for the connections of wireless access points, IP phones and other PoE-supported devices, allowing them to be deployed at difficult places such as on high walls and ceilings, where AC power outlets are not readily available.

**D-Link Green Technology.** D-Link Green devices are about providing eco-friendly alternatives without compromising performance. D-Link Green Technology includes a number of innovations to reduce energy consumption on DGS-1210 series such as reducing power when a port does not have a device attached, or adjusting the power usage according to the Ethernet cable connected to it. For PoE model such as DGS-1210-10P, D-Link Green Technology offers Time-based PoE feature to shut down per port power off working hours.

**Extensive Layer 2 Features.** Implemented as complete L2 devices, these switches include functions such as IGMP snooping, port mirroring, Spanning Tree, 802.3ad LACP and Loopback Detection to enhance performance and network resiliency.

**Traffic Segmentation and QoS.** The switches support 802.1Q VLAN standard tagging to enhance network security and performance. The switches also support 802.1p priority queues, enabling users to run bandwidth-sensitive applications such as streaming multimedia by prioritizing that traffic in network. These functions allow switches to work seamlessly with VLAN and 802.1p traffic in the network. Auto Voice VLAN will automatically place the voice traffic from IP phone to an assigned VLAN with higher priority, so it can be separated from normal data traffic. Asymmetric VLAN is implemented in these switches for a more efficient use of shared resources, such as server or gateway devices.

**Network Security.** D-Link's innovative Safeguard Engine function protects the switches against traffic flooding caused by virus attacks. Additional features like 802.1X port-based authentication provides access control of the network with external RADIUS servers. ACL is a powerful tool to screen unwanted IP or MAC traffic. Storm Control can help to keep the network from being overwhelmed by abnormal traffic. Port Security is another simple but useful authentication method to maintain the network device integrity.

**Versatile Management.** The new generation of D-Link Web Smart Switches provides growing businesses with a simple and easy management of their network, using an intuitive SmartConsole utility or a Web-Based management interface that allows administrators to remotely control their network down to the port level. The SmartConsole easily allows customers to discover multiple D-Link web smart switches with the same L2 network segment connected to the user's local PC. With this utility, users do not need to change the IP address of the PC and provide easy initial settings of the smart switches. The switches within the same L2 network segment connected to the user's local PC are displayed on the screen for instant access. It allows extensive switch configuration settings, and basic configuration of discovered devices, such as a password change or firmware upgrade.

Users can also access the switch via TELNET. Some basic tasks can be performed such as changing the Switch IP address, resetting the settings to factory defaults, setting the administrator password, rebooting the Switch, or upgrading the Switch firmware by using the Command Line Interface (CLI).



In addition, users can utilize the SNMP MIB (*Management Information Base*) to poll the switches for information about the status, or send out traps of abnormal events. SNMP support allows users to integrate the switches with other third-party devices for management in an SNMP-enabled environment. D-Link Web Smart Switches also come with the D-View plug-in module that works with D-View 6 SNMP Management Software, and provides easy-to-use graphic interface and facilitates the operation efficiency.

## ***DGS-1210-10P***

8-Port 10/100/1000Mbps plus 2 1000Base-T/SFP ports Web Smart PoE Switch

### **Front Panel**



Figure 1 – DGS-1210-10P Front Panel

**Power LED** : The Power LED lights up when the Switch is connected to a power source.

**Pwr Max**: The Pwr Max LED lights up when the Switch reaches the maximum power budget defined by the administrator via PoE System Settings page of Web GUI or the default power budget of 78 Watts.

**Reset**: By pressing the Reset button, the Switch will change back to the default configuration and all changes will be lost.

**Mode**: By pressing the Mode button, the Port LED will switch between Link/Act and PoE modes.

**Port Link/Act/Speed LED (1-8, 9T, 10T, 9F, 10F)**: When mode LED lights up in Link/Act mode, the port LEDs indicate a network link through the corresponding port. Blinking indicates the Switch is either sending or receiving data to the port. When the port LED glows in amber, it indicates the port is running on 10M or 100M. When the port LED glows in green, it is running on 1000Mbps.



**NOTE:** On DGS-1210-10P, the SFP ports are shared with normal RJ-45 ports 9 to 10. When optical transceiver is inserted to SFP port and link up, the RJ-45 port cannot be used.



**CAUTION:** The MiniGBIC ports should use UL listed Optical Transceiver product, Rated Laser Class I. 3.3Vdc

**Port PoE LED (1-8)**: When mode LED lights up in PoE mode, the port LEDs indicate powering status over the corresponding port.

### **Rear Panel**



Figure 2 – DGS-1210-10P Rear Panel

**Power**: The power port is where to connect the AC power cord.

**DGS-1210-16**

16-Port 10/100/1000Mbps with 4 Combo SFP Slot Web Smart Switch

**Front Panel**



Figure 3 – DGS-1210-16 Front Panel

SFP ports for optical transceivers

**Power LED** : The Power LED lights up when the Switch is connected to a power source.

**Port Link/Act/Speed LED (1-12, 13F, 14F, 15F, 16F, 13T, 14T, 15T, 16T):** The Link/Act/Speed LED flashes, which indicates a network link through the corresponding port. Blinking indicates that the Switch is either sending or receiving data to the port. When a port has an amber light, this indicates that the port is running on 10M or 100M. When it has a green light it is running on 1000M.



**NOTE:** On DGS-1210-16, the SFP ports are shared with normal RJ-45 ports 13 to 16. When optical transceiver is inserted to SFP port and link up, the RJ-45 port cannot be used.



**CAUTION:** The MiniGBIC ports should use UL listed Optical Transceiver product, Rated Laser Class I. 3.3Vdc.

**Reset:** By pressing the Reset button, the Switch will change back to the default configuration and all changes will be lost.

**Rear Panel**



Figure 4 – DGS-1210-16 Rear Panel

**Power:** The power port is where to connect the AC power cord.

**DGS-1210-24**

24-Port 10/100/1000Mbps with 4 Combo SFP Slot Web Smart Switch.

**Front Panel**

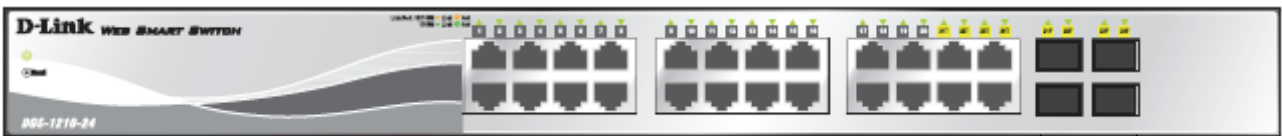


Figure 5 – DGS-1210-24 Front Panel

SFP ports for optical transceivers

**Power LED** : The Power LED lights up when the Switch is connected to a power source.

**Port Link/Act/Speed LED (1-20, 21F, 22F, 23F, 24F, 21T, 22T, 23T, 24T):** The Link/Act/Speed LED flashes, which indicates a network link through the corresponding port. Blinking indicates that the Switch is either sending or receiving data to the port. When a port has an amber light, this indicates that the port is running on 10M or 100M. When it has a green light it is running on 1000M.

**Reset:** Press the Reset button to reset the Switch back to the default settings. All previous changes will be lost.



**NOTE:** On the DGS-1210-24, the SFP ports are shared with normal RJ-45 ports 49 and 50. When optical transceiver is inserted to SFP port and link up, the RJ-45 port cannot be used.



**CAUTION:** The MiniGBIC ports should use UL listed Optical Transceiver product, Rated Laser Class I. 3.3Vdc.

## Rear Panel



Figure 6 – DGS-1210-24 Rear Panel

**Power:** Connect the supplied AC power cable to this port.

## DGS-1210-48

48-Port 10/100/1000Mbps with 4 Combo SFP Slot Web Smart Switch.

## Front Panel

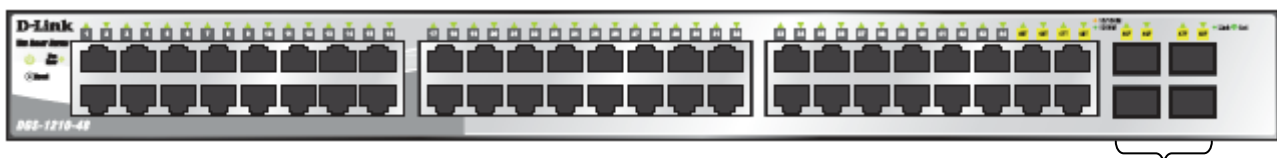


Figure 7 – DGS-1210-48 Front Panel

SFP ports for optical transceivers

**Power LED** : The Power LED lights up when the Switch is connected to a power source.

**Port Link/Act/Speed LED (1-44, 45F, 46F, 47F, 48F, 45T, 46T, 47T, 48T):** The Link/Act/Speed LED flashes, which indicates a network link through the corresponding port. Blinking indicates that the Switch is either sending or receiving data to the port. When a port has an amber light, this indicates that the port is running on 10M or 100M. When it has a green light it is running on 1000M.

**Fan Err:** The Fan Err LED lights red when the fan fails. It is off when all fans work normally.

**Reset:** Press the Reset button to reset the Switch back to the default settings. All previous changes will be lost.



**NOTE:** On the DGS-1210-48, the SFP ports are shared with normal RJ-45 ports 49 and 50. When the optical transceiver is inserted to the SFP port and linked up, the RJ-45 port cannot be used.



**CAUTION:** The MiniGBIC ports should use UL listed Optical Transceiver product, Rated Laser Class I. 3.3Vdc.

**Rear Panel**



Figure 8 – DGS-1210-48 Rear Panel

**Power:** Connect the supplied AC power cable to this port.

## 2 Hardware Installation

This chapter provides unpacking and installation information for the D-Link Web-Smart Switch.

### Step 1: Unpacking

Open the shipping carton and carefully unpack its contents. Please consult the packing list located in the User Manual to make sure all items are present and undamaged. If any item is missing or damaged, please contact your local D-Link reseller for replacement.

- One D-Link Web-Smart Switch
- One AC power cord
- Four rubber feet
- Screws and two mounting brackets
- One Multi-lingual Getting Started Guide
- One CD with User Manual, SmartConsole Utility program, and D-View Module

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

### Step 2: Switch Installation

For safe switch installation and operation, it is recommended that you:

- Visually inspect the power cord to see that it is secured fully to the AC power connector.
- Make sure that there is proper heat dissipation and adequate ventilation around the switch.
- Do not place heavy objects on the switch.

#### Desktop or Shelf Installation

When installing the switch on a desktop or shelf, the rubber feet included with the device must be attached on the bottom at each corner of the device's base. Allow enough ventilation space between the device and the objects around it.

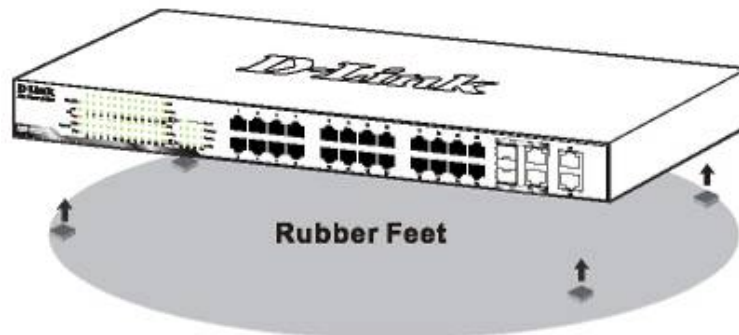


Figure 9 – Attach the adhesive rubber pads to the bottom

#### Rack Installation

The switch can be mounted in an EIA standard size 19-inch rack, which can be placed in a wiring closet with other equipment. To install, attach the mounting brackets to the switch's side panels (one on each side) and secure them with the screws provided (please note that these brackets are not designed for palm size switches).



Figure 10 – Attach the mounting brackets to the Switch

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

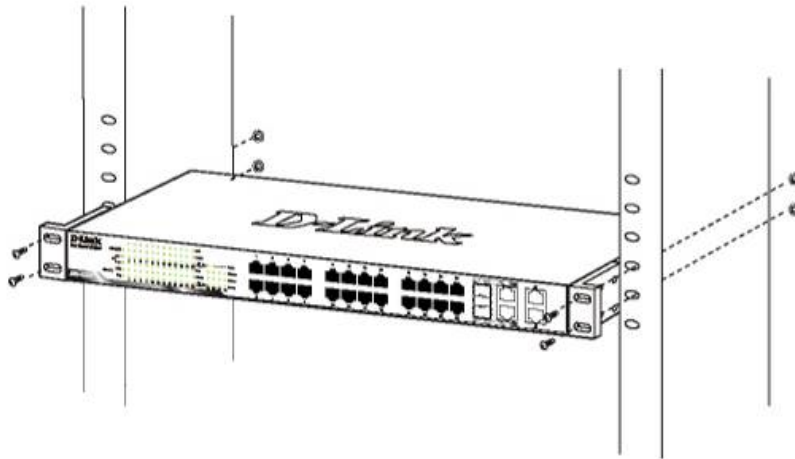


Figure 11 – Mount the Switch in the rack or chassis

Please be aware of following safety Instructions when installing:

- A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
- B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit, and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

### ***Step 3 – Plugging in the AC Power Cord***

Users may now connect the AC power cord into the rear of the switch and to an electrical outlet (preferably one that is grounded and surge protected).

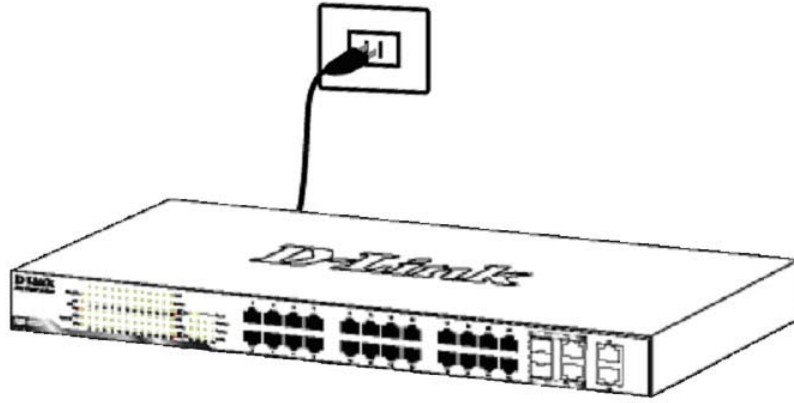


Figure 12 –Plugging the switch into an outlet

### **Power Failure**

As a precaution, the switch should be unplugged in case of power failure. When power is resumed, plug the switch back in.

## 3 Getting Started

This chapter introduces the management interface of D-Link Web-Smart Switch.

### ***Management Options***

The D-Link Web Smart Switch can be managed through any port on the device by using the Web-based Management, or through any PC using the SmartConsole Utility.

Each switch must be assigned its own IP Address, which is used for communication with the Web-Based Management or a SNMP network manager. The PC should have an IP address in the same range as the switch. Each switch can allow up to four users to access the Web-Based Management concurrently.

However, if you want to manage multiple D-Link Web Smart Switches, the SmartConsole Utility is a more convenient choice. By using the SmartConsole Utility, you do not need to change the IP address of your PC and it is easier to initialize multiple Smart Switches.

Please refer to the following installation instructions for the Web-based Management and the SmartConsole Utility.

### ***Using Web-based Management***

After a successful physical installation, you can configure the Switch, monitor the network status, and display statistics using a web browser.

### **Supported Web Browsers**

The embedded Web-based Management currently supports the following web browsers:

- Internet Explorer 6 or higher
- Netscape 8 or higher
- Mozilla
- Firefox 1.5/2.0 or higher

### **Connecting to the Switch**

You will need the following equipment to begin the web configuration of your device:

1. A PC with a RJ-45 Ethernet connection
2. A standard Ethernet cable

Connect the Ethernet cable to any of the ports on the front panel of the switch and to the Ethernet port on the PC.

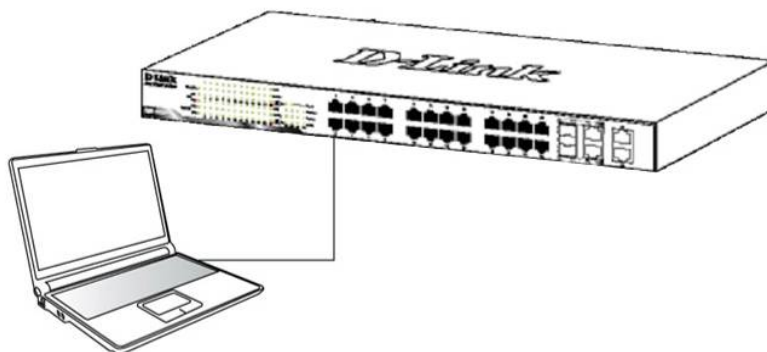


Figure 13 – Connected Ethernet cable



### Login Web-based Management

In order to login and configure the switch via an Ethernet connection, the PC must have an IP address in the same subnet as the switch. For example, if the switch has an IP address of **10.90.90.90**, the PC should have an IP address of **10.x.y.z** (where x/y is a number between 0 ~ 254 and z is a number between 1 ~ 254), and a subnet mask of **255.0.0.0**. There are two ways to launch the Web-based Management, you may either click the Web Access button at the top of the SmartConsole Utility or open the web browser and enter **10.90.90.90** (the factory-default IP address) in the address bar. Then press <Enter>.

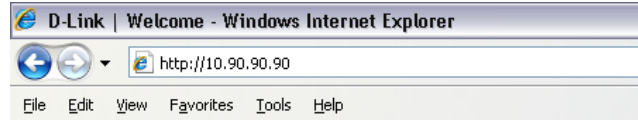


Figure 14 – Enter the IP address 10.90.90.90 in the web browser



**NOTE:** The switch's factory default IP address is 10.90.90.90 with a subnet mask of 255.0.0.0 and a default gateway of 0.0.0.0.

The web configuration can also be accessed through the SmartConsole Utility. Open the SmartConsole Utility and double-click the switch as it appears in the Monitor List. This will automatically load the web configuration in your web browser.

When the following logon dialog box appears, enter the password and choose the language of the Web-based Management interface then click **OK**.

The switch supports 9 languages including English, Traditional Chinese, Simplified Chinese, German, Spanish, French, Italian, Japanese and Russian. By default, the password is **admin** and the language is **English**.



Figure 15 – Logon Dialog Box

### **Smart Wizard**

After a successful login, the Smart Wizard will guide you through essential settings of the D-Link Web Smart Switch. Please refer to the Smart Wizard Configuration section for details.

### **Web-based Management**

By clicking the **Exit** button in the Smart Wizard, you will enter the Web-based Management interface. Please refer to Chapter 5 [Configuration](#) for detailed instructions.

### **SmartConsole Utility**

The SmartConsole Utility included in the installation CD is a program for discovering D-Link Smart Switches within the same network segment connected to your PC. This tool is only for computers running Windows 2000, Windows XP, or Windows Vista x64/86 operating systems. There are two options for the installation of the SmartConsole Utility; one is through the autorun program on the installation CD and the other is manual installation.



**NOTE:** Please be sure to uninstall any existing SmartConsole Utility from your PC before installing the latest SmartConsole Utility.

**Option 1:** Follow these steps to install the SmartConsole Utility via the autorun program on the installation CD.

1. Insert the Utility CD into your CD-Rom/DVD-Rom Drive.
2. The autorun program will appear automatically.
3. Click on the "Install SmartConsole Utility" button and an installation wizard will guide you through the process.
4. After successfully installing the SmartConsole Utility, you can open the utility by clicking Start > Programs > D-Link SmartConsole Utility.
5. Connect the Smart Switch to the same L2 network segment of your PC and use the SmartConsole Utility to discover the Smart Switches.

**Option 2:** Follow these steps to install the SmartConsole Utility manually.

1. Insert the Utility CD into your CD-Rom/DVD-Rom Drive.
2. From the Start menu on the Windows desktop, click Run.
3. In the Run dialog box, type D:\D-Link SmartConsole Utility\setup.exe (where D:\ represents the drive letter of your CD-Rom or DVD-Rom) and click OK.
4. Follow the on-screen instructions to install the utility.
5. Upon completion, go to Start > Programs > D-Link SmartConsole Utility and open the SmartConsole Utility.
6. Connect the Smart Switch to the same L2 network segment of your PC and use the SmartConsole Utility to discover the Smart Switches.

For detailed explanations of SmartConsole's functions, please refer to Chapter 4 [SmartConsole Utility](#)



Web-Smart Switch will not be discovered.

**Log**

Click this icon to launch the Log window. Click **View Log** to show the events of the SmartConsole Utility and the device. **Date/Time** indicates when the message was received, **IP** denotes where it comes from and **Status** shows the content of this log message. Click **Clear Log** to clear all log entries. Click **OK** to exit.



Figure 18 – SmartConsole Log

**Trap**

Click this icon to launch the Trap window. Click **View Trap** to show the events of the SmartConsole Utility and the device. **Date/Time** indicates when the trap message was received, **IP** denotes where it comes from and **Status** shows the content of this trap message. Click **Clear Trap** to clear all entries. Click **OK** to exit

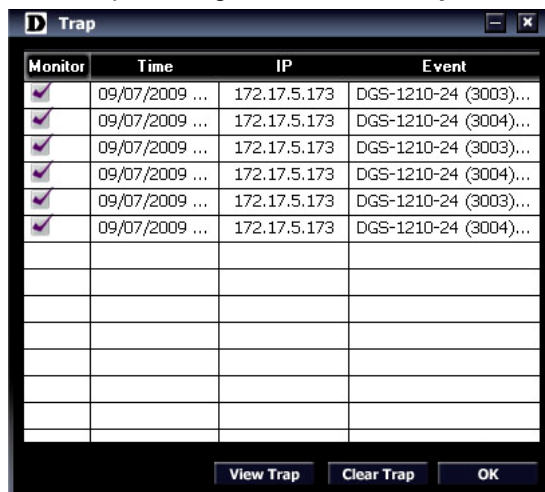




Figure 19 – SmartConsole Trap

The trap icon in the SmartConsole Settings will change while receiving new trap messages. Please see below for detailed description.

Icon	Description
	No new traps
	New traps was received

**File**

By clicking on this icon you will see below options:

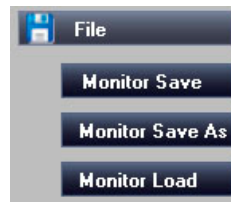


Figure 20 – SmartConsole File

**Monitor Save:** Records the setting of the Device List as default for the next time the SmartConsole Utility is used.

**Monitor Save As:** Records the setting of the Device List in an appointed filename and file path.

**Monitor Load:** Manually load a Device List setting file.

### Help

Click this icon to launch the SmartConsole Info window.

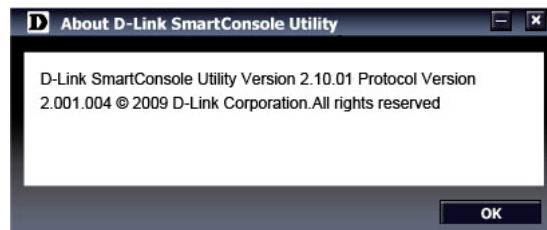


Figure 21 – SmartConsole Help

**Device Configuration**

The Device Configuration in the SmartConsole Utility has five icons:



Device Settings



Device Password Manager



Multi Firmware Upgrade



DHCP Refresh



Web Access

and the **+**, **-**, **Discovery** device buttons for the Device List.



**Device Settings**

Select a switch from the Device List. Click on this icon to launch the Device Settings window. Here you can configure the Product Name, IP Address, Gateway, Subnet Mask, System Name, Location, Trap Host IP, Switch Group Interval, and DHCP Client Setting of the Switch.

To apply the configuration, insert the correct device password in the Confirm Password box and then click **OK**

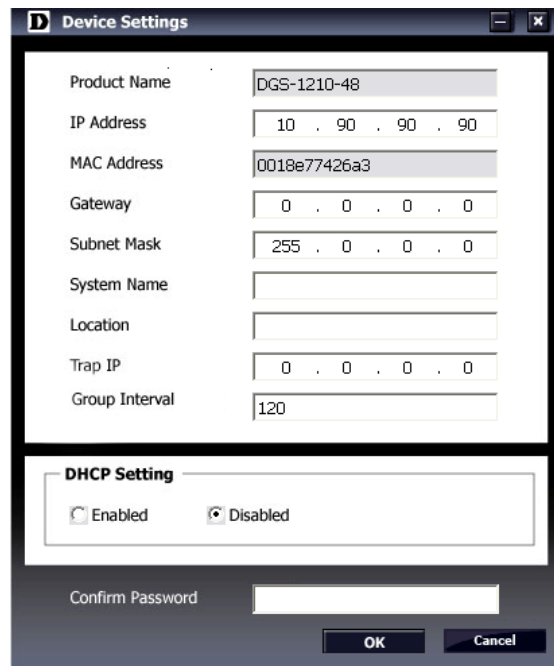


Figure 22 – SmartConsole Device Settings



**Device Password Manager**

Select a switch from the Device List. Click on this icon to launch the Device Password Manager window. Here you can enter a new password and confirm it.



Figure 23 – SmartConsole Device Password Manager



**Multi Firmware Upgrade**

Select one or many switches of the same model name from the Device List. Click on this icon to launch the Firmware Upgrade window. Specify the Firmware Path (or Browse for one) that you are going to use. Input the correct password of the device, and then click **Upgrade**. The state will show "OK" after completion, or "Fail" if the firmware upgrade fails or cannot be completed for any reason.

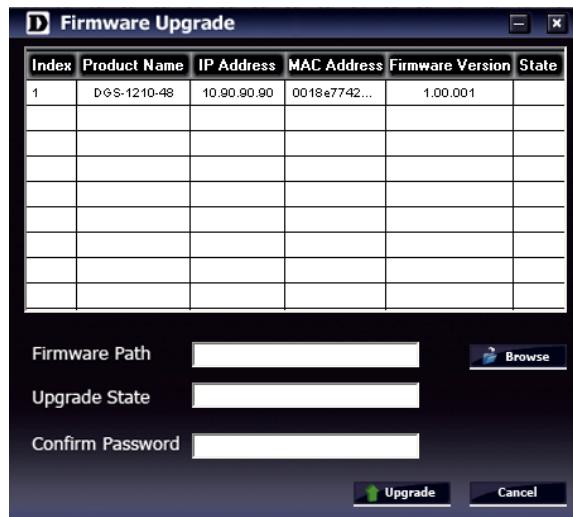


Figure 24 – Firmware Upgrade

**CAUTION:** Do not disconnect the PC or remove the power cord from the device until the upgrade completes. The software may be corrupted because of the incomplete firmware upgrade.



**DHCP Refresh:**

If a DHCP-client enabled switch in the Device List shows the default IP is still used, it means the device did not receive an IP address from the DHCP server successfully. Select that switch and click the DHCP refresh icon. Enter the correct Device Password and then click **OK**. The device will renew the IP address from the DHCP server.



Figure 25 – DHCP Refresh





**Product Name:** Displays the device product name.

**System Name:** Displays the appointed device system name.

**DHCP:** Specify if the device gets the IP address from a DHCP server.

**Location:** Displays the location of the appointed device.

**Trap IP:** Displays the IP address of the host where the Trap information will be sent.

**Subnet Mask:** Displays the Subnet Mask setting of the device.

**Gateway:** Displays the Gateway setting of the device.

**Device Group Interval:** Displays the intervals (in seconds) that the Switch will be discovered in the SmartConsole Device List

**Firmware version:** Displays the current Firmware version of this device.

**LLDP:** Displays the LLDP (Link Layer Discovery Protocol) status of the device.

**SNMP:** Displays the SNMP status of the device.



**NOTE:** If the devices are marked red in the device list, it means that a firmware upgrade is required again.



**NOTE:** The LLDP function is only provided by PoE models. For non-PoE models, the LLDP column will appear blank.

## 5 Configuration

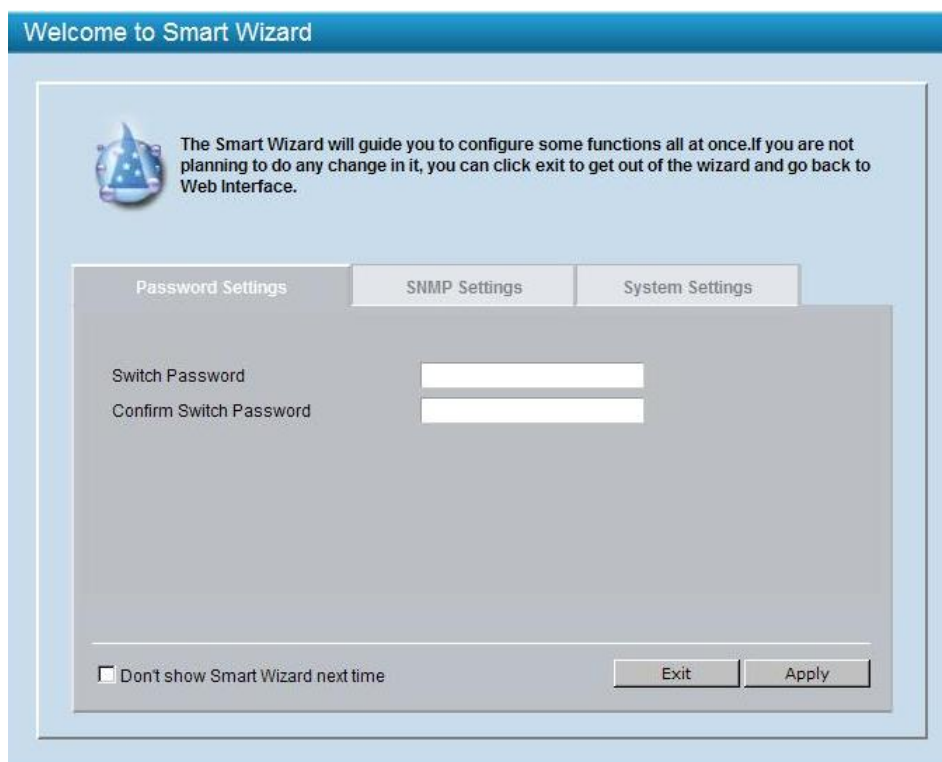
The features and functions of the D-Link Web Smart Switch can be configured for optimum use through the Web-based Management Utility.

### **Smart Wizard Configuration**

After a successful login, the Smart Wizard will guide you through essential settings of the D-Link Web Smart Switch. If you do not plan to change anything, click **Exit** to leave the Wizard and enter the Web Interface. You can also skip it by clicking **Don't show Smart Wizard next time** for the next time you logon to the Web-based Management.

### **Password Settings**

Password setting allows you to change the login password of the device. Type the desired new password in the **Switch Password** box and again in the **Confirm Switch Password**, then click the **Apply** button to make it effective.

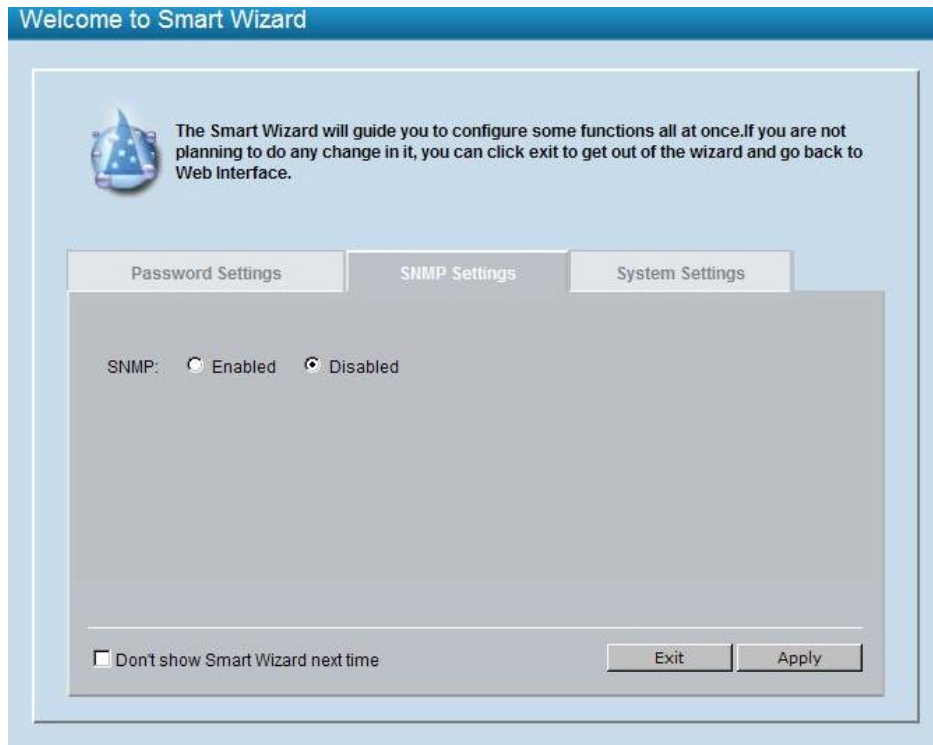


The screenshot shows the 'Welcome to Smart Wizard' interface. At the top, there is a blue header with the text 'Welcome to Smart Wizard'. Below the header, there is a light blue box containing a wizard icon and the text: 'The Smart Wizard will guide you to configure some functions all at once. If you are not planning to do any change in it, you can click exit to get out of the wizard and go back to Web Interface.' Below this text, there are three tabs: 'Password Settings', 'SNMP Settings', and 'System Settings'. The 'Password Settings' tab is selected and highlighted. Underneath the tabs, there are two input fields: 'Switch Password' and 'Confirm Switch Password'. At the bottom of the form, there is a checkbox labeled 'Don't show Smart Wizard next time' and two buttons: 'Exit' and 'Apply'.

Figure 29 – Configure Password in Smart Wizard

### **SNMP Settings**

The SNMP Setting allows you to quickly enable/disable the SNMP function and configure the SNMP community name. For the complete SNMP function, please check “Setup Menu > System > SNMP Settings” in the Web Interface. The default SNMP Setting is Disabled. Click **Enabled**, enter Community names, and then click **Apply** to make it effective.



**Figure 30 – Configure SNMP in Smart Wizard**

### System Settings

You can manually change the system IP Address, Subnet Mask, and Gateway address by selecting **Static** and clicking **Apply**. You can further configure and read more about the above settings in the “Setup Menu > System > System Settings”. The default setting of System IP address is Static. Select **DHCP** to have the switch obtain an IP address from a DHCP server in the network.

Figure 31 – Configure System IP address in Smart Wizard



**NOTE:** Changing the system IP address will disconnect you from the current connection. Please enter the correct IP address in the Web browser again and make sure your PC is in the same subnet with the switch. See Login Web-based Management for a detailed description.

If you want to change the IP settings, click **OK** and start a new web browser.



Figure 32 – Confirm the changes of IP address in Smart Wizard

## Web-based Management

After clicking the **Exit** button in Smart Wizard you will see the screen below:

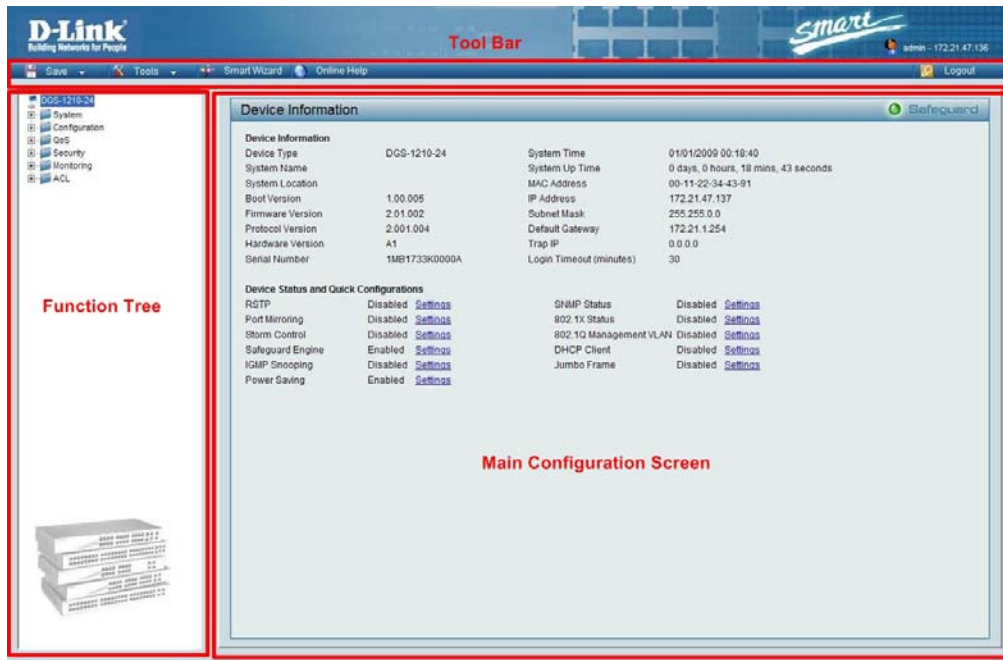


Figure 33 – Web-based Management

The above image is the Web-based Management screen. The three main areas are the **Tool Bar** on top, the **Function Tree**, and the **Main Configuration Screen**.

The **Tool Bar** provides a quick and convenient way for essential utility functions like firmware and configuration management.

By choosing different functions in the **Function Tree**, you can change all the settings in the **Main Configuration Screen**. The main configuration screen will show the current status of your Switch by clicking the model name on top of the function tree.

At the upper right corner of the screen the username and current IP address will be displayed.

Under the username is the **Logout** button. Click this to end this session.



**NOTE:** If you close the web browser without clicking the **Logout** button first, then it will be seen as an abnormal exit and the login session will still be occupied.

Finally, by clicking on the D-Link logo at the upper-left corner of the screen you will be redirected to the local D-Link website.

**Tool Bar > Save Menu**

The Save Menu provides Save Configuration and Save Log functions.

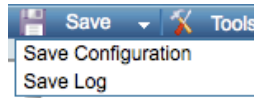


Figure 34 – Save Menu

**Save Configuration**

Select to save the entire configuration changes you have made to the device to switch's non-volatile RAM.



Figure 35 – Save Configuration

**Save Log**

Save the log entries to your local drive and a pop-up message will prompt you for the file path. You can view or edit the log file by using text editor (e.g. Notepad).

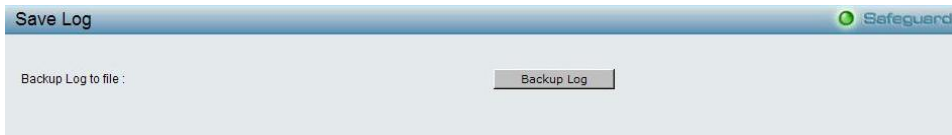


Figure 36 – Save Log

**Tool Bar > Tool Menu**

The Tool Menu offers global function controls such as Reset, Reset System, Reboot Device, Configuration Backup and Restore, Firmware Backup and Upgrade.

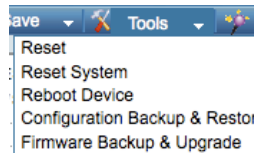


Figure 37 – Tool Menu

**Reset**

Provide a safe reset option for the Switch. All configuration settings in non-volatile RAM will be reset to factory default except for the IP address.



Figure 38 – Tool Menu > Reset

**Reset System**

Provide another safe reset option for the Switch. All configuration settings in non-volatile RAM will reset to factory default and the Switch will reboot.

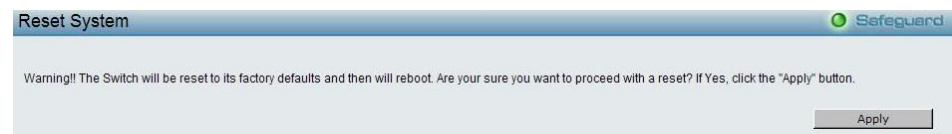


Figure 39 – Tool Menu > Reset System

**Reboot Device**

Provide a safe way to reboot the system. Click **Reboot** to restart the switch.



Figure 40 – Tool Menu > Reboot Device

**Configuration Backup and Restore**

Allow the current configuration settings to be saved to a file (not including the password), and if necessary, you can restore configuration settings from this file. Two methods can be selected: **HTTP** or **TFTP**.

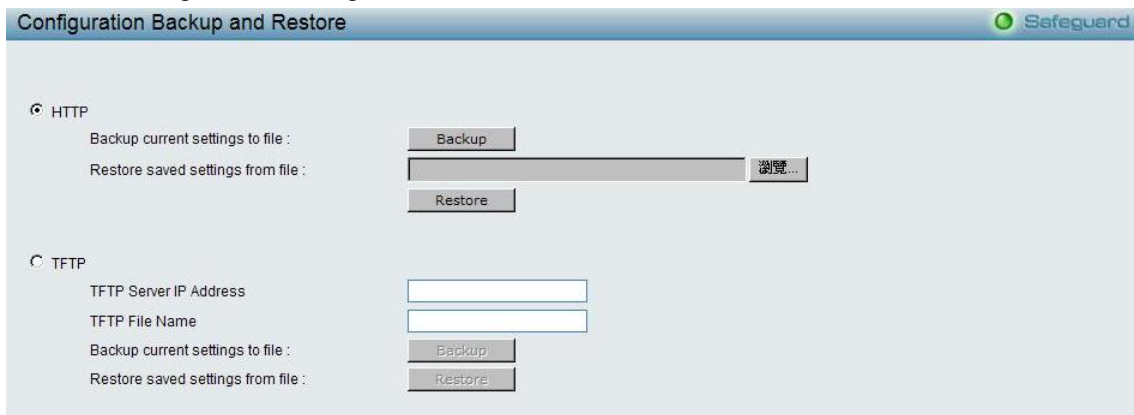


Figure 41 – Tool Menu > Configure Backup and Restore

**HTTP:** Backup or restore the configuration file to or from your local drive.  
 Click **Backup** to save the current settings to your disk.  
 Click **Browse** to browse your inventories for a saved backup settings file.  
 Click **Restore** after selecting the backup settings file you want to restore.

**TFTP:** TFTP (Trivial File Transfer Protocol) is a file transfer protocol that allows you to transfer files to a remote TFTP server. Specify **TFTP Server IP Address** and **File Name** for the configuration file you want to save to / restore from.  
 Click **Backup** to save the current settings to the TFTP server.  
 Click **Restore** after selecting the backup settings file you want to restore.



**Note:** Switch will reboot after restore, and all current configurations will be lost

**Firmware Backup and Upgrade**

Allow for the firmware to be saved, or for an existing firmware file to be uploaded to the Switch. Two methods can be selected: **HTTP** or **TFTP**.

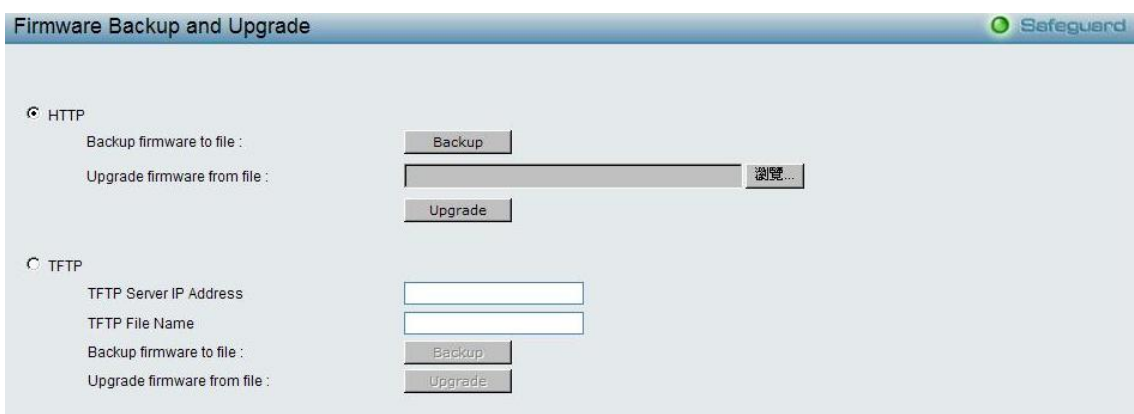


Figure 42 – Tool Menu > Firmware Backup and Upload

**HTTP:** Backup or upgrade the firmware to or from your local PC drive.

Click **Backup** to save the firmware to your disk.

Click **Browse** to browse your inventories for a saved firmware file.

Click **Upgrade** after selecting the firmware file you want to restore.

**TFTP:** Backup or upgrade the firmware to or from a remote TFTP server. Specify **TFTP Server IP Address** and **File Name** for the configuration file you want to save to / restore from.

Click **Backup** to save the firmware to the TFTP server.

Click **Upgrade** after selecting the firmware file you want to restore.



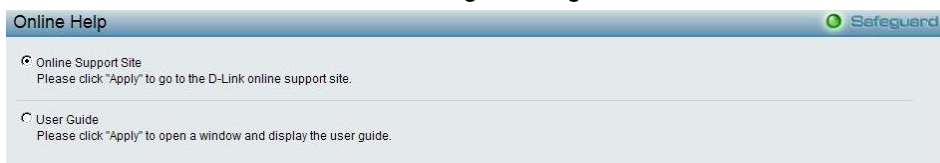
**CAUTION:** Do not disconnect the PC or remove the power cord from device until the upgrade completes. The Switch may crash if the Firmware upgrade is incomplete.

### ***Tool Bar > Smart Wizard***

By clicking the Smart Wizard button, you can return to the Smart Wizard if you wish to make any changes there.

### ***Tool Bar > Online Help***

The Online Help provides two ways of online support: **Online Support Site** will lead you to the D-Link website where you can find online resources such as updated firmware images; **User Guide** can offer an immediate reference for the feature definition or configuration guide.



**Figure 43 – Online Help**



Online Help Safeguard

Online Support Site  
Please click "Apply" to go to the D-Link online support site.

---

User Guide  
Please click "Apply" to open a window and display the user guide.


WEB SMART SWITCH



**Web Smart Switch User Manual**  
DGS-1210 Series

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  - DGS-1210-52 Front Panel
  - DGS-1210-52 Rear Panel
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  - Save

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  - SNMP Settings
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  - Configuration > Voice VLAN > Voice VLAN OUI Setting
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  - Configuration > Link Aggregation > LACP Port Settings
  - Configuration > IGMP Snooping
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  - Security
  - Management

- Appendix C – Rack mount Instructions**



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Figure 44 – User Guide Micro Site

**Function Tree**

All configuration options on the switch are accessed through the Setup menu on the left side of the screen. Click on the setup item that you want to configure. The following sections provide more detailed description of each feature and function.

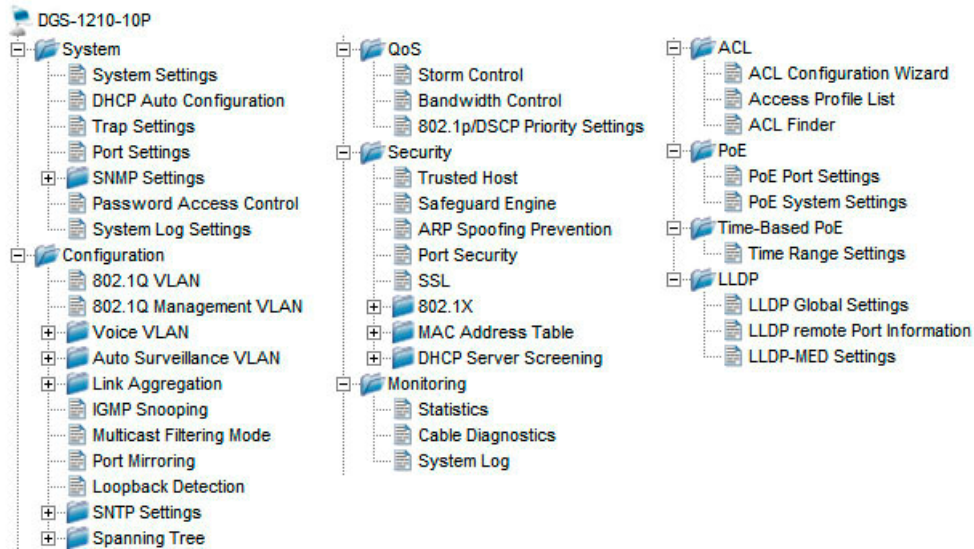


Figure 45 –Function Tree

**Device Information**

The Device Information provides an overview of the switch, including essential information such as firmware & hardware information, and IP address.

It also offers an overall status of common software features:

**RSTP:** Click **Setting** to link to Configuration > Spanning Tree > STP Global Settings. Default is disabled.

**Port Mirroring:** Click **Setting** to link to Configuration > Port Mirroring. Default is disabled.

**Storm Control:** Click **Setting** to link to Configuration > QoS > Storm Control. Default is disabled.

**Safeguard Engine:** Click **Setting** to link to Configuration > Security > Safeguard Engine. Default is enabled.

**IGMP Snooping:** Click **Setting** to link to Configuration > IGMP Snooping. Default is disabled.

**SNMP:** Click **Setting** to link to System > SNMP Setting. Default is disabled.

**802.1X:** Click **Setting** to link to Configuration > Security > 802.1X > 802.1X Settings. Default is disabled.

**802.1Q Management VLAN:** Click **Setting** to link to Configuration > 802.1Q Management VLAN. Default is disabled.

**DHCP Client:** Click **Setting** to link to System > System Setting. Default is disabled.

Device Information		Safeguard	
<b>Device Information</b>			
Device Type	DGS-1210-24	System Time	01/01/2009 00:50:39
System Name		System Up Time	0 days, 0 hours, 50 mins, 42 seconds
System Location		MAC Address	00-11-22-34-43-91
Boot Version	1.00.005	IP Address	172.21.47.137
Firmware Version	2.01.002	Subnet Mask	255.255.0.0
Protocol Version	2.001.004	Default Gateway	172.21.1.254
Hardware Version	A1	Trap IP	0.0.0.0
Serial Number	1MB1733K0000A	Login Timeout (minutes)	30
<b>Device Status and Quick Configurations</b>			
RSTP	Disabled <a href="#">Settings</a>	SNMP Status	Disabled <a href="#">Settings</a>
Port Mirroring	Disabled <a href="#">Settings</a>	802.1X Status	Disabled <a href="#">Settings</a>
Storm Control	Disabled <a href="#">Settings</a>	802.1Q Management VLAN	Disabled <a href="#">Settings</a>
Safeguard Engine	Enabled <a href="#">Settings</a>	DHCP Client	Disabled <a href="#">Settings</a>
IGMP Snooping	Disabled <a href="#">Settings</a>	Jumbo Frame	Disabled <a href="#">Settings</a>
Power Saving	Enabled <a href="#">Settings</a>		

Figure 46 – Device Information

**System > System Settings**

The System Setting allows the user to configure the IP address and the basic system information of the Switch.

**IP Information:** There are two ways for the switch to obtain an IP address: Static and DHCP (Dynamic Host Configuration Protocol).

When using static mode, the **IP Address**, **Subnet Mask** and **Gateway** can be manually configured. When using DHCP mode, the Switch will first look for a DHCP server to provide it with an IP address (including network mask and default gateway) before using the default or previously entered settings. By default the IP setting is static mode with IP address is **10.90.90.90** and subnet mask is **255.0.0.0**.

**System Information:** By entering a **System Name** and **System Location**, the device can more easily be recognized through the SmartConsole Utility and from other Web-Smart devices on the LAN.

**Login Timeout:** The Login Timeout controls the idle time-out period for security purposes, and when there is no action for a specific time span in the Web-based Management. If the current session times out (expires), the user is required a re-login before using the Web-based Management again. Selective range is from 3 to 30 minutes, and the default setting is 5 minutes.

**Group Interval:** The D-Link Web Smart Switch will routinely send report packets to the SmartConsole Utility in order to maintain the information integrity. The user can adjust the **Group Interval** to optimal frequency. Selective range is from 120 to 1225 seconds, and 0 means disabling the reporting function.

The screenshot shows the 'System Settings' web interface. It is divided into two main sections: 'IP Information' and 'System Information'.  
 In the 'IP Information' section, the 'Static' radio button is selected. The IP Address is set to 10.90.90.90, the Subnet Mask is 255.0.0.0, and the Gateway is 0.0.0.0. An 'Apply' button is located at the bottom right of this section.  
 In the 'System Information' section, there are four input fields: 'System Name' (empty), 'System Location' (empty), 'Login Timeout (3-30 minutes)' (set to 5), and 'Group Interval (120-1225 seconds)' (set to 120). A note next to the Group Interval field says '(Disable: 0 second)'. An 'Apply' button is located at the bottom right of this section.

Figure 47 – System > System Settings

**System > DHCP Auto Configuration**

This page allows you to enable the DHCP Auto Configuration feature on the Switch. When enabled, the Switch becomes a DHCP client and gets the configuration file from a TFTP server automatically on next boot up. To accomplish this, the DHCP server must deliver the TFTP server IP address and configuration file name information in the DHCP reply packet. The TFTP server must be up and running and store the necessary configuration file in its base directory when the request is received from the Switch.

The screenshot shows the 'DHCP Auto Configuration' web interface. At the top, the 'Auto Configuration State' is set to 'Disabled' (radio button selected). An 'Apply' button is to the right.  
 Below this, a text line reads: 'The DHCP autoconfiguration function on the switch will load a previously saved configuration file for current use.'  
 At the bottom, a red note states: 'Note: If the switch is unable to complete the autoconfiguration process, the previously saved local configuration file present in switch memory will be loaded.'

Figure 48 – System > DHCP Auto Configuration

**System > Trap Settings (For SmartConsole)**

By configuring the Trap Setting, it allows SmartConsole Utility to monitor specified events on this Web-Smart Switch. By default, Trap Setting is disabled. When the Trap Setting is enabled, enter the **Destination IP** address of the managing station that will receive trap information.

Figure 49 – System > Trap Settings

You can select which event message(s) to be sent to the managing station

**System Event:** The system level messages, which contains:

**Device Bootup** - System boot-up information.

**Illegal Login** - Events of incorrect password logins, recording the IP of the originating PC.

**Fiber Port Link Up/Link Down:** Fiber port connection information.

**Twisted pair Port Link Up/Link Down:** Copper port connection information.

**RSTP Port State Change:** Events of a RSTP port state changes.

**Firmware Upgrade State:** Information of firmware upgrade - success or failure.

**PoE Power On/Off:** Status of power per port (Only for DGS-1210-10P)

**PoE Power Error:** The four trap events are: power over loading, short circuit, thermal shutdown and power deny (Only for DGS-1210-10).



**NOTE:** The total PoE power budget is 78 watts for DGS-1210-10P. The remaining 7watts is reserved for the last PoE device to be connected to the switch. The Power Deny trap message is sent out when the switch hits the total power budget and when a new Power Device (PD) requests to connect to the switch at the same time.

**Over Max Power Budget:** When the system supplies power to PDs and hits the max PoE power budget of 78watts, the system will send out this trap message. (Only for DGS-1210-10P)

**System > Port Settings**

In the Port Setting page, the status of all ports can be monitored and adjusted for optimum configuration. By selecting a range of ports (**From Port** and **To Port**), the **Speed** can be set for all selected ports by clicking **Apply**. Press the **Refresh** button to view the latest information.

Port Settings Safeguard

From Port:  To Port:  Speed:  MDI/MDIX:  Flow Control:

Port	Link Status	Speed	MDI/MDIX	Flow Control
1	Down	Auto	AUTO	Disabled
2	Down	Auto	AUTO	Disabled
3	Down	Auto	AUTO	Disabled
4	Down	Auto	AUTO	Disabled
5	Down	Auto	AUTO	Disabled
6	Down	Auto	AUTO	Disabled
7	Down	Auto	AUTO	Disabled
8	Down	Auto	AUTO	Disabled
9	Down	Auto	AUTO	Disabled
10	Down	Auto	AUTO	Disabled
11	Down	Auto	AUTO	Disabled
12	Down	Auto	AUTO	Disabled
13	Down	Auto	AUTO	Disabled
14	Down	Auto	AUTO	Disabled
15	Down	Auto	AUTO	Disabled
16	Down	Auto	AUTO	Disabled
17	Down	Auto	AUTO	Disabled
18	Down	Auto	AUTO	Disabled
19	Down	Auto	AUTO	Disabled
20	Down	Auto	AUTO	Disabled
21	100M C Full	Auto	AUTO	Disabled
22	Down	Auto	AUTO	Disabled
23	Down	Auto	AUTO	Disabled
24	Down	Auto	AUTO	Disabled

Figure 50 – System &gt; Port Settings

**Speed:** Gigabit Fiber connections can operate in 1000M Full Force Mode, Auto Mode or Disabled. Copper connections can operate in Forced Mode settings (1000M Full, 100M Full, 100M Half, 10M Full, 10M Half), Auto, or Disabled. 100M Fiber connections support 100M Full Force Mode, 100M Half Force Mode, or Disabled. The default setting for all ports is **Auto**.



**NOTE:** Be sure to adjust port speed settings appropriately after changing the connected cable media types.

#### MDI/MDIX:

A **medium dependent interface (MDI)** port is an Ethernet port connection typically used on the Network Interface Card (NIC) or Integrated NIC port on a PC. Switches and hubs usually use **Medium dependent interface crossover (MDIX)** interface. When connecting the Switch to end stations, user have to use straight through Ethernet cables to make sure the Tx/Rx pairs match up properly. When connecting the Switch to other networking devices, a crossover cable must be used.

This switch provides a configurable **MDI/MDIX** function for users. The switches can be set as an MDI port in order to connect to other hubs or switches without an Ethernet crossover cable.

**Auto MDI/MDIX** is designed on the switch to detect if the connection is backwards, and automatically chooses MDI or MDIX to properly match the connection. The default setting is "**Auto**" **MDI/MDIX**.

**Flow Control:** You can enable this function to mitigate the traffic congestion. Ports configured for full-duplex use 802.3x flow control, half-duplex ports use backpressure flow control. The default setting is Disabled.

**Link Status:** Reporting **Down** indicates the port is disconnected.

#### System > SNMP Settings > SNMP Global State

Simple Network Management Protocol (SNMP) is an OSI Layer 7 (Application Layer) protocol designed specifically for managing and monitoring network devices. SNMP enables network management stations to read and modify the settings of gateways, routers, switches, and other network devices. Use SNMP to configure system features for proper operation, monitor performance and detect potential problems in the Switch or LAN.

Managed devices that support SNMP include software (referred to as an agent), which runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and used to manage the device. These objects are defined in a Management Information Base (MIB), which provides a standard

presentation of the information controlled by the on-board SNMP agent. SNMP defines both the format of the MIB specifications and the protocol used to access this information over the network.

The default SNMP global state is disabled. Select Enable and click **Apply** to enable the SNMP function.



Figure 51 – System > SNMP Settings > SNMP Global State Settings

**System > SNMP Settings > User/Group Table**

This page is used to maintain the SNMP user table for the use of SNMPv3. SNMPv3 allows or restricts users using the MIB OID, and also encrypts the SNMP messages sent out between users and Switch.

**User Name:** Enter a SNMP user name of up to 32 characters.

**Group Name:** Specify the SNMP group of the SNMP user.

**SNMP Version:** Specify the SNMP version of the user. Only SNMPv3 encrypts the messages.

**Auth-Protocol/Password:** Specify either HMAC-MD5-96 or HMAC-SHA to be the authentication protocol. Enter a password for SNMPv3 encryption in the right column.

**Priv-Protocol/Password:** Specify either **no authorization** or **DES 56-bit encryption** and then enter a password for SNMPv3 encryption in the right column.

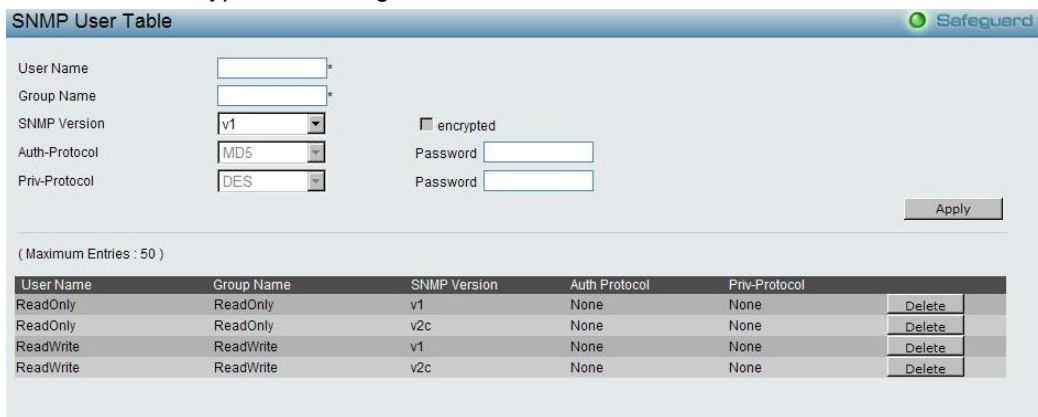


Figure 52 – System > SNMP Settings > User/Group Table

Click **Apply** to create a new SNMP user account, and click **Delete** to remove any existing data.

**System > SNMP Settings > SNMP Group Access Table**

This page is used to maintain the SNMP Group Table associating to the users in SNMP User Table. SNMPv3 can control MIB access policy, security policy for a user group directly.

**Group Name:** Specify the SNMP user group of up to 32 characters.

**Read View Name:** Specify a SNMP group name for users that are allowed SNMP read privileges to the Switch's SNMP agent.

**Write View Name:** Specify a SNMP group name for users that are allowed SNMP write privileges to the Switch's SNMP agent.

**Security Model:** Select the SNMP security model.

**SNMPv1** - SNMPv1 does not support the security features.

**SNMPv2** - SNMPv2 supports both centralized and distributed network management strategies. It includes improvements in the Structure of Management Information (SMI) and adds some security features.

**SNMPv3** - SNMPv3 provides secure access to devices through a combination of authentication and encrypting packets over the network.

**Security Level:** This function is only available when you select SNMPv3 security level.

**NoAuthNoPriv** - No authorization and no encryption for packets sent between the Switch and SNMP manager.

**AuthNoPriv** - Authorization is required, but no encryption for packets sent between the Switch and SNMP manager.

**AuthPriv** - Both authorization and encryption are required for packets sent between the Switch and SNMP manager.

**Notify View Name:** Specify a SNMP group name for users that can receive SNMP trap messages generated by the Switch's SNMP agent.

Group Name	Read View	Write View	Notify View	Security Model	Security Level	
ReadOnly	ReadWrite	---	ReadWrite	v1	NoAuthNoPriv	Delete
ReadOnly	ReadWrite	---	ReadWrite	v2c	NoAuthNoPriv	Delete
ReadWrite	ReadWrite	ReadWrite	ReadWrite	v1	NoAuthNoPriv	Delete
ReadWrite	ReadWrite	ReadWrite	ReadWrite	v2c	NoAuthNoPriv	Delete

Figure 53 – System > SNMP Settings > SNMP Group Access Table

### System > SNMP Settings > SNMP View Table

This page allows you to maintain SNMP views to community strings that define the MIB objects which can be accessed by a remote SNMP manager.

View Name	Subtree OID	OID Mask	View Type	
ReadWrite	1	1	Included	Delete

Figure 54 – System > SNMP Settings > SNMP View Table

**View Name:** Name of the view, up to 32 characters.

**Subtree OID:** The Object Identifier (OID) Subtree for the view. The OID identifies an object tree (MIB tree) that will be included or excluded from access by an SNMP manager.

**OID Mask:** The mask of the Subtree OID. 1 means this object number is concerned, 0 means do not concerned. For example 1.3.6.1.2.1.1 with mask 1.1.1.1.1.0 means 1.3.6.1.2.1.X.

**View Type:** Specify the configured OID is Included or Excluded that a SNMP manager can access.

Click **Apply** to create a new view, **Delete** to remove an existing view.

### System > SNMP Settings > Community Table

This page is used to maintain the SNMP community string of the. SNMP managers using the same community string are permitted to gain access to the Switch's SNMP agent.

**Community Name:** Name of the community string

**User Name (View Policy):** Specify the read/write or read-only level permission for the MIB objects accessible to the SNMP community.



Figure 55 – System > SNMP Settings > Community Table

Click **Apply** to create a new SNMP community, **Delete** to remove an existing community.

**System > SNMP Settings > Host Table**

This page is to configure the SNMP trap recipients.

**Host IP Address:** Specify the IP address of SNMP management host.

**SNMP Version:** Specify the SNMP version to be used to the management host.

**Community String/SNMPv3 User Name:** Specify the community string or SNMPv3 user name for the management host.



Figure 56 – System > SNMP Settings > Host Table

Click **Apply** to create a new SNMP host, **Delete** to remove an existing host.

**System > SNMP Settings > SNMP Engine ID**

The Engine ID is a unique identifier used to identify the SNMPv3 engine on the Switch.

Input the Engine ID then click **Apply** to apply the changes and click **Default** resets to default value.



Figure 57 – System > SNMP Settings > SNMP Engine ID

**System > SNMP Settings > SNMP Trap Settings**

This page is to configure which traps will be sent to the SNMP manage hosts when event happens.

Select the event and click **Apply** to submit the changes.





The screenshot shows the 'SNMP Trap Configuration' page. At the top, there is a 'Safeguard' logo. Below it, the 'Trap Settings' section contains a list of checkboxes:
 

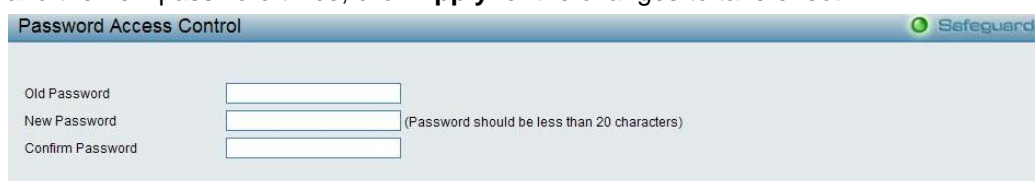
- SNMP Authentication Traps
- System Device Bootup
- Fiber Port Link Up / Link Down
- Twisted Pair Port Link Up / Link Down
- RSTP Port State Change
- Firmware Upgrade State

 An 'Apply' button is located at the bottom right of the page.

Figure 58 – System &gt; SNMP Settings &gt; SNMP Trap Setting

### System > Password Access Control

Setting a password is a critical tool for managers to secure the Web-Smart Switch. After entering the old password and the new password twice, click **Apply** for the changes to take effect.



The screenshot shows the 'Password Access Control' page. It features three input fields:
 

- Old Password
- New Password (with a note: '(Password should be less than 20 characters)')
- Confirm Password

 An 'Apply' button is located at the bottom right of the page.

Figure 59 – System &gt; Password Access Control

### System > System Log Settings

System Logs record and manage events, as well as report errors and informational messages. Message severity determines a set of event messages that will be sent. Click **Enable** so you can start to configure the related settings of the remote system log server, then press **Apply** for the changes to take effect.



The screenshot shows the 'System Log Configuration' page. At the top, there is a 'Safeguard' logo. Below it, the 'System Log' section has radio buttons for 'Enabled' and 'Disabled'. The 'Enabled' option is selected. Below this, there are several configuration fields:
 

- Server IP Address: Four input boxes, each containing '0'.
- UDP Port (1-65535): An input box containing '514'.
- Time Stamp: A dropdown menu set to 'Enable'.
- Severity: A dropdown menu set to 'All'.
- Facility: A dropdown menu set to 'Local 0'.

 An 'Apply' button is located at the bottom right of the page.

Figure 60 – System &gt; System Log Settings

**Server IP Address:** Specifies the IP address of the system log server.

**UDP Port:** Specifies the UDP port to which the server logs are sent. The possible range is 1 – 65535, and the default value is 514.

**Time Stamp:** Select Enable to time stamp log messages.

**Severity:** Specifies the minimum severity from which warning messages are sent to the server. There are three levels. When a severity level is selected, all severity level choices above the selection are selected automatically. The possible levels are:

**Warning** - The lowest level of a device warning. The device is functioning, but an operational problem has occurred.

**Informational** - Provides device information.

**All** - Displays all levels of system logs.

**Facility:** Specifies an application from which system logs are sent to the remote server. Only one facility can be assigned to a single server. If a second facility level is assigned, the first facility is overwritten. There are up to eight facilities can be assigned (Local 0 ~ Local 7),

### Configuration > Jumbo Frame

D-Link Gigabit Web Smart Switches support jumbo frames (frames larger than the Ethernet frame size of 1536 bytes) of up to 10,000 bytes (tagged). Default is disabled, Select **Enabled** then click **Apply** to turn on the jumbo frame support.



Figure 59 – Configuration &gt; Jumbo Frame

### Configuration > 802.1Q VLAN

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

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

The IEEE 802.1Q VLAN Configuration page provides powerful VID management functions. The original settings have the VID as 1, no default name, and all ports as “Untagged”

**Rename:** Click to rename the VLAN group.

**Delete VID:** Click to delete the VLAN group.

**Add New VID:** Click to create a new VID group, assigning ports from 01 to 28 as **Untag, Tag, or Not Member**. A port can be untagged in only one VID. To save the VID group, click **Apply**.

You may change the name accordingly to the desired groups, such as R&D, Marketing, email, etc.

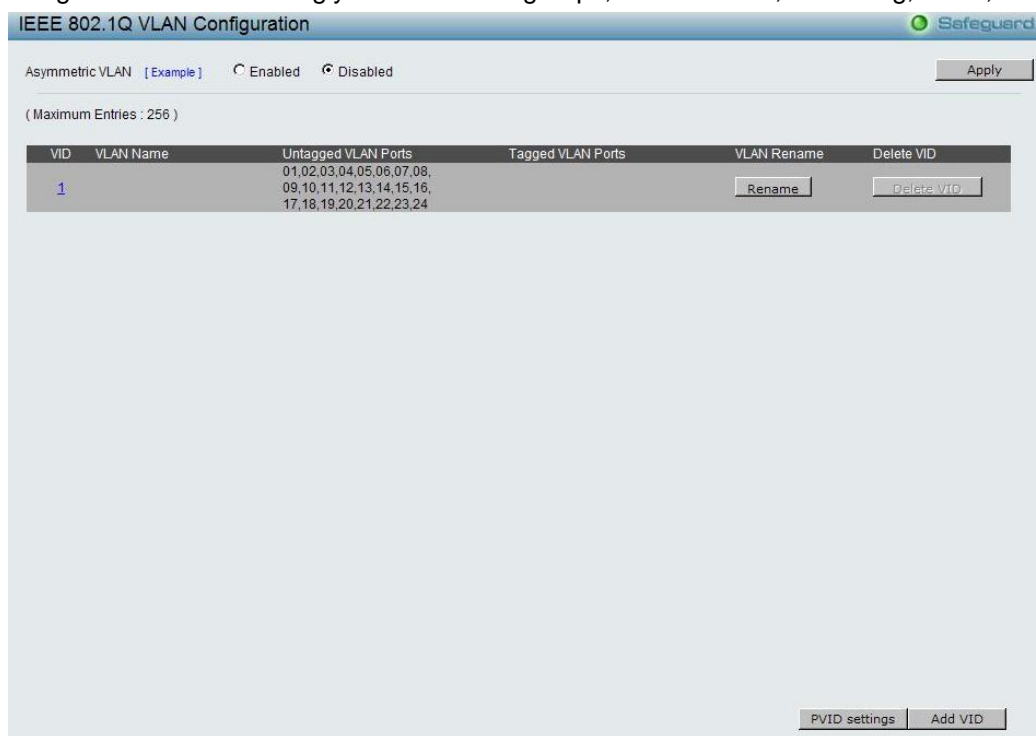


Figure 60 – Configuration &gt; 802.1Q VLAN

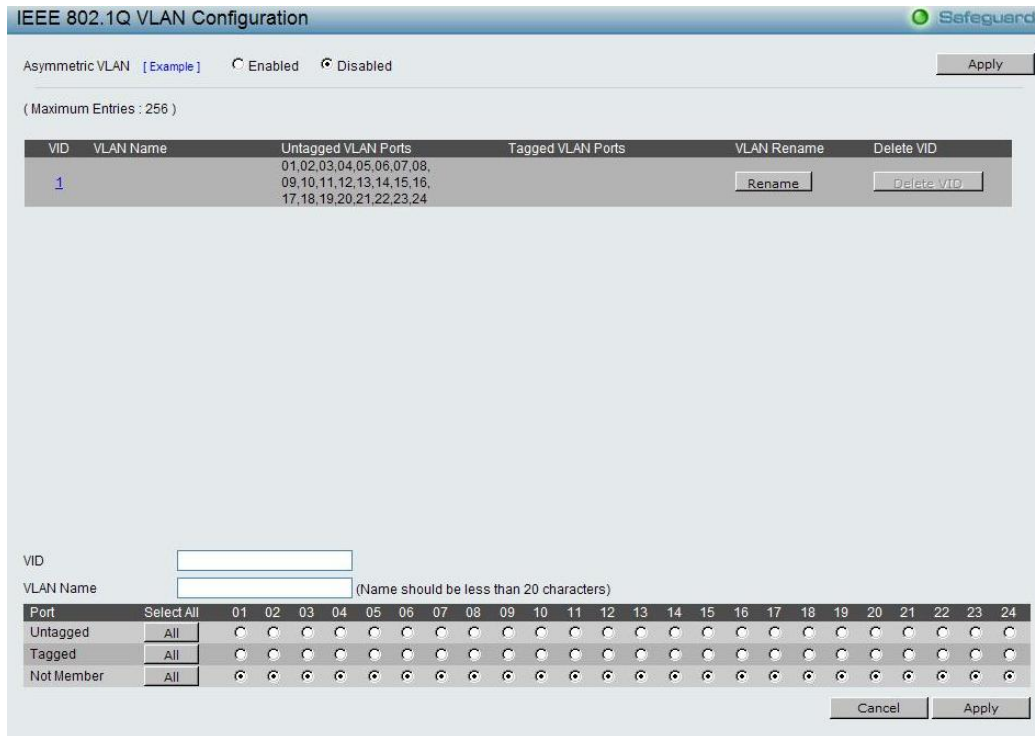


Figure 61 – Configuration > 802.1Q VLAN > Add VID



Figure 62 – Configuration > 802.1Q VLAN > Example VIDs

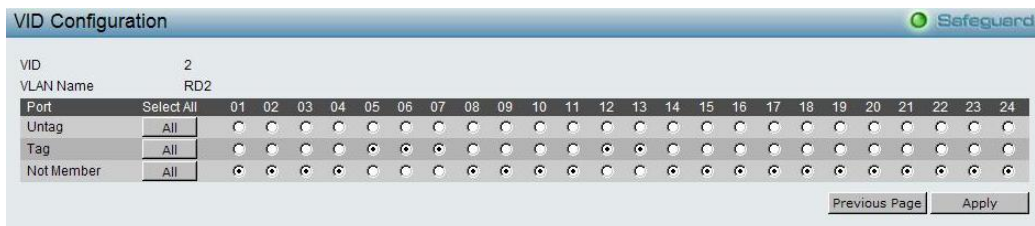


Figure 63 – Configuration > 802.1Q VLAN > VID Assignments

**Configuration > 802.1Q Management VLAN**

The 802.1Q Management VLAN setting allows you to transfer the authority of the switch from the default VLAN to others created by users. This allows managing the whole network more flexible.

By default, the Management VLAN is disabled. You can select any existing VLAN as the management VLAN when this function is enabled. There can only be one management VLAN at a time.



Figure 66 – Configuration > 802.1Q Management VLAN

**Configuration > Auto Surveillance VLAN > Auto Surveillance VLAN Settings**

Similar as Voice VLAN, Auto Surveillance VLAN is a feature that allows you to automatically place the video traffic from D-Link IP cameras to an assigned VLAN to enhance the IP surveillance service. With a higher priority and individual VLAN, the quality and the security of surveillance traffic are guaranteed. The Auto Surveillance VLAN function will check the source MAC address / VLAN ID on the incoming packets. If it matches specified MAC address / VLAN ID, the packets will pass through switch with desired priority.

Figure 67 – Configuration > Auto Surveillance VLAN > Auto Surveillance VLAN Settings

**Auto Surveillance VLAN Global Settings:**

**Auto Surveillance VLAN State:** Select to enable or disable Auto Surveillance VLAN. The default is *Disabled*.

**VLAN ID:** By default, the VLAN ID 4094 was created as Auto Surveillance VLAN. You also can create another Auto Surveillance VLAN by selecting a VLAN ID that you have created a VLAN from the 802.1Q VLAN page. The member port you configured in 802.1Q VLAN setting page will be the static member port of Auto Surveillance VLAN.

**Priority:** The 802.1p priority levels of the traffic in the Auto Surveillance VLAN. The possible values are *Highest, High, Medium and Low*.

**Tagged Uplink/Downlink Port:** Specifies the ports to be tagged uplink port or downlink port for the Auto Surveillance VLAN.

Click **Apply** to implement changes of Auto Surveillance VLAN global settings.

**User-defined MAC Settings:**

**Component Type:** Auto Surveillance VLAN will automatically detect D-Link Surveillance Devices by default. There are another five surveillance components that could be configured to be auto-detected by the Auto Surveillance VLAN. These five components are *Video Management Server (VMS), VMS Client/Remote viewer, Video Encoder, Network Storage and Other IP Surveillance Devices*.

**Description:** Here to input the description for the component type.

**MAC/OUI:** You can manually create an MAC or OUI address for the surveillance component. The maximum number of user defined MAC address is 5. System will auto generate an ACL profile (Profile ID: 56) for all the Auto Surveillance VLAN rules.

Click **Add** to create a new surveillance component and **Refresh** to refresh the Auto Surveillance VLAN summary table.

### Configuration > Voice VLAN > Voice VLAN Settings

Voice VLAN is a feature that allows you to automatically place the voice traffic from IP phone to an assigned VLAN to enhance the VoIP service. With a higher priority and individual VLAN, the quality and the security of VoIP traffic are guaranteed. The Voice VLAN function will only insert the Voice VLAN tag to untagged packets under corresponding ports. If a VoIP packet comes with a VLAN tag, the Voice VLAN function won't replace the original VLAN tag.

Port	Auto Detection	Status
1	Disabled	None
2	Disabled	None
3	Disabled	None
4	Disabled	None
5	Disabled	None
6	Disabled	None
7	Disabled	None
8	Disabled	None
9	Disabled	None
10	Disabled	None
11	Disabled	None
12	Disabled	None
13	Disabled	None
14	Disabled	None
15	Disabled	None
16	Disabled	None
17	Disabled	None
18	Disabled	None
19	Disabled	None
20	Disabled	None
21	Disabled	None
22	Disabled	None

Figure 68 – Configuration > Voice VLAN > Voice VLAN Settings

**Voice VLAN State:** Select to enable or disable Voice VLAN. The default is *Disabled*. After you enabled Voice VLAN, you can configure the **Voice VLAN Global Settings**.

**VLAN ID:** The ID of VLAN that you want to assign voice traffic to. You must first create a VLAN from the 802.1Q VLAN page before you can assign a dedicated Voice VLAN. The member port you configured in 802.1Q VLAN setting page will be the static member port of voice VLAN. To dynamically add ports into the voice VLAN, please enable the **Auto Detection** function

**Priority:** The 802.1p priority levels of the traffic in the Voice VLAN.

**Aging Time:** Enter a period of time (in hours) to remove a port from the voice VLAN if the port is an automatic VLAN member. When the last voice device stops sending traffic and the MAC address of this voice device is aged out, the voice VLAN aging timer will start. The port will be removed from the voice VLAN after the expiration of the voice VLAN aging timer. Selectable range is from 1 to 120 hours, and default is 1 hour.

**From Port / To Port:** A consecutive group of ports may be configured starting with the selected port.

**Auto Detection:** Switch will add ports to the voice VLAN automatically if it detects the device OUI matches the Telephony OUI configured in the Voice VLAN OUI Setting page. Use the drop-down menu to enable or disable the OUI auto detection function. The default is *Disabled*

Click **Apply** to implement changes made.



**Note:** Voice VLAN has higher priority than any other features (including QoS). Therefore the voice traffic will be operated according to the Voice VLAN setting and not impacted by the QoS feature.



**Note:** It is recommended setting the highest priority for Voice VLAN to guarantee the quality of VoIP traffic.

### Configuration > Voice VLAN > Voice VLAN OUI Settings

This window allows the user to configure the user-defined voice traffic's OUI. An Organizationally Unique Identifier (OUI) is the first three bytes of the MAC address. This identifier uniquely identifies a vendor, manufacturer, or other organization.

Figure 69 – Configuration > Voice VLAN > Voice VLAN OUI Settings

There are some pre-defined OUIs and when the user configures personal OUI, these pre-defined OUIs must be avoided. Below are the pre-defined voice traffic's OUI:

OUI	Vendor	Mnemonic Name
00:E0:BB	3Com	3com
00:03:6B	Cisco	cisco
00:E0:75	Veritel	veritel
00:D0:1E	Pingtel	pingtel
00:01:E3	Siemens	siemens
00:60:B9	NEC/ Philips	nec&philips
00:0F:E2	Huawei-3COM	huawei&3com
00:09:6E	Avaya	avaya

**Default OUI:** Pre-defined OUI values, including brand names of 3COM, Cisco, Veritel, Pingtel, Siemens, NEC/Philips, Huawei3COM, and Avaya.

**User defined OUI:** You can manually create a Telephony OUI with a description. The maximum number of user defined OUIs is 10. It will occupy one ACL rule when selecting a user defined OUI by default, and to configure one user-defined OUI will take extra one ACL rule. System will auto generate an ACL profile (Profile ID: 51) for all the Voice VLAN rules.

Select the OUI and press **Add** to the lower table to complete the Auto Voice VLAN setting.

### Configuration > Link Aggregation > Port Trunking

The Trunking function enables the combining of two or more ports together to increase bandwidth. Up to eight Trunk groups may be created, and each group consists up to eight ports. Select the ports to be grouped together, and then click **Apply** to activate the selected Trunking groups. Two types of link aggregation can be selected:

**Static** - Static link aggregation.

**LACP** - LACP (Link Aggregation Control Protocol) is enabled on the device. LACP allows for the automatic detection of links in a Port Trunking Group.

**Disable** - Remove all members in this trunk group.

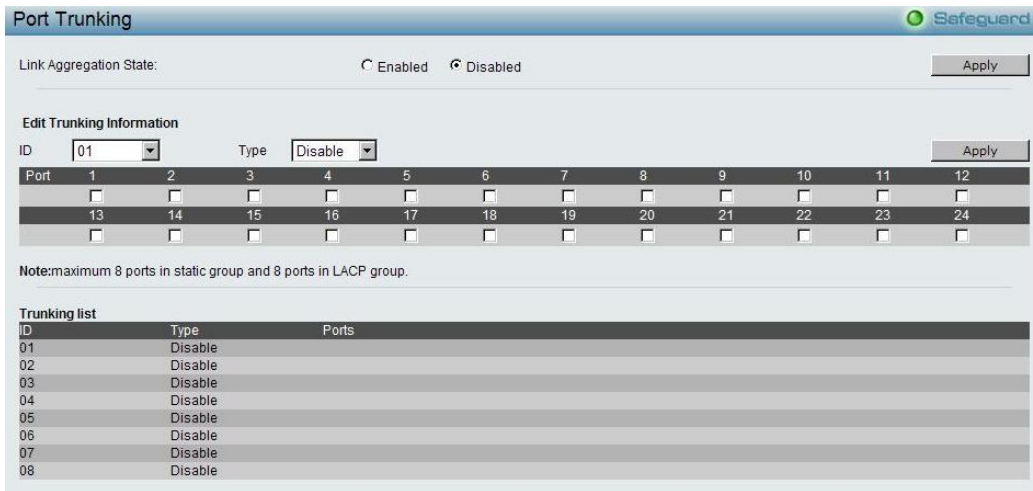


Figure 70 – Configuration > Link Aggregation > Port Trunking



**NOTE:** Each combined trunk port must be connected to devices within the same VLAN group.

**Configuration > Link Aggregation > LACP Port Settings**

The LACP Port Settings is used to create port trunking groups on the Switch. The user may set which ports will be active and passive in processing and sending LACP control frames

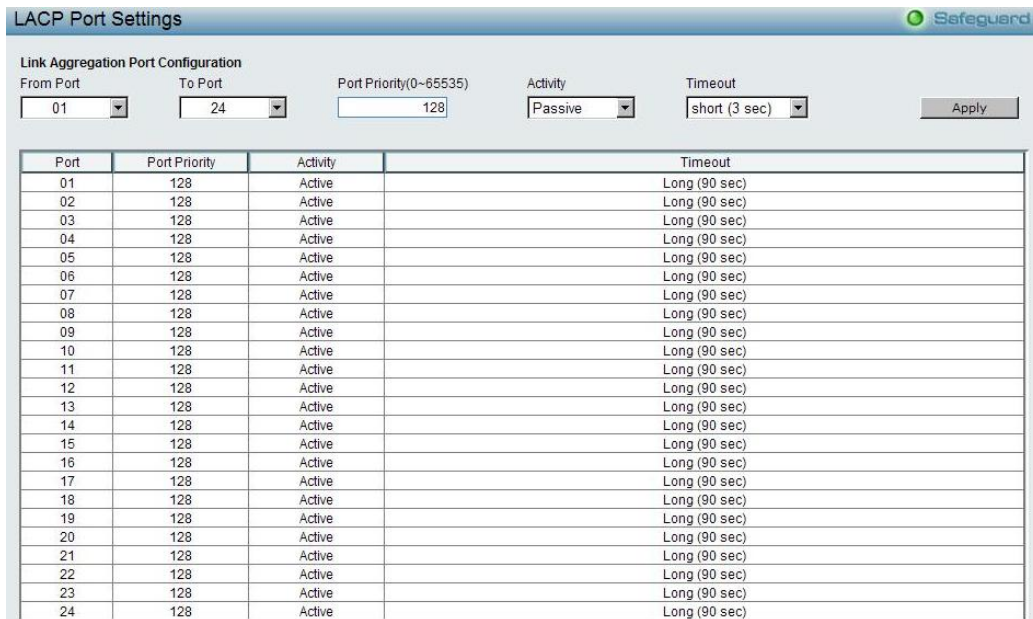


Figure 71 – Configuration > Link Aggregation > LACP Port Settings

**From Port:** The beginning of a consecutive group of ports may be configured starting with the selected port.

**To Port:** The ending of a consecutive group of ports may be configured starting with the selected port.

**Port Priority (0-65535):** Displays the LACP priority value for the port. Default is 128.

**Activity:** There are two different roles of LACP ports:

**Active** - Active LACP ports are capable of processing and sending LACP control frames. This allows LACP compliant devices to negotiate the aggregated link so the group may be changed dynamically as needs require. In order to utilize the ability to change an aggregated port group, that is, to add or subtract ports from the group, at least one of the participating devices must designate LACP ports as active. Both devices must support LACP.

**Passive** - LACP ports that are designated as passive cannot initially send LACP control frames. In order to allow the linked port group to negotiate adjustments and make changes dynamically, one end of the connection must have "active" LACP ports.

**Timeout:** Specify the administrative LACP timeout. The possible field values are:

**Short (3 Sec)** - Defines the LACP timeout as 3 seconds.

**Long (90 Sec)** - Defines the LACP timeout as 90 seconds. This is the default value.

Click **Apply** to implement the changes made.

### **Configuration > IGMP Snooping > IGMP Snooping Configuration**

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

IGMP snooping can help reduce cluttered traffic on the LAN. With IGMP snooping enabled globally, the Web Smart Switch will forward multicast traffic only to connections that have group members attached.

The settings of IGMP snooping is set by each VLAN individually.

IGMP Snooping Configuration

IGMP Snooping  Enabled  Disabled

**IGMP Global Settings**

Host Timeout (130-153025 sec)  Router Timeout (60-600 sec)

Robustness Variable (2-255)  Last Member Query Interval (1-25 sec)

Query Interval (60-600 sec)  Max Response Time (10-25 sec)

Note: The Host Timeout was computed automatically in Querier Enabled by (Robustness Variable \* Query Interval + Max Response Time).

The VLAN Settings of IGMP snooping

VLAN ID	VLAN Name	State	Querier State	Router Ports Settings	Multicast Entry Table
1	RD1	Enabled	Disabled	<input type="button" value="Edit"/>	<input type="button" value="View"/>
2	RD2	Enabled	Disabled	<input type="button" value="Edit"/>	<input type="button" value="View"/>

**Figure 72 – Configuration > IGMP Snooping Configuration**

By default, IGMP is disabled. If enabled, the IGMP Global Settings will need to be entered:

**Host Timeout (130-153025 sec):** This is the interval after which a learned host port entry will be purged. For each host port learned, a 'Port Purge Timer' runs for 'Host Port Purge Interval'. This timer will be restarted whenever a report message from host is received over that port. If no report messages are received for 'Host Port Purge Interval' time, the learned host entry will be purged from the multicast group. The default value is 260 seconds.

**Robustness Variable (2-255 sec):** The Robustness Variable allows adjustment for the expected packet loss on a subnet. If a subnet is expected to be lossy, the Robustness Variable may need to be increased. The Robustness Variable cannot be set to zero, and it SHOULD NOT be. Default is 2 seconds.

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

**Router Timeout (60-600 sec):** This is the interval after which a learned router port entry will be purged. For each router port learned, a 'Router Port Purge Timer' runs for 'Router Port Purge Interval'. This timer will be restarted whenever a Query control message is received over that port. If there are no Query control messages received for 'Router Port Purge Interval' time, the learned router port entry will be purged. Default is 260 seconds.

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

**Max Response Time (10-25 sec):** The Max Response Time specifies the maximum allowed time before sending a responding report message. Adjusting this setting effects the "leave latency", or the time between



the moment the last host leaves a group and when the multicast server is notified that there are no more members. It also allows adjustments for controlling the frequency of IGMP traffic on a subnet. Default is 10 seconds.

**Querier State:** D-Link Smart Switch is able to send out the IGMP Queries to check the status of multicast clients. Default is disabled.

To enable IGMP snooping for a given VLAN, select enable and click on the **Apply** button. Then press the **Edit** button under **Router Port Setting**, and select the ports to be assigned as router ports for IGMP snooping for the VLAN. Press **Apply** for changes to take effect. A router port configured manually is a **Static Router Port**, and a **Dynamic Router Port** is dynamically configured by the Switch when a query control message is received.

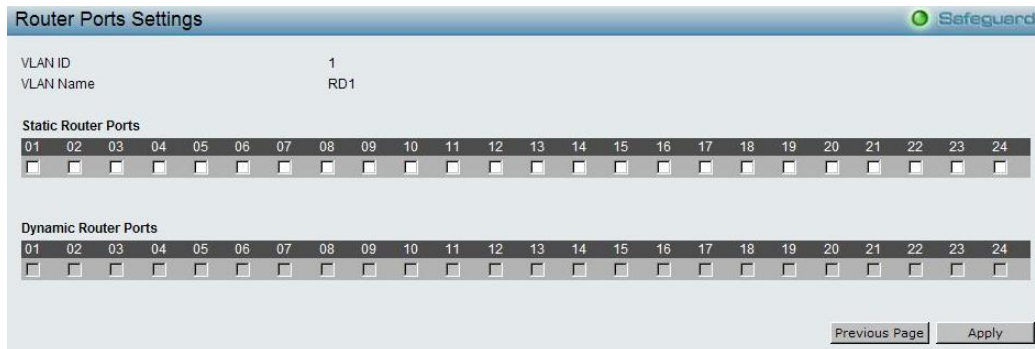


Figure 73 – Configuration > IGMP Snooping > IGMP Router port Settings

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



Figure 74 – Configuration > IGMP Multicast Entry Table

**Configuration > Multicast Filtering Mode**

The **Multicast Filtering Mode** function allows users to select the filtering mode for IGMP group per VLAN basis.

**Forward All Groups:** The multicast stream will be flooded to all ports of the VLAN for both registered and unregistered groups.

**Forward Unregistered Groups:** The multicast stream will be forwarded based on the register table in registered group, but it will be flooded to all ports of the VLAN in unregistered group.

**Filter Unregistered Groups:** The registered group will be forwarded based on the register table and the unregistered group will be filtered.

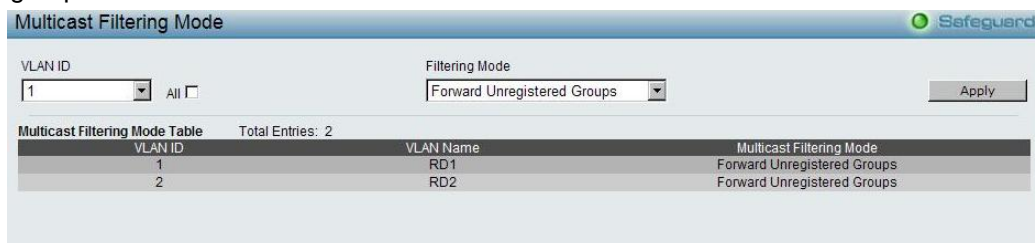


Figure 75 – Configuration > Multicast Filtering Mode

**Configuration > Port Mirroring**

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

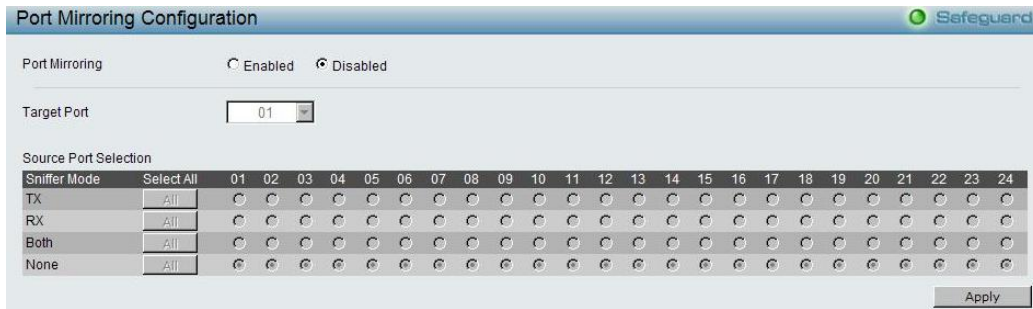


Figure 76 – Configuration > Port Mirroring

Selection options for the Source Ports are as follows:

**TX (transmit) mode:** Duplicates the data transmitted from the source port and forwards it to the Target Port. Click “all” to include all ports into port mirroring.

**RX (receive) mode:** Duplicates the data that is received from the source port and forwards it to the Target Port. Click “all” to include all ports into port mirroring.

**Both (transmit and receive) mode:** Duplicate both the data transmitted from and data sent to the source port, and forwards all the data to the assigned Target Port. Click “all” to include all ports into port mirroring.

**None:** Turns off the mirroring of the port. Click “all” to remove all ports from mirroring.

**Configuration > Power Saving**

The Power Saving mode feature reduces power consumption automatically when the RJ-45 port is link down or the connected devices are turned off. Less power will be consumed also when the short cable is used (less than 20 meters).

By reducing power consumption, less heat is produced, resulting in extended product life and lower operating costs. By default, the Power Saving mode is enabled. Click **Apply** to make the change effective.

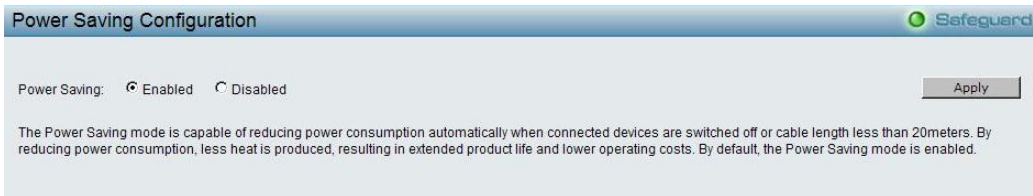


Figure 77 – Configuration > Power Saving

**Configuration > Loopback Detection**

The Loopback Detection function is used to detect the loop created by a specific port while Spanning Tree Protocol (STP) is not enabled in the network, especially when the down links are hubs or unmanaged switches. The Switch will automatically shutdown the port and sends a log to the administrator. The Loopback Detection port will be unlocked when the Loopback Detection **Recover Time** times out. The Loopback Detection function can be implemented on a range of ports at the same time. You may enable or disable this function using the pull-down menu.

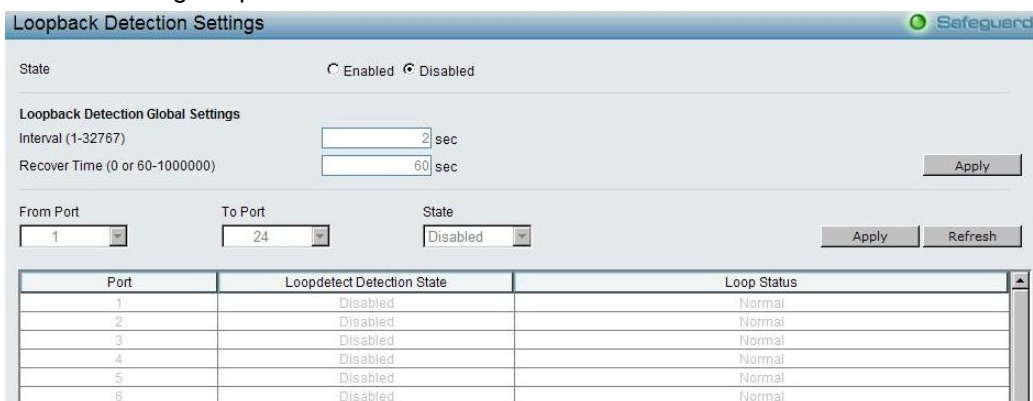


Figure 78 – Configuration > Loopback Detection

**Loopback Detection State:** Use the drop-down menu to enable or disable loopback detection. The default is *Disabled*.

**Interval (1-32767):** Set a Loop detection Interval between 1 and 32767 seconds. The default is 1 seconds.

**Recover Time (0 or 60-1000000):** Time allowed (in seconds) for recovery when a Loopback is detected. The Loop Detection Recover Time can be set at 0 seconds, or 60 to 1000000 seconds. Entering 0 will disable the Loop Detection Recover Time. The default is 60 seconds.

**From Port:** The beginning of a consecutive group of ports may be configured starting with the selected port.

**To Port:** The ending of a consecutive group of ports may be configured starting with the selected port.

**State:** Use the drop-down menu to toggle between *Enabled* and *Disabled*. Default is *Disabled*.

Click **Apply** to implement changes made.

### **Configuration > SNTP Settings > Time Settings**

SNTP or Simple Network Time Protocol is used by the Switch to synchronize the clock of the computer. The SNTP settings folders contain two windows: Time Settings and TimeZone Settings. Users can configure the time settings for the switch, and the following parameters can be set or are displayed in the Time Settings page.

Figure 79 – Configuration > SNTP Settings > Time Settings

**Clock Source:** Specify the clock source by which the system time is set. The possible options are:

**Local** - Indicates that the system time is set locally by the device.

**SNTP** - Indicates that the system time is retrieved from a SNTP server.

**Current Time:** Displays the current date and time for the switch.

If choosing **SNTP** for the clock source, then the following parameters will be available:

**SNTP First Server:** Specify the IP address of the primary SNTP server from which the system time is retrieved.

**SNTP Second Server:** Specify the IP address of the secondary SNTP server from which the system time is retrieved.

**SNTP Poll Interval in Seconds (30-99999):** Defines the interval (in seconds) at which the SNTP server is polled for Unicast information. The Poll Interval default is 30 seconds.

Click **Apply** to implement changes made.

When selecting **Local** for the clock source, users can select from one of two options:

**Manually set current time:** Users input the system time manually.

**Set time from PC:** The system time will be synchronized from the local computer.

### Configuration > SNTP Settings > TimeZone Settings

The TimeZone Setting Page is used to configure time zones and Daylight Savings time settings for SNTP.

Figure 80 – Configuration > SNTP Settings > TimeZone Settings

**Daylight Saving Time State:** Use this drop-down menu to enable or disable the DST Settings.

**Daylight Saving Time Offset in Minutes:** Use this drop-down menu to specify the amount of time that will constitute your local DST offset - 30, 60, 90, or 120 minutes.

**Time Zone Offset from GMT in +/- HH:MM:** Use these drop-down menus to specify your local time zone's offset from Greenwich Mean Time (GMT.)

**DST Annual Settings:** Using annual mode will enable DST seasonal time adjustment. Annual mode requires that the DST beginning and ending date must not be in the same month. For example, specify to begin DST on March 8 and end DST on November 1.

**From: Month:** Enter the month DST will start on, each year.

**From: Day:** Enter the day of the week DST will start on, each year.

**From: Time in HH:MM:** Enter the time of day DST will start on, each year.

**To: Month:** Enter the month DST will end on, each year.

**To: Day:** Enter the date DST will end on, each year.

**To: Time in HH:MM:** Enter the time of day that DST will end on, each year.

Click **Apply** to implement changes made.

### Configuration > Spanning Tree > STP Global Settings

The Switch implements two versions of the Spanning Tree Protocol, the Rapid Spanning Tree Protocol (RSTP) as defined by the IEEE 802.1w specification and a version compatible with the IEEE 802.1D STP. RSTP can operate with legacy equipment implementing IEEE 802.1D, however the advantages of using RSTP will be lost.

The IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) evolved from the 802.1D STP standard. RSTP was developed in order to overcome some limitations of STP that impede the function of some recent switching innovations. The basic function and much of the terminology is the same as STP. Most of the settings configured for STP are also used for RSTP. This section introduces some new Spanning Tree concepts and illustrates the main differences between the two protocols.

By default, Rapid Spanning Tree is disabled. If enabled, the Switch will listen for BPDU packets and its accompanying Hello packet. BPDU packets are sent even if a BPDU packet was not received. Therefore, each link between bridges is sensitive to the status of the link. Ultimately this difference results in faster detection of failed links, and thus faster topology adjustment.

After enabling STP, setting the STP Global Setting includes the following options:

Figure 81 – Configuration > Spanning Tree > STP Global Settings

**STP Version:** You can choose RSTP or STP Compatible. The default setting is RSTP.

**Bridge Priority:** This value between 0 and 61410 specifies the priority for forwarding packets: the lower the value, the higher the priority. The default is 32768.

**TX Hold Count (1-10):** Used to set the maximum number of Hello packets transmitted per interval. The count can be specified from 1 to 10. The default is 6.

**Maximum Age (6-40 sec):** This value may be set to ensure that old information does not endlessly circulate through redundant paths in the network, preventing the effective propagation of the new information. Set by the Root Bridge, this value will aid in determining that the Switch has spanning tree configuration values consistent with other devices on the bridged LAN. If the value ages out and a BPDU has still not been received from the Root Bridge, the Switch will start sending its own BPDU to all other switches for permission to become the Root Bridge. If it turns out that the Switch has the lowest Bridge Identifier, it will become the Root Bridge. A time interval may be chosen between 6 and 40 seconds. The default value is 20. (Max Age has to have a value bigger than Hello Time)

**Hello Time (1-10 sec):** The user may set the time interval between transmissions of configuration messages by the root device, thus stating that the Switch is still functioning. The default is 2 seconds.

**Forward Delay (4-30 sec):** This sets the maximum amount of time that the root device will wait before changing states. The default is 15 seconds.

**Root Bridge:** Displays the MAC address of the Root Bridge.

**Root Maximum Age:** Displays the Maximum Age of the Root Bridge.

**Root Forward Delay:** Displays the Forward Delay of the Root Bridge.

**Root port:** Displays the root port.

Click **Apply** for the settings to take effect. Click **Refresh** to renew the page.

### Configuration > Spanning Tree > STP Port Settings

STP can be set up on a port per port basis. In addition to setting Spanning Tree parameters for use on the switch level, the Switch allows for the configuration of the groups of ports, each port-group of which will have its own spanning tree, and will require some of its own configuration settings.

An STP Group spanning tree works in the same way as the switch-level spanning tree, but the root bridge concept is replaced with a root port concept. A root port is a port of the group that is elected based on port priority and port cost, to be the connection to the network for the group. Redundant links will be blocked, just as redundant links are blocked on the switch level.

The STP on the switch level blocks redundant links between switches (and similar network devices). The port level STP will block redundant links within an STP Group.

It is advisable to define an STP Group to correspond to a VLAN group of ports.

Port	State	Priority	External Cost	Edge	P2P	Restricted Role	Restricted TCN	Port State
01	Enable	128	2000000	Auto	Auto	False	False	Blocking
02	Enable	128	2000000	Auto	Auto	False	False	Blocking
03	Enable	128	2000000	Auto	Auto	False	False	Blocking
04	Enable	128	2000000	Auto	Auto	False	False	Blocking
05	Enable	128	2000000	Auto	Auto	False	False	Blocking
06	Enable	128	2000000	Auto	Auto	False	False	Blocking
07	Enable	128	2000000	Auto	Auto	False	False	Blocking
08	Enable	128	2000000	Auto	Auto	False	False	Blocking
09	Enable	128	2000000	Auto	Auto	False	False	Blocking
10	Enable	128	2000000	Auto	Auto	False	False	Blocking
11	Enable	128	2000000	Auto	Auto	False	False	Blocking
12	Enable	128	2000000	Auto	Auto	False	False	Blocking
13	Enable	128	2000000	Auto	Auto	False	False	Blocking
14	Enable	128	2000000	Auto	Auto	False	False	Blocking
15	Enable	128	2000000	Auto	Auto	False	False	Blocking
16	Enable	128	2000000	Auto	Auto	False	False	Blocking
17	Enable	128	2000000	Auto	Auto	False	False	Blocking
18	Enable	128	2000000	Auto	Auto	False	False	Blocking
19	Enable	128	2000000	Auto	Auto	False	False	Blocking
20	Enable	128	2000000	Auto	Auto	False	False	Blocking
21	Enable	128	2000000	Auto	Auto	False	False	Forwarding
22	Enable	128	2000000	Auto	Auto	False	False	Blocking
23	Enable	128	2000000	Auto	Auto	False	False	Blocking
24	Enable	128	2000000	Auto	Auto	False	False	Blocking

Figure 82 – Configuration > Spanning Tree > STP Port Settings

**From Port/To Port:** A consecutive group of ports may be configured starting with the selected port.

**State:** Use the drop-down menu to enable or disable STP by per-port based. It will be selectable after the global STP is enabled.

**External Cost:** This defines a metric that indicates the relative cost of forwarding packets to the specified port list. Port cost can be set automatically or as a metric value. The default value is 0 (auto).

**0 (auto)** - Setting 0 for the external cost will automatically set the speed for forwarding packets to the specified port(s) in the list for optimal efficiency. Default port cost: 100Mbps port = 200000. Gigabit port = 20000.

**Value 1-200000000** - Define a value between 1 and 200000000 to determine the external cost. The lower the number, the greater the probability the port will be chosen to forward packets.

**Migrate:** Setting this parameter as Yes will set the ports to send out BPDU packets to other bridges, requesting information on their STP setting. If the Switch is configured for RSTP, the port will be capable to migrate from 802.1d STP to 802.1w RSTP. Migration should be set as yes on ports connected to network stations or segments that are capable of being upgraded to 802.1w RSTP on all or some portion of the segment.

**Edge:** Selecting the *True* parameter designates the port as an edge port. Edge ports cannot create loops, however an edge port can lose edge port status if a topology change creates a potential for a loop. An edge port normally should not receive BPDU packets. If a BPDU packet is received, it automatically loses edge port status. Selecting the *False* parameter indicates that the port does not have edge port status. Selecting the *Auto* parameter indicates that the port have edge port status or not have edge port status automatically.

**Priority:** Specify the priority of each port. Selectable range is from 0 to 240, and the default setting is 128. The lower the number, the greater the probability the port will be chosen as a root port.

**P2P:** Choosing the *True* parameter indicates a point-to-point (P2P) shared link. P2P ports are similar to edge ports, however they are restricted in that a P2P port must operate in full-duplex.

Like edge ports, P2P ports transition to a forwarding state rapidly thus benefiting from RSTP. A p2p value of *false* indicates that the port cannot have p2p status. *Auto* allows the port to have p2p status whenever possible and operate as if the p2p status were true. If the port cannot maintain this status, (for example if the port is forced to half-duplex operation) the p2p status changes to operate as if the p2p value were *False*. The default setting for this parameter is *Auto*.

**Restricted Role:** Toggle between *True* and *False* to set the restricted role state of the packet. If set to *True*, the port will never be selected to be the Root port. The default value is *False*.

**Restricted TCN:** Toggle between *True* and *False* to set the restricted TCN of the packet. Topology Change Notification (TCN) is a BPDU that a bridge sends out to its root port to signal a topology change. If set to *True*, it stops the port from propagating received TCN and to other ports. The default value is *False*.

Click **Apply** for the settings to take effect. Click **Refresh** to renew the page.

**QoS > Storm Control**

The Storm Control feature provides the ability to control the receive rate of broadcast, multicast, and unknown unicast packets. Once a packet storm has been detected, the Switch will drop packets coming into the Switch until the storm has subsided.

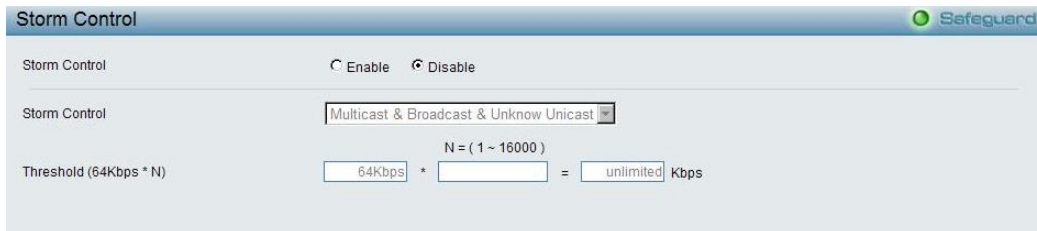


Figure 83 – QoS > Storm Control

**Storm Control Type:** User can select the different Storm type from Broadcast Only, Multicast & Broadcast, and Multicast & Broadcast & Unknown Unicast.

**Threshold (64Kbps \* N):** If storm control is enabled (default is disabled), the threshold is from of 64 ~ 1,024,000 Kbit per second, with steps (N) of 64Kbps. N can be from 1 to 16000.

Click **Apply** for the settings to take effect.

**QoS > Bandwidth Control**

The Bandwidth Control page allows network managers to define the bandwidth settings for a specified port’s transmitting and receiving data rates.

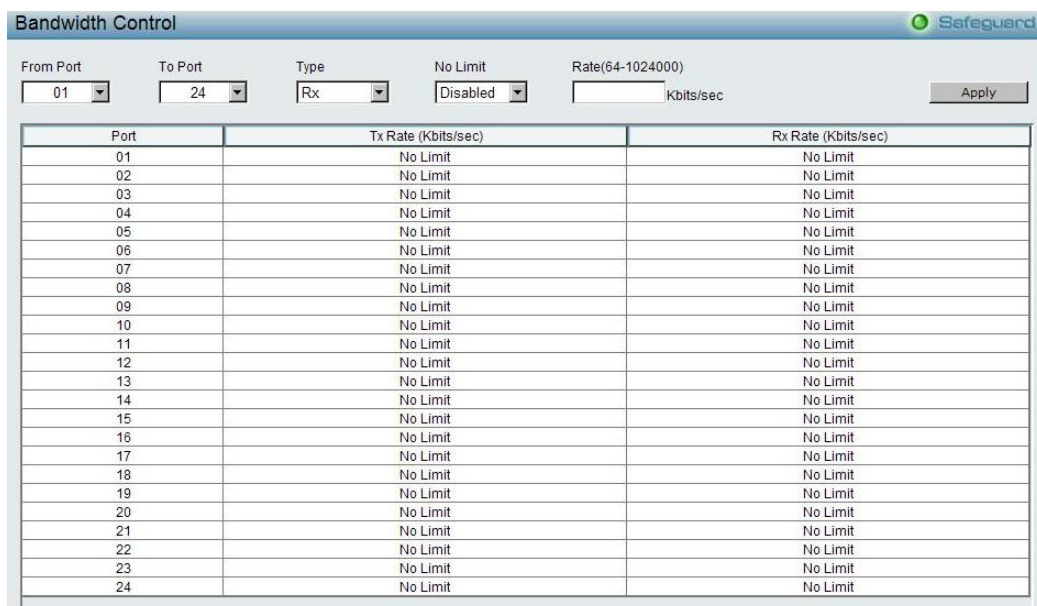


Figure 84 – QoS > Bandwidth Control

**From Port / To Port:** A consecutive group of ports may be configured starting with the selected port.

**Type:** This drop-down menu allows you to select between *RX* (receive), *TX* (transmit), and *Both*. This setting will determine whether the bandwidth ceiling is applied to receiving, transmitting, or both receiving and transmitting packets.

**No Limit:** This drop-down menu allows you to specify that the selected port will have no bandwidth limit.

*Enabled* disables the limit.

**Rate (64-1024000):** This field allows you to enter the data rate, in Kbits per second, will be the limit for the selected port. The value is between 64 and 1024000.

Click **Apply** to set the bandwidth control for the selected ports.



**NOTE:** The TX rate for Gigabit ports can only be configured in multiples of 1850kbps. If any other value is used, the system automatically rounds it down to the lower multiple of 1850.

**QoS > 802.1p/DSCP Priority Settings**

QoS is an implementation of the IEEE 802.1p standard that allows network administrators to reserve bandwidth for important functions that require a larger bandwidth or that might have a higher priority, such as VoIP (voice-over Internet Protocol), web browsing applications, file server applications or video conferencing. Thus with larger bandwidth, less critical traffic is limited, and therefore excessive bandwidth can be saved.

The following figure displays the status of Quality of Service priority levels of each port, higher priority means the traffic from this port will be first handled by the switch. For packets that are untagged, the switch will assign the priority depending on your configuration.

IEEE 802.1p Default Priority Safeguard

Select QoS Mode:  802.1p  DSCP

Queuing mechanism:  Strict Priority  WRR (By default is strict priority) Apply

By default the 802.1p is chosen. To enable DSCP mode, please select the DSCP mode and press "Apply" to go to DSCP Priority Settings page.

From Port:  To Port:  Priority:  Apply

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

For ingress untagged packets, the per port "Default Priority" settings will be applied to packets of each port to provide port-based traffic prioritization.  
 For ingress tagged packets, D-Link Smart Switches will refer to their 802.1p information and prioritize them with 4 different priority queues.

Figure 85 – QoS > 802.1p/DSCP Priority Settings

**Security > Trusted Host**

Use Trusted Host function to manage the switch from a remote station. You can enter up to ten designated management stations networks by defining the IP address/Subnet Mask as seen in the figure below.





Figure 86 Security > Trusted Host

To define a management station IP setting, click the **Add Host** button and type in the IP address and Subnet mask. Click the **Apply** button to save your settings. You may permit only single or a range of IP addresses by different IP mask settings, the format can either be 192.168.1.1/255.255.255.0 or 192.168.0.1/24. Please see the example below for permitting the IP range

IP Address	Subnet Mask	Permitted IP
192.168.0.1	255.255.255.0	192.168.0.1~192.168.0.255
172.17.5.215	255.0.0.0	172.0.0.1~172.255.255.255

To delete the IP address, simply click the **Delete** button. Check the unwanted address, and then click **Apply**.

**Security > Safeguard Engine**

D-Link’s **Safeguard Engine** is a robust and innovative technology that automatically throttles the impact of packet flooding into the switch's CPU. This function helps protect the Web-Smart Switch from being interrupted by malicious viruses or worm attacks. This option is enabled by default.

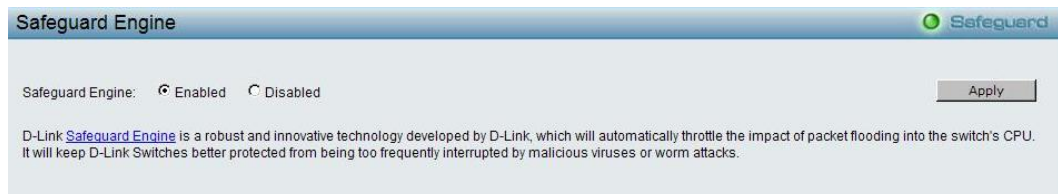


Figure 87 – Security > Safeguard Engine

**Security > ARP Spoofing Prevention**

ARP spoofing, also known as ARP poisoning, is a method to attack an Ethernet network by allowing an attacker to sniff data frames on a LAN, modifying the traffic, or stopping the traffic (known as a Denial of Service – DoS attack). The main idea of ARP spoofing is to send fake or spoofed ARP messages to an Ethernet network. It associates the attacker's or random MAC address with the IP address of another node such as the default gateway. Any traffic meant for that IP address would be mistakenly re-directed to the node specified by the attacker.

A common DoS attack today can be done by associating a nonexistent or specified MAC address to the IP address of the network’s default gateway. The malicious attacker only needs to broadcast one gratuitous ARP to the network claiming to be the gateway, so that the whole network operation is turned down as all packets to the Internet will be directed to the wrong node.

The ARP Spoofing Prevention function can discard the ARP Spoofing Attack in the network by checking the gratuitous ARP packets and filtering those with illegal IP or MAC addresses. Enter the **Router/Gateway IP Address, MAC Address, Ports** and then click **Add** to create a checking/filtering rule. Click **Delete** to remove an existing rule and **Delete All** to clear all the entries.



security functions are implemented by Ciphersuite, a security string that determines the cryptographic parameters, encryption algorithms and key sizes.

This page allows you to configure the SSL global state and the Ciphersuite settings. Select **Enable** or **Disable** and then click **Apply** to change the SSL state or the Ciphersuite settings of the Switch. By default, SSL is **Disabled** and all Ciphersuites are **Enabled**.

Figure 90 – Security > SSL Settings



**NOTE:** When SSL is enabled, it will take longer time to open a web page due to encryption. After saving configuration, please wait around 10 seconds for the system summary page.

### **Security > 802.1X > 802.1X Settings**

Network switches provide easy and open access to resources, by simply attaching a client PC. Unfortunately this automatic configuration also allows unauthorized personnel to easily intrude and possibly gain access to sensitive data.

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

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

802.1X Settings

802.1X  Enabled  Disabled

**802.1X Global Settings**

Radius Server IP: [ ][ ][ ][ ]      QuietPeriod (0 - 65535 sec): [ 60 ]

Key: [ ]      SuppTimeout (1 - 65535 sec): [ 12 ]

Confirm Key: [ ]      ServerTimeout (1 - 65535 sec): [ 16 ]

TxPeriod (1 - 65535 sec): [ 24 ]      MaxReq (1 - 10): [ 2 ]

ReAuthEnabled: [ Disabled ]      ReAuthPeriod (1 - 4294967295 sec): [ 3600 ]

[ Apply ]

**802.1X Port Access Control**

From Port: [ 01 ]      To Port: [ 24 ]      Control: [ Auto ]      [ Apply ]      [ Refresh ]

Port	Control	Port Status	Session Time	User ID
01	Force Authorized	*	0	*****
02	Force Authorized	*	0	*****
03	Force Authorized	*	0	*****
04	Force Authorized	*	0	*****
05	Force Authorized	*	0	*****
06	Force Authorized	*	0	*****
07	Force Authorized	*	0	*****
08	Force Authorized	*	0	*****
09	Force Authorized	*	0	*****
10	Force Authorized	*	0	*****
11	Force Authorized	*	0	*****
12	Force Authorized	*	0	*****
13	Force Authorized	*	0	*****
14	Force Authorized	*	0	*****
15	Force Authorized	*	0	*****
16	Force Authorized	*	0	*****

Figure 91 – Security &gt; 802.1X &gt; 802.1X Settings

By default, 802.1X is disabled. To use EAP for security, select enabled and set the 802.1X **Global Settings** for the Radius Server and applicable authentication information.

**RADIUS Server IP:** The IP address of the external Radius Server. You need to specify an RADIUS server to enable 802.1X authentication.

**Key:** Masked password matching the Radius Server Key. The max. length is 32 characters.

**Confirm Key:** Enter the Key a second time for confirmation.

**TxPeriod (1 – 65535 sec):** This sets the TxPeriod of time for the authenticator PAE state machine. This value determines the period of an EAP Request/Identity packet transmitted to the client. Default is 24 seconds.

**ReAuthEnabled:** This function is to determine whether regular re-authentication will take place on this port(s). When the 802.1X function is enabled, the switch sends an EAP-request/identity packet to client. The ReAuthEnabled function is by default disabled.

**QuietPeriod (0 – 65535 sec):** Sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. Default is 80 seconds

**SuppTimeout (1 – 65535 sec):** This value determines timeout conditions in the exchanges between the Authenticator and the client. Default is 12 seconds.

**ServerTimeout (1 – 65535 sec):** Sets the amount of time the switch waits for a response from the client before resending the response to the authentication server. Default is 16 seconds.

**MaxReq (1 – 10):** This parameter specifies the maximum number of times that the switch retransmits an EAP request (md-5challenge) to the client before it times out the authentication session. Default is 5 times.

**ReAuthPeriod (1 – 4294967295 sec):** This command affects the behavior of the switch only if periodic re-authentication is enabled. Default is 3600.

To establish 802.1X port-specific assignments, select the **From Ports / To Ports** and select **Enable**.

**802.1X Port Access Control:** Three type of Port Access Control State can be "**Force Authorized**", "**Force Unauthorized**", and "**Auto**".

Select **Force Authorized** to disable 802.1X and cause the port to transition to the authorized state without any authentication exchange required. This means the port transmits and receives normal traffic without 802.1X-based authentication of the client.

If **Force Unauthorized** is selected, the port will remain in the unauthorized state ignoring all attempts by the client to authenticate. The Switch cannot provide authentication services to the client through the interface.

If **Auto** is selected, it will enable 802.1X and cause the port to begin in the unauthorized state, allowing only EAPOL frames to be sent and received through the port. The authentication process begins when the link state of the port transitions from down to up, or when an EAPOL-start frame is received. The Switch then requests the identity of the client and begins relaying authentication messages between the client and the authentication server.

The default setting is **Auto**.

### **Security > MAC Address Table > Static MAC**

This feature provides two distinct functions. The **Disable Auto Learning** table allows turning off the function of learning MAC address automatically, if a port isn't specified as an uplink port (for example, connects to a DHCP Server or Gateway). By default, this feature is Off (disabled).

Static MAC Configuration

Disable auto learning on ports other than the uplink ports configured below  On  Off

Uplink Port	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Static MAC Address Lists (Maximum Entries : 256)

ID	Port	MAC Address	VID
----	------	-------------	-----

Apply Delete all Add MAC

Figure 92 – Security > MAC Address Table > Static Mac Address

To initiate the removal of auto-learning for any of the uplink ports, click **On** to enable this feature, and then select the port(s) for auto learning to be disabled.

The **Static MAC Address Setting** table displays the static MAC addresses connected, as well as the VID. Click **Add Mac** to add a new MAC address, you also need to select the assigned Port number. Enter both the Mac Address and VID, and then Click **Apply**. Click **Delete** to remove one entry or click **Delete all** to clear the list. You can also copy a learned MAC address from the **Dynamic Forwarding Table** (please refer to **Security > MAC Address Table > Dynamic Forwarding Table** for details).

By disabling Auto Learning capability and specifying the static MAC addresses, the network is protected from potential threats like hackers, because traffic from illegal MAC addresses will not be forwarded by the Switch.

### **Security > MAC Address Table > Dynamic Forwarding Table**

For each port, this table displays the MAC address learned by the Switch. To add a MAC address to the Static Mac Address List, click the **Add** checkbox, and then click **Apply** associated with the identified address.

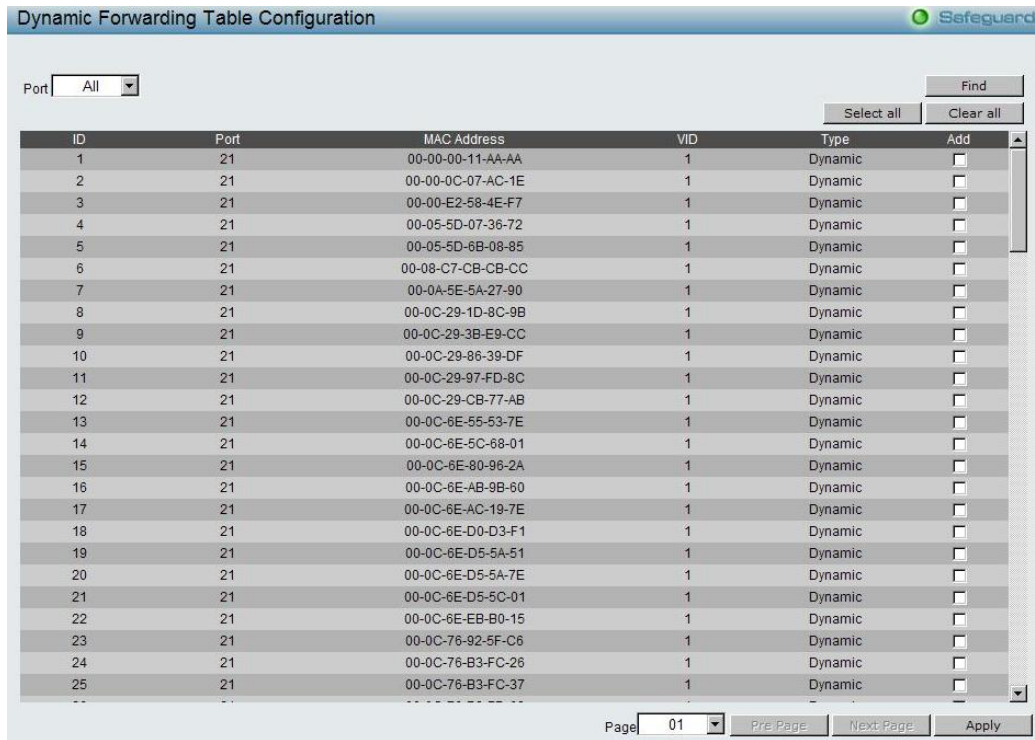


Figure 93 – Security > MAC Address Table > Dynamic Forwarding Table

**Security > DHCP Server Screening > DHCP Server Screening Port Setting**

DHCP Server Screening function allows you to restrict the illegal DHCP server by discarding the DHCP service from distrusted ports. This page allows you to configure the DHCP Server Screening state for each port. Select **From Port**, **To Port** and **State** and then click **Apply** to enable or disable the function. The default setting is **Disable**.

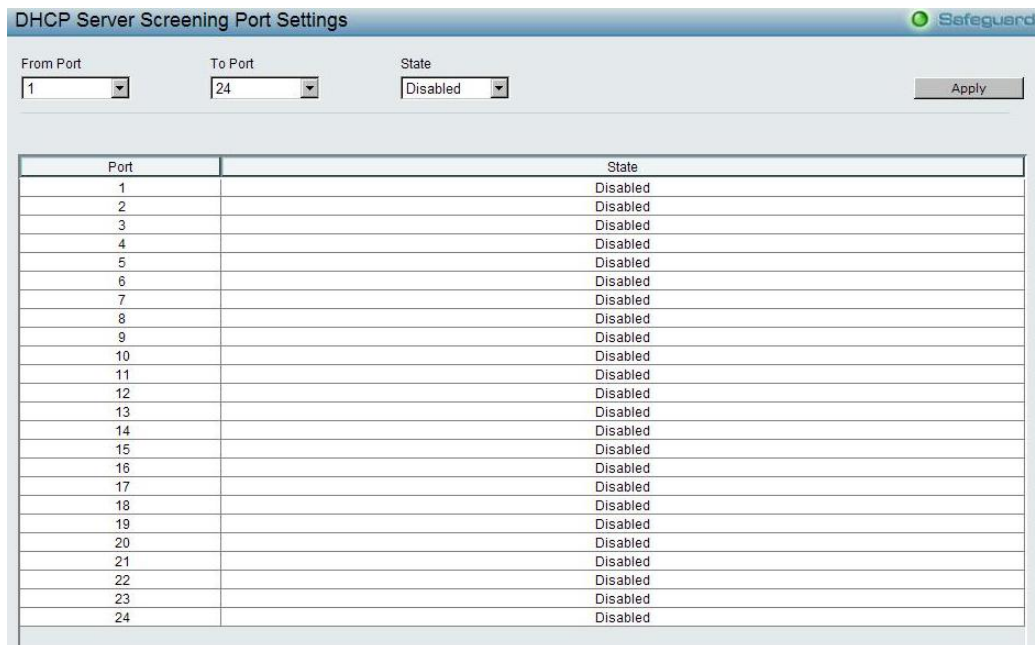
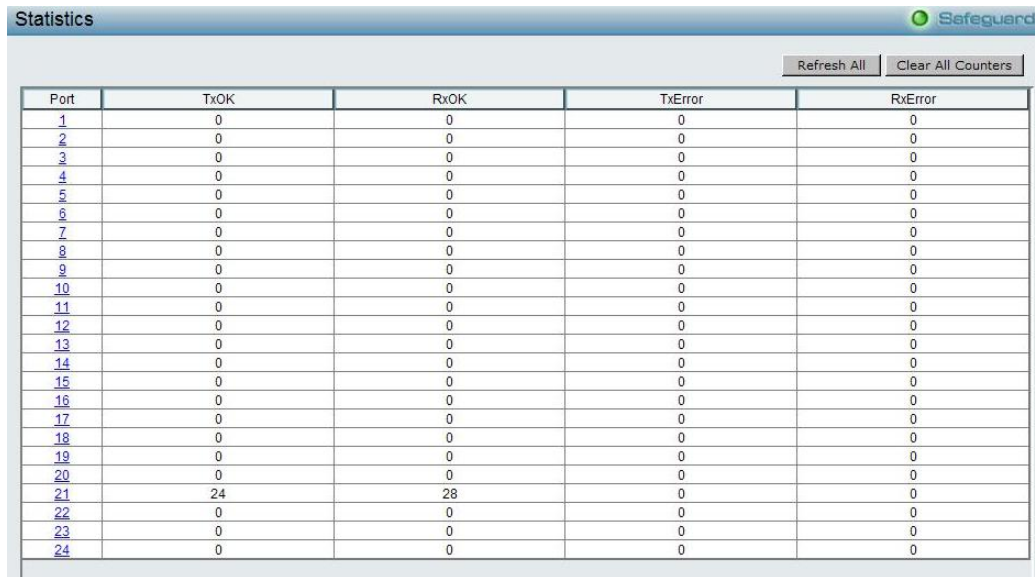


Figure 94 – Security > DHCP Server Screening > DHCP Server Screening Port Settings

**Monitoring > Statistics**

The Statistics screen displays the status of each port packet count.



Port	TxOK	RxOK	TxError	RxError
<a href="#">1</a>	0	0	0	0
<a href="#">2</a>	0	0	0	0
<a href="#">3</a>	0	0	0	0
<a href="#">4</a>	0	0	0	0
<a href="#">5</a>	0	0	0	0
<a href="#">6</a>	0	0	0	0
<a href="#">7</a>	0	0	0	0
<a href="#">8</a>	0	0	0	0
<a href="#">9</a>	0	0	0	0
<a href="#">10</a>	0	0	0	0
<a href="#">11</a>	0	0	0	0
<a href="#">12</a>	0	0	0	0
<a href="#">13</a>	0	0	0	0
<a href="#">14</a>	0	0	0	0
<a href="#">15</a>	0	0	0	0
<a href="#">16</a>	0	0	0	0
<a href="#">17</a>	0	0	0	0
<a href="#">18</a>	0	0	0	0
<a href="#">19</a>	0	0	0	0
<a href="#">20</a>	0	0	0	0
<a href="#">21</a>	24	28	0	0
<a href="#">22</a>	0	0	0	0
<a href="#">23</a>	0	0	0	0
<a href="#">24</a>	0	0	0	0

Figure 95 – Monitoring > Statistics

**Refresh All:** Renews the details collected and displayed.

**Clear All Counters:** To reset the details displayed.

**TxOK:** Number of packets transmitted successfully.

**RxOK:** Number of packets received successfully.

**TxError:** Number of transmitted packets resulting in error.

**RxError:** Number of received packets resulting in error.

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



TX		RX	
OutOctets	0	InOctets	0
OutUcastPkts	0	InUcastPkts	0
OutNUcastPkts	0	InNUcastPkts	0
OutErrors	0	InDiscards	0
LateCollisions	0	InErrors	0
ExcessiveCollisions	0	FCSErrors	0
InternalMacTransmitErrors	0	FrameTooLongs	0
		InternalMacReceiveErrors	0

Figure 96 – Monitoring > Port Statistics

**Previous Page:** Go back to the Statistics main page.

**Refresh:** To renew the details collected and displayed.

**Clear Counter:** To reset the details displayed.

### Monitoring > Cable Diagnostics

The Cable Diagnostics is designed primarily for administrators and customer service representatives to examine the copper cable quality. It rapidly determines the type of cable errors occurred in the cable.

Select a port and then click the **Test Now** button to start the diagnosis.

**Cable Diagnostics** Safeguard

Port:

Port	Test Result	Cable Fault Distance (meters)	Cable Length (meters) [in range]
<p>The cable diagnostics feature is designed primarily for administrators or customer service representatives to verify and test copper cables; it can rapidly determine the quality of the cables and the types of error.</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Before enabling Cable Diagnostics function, please be sure to disable Power Saving via the Power Saving configuration of Web GUI.</li> <li>2. If cable length is displayed as "N/A" it means the cable length is "Not Available". This is due to the port being unable to obtain cable length/either because its link speed is 10M or 100M, or the cables used are broken and/or bad in quality.</li> <li>3. The deviation of "Cable Fault Distance" is +/-2 meters, therefore No cable may be displayed under Test Result, when the cable used is less than 2 m in length.</li> <li>4. It also measures cable fault and identifies the fault in length according to the distance from this switch.</li> </ol>			

Figure 97 – Monitoring > Cable Diagnostic

**Test Result:** The description of the cable diagnostic results.

- **OK** means the cable is good for the connection.
- **Short in Cable** means the wires of the RJ45 cable may be in contact somewhere.
- **Open in Cable** means the wires of RJ45 cable may be broken, or the other end of the cable is simply disconnected.
- **Test Failed** means some other errors occurred during cable diagnostics. Please select the same port and test again.

**Cable Fault Distance (meters):** Indicates the distance of the cable fault from the Switch port, if the cable is less than 2 meters, it will show "No Cable".

**Cable Length (meter):** If the test result shows OK, then cable length will be indicated for the total length of the cable. The cable lengths are categorized into four types: <50 meters, 50~80 meters, 80~100 meters and >100 meters.



**NOTE:** Cable length detection is effective on Gigabit ports only.



**NOTE:** Please be sure that Power Saving feature is disabled before enabling Cable Diagnostics function.

### Monitoring > System Log

The System Log page provides information about system logs, including information when the device was booted, how the ports are operating, when users logged in, when sessions timed out, as well as other system information.



ID	Time	Log Description	Severity
1	Jan 2 00:12:19 2009	Successful login through Web ( IP: 172.21.47.136 )	info
2	Jan 2 00:07:22 2009	New Root bridge selected(MAC: 00-D0-2B-60-DD-03 Priority :24576)	info
3	Jan 2 00:07:21 2009	New Root bridge selected(MAC: 00-11-22-34-43-91 Priority :32768)	info
4	Jan 2 00:07:20 2009	New Root bridge selected(MAC: 00-11-22-33-44-30 Priority :4096)	info
5	Jan 2 00:07:20 2009	New Root bridge selected(MAC: 00-11-22-34-43-91 Priority :32768)	info
6	Jan 1 23:56:10 2009	New Root bridge selected(MAC: 00-11-22-33-44-30 Priority :4096)	info
7	Jan 1 23:54:56 2009	New Root bridge selected(MAC: 00-D0-2B-60-DD-03 Priority :24576)	info
8	Jan 1 23:54:55 2009	Spanning Tree Protocol is enabled	info
9	Jan 1 23:54:06 2009	Successful login through Web ( IP: 172.21.47.136 )	info
10	Jan 1 23:54:02 2009	Login failed through Web ( IP: 172.21.47.136 )	warning
11	Jan 1 21:54:26 2009	Logout through Web( IP: 172.21.47.136 )	info
12	Jan 1 21:54:26 2009	Web session timed out ( IP: 172.21.47.136 )	info
13	Jan 1 19:21:00 2009	Successful login through Web ( IP: 172.21.47.136 )	info
14	Jan 1 03:22:53 2009	Logout through Web( IP: 172.21.47.136 )	info
15	Jan 1 03:22:53 2009	Web session timed out ( IP: 172.21.47.136 )	info
16	Jan 1 02:47:06 2009	Successful login through Web ( IP: 172.21.47.136 )	info
17	Jan 1 02:47:03 2009	Login failed through Web ( IP: 172.21.47.136 )	warning
18	Jan 1 02:27:15 2009	Logout through Web( IP: 172.21.47.136 )	info
19	Jan 1 02:27:15 2009	Web session timed out ( IP: 172.21.47.136 )	info
20	Jan 1 00:35:44 2009	Logout through Web( IP: 10.90.90.99 )	info
21	Jan 1 00:35:44 2009	Web session timed out ( IP: 10.90.90.99 )	info
22	Jan 1 00:18:37 2009	Successful login through Web ( IP: 172.21.47.136 )	info
23	Jan 1 00:12:44 2009	Logout through Web( IP: 172.21.47.136 )	info
24	Jan 1 00:06:45 2009	Successful login through Web ( IP: 172.21.47.136 )	info
25	Jan 1 00:06:40 2009	Login failed through Web ( IP: 172.21.47.136 )	warning
26	Jan 1 00:05:43 2009	Management IP address was changed. New IP: 172.21.47.137	info
27	Jan 1 00:02:31 2009	Successful login through Web ( IP: 10.90.90.99 )	info
28	Jan 1 00:02:26 2009	Login failed through Web ( IP: 10.90.90.99 )	warning

Figure 98 – Monitoring > System Log

**ID:** Displays an incremented counter of the System Log entry. The Maximum entries are 500.

**Time:** Displays the time in days, hours, and minutes the log was entered.

**Log Description:** Displays a description event recorded.

**Severity:** Displays a severity level of the event recorded.

Click **Refresh** to renew the page, and click **Clear** to clean out all log entries.

**ACL > ACL Configuration Wizard**

Access Control List (ACL) allows you to establish criteria to determine whether or not the Switch will forward packets based on the information contained in each packet's header. This criteria can be specified on a basis of the MAC address, or IP address.

The ACL Configuration Wizard will aid with the creation of access profiles and ACL Rules. The ACL Wizard will create the access rule and profile automatically. The maximum usable profiles are 50 and with 240 Rules in total for the switch.

ACL Configuration Wizard

General ACL Rules

From: [Any] [ ]

To: [Any] [ ]

Service Type: [Any] [ ]

Action: [Permit] [ ]

Ports: [ ] ex:(1,2,4-6)

[Apply]

Note:  
 ACL Wizard will create the access profile and rule automatically.  
 For advanced access profile/rule setting, you can manually configure it in Access Profile List.

Figure 99 – ACL > ACL Configuration Wizard

**From:** Specify the origin of accessible packets. The possible values are:

**Any** - Indicates ACL action will be on packets from any source.

**MAC Address** - Indicates ACL action will be on packets from this MAC address.

**IPv4 Addresses** - Indicates ACL action will be on packets from this IPv4 source address.

**To:** Specify the destination of accessible packets. The possible values are:

**Any** - Indicates ACL action will be on packets from any source.

**MAC Address** - Indicates ACL action will be on packets from this MAC address. The field of format is xx-xx-xx-xx-xx-xx.

**IPv4 Addresses** - Indicates ACL action will be on packets from this IPv4 source address.

**Service Type:** Specify the type of service. The possible values are:

**Any** - Indicates ACL action will be on packets from any service type.

**Ether type** - Specifies an Ethernet type for filtering packets.

**ICMP All** - Indicates ACL action will be on packets from ICMP packets.

**IGMP** - IGMP packets can be filtered by IGMP message type.

**TCP All** - Indicates ACL action will be on packets from TCP Packets.

**TCP Source Port** - Matches the packet to the TCP Source Port.

**TCP Destination Port** - Matches the packet to the TCP Destination Port.

**UDP All** - Indicates ACL action will be on packets from UDP Packets.

**UDP Source Port** - Matches the packet to the UDP Source Port.

**UDP Destination Port** - Matches the packet to the UDP Destination Port.

**Action:** Specify the ACL forwarding action matching the rule criteria. *Permit* forwards packets if all other ACL criteria are met. *Deny* drops packets if all other ACL criteria is met.

**Port:** Enter a range of ports to be configured.

Press **Apply** for the settings to take effect.



**NOTE:** Once the ACL rules conflict, rules with the smaller rule ID will take higher priority.



**NOTE:** Be careful when configuring ACL rules, an inappropriate ACL rule may cause management access failure.

**ACL > ACL Profile List**

The ACL Profile List provides information for configuring ACL Profiles manually. ACL profiles are attached to interfaces, and define how packets are forwarded if they match the ACL criteria.

Profile ID	Owner Type	Profile Summary	Show Details	Show Rules	Delete
51	Voice VLAN	Source MAC	Show Details	Show Rules	Delete
52	ARP-SP	Source MAC, Ether Type, ARP Sender MAC, ARP Sender IP	Show Details	Show Rules	Delete
53	ARP-SP	Ether Type, ARP Sender IP	Show Details	Show Rules	Delete
56	Surveillance VLAN	Source MAC	Show Details	Show Rules	Delete

Current/Max. Profile: 0/50, Current/Max. Rule: 0/240

Figure 100 – ACL > ACL Profile List

The contents of Access Profile List table include:

**Profile ID:** Indicates the profile Identification number. The possible configured profile IDs are 1~50, and profile ID 51 is reserved for Voice VLAN.

**Owner Type:** The owner type of ACL profile; it can be normal ACL or Voice VLAN.

**Profile Summary:** Displays the profile summary.

**Show Details:** To display an ACL's profile details. The ACL profile details are displayed below the ACL table.

**Show Rules:** To show the access rule in this profile.

**Edit / New Rules:** To edit or create an access rule in this profile. To add a new rule, please see **Access Rule List** in the next section.

**Delete:** To delete an access profile.

To manually add a profile, click **Add ACL Profile**:

Figure 101 – Add Access Profile

The steps of adding an access profile are described below:

1) After selecting the **Profile ID** and **Frame Type** (MAC or IPv4), specify attributes like Untagged/Tagged (for MAC), or ICMP/IGMP/TCP/UDP (for IPv4). Click *Select* and a simplified frame diagram will be displayed.

2) Selecting the field of interest will display the related columns in the lower part of the page. Enter the filtering mask and click **Create** when done. A filtering mask is to specify the digit that you want to check. For example, if you want to check a network of 192.168.1.0/24, then you should enter the IP mask as 255.255.255.0.



**NOTE:** You cannot select Payload in a MAC ACL, or L2 Header in IP ACL.

3) After the **Profile ID** has been created, it will go back to the main Access Profile List page, clicking the **Edit / New Rules** button to enter the **Access Rule List** page.

Profile ID	Access ID	Profile Type	Summary	Action
------------	-----------	--------------	---------	--------

Figure 102 – Access Rule List

**Profile ID:** Indicates the corresponding access profile Identification number.

**Access ID:** Indicates the access rule Identification number.

**Profile Type:** Displays the profile type.

**Summary:** Displays the access rule summary.

**Action:** Displays the access rule action.

To add a new rule, click **Add Rule:**

Figure 103 – Add Access Rule

**Profile Information** displays the information to which the rule is being added to, including **Profile ID** and other fields specified.

In **Rule Detail**, you can specify the details of an access rule. Below are all the possible parameters that can be set.

**Access ID:** Specify the Access ID (1-65535).

**Type:** Display the type of rule.

**VLAN ID:** The VLAN ID for a previously configured VLAN.

**Destination MAC Address:** Specify the Destination MAC address, the field of format is xx-xx-xx-xx-xx-xx.

- Source MAC Address:** Specify the Source MAC address, the field of format is xx-xx-xx-xx-xx-xx.
- 802.1p:** Specify the 802.1p priority value.
- Ether Type:** Specify the Ethernet Type value.
- Destination IP Address:** Specify the Destination IP address.
- Source IP Address:** Specify the Source IP address.
- DSCP:** Specify the DSCP value.
- IP Protocol:** The L4 protocol above IP. Possible values are ICMP, IGMP, TCP, and UDP.
- ICMP Type:** Specify the ICMP packet type.
- ICMP Code:** Specify the ICMP packet Code.
- IGMP Type:** Specify the IGMP packet type.
- Source Port:** Specify the TCP or UDP source port value.
- Destination Port:** Specify the TCP or UDP destination port value.
- TCP Flag:** Specify the TCP flag value.
- Ports:** Specify the switch ports that you want to implement the access rule to.
- Action:** Specify the ACL forwarding action matching the rule criteria. **Permit** forwards packets if all other ACL criteria are met. **Deny** drops packets if all other ACL criteria is met.

Click **Apply** to make it effective.



**NOTE:** The switch begins the access rule with the smallest access ID, so be careful in assigning the ID for the expected results.

To modify an existing rule, please click on the Access ID hyperlink.

Access Rule List				
Profile ID	Access ID	Profile Type	Summary	Action
1	<a href="#">25</a>	IP	ICMP, Source IP	Permit <span style="float: right;">Delete</span>

Figure 104 – ACL > Access Profile List > Access Rule List

**ACL > ACL Finder**

This page is used to help find a previously configured ACL entry. To search for an entry, enter the profile ID from the drop-down menu, select a port that you wish to view, define the state and click **Find**. The table on the lower half of the screen will display the entries. To delete an entry click the corresponding **Delete** button.

ACL Finder				
Profile ID	Access ID	Profile Type	Summary	Action
ACL rule finder helps you identify any rule has been assigned to a specific port Profile ID: <input type="text" value="Any"/> Ports: <input type="text"/> <span style="float: right;">Find</span>				

Figure 105 – ACL > ACL Finder

**PoE > PoE Port Settings (DGS-1210-10P only)**

DGS-1210-10P supports Power over Ethernet (PoE) as defined by the IEEE 802.3at specification. Ports 1-8 can supply 54VDC power to PDs (Powered Device) over Category 5 or Category 3 UTP Ethernet cables. DGS-1210-10P follows the standard PSE (Power Supply Equipment) pinout Alternative A, whereby power is sent out over pins 1, 2, 3 and 6.

DGS-1210-10P works with all D-Link 802.3af or 802.3at capable devices. The Switch also works in PoE mode with all non-802.3af capable D-Link AP, IP Cam and IP phone equipment via the PoE splitter DWL-P50.

IEEE 802.3at defined that the PSE provides power according to the following classification:

Class	Usage	Output power limit by PSE
-------	-------	---------------------------

0	Default	15.4W
1	Optional	4.0W
2	Optional	7.0W
3	Optional	15.4W
4	Reserved	30W

The PoE port table will display the PoE status including, Port Enable, Power Limit, Power (W), Voltage (V), Current (mA), Classification, Port Status. You can select **From Port / To Port** to control the PoE functions of a port. DGS-1210-10P will auto disable the ports if port current is over 375mA in 802.3af mode or 625mA in pre-802.3at mode.



**Note:** The PoE Status information of Power current, Power Voltage, and Current is the power usage information of the connected PD; please "Refresh" to renew the information.

**PoE Port Settings**

From Port: 1 To Port: 8 State: Enabled Time Range: N/A Priority: Normal Power Limit: Auto User Define:  (1.0~30.0w)

Port	State	Time Range	Priority	Power Limit	Power (W)	Voltage (V)	Current (mA)	Classification	Status
1	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
2	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
3	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
4	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
5	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
6	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
7	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF
8	Enabled	N/A	Normal	Auto	0.0	0.0	0.0	N/A	POWER OFF

Note: The port 1 to port 8 can be set a power limit between 1W and 30W. Max power used by PSE: Class 1: 4W, Class 2: 7W, Class 3: 15.4W, Class 4: 30W.

Figure 106 – PoE > PoE Port Setting

**State:** Select “Enabled” or “Disabled” to configure PoE function for designated port(s). Default is **Enabled**.

**Time Range:** Select the PoE time profile configured from Time-Based PoE > Time Range Settings to enable the time-based PoE function on designated port(s). Default setting is **N/A**.

**Priority:** Configure the power supply priority as “Low”, “Normal”, or “High” on designated port(s). Default is **Normal**.

**Power Limit:** This function allows you to manually set the port power current limitation to be given to the PD. To protect the DGS-1210-10P and the connected devices, the power limit function will disable the PoE function of the port when the power is overloaded. Select from "**Class 1**", "**Class 2**", "**Class 3**", "**Class 4**" and "**Auto**" for the power limit. "**Auto**" will negotiate and follow the classification from the PD power current based on the 802.3at standard.

**User Define:** Check the box and input the power budget (from 1 to 30W) to manually assign an upper limit of port power budget on designated port(s).

**PoE > PoE System Settings (DGS-1210-10P only)**

This page will display the PoE status including System Budget Power, Support Total Power, Remainder Power, and The ratio of system power supply.

Figure 107 – PoE > PoE System Setting

**System Power Threshold:** Manually configure the system power budget (7.1 ~ 78.0 W)

**System Setting Disconnection Method:** Configure PoE power management mode. The power management policy will deny powering to low priority port while system power budget is not enough to supply power. DGS-1210-10P supports two deny policies, *Deny next port* and *Deny low priority*. The Deny next port means the port with earliest plug-in PD gets the highest priority, whereas the latest gets the lowest priority. And the Deny low priority port applied the port priority setting configured from PoE port setting page. Default setting is **Deny next port**.



**Note:** The power management policy is only effective while PoE system entering guard band mode ( $0 < \text{remainder power} \leq 7$ ).

**Time-Based PoE > Time Range Settings (DGS-1210-10P only)**

The Time Range window is used in conjunction with the PoE feature to determine the powering time range based on days of the week when PoE is enabled on the Switch port. Once it is configured here, the time range settings will be applied to the PoE port setting.

Range Name	Weekdays	From Day	To Day	Start Time	End Time	
Week Day	Mon, Tue, Wed, Thu, Fri			00:00	02:00	Edit Delete

Figure 108 – Time-Based PoE > Time Range Settings

**Range Name:** Name of a time range profile.

**Date:** Select the checkbox if there is a certain date range for the profile to use. Select from drop-down menu of **From Day** and **To Day** to define the date range.

**Hours:** Select from drop-down menu of **Start Time** and **End Time** to define the range of a day. Note: If the End Time is before the Start Time the End date should be set to the following day.

**Weekdays:** Select the checkboxes for the days you want to apply the time range profile per week. You can select all days.

Click **Apply** to confirm profile creation.

**LLDP > LLDP Global Settings (DGS-1210-10P only)**

**LLDP (Link Layer Discovery Protocol)** provides IEEE 802.1AB standards-based method for switches to advertise themselves to neighbor devices, as well as to learn about neighbor LLDP devices. DGS-1210-10P will keep the information in the Management Information Base (MIB). SNMP utilities can learn the network topology by obtaining the MIB information in each LLDP device. The LLDP function is enabled by default.

LLDP System Information	
Chassis ID Subtype	macAddress
Chassis ID	00-CB-FB-E2-84-10
System Name	
System Description	DGS-1210-10P 2.01.002

Figure 109 –LLDP > LLDP Global Settings

**LLDP:** When this function is *Enabled*, the switch can start to transmit, receive and process the LLDP packets. For the advertisement of LLDP packets, the switch announces the information to its neighbor through ports. For the receiving of LLDP packets, the switch will learn the information from the LLDP packets advertised from the neighbor in the neighbor table. Click **Apply** to make the change effective.

**Message TX Hold Multiplier (2-10):** This parameter is a multiplier that determines the actual TTL value used in an LLDPDU. The default value is **4**.

**Message TX Interval (5-32768):** This parameter indicates the interval at which LLDP frames are transmitted on behalf of this LLDP agent. The default value is **30** seconds.

**LLDP Reinit Delay (1-10):** This parameter indicates the amount of delay from the time adminStatus becomes "disabled" until re-initialization is attempted. The default value is **2** seconds.

**LLDP TX Delay (1-8192):** This parameter indicates the delay between successive LLDP frame transmissions initiated by value or status changes in the LLDP local systems MIB. The value for txDelay is set by the following range formula:  $1 < \text{txDelay} < (0.25 \times \text{msgTxInterval})$ . The default value is **2** seconds.

**LLDP > LLDP Remote Port Information (DGS-1210-10P only)**

This page is used to display the LLDP Remote Port Brief Table. Click **Show Normal** to display additional information.

Entity	Port	Chassis ID Subtype	Chassis ID	Port ID Subtype	Port ID	Port Description	Show Normal
Remote Entities Count : 0							

Figure 110 –LLDP > LLDP Remote Port Information

**LLDP > LLDP MED Settings (DGS-1210-10P only)**

By selecting a range of ports (**From Port** and **To Port**), the power PSE TLV type can be enabled for all selected ports to indicate the power source equipment (PSE) switch to transmit high power (15.4 to 30 Watts) to the pre-standard of 802.3at power devices via LLDP MDI TLV. Through this feature, the PSE can provide precise output power to the pre-standard of 802.3at power devices and achieve optimal power management.



LLDP MED Settings Safeguard

LLDP-MED Power PSE TLV Setting

From Port:  To Port:  Power PSE TLV:

Port	Power PSE TLV
1	Enabled
2	Enabled
3	Enabled
4	Enabled
5	Enabled
6	Enabled
7	Enabled
8	Enabled

Figure 111 –LLDP > LLDP MED Settings

## 6 Command Line Interface

The D-Link Web Smart Switch allows a computer or terminal to perform some basic monitoring and configuration tasks by using the Command Line Interface (CLI) via TELNET protocol.

### **To connect a switch via TELNET:**

1. Make sure the network connection between the switch and PC is active.
2. To connect, launch any terminal software like *HyperTerminal* in Microsoft Windows, or just use the command prompt by typing the command *telnet* followed by the switch IP address, eg. *telnet 10.90.90.90*.
3. The logon prompt will appear.

### **Logging on to the Command Line Interface:**

Enter your User Name and Password to log in. The default user name and password is **admin**. Note that the user name and password are case-sensitive. Press **Enter** in both the Username and Password fields. The command prompt will appear as shown below (**DGS-1210-48>**):

```
DGS-1210-48 login: admin
Password:
DGS-1210-48>
```

Figure 112 – Command Prompt

The user session is automatically terminated if idle for the login timeout period. The default login timeout period is 5 minutes. To change the login timeout session, please refer to chapter 5.

### **CLI Commands:**

There are a number of helpful features included in the CLI. Entering the **?** command will display a list of commands.

```
DGS-1210-48> ?
USEREXEC commands :
  config account admin password <passwd>
  config ipif System { ipaddress <ip-address> <subnet-mask> gateway <gw-
address> | dhcp }
  debug info
  download { firmware_fromTFTP tftp://ip-address/filename | cfg_fromTFTP
tftp://ip-address/filename }
  logout
  ping <ip_addr> [times <integer (1-255)>] [timeout <integer (1-99)>]
  reboot
  reset config
  save
  show ipif
  show switch
  upload { firmware_toTFTP tftp://ip-address/filename | cfg_toTFTP
tftp://ip-address/filename }
DGS-1210-48>
```

Figure 113 – The ? Command

### **Download**

The **download** command is used to download and install new firmware or a Switch configuration file from a TFTP server.

#### **Syntax**

```
download { firmware_fromTFTP tftp://ip-address/filename | cfg_fromTFTP
tftp://ip-address/filename }
```

#### **Parameters**

Parameter	Description
-----------	-------------

<code>firmware_fromTFTP</code>	Download and install new firmware on the Switch from a TFTP server.
<code>cfg_fromTFTP</code>	Download a switch configuration file from a TFTP server.
<code>tftp://ip-address/</code>	The IP address of the TFTP server.
<code>filename</code>	The filename of the firmware or switch configuration file on the TFTP server. You need to specify the DOS path if the file is not at the root directory of the TFTP server.



**Note:** Switch will reboot after restore and all current configurations will be lost

### Upload

The **upload** command is used to upload the firmware file or a Switch configuration file to a TFTP server.

#### Syntax

```
upload { firmware_toTFTP tftp://ip-address/filename | cfg_toTFTP
tftp://ip-address/filename }
```

#### Parameters

Parameter	Description
<code>firmware_toTFTP</code>	Upload the firmware on the Switch from a TFTP server.
<code>cfg_toTFTP</code>	Specifies that the Switch's current settings will be uploaded to the TFTP server.
<code>tftp://ip-address/</code>	The IP address of the TFTP server.
<code>filename</code>	The filename of the firmware or switch configuration file on the TFTP server. You need to specify the DOS path if the file is not at the root directory of the TFTP server.

### Config ipif System

The **config ipif System** command sets the IP address of the switch.

#### Syntax

```
config ipif System { ipaddress <ip-address> <subnet-mask> gateway <gw-
address> | dhcp }
```

#### Parameter

Parameter	Description
<code>ipaddress &lt;ip-address&gt; &lt;subnet-mask&gt;</code>	The IP address and subnet mask to be created. Users need to specify the address and mask information using the traditional format (for example, 10.1.2.3/255.0.0.0).
<code>gateway &lt;gw-address&gt;</code>	The IP address of the router or gateway.
<code>dhcp</code>	Allows the selection of the DHCP protocol for the assignment of an IP address to the Switch's System IP interface.

### Logout

This command closes the current connection.

#### Syntax

## Logout

### Example

```
DGS-1210-48> logout
```

Figure 114 – The logout command



**NOTE:** Save your configuration changes before logging out.

## Ping

This command checks if another IP address is reachable on the network. You can ping the IP address connected to through the managed VLAN (VLAN 1 by default), as long as there is a physical path between the switch and the target IP equipment. By default, Switch sends five pings to the target IP.

### Syntax

```
ping <ipaddr> [times <integer (1-255)>] [timeout <integer (1-99)>]
```

### Parameter

Parameter	Description
<ipaddr>	The IP address of the target station.
times <integer (1-255)>	Specify how many ping requests will be sent to the target IP address.
timeout <integer (1-99)>	Specify the timeout interval waiting the ping reply for target IP address.

### Example

```
DGS-1210-48> ping 10.90.90.91 times 3 timeout 1
Reply Received From :10.90.90.91, TimeTaken : 20 msec
Reply Received From :10.90.90.91, TimeTaken : 20 msec
Reply Received From :10.90.90.91, TimeTaken : 20 msec

--- 10.90.90.91 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
DGS-1210-48>
```

Figure 115 – The ping command

## Reboot

This command reboots the system. All network connections are terminated and the boot code executes.

### Syntax

```
reboot
```

## Reset

All configurations will be reset to the default settings.

### Syntax

```
reset config
```

## Show ipif

The command displays the current IP address of the switch.

**Syntax****show ipif****Example**

```
DGS-1210-48> show ipif
IP Setting Mode           : Static
IP Address                : 172.17.5.214
Subnet Mask               : 255.255.255.0
Default Gateway          : 172.17.5.254
DGS-1210-48>
```

Figure 116 – The show ipif Command

**Show switch**

The command displays the status of the switch.

**Syntax****show switch****Example**

```
DGS-1210-48> show switch
System name               :
System Contact           :
System Location          :
System up time           : 0 days, 6 hrs, 32 min, 17 secs
System Time              : 01/01/2009 06:32:19
System hardware version  : A1
System firmware version  : 1.00.001
System boot version      : 1.00.000
System Protocol version  : 2.001.004
System serial number     : 1MB1733K0000A
MAC Address              : 00-18-E7-48-85-50
DGS-1210-48>
```

Figure 117 – The show switch Command

**Config account admin password**

The command sets the administrator password.

**Syntax****config account admin password <passwd>****Parameter**

Parameter	Description
<passwd>	The new password of the administrator.

**Save**

The command saves the configuration changes to the memory.

**Syntax****save****Example**

```
DGS-1210-48> save
Building configuration ...
[OK]
DGS-1210-48>
```

Figure 118 – The save Command

**Debug info**

This command displays the ARP table and MAC FDB of the Switch.

**Syntax**

**debug info**

**Example**

```
DGS-1210-48> debug info
% ARP table :

Address          Hardware Address   Type  Interface  Mapping
-----          -
172.17.5.85      00:18:8b:bf:75:30  ARPA  vlanMgmt   Dynamic
172.17.5.254     00:19:5b:14:3d:c4  ARPA  vlanMgmt   Dynamic

% MAC table :

Vlan    Mac Address          Type    Ports
-----  -
1       00:00:00:00:00:26    Learnt  Fa0/4
1       00:00:48:bf:f3:01    Learnt  Fa0/4
1       00:03:1b:66:66:5c    Learnt  Fa0/4
1       00:03:64:00:01:23    Learnt  Fa0/4
1       00:0d:60:cb:6e:5d    Learnt  Fa0/4
1       00:0e:7b:a0:12:97    Learnt  Fa0/4
1       00:0f:3d:a8:88:9b    Learnt  Fa0/4
1       00:0f:ea:f0:0e:1e    Learnt  Fa0/4
1       00:10:db:73:68:31    Learnt  Fa0/4
1       00:11:25:2c:43:c6    Learnt  Fa0/4
1       00:11:25:43:38:83    Learnt  Fa0/4

Total Mac Addresses displayed: 11
DGS-1210-48>
```

Figure 119 – The debug info command

---

## ***Appendix A - Ethernet Technology***

---

This chapter will describe the features of the D-Link Web Smart Switch and provide some background information about Ethernet/Fast Ethernet/Gigabit Ethernet switching technology.

### ***Gigabit Ethernet Technology***

---

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

The increased speed and extra bandwidth offered by Gigabit Ethernet is essential in solving network bottlenecks, which frequently develops as more advanced computer users and newer applications continue to demand greater network resources. Upgrading key components, such as backbone connections and servers to Gigabit Ethernet technology, can greatly improve network response times as well as significantly speed up the traffic between subnets.

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

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

### ***Fast Ethernet Technology***

---

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

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

### ***Switching Technology***

---

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

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

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

## Appendix B - Technical Specifications

### Hardware Specifications

#### Key Components / Performance

- › Switching Capacity:
  - DGS-1210-10P: 20Gbps
  - DGS-1210-16: 32Gbps
  - DGS-1210-24: 48Gbps
  - DGS-1210-48: 96Gbps
- › Max. Forwarding Rate
  - DGS-1210-10P: 14.88Mpps
  - DGS-1210-16: 23.8Mpps
  - DGS-1210-24: 35.7Mpps
  - DGS-1210-48: 71.4Mpps
- › Forwarding Mode: Store and Forward
- › Packet Buffer memory:
  - DGS-1210-10P: 512K Bytes
  - DGS-1210-16: 512K Bytes
  - DGS-1210-24: 512K Bytes
  - DGS-1210-48: 1MBytes
- › DDRII for CPU: 64M Bytes
- › Flash Memory: 16M Bytes

#### Port Functions

- › 1000Base-T ports compliant with the following standards:
  - IEEE 802.3
  - IEEE 802.3u
  - Supports Full-Duplex operations
- › Combo SFP ports compliant with the following standards:
  - IEEE 802.3z
  - Supports Full-Duplex operations
- › SFP transceivers supported
  - DEM-310GT (1000BASE-LX, 10km)
  - DEM-311GT (1000BASE-SX, 550m)
  - DEM-314GT (1000BASE-LH, 50km)
  - DEM-315GT (1000BASE-ZX, 80km)
  - DEM-312GT2 (1000BASE-SX, 2km)
  - DEM-210 (100BASE-FX, 15km)
  - DEM-211 (100BASE-FX, 2km)
- WDM Transceivers Supported:
  - DEM-330T (1000Base-BX,TX-1550/RX-1310nm, 10km)
  - DEM-330R (1000Base-BX,TX-1310/RX-1550nm, 10km)
  - DEM-331T (1000Base-BX,TX-1550/RX-1310nm, 40km)
  - DEM-331R (1000Base-BX,TX-1310/RX-1550nm, 40km)

- DEM-220T (100Base-BX, TX-1550/RX-1310nm, 20km)
- DEM-220R (100Base-BX, TX-1310/RX-1550nm, 20km)

#### Physical & Environment

- › AC input, 100~240 VAC, 50/60Hz, internal universal power supply
- › Acoustic Value:
  - DGS-1210-10P/16/24: 0dB (Fan-less)
  - DGS-1210-48: 46.2dB (Smart Fan)
- › Operation Temperature 0~40°C
- › Storage Temperature -10~70°C
- › Operation Humidity: 10%~95% RH
- › Storage Humidity: 5%~95% RH

#### Emission (EMI) Certifications

- › FCC class A
- › CE Class A
- › VCCI Class A

#### Safety Certifications

- › cUL, LVD

### Features

#### L2 Features

- › Supports up to 8K MAC address
- › Jumbo frame: Supports up to 10,000 bytes
- › IGMP snooping: Supports 256 multicast group
- › 802.1D Spanning Tree
- › 802.1w Rapid Spanning Tree
- › Loopback Detection
- › 802.3ad Link Aggregation: up to 8 groups per device, up to 8 ports per group
- › Port mirroring

#### D-Link Green Technology

- › Power Saving: Enabled by default, save energy in 2 ways:
  - Power Saving by Link Status: Drastically save power when the switch port link is down. For example, no PC connection or the connected PC is powered off.
  - Power Saving by Cable Length: Detects the length of connected RJ-45 cables and adjusts power usage accordingly without affecting performance. Once the RJ-45 connection is less than 20 meters, the switch will reduce the power instead of full power, which is only needed for 100 meters cables.



**VLAN**

- 802.1Q VLAN standard (VLAN Tagging)
- Up to 256 static VLAN groups
- Asymmetric VLAN
- Management VLAN
- Auto-Voice VLAN
- Auto Surveillance VLAN

**QoS (Quality of Service)**

- 802.1p priority, DSCP priority queue mapping
- Up to 4 queues per port
- Supports Strict / WRR mode in queue handling
- Bandwidth Control

**Security**

- 802.1X port-based access control
- Port Security
- IP and MAC ACL
- Broadcast Storm Control
- D-Link Safeguard Engine
- Trusted Host
- ARP Spoofing Prevention
- DHCP Server Screening
- SSL

**Management**

- Web-based GUI or SmartConsole Utility
- D-Link proprietary CLI
- SNMP support
- DHCP client
- Trap setting for destination IP, system events, fiber port events, twisted-pair port events
- Password access control
- Web-based configuration backup / restoration
- Web-based firmware backup/restore
- Firmware upgrade using SmartConsole Utility & Web-based management
- Reset, Reboot

***Appendix C – Rack mount Instructions***

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Safety Instructions - Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:

- A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
  
- B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
  
- C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
  
- D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
  
- E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

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