RG-Switch Web-Based Configuration Guide

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Preface

Thank you for using our products.

Audience

This manual is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

Obtaining Technical Assistance

- Ruijie Networks Website: http://www.ruijienetworks.com/
- Service Email: service_rj@ruijienetworks.com
- Technical Support: http://www.ruijienetworks.com/service.aspx
- Technical Support Hotline: +86-4008-111-000

Related Documents

Documents	Description
Command Reference	Describes the related configuration commands, including command modes, parameter descriptions, usage guides, and related examples.
Hardware Installation and Reference Guide	Describes the functional and physical features and provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors.

Conventions

This manual uses the following conventions:

Convention	Description
boldface font	Commands, command options, and keywords are in **boldface**.

italic font	Arguments for which you supply values are in *italics*.
[ ]	Elements in square brackets are optional.
{ x | y | z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Symbols

ℹ Means reader take note. Notes contain helpful suggestions or references.

⚠ Means reader be careful. In this situation, you might do something that could result in equipment damage or loss of data.

1 Web-Based Configuration

1.1 Overview

A user accesses and employs the Web-based management system for a switch using a web browser like IE. Web-based management involves two parts: Web server and Web client. A web server is integrated into a device to receive and process requests sent from a client (for example, to read a web file or execute a command request) and returns the processing results. Generally, a Web client refers to a web browser like IE.

✓ Currently, this file is applicable to only switches.

1.2 Application

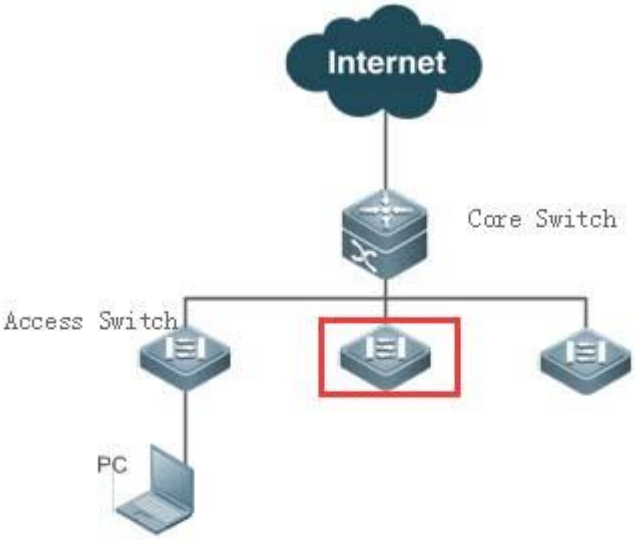
Application	Description
Web-based Management	After finishing relevant configuration, a user can access the web-based management system through a browser.

1.2.1 Web-based Management

Scenario

As shown in the following figure, a user can access an access or aggregation switch with a browser on a PC to manage and configure the device.

Figure 1-1



Note	A user can access the Web-based management system of the switch in the red rectangle if the switch can be pinged from the PC.

Function Deployment

↘ Configuration Environment Requirements

Requirements for Client

- An administrator logs in to the Web-based management system using the web browser on a client to manage the switch. Generally, a client refers to a PC. It may also be other mobile terminal devices like a laptop.
- Browser: IE7.0, IE8.0, IE9.0, IE10.0, IE11.0, Google chrome, Firefox, and some IE kernel-based browsers (for example, 360 security browser) are all supported. Exceptions such as messy code and format errors may occur when other browsers are used.
- Resolution: It is recommended that the resolution be set to 1024*768, 1280*1024, or 1920*1080. Exceptions such as font alignment error and format error may occur after selecting other resolutions.

Server Requirements

- The Web service must be enabled for the switch.
- Login authentication information for Web-based management must be configured for the switch.
- A management IP address must be configured for the switch.

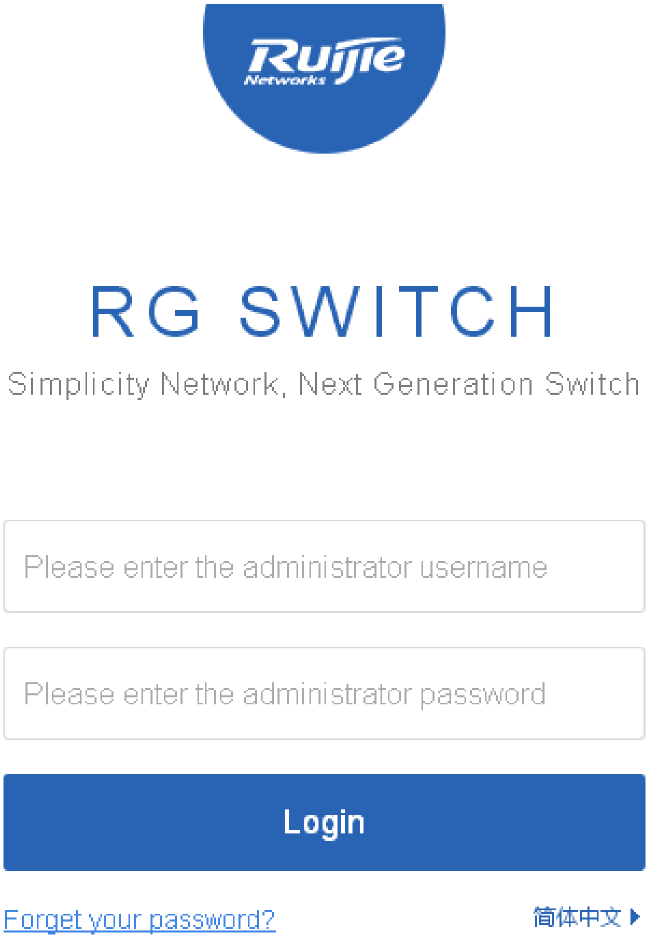
ⓘ For the detailed configuration of the switch on the command line interface (CLI), see Configuring Web Server.

ⓘ Web configuration and CLI configuration can be performed synchronously. It is recommended that the write command be executed after CLI configuration is completed. If any web page is opened, please refresh this page to synchronize web and CLI configuration.

↘ Login

Type http://X.X.X.X (management IP address) in the address bar of a browser and press Enter to access the login page, as shown in the following figure.

Figure 1-2 Login Page


Ruijie Networks
RG SWITCH
Simplicity Network, Next Generation Switch
Please enter the administrator username
Please enter the administrator password
Login
Forget your password?
简体中文 ▸

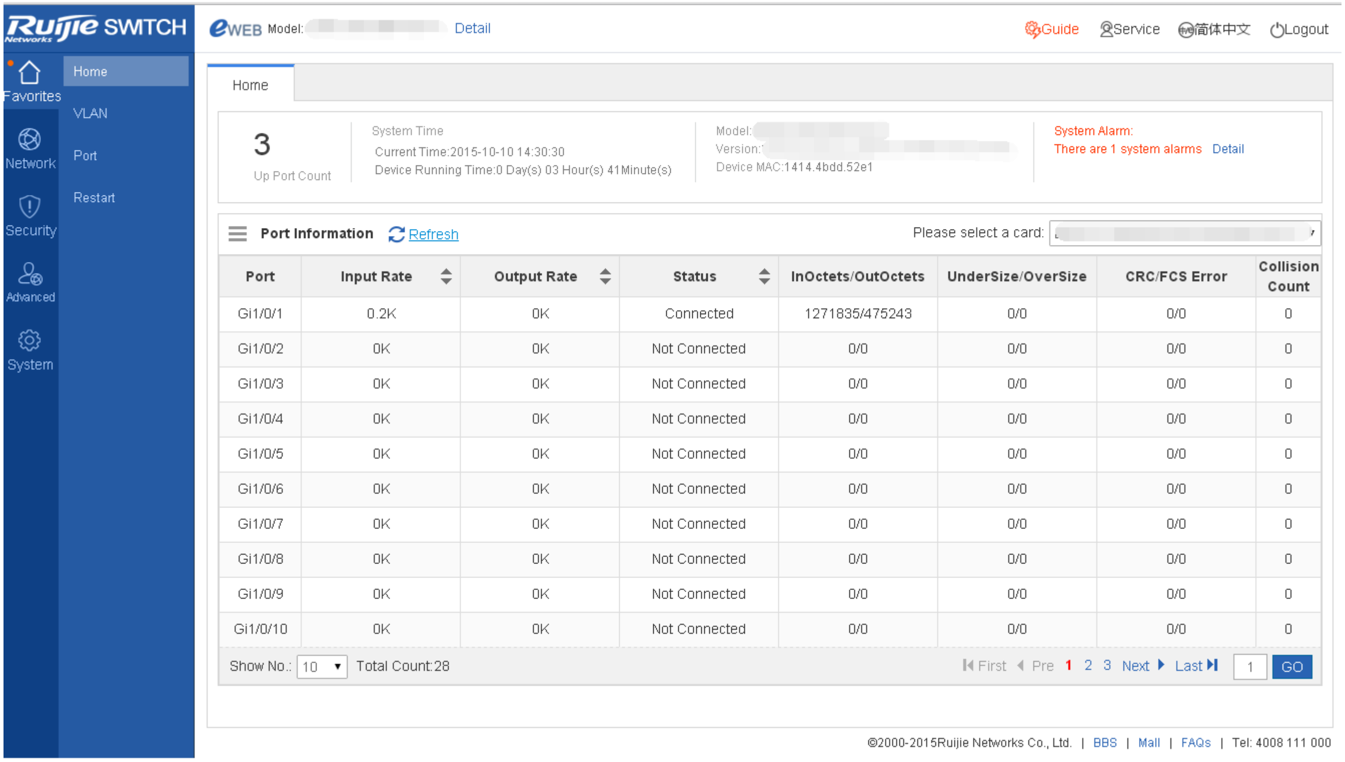
After typing the username and password, click Login. The following table lists the default username and password.

Default Username/Password	Permission Description
admin / admin	Super administrator possessing all permissions.

ℹ The default username and password are not displayed by running the show running-config command.

After passing authentication, the home page of the web-based management platform is displayed, as shown in the following figure.

Figure 1-3 Home Page



3
Up Port Count

System Time
Current Time:2015-10-10 14:30:30
Device Running Time:0 Day(s) 03 Hour(s) 41Minute(s)

Model: [redacted]
Version: [redacted]
Device MAC:1414.4bdd.52e1

System Alarm:
There are 1 system alarms Detail

Port Information Refresh Please select a card: [redacted]

Port	Input Rate	Output Rate	Status	InOctets/OutOctets	UnderSize/OverSize	CRC/FCS Error	Collision Count
Gi1/0/1	0.2K	0K	Connected	1271835/475243	0/0	0/0	0
Gi1/0/2	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/3	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/4	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/5	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/6	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/7	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/8	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/9	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/10	0K	0K	Not Connected	0/0	0/0	0/0	0

Show No.: 10 Total Count:28 First Pre 1 2 3 Next Last 1 GO

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For details on the web page, see Web Management System below.

1.3 Web Management System

Basic Concepts

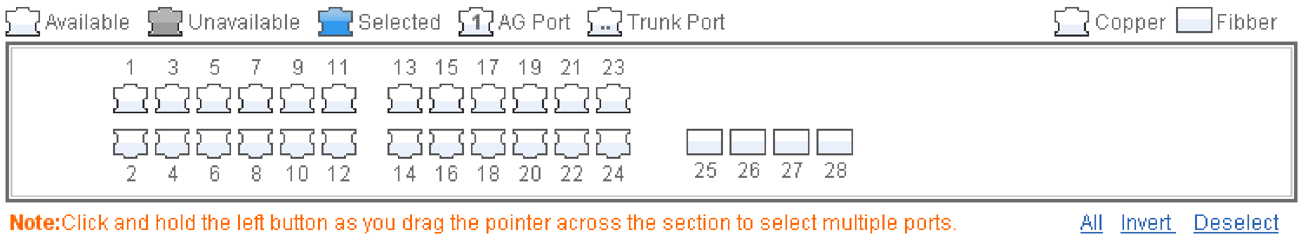
Various Icons and Buttons on the GUI

Icon/Button	Note
Edit	Edit button. Click this icon to edit the currently selected item.
Delete	Delete button.
ON	Status icon.
□	Port available for selection. After you click or select this port, it becomes a selected port.
▩	Port not available for selection.
■	Selected port.
1	Aggregate port. The number in the port indicates the aggregate port number.
..	Trunk port. This port is displayed on the panel on the VLAN Management/VLAN Settings page.

Save	Save button. Click this button to submit and save the input information.
+	Add setting.
×	Delete setting.
All Invert Deselect	Batch processing operations on panel ports. These icons are located on the lower right of the panel. These icons are available only on the panel where selecting multiple ports is allowed.
*	If this mark is displayed behind a text box, the item corresponding to the text box is mandatory.
📖	Note.
⚡	Warning.

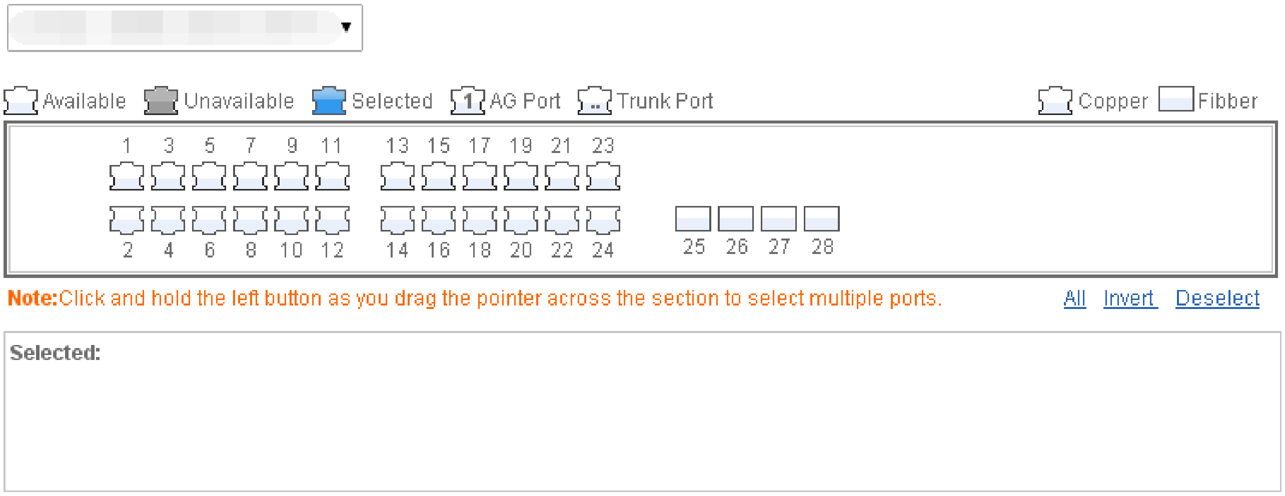
↘ System Operations

1) Standalone Device Panel



Note:Click and hold the left button as you drag the pointer across the section to select multiple ports.

2) VSU Device Panel



Note:Click and hold the left button as you drag the pointer across the section to select multiple ports.

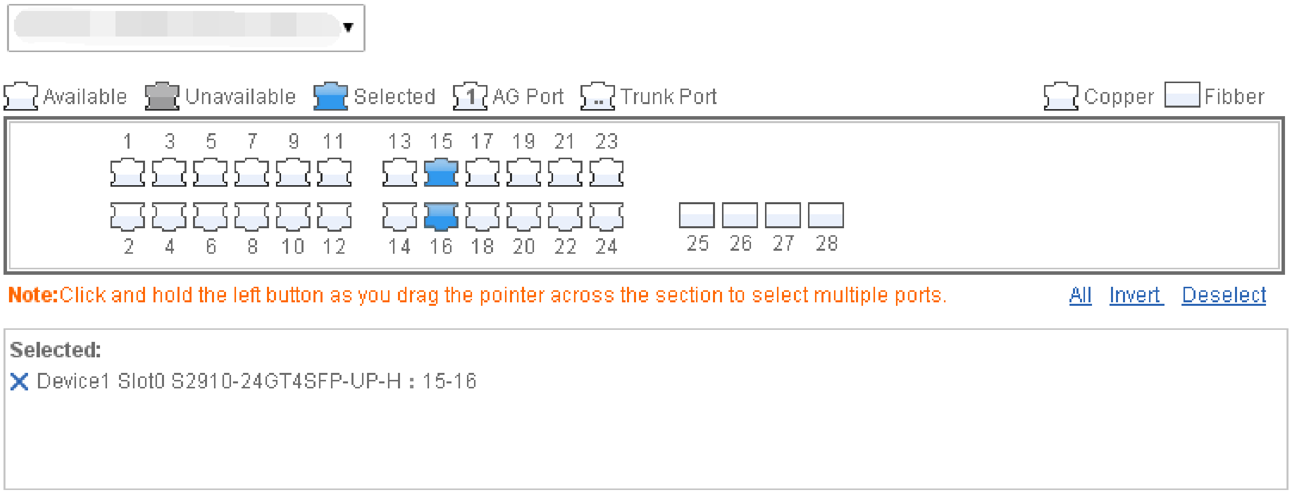
Selected:

- Panel operations

Click to select a port or move the cursor to select multiple ports on the panel to change available port(s) into selected port(s). To add a setting on a selected port, for example, add port description, configure port mirroring, and configure port rate limiting. Selected ports are arranged in the boxes in the lower section of the port panel by slots.

1) Selected port on standalone device

2) Selected port on a VSU device



Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

✕ Device1 Slot0 S2910-24GT4SFP-UP-H : 15-16

Features

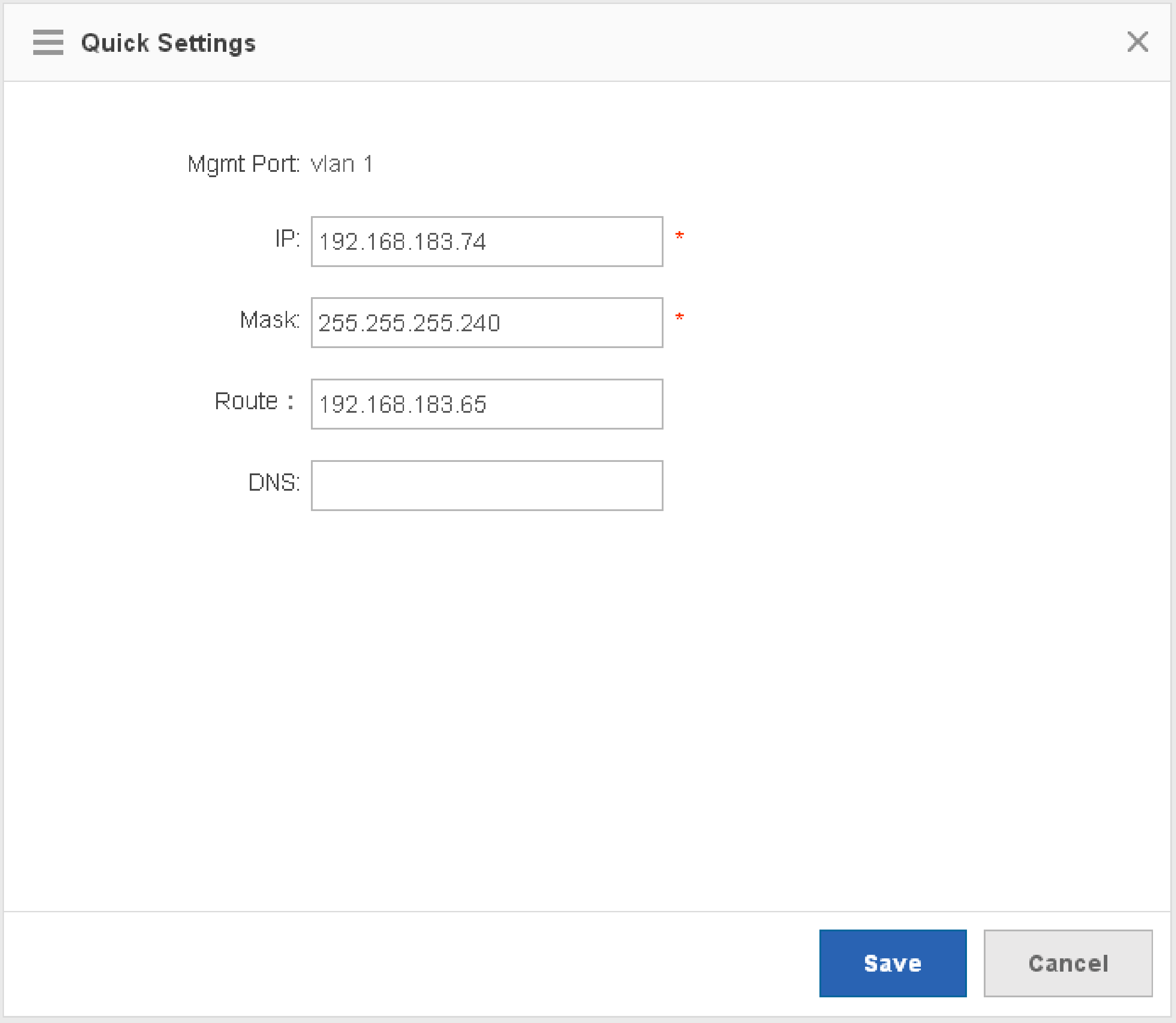
The following table describes the functions in the secondary menu on the left of the Web page.

Feature	Description
Home Page	For viewing port information and device configuration.
VLAN	Used to set the VLAN and Trunk ports.
Quick Configuration	Used for quickly performing VLAN configuration or other configurations.
Port	Used to perform basic settings on a port and configure port aggregation, port mirroring, and port rate limiting.
Restart	For restarting the device.
MAC Address	For configuring the static address and filtering address.
'Routing	Used to configure the route.
STP	Used to configure basic STP information, STP ports and RLDP.
IGMP Snooping	Used to configure IGMP Snooping.
DHCP Relay	Used to configure DHCP relay.
Authentication	For configuring Eportal authentication and enabling advanced settings.
DHCP Snooping	Used to configure DHCP Snooping.
Anti-ARP-Attack	Used to perform anti-ARP-spoofing settings, ARP check settings, DAI settings, and ARP entry settings.
IP Source Guard	Used to perform port settings and user binding.
Port Security	Used to perform basic settings and security binding.
NFPP	Used to view the content related to NFPP anti-attack.
Storm Control	Used to perform storm control.
Port Protection	Used to configure port protection.

DHCP	Used to perform DHCP settings and static address allocation and access the client list.
ACL	Used to set the ACL list and ACL time and apply ACL.
QoS	Used to perform classification setting, policy setting, and stream setting.
System Settings	Used to set the system time, modify passwords, restart the system, restore to default factory settings, configure enhanced functions, and set the SNMP and DNS.
System Upgrade	Used to perform local upgrade and online upgrade.
Administrator Permissions	Used to set the administrator permissions.
System Logging	Used to configure the log server and view system logs.
Network Detection	Used to configure ping, Traceroute (tracert.exe) and cable detection.

1.3.1 Quick Settings

Figure 1-4 Quick Settings



Quick Settings

Mgmt Port: vlan 1

IP: 192.168.183.74 *

Mask: 255.255.255.240 *

Route : 192.168.183.65

DNS:

Select the management port mode, configure the VLAN ID, IP address, subnet mask, default gateway, and DNS server, and click **Save**. If the message ”Configuration succeeded.” is displayed, the operation is successful.

1.3.2 Favorites

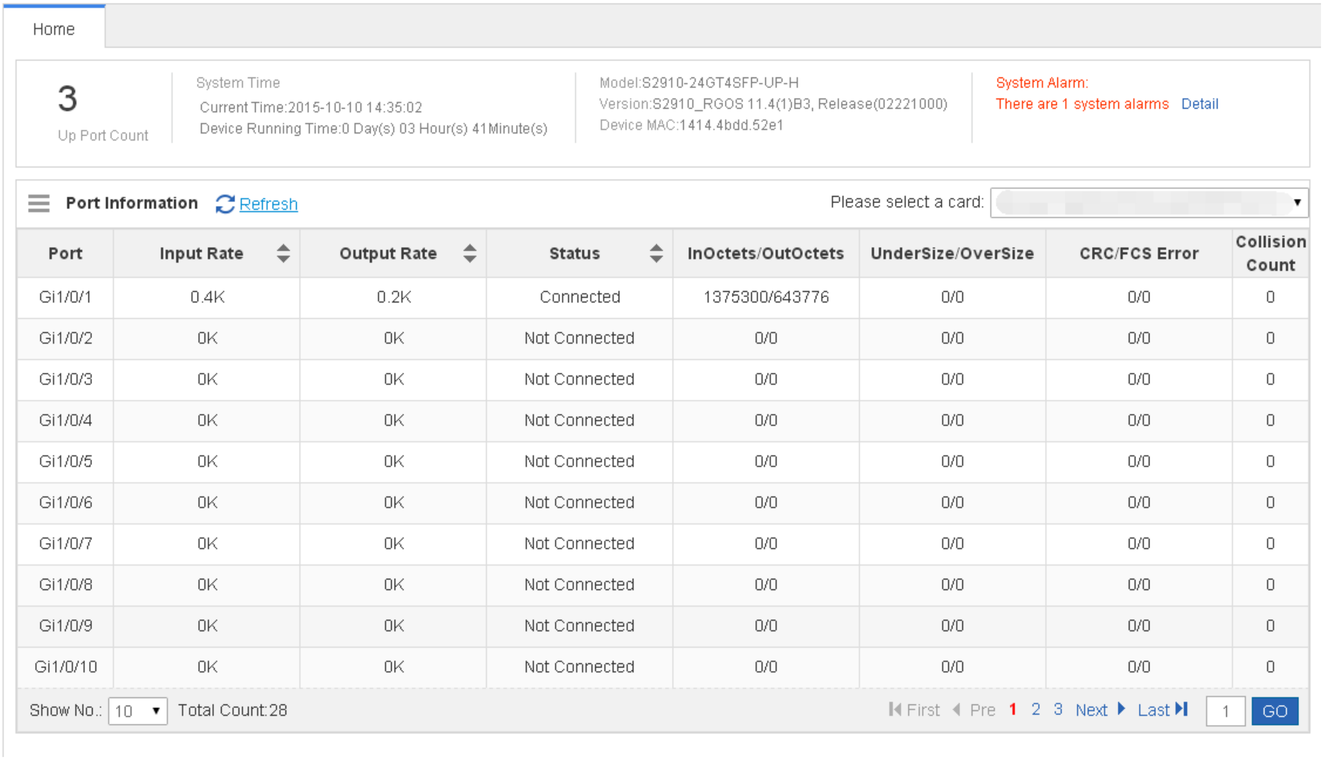
You can access secondary menus through the primary menu Favorites, including Home page, VLAN, Port and Restart.

1.3.2.1 Home Page

Device configuration, basic port information, and port statistics are displayed on the home page.

The following figure shows the home page.

Figure 1-5 Home Page



3
Up Port Count

System Time
Current Time:2015-10-10 14:35:02
Device Running Time:0 Day(s) 03 Hour(s) 41Minute(s)

Model:S2910-24GT4SFP-UP-H
Version:S2910_RGOS 11.4(1)B3, Release(02221000)
Device MAC:1414.4bdd.52e1

System Alarm:
There are 1 system alarms Detail

Port Information Refresh

Please select a card:

Port	Input Rate	Output Rate	Status	InOctets/OutOctets	UnderSize/OverSize	CRC/FCS Error	Collision Count
Gi1/0/1	0.4K	0.2K	Connected	1375300/643776	0/0	0/0	0
Gi1/0/2	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/3	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/4	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/5	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/6	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/7	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/8	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/9	0K	0K	Not Connected	0/0	0/0	0/0	0
Gi1/0/10	0K	0K	Not Connected	0/0	0/0	0/0	0

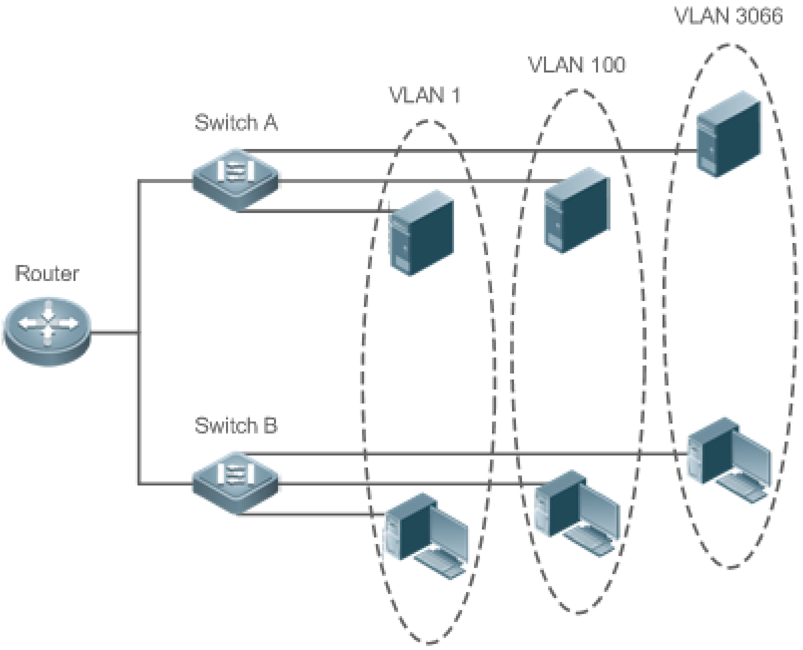
Show No.: 10 Total Count:28

1.3.2.2 VLAN

A Virtual Local Area Network (VLAN) is a logical network created based on a physical network. A VLAN can be categorized into Layer-2 networks of the OSI model.

A VLAN has the same properties as a common LAN, except for physical location limitation. Unicast, broadcast and multicast frames of Layer 2 are forwarded and transmitted within a VLAN, keeping traffic segregated.

We may define a port as a member of a VLAN, and all terminals connected to this port are parts of a virtual network that supports multiple VLANs. You do not need to adjust the network physically when adding, removing and modifying users. Communication among VLANs is realized through Layer-3 devices, as shown in the following figure.



The VLANs supported by Ruijie products comply with the IEEE802.1Q standard. A maximum of 4094 VLANs (VLAN ID 1-4094) are supported, among which VLAN 1 cannot be deleted.

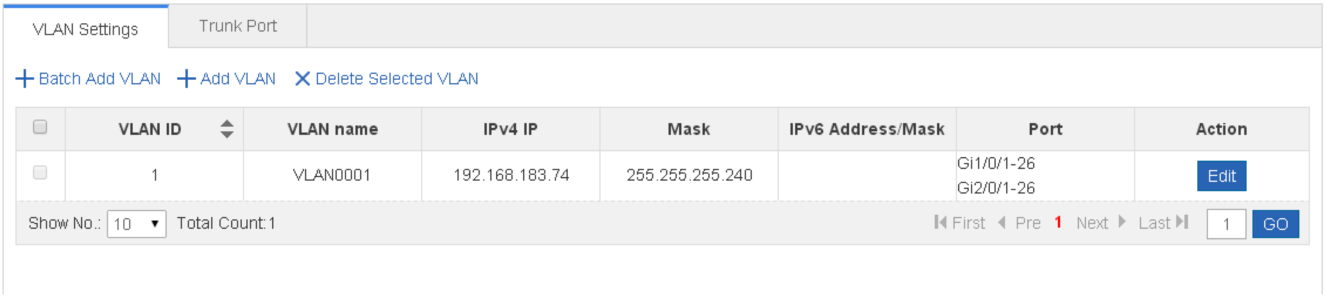
A trunk port can belong to multiple VLANs that receives and sends frames belonging to multiple VLANs. Generally, it is used to connect devices or computers.

Two tab pages are available on the VLAN page: VLAN Settings and Trunk Port.

VLAN Settings

The following figure shows the VLAN Settings page.

Figure 1-6 VLAN Settings



□	VLAN ID	VLAN name	IPv4 IP	Mask	IPv6 Address/Mask	Port	Action
□	1	VLAN0001	192.168.183.74	255.255.255.240		Gi1/0/1-26 Gi2/0/1-26	Edit

Show No.: 10 Total Count:1

- Adding VLAN

To add a VLAN, you must input the VLAN ID and input other information as required. Afterwards, click **Save**. The newly added VLAN is displayed in the VLAN list after the ”Add succeeded.” message is displayed.

- Editing a VLAN

After clicking **Edit** in the Action column, information from the corresponding VLAN is displayed on the page. After editing the information, click **Save**. The ”Edit succeeded.” message is then displayed.

- Deleting a VLAN

1) Select multiple VLANs from the VLAN list and click **Delete Selected VLAN** to delete the VLANs in batches.

2) Click **Delete** in the **Action** column, the message, “Are you sure you want to delete the VLAN?” is then displayed.

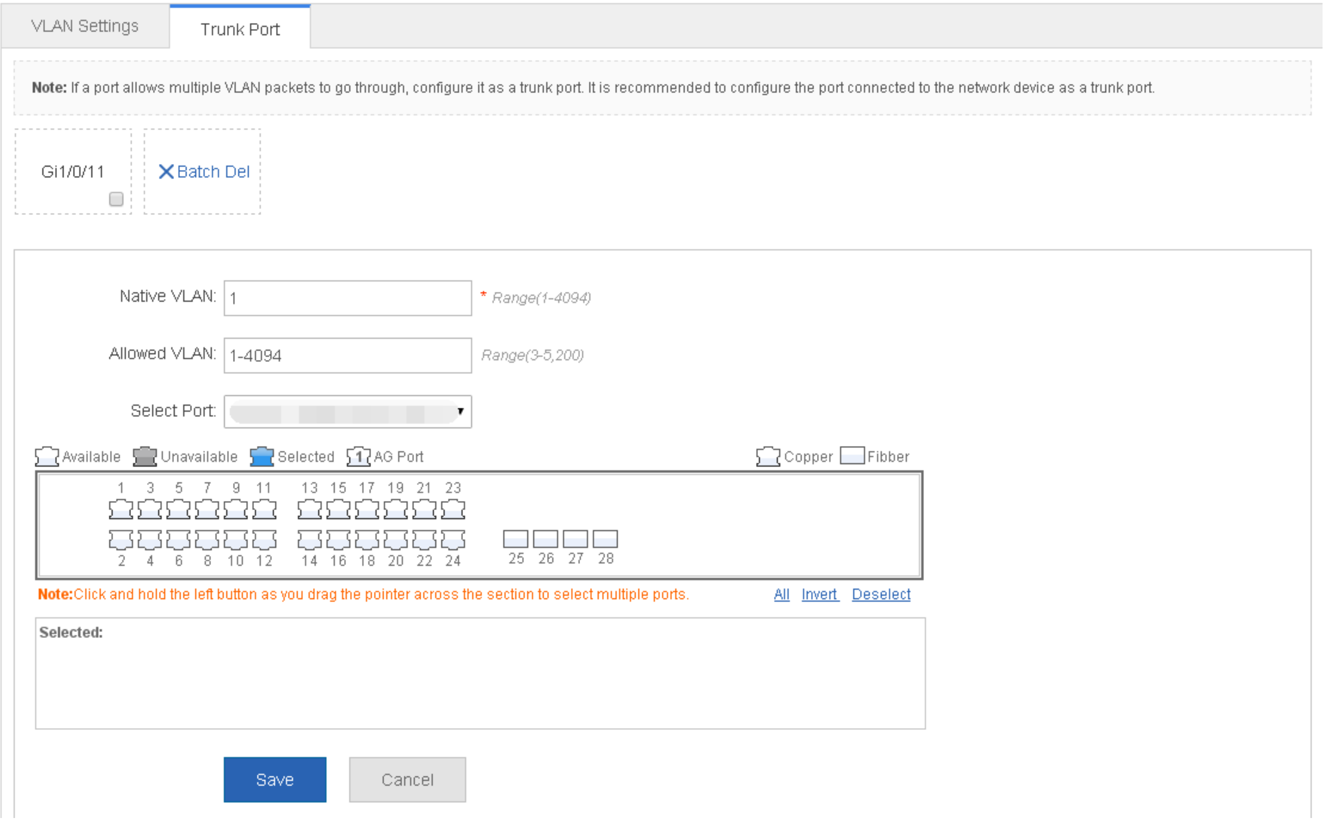
After confirming the operation, the message, “Delete succeeded.” is displayed. VLAN 1 is the default VLAN and cannot be deleted.

VLAN 1 is the default management VLAN. This VLAN can only be modified and cannot be deleted. Before changing the IP address of VLAN 1, ensure that the new IP address is reachable. After the change is successful, the web page automatically jumps to the login page and the user must log in again. If the web page does not jump to the login page and a "page not found" message is displayed, it is possible that the IP address is not reachable. In this case, check the network connection.

Trunk Port

The following figure shows the Trunk Port page.

Figure 1-7 Trunk Port



Note: If a port allows multiple VLAN packets to go through, configure it as a trunk port. It is recommended to configure the port connected to the network device as a trunk port.

Native VLAN: 1 * Range(1-4094)

Allowed VLAN: 1-4094 Range(3-5,200)

Select Port:

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

- Adding a trunk port

Select a panel port, specify Native VLAN and Allowed VLAN (for example, 3-5, 8, and 10), and click **Save**. The ”Configuration succeeded.” message is displayed. In this case, the newly added trunk port is displayed in the trunk port list.

- Editing a trunk port

Click a certain trunk port in the trunk port list, and the information of this trunk port is displayed on the page. After editing the information, click **Edit**. The ”Configuration succeeded.” message is displayed.

- Deleting trunk port

After moving the cursor to a specific trunk port in the trunk port list click **Delete**. The message, ”Are you sure you want to delete the trunk port?” is then displayed.

After confirming the operation, a ”Delete succeeded.” message is displayed.

- Deleting trunk ports in batches

After selecting the trunk ports to be deleted (in the trunk port list) click **Batch Del**. The message, ”Are you sure you want to delete the trunk ports?” is displayed.

After confirming the operation, a ”Delete succeeded.” message is displayed.

1.3.2.3 Port

A port is a physical entity that is used for connections on the network devices.

Speed

Generally, the speed of an Ethernet physical port is determined through negotiation with the peer device. The negotiated speed can be any speed within the interface capability. You can also configure any speed within the interface capability for the Ethernet physical port on the Web page.

When you configure the speed of an AP port, the configuration takes effect on all of its member ports. (All these member ports are Ethernet physical ports.)

Interface Name

You can configure the name of an interface based on the purpose of the interface. For example, if you want to assign GigabitEthernet 1/1 for exclusive use by user A, you can describe the interface as "Port for User A."

Administrative Status

You can configure the administrative status of an interface to disable the interface as required. If the interface is disabled, no frame will be received or sent on this interface, and the interface will loss all its functions. You can enable a disabled interface by configuring the administrative status of the interface. Two types of interface administrative status are defined: Up and Down. The administrative status of an interface is Down when the interface is disabled, and Up when the interface is enabled.

Aggregated Port

An aggregated port (AP) is used to bundle multiple physical links into one logical link to increase the link bandwidth and improve connection reliability. An AP port supports load balancing, namely, distributes load evenly among member links.

Besides, an AP port realizes link backup. When a member link of the AP port is disconnected, the load carried by the link is automatically allocated to other functional member links. A member link does not forward broadcast or multicast packets to other member links.

Duplex Mode

The duplex mode of an Ethernet physical port or AP port can be configured as follows:

- Set the duplex mode of the interface to full-duplex so that the interface can receive packets while sending packets.
- Set the duplex mode of the interface to half-duplex so that the interface can receive or send packets at a time.
- Set the duplex mode of the interface to auto-negotiation so that the duplex mode of the interface is determined through auto negotiation between the local interface and peer interface.

Load Balancing

AP ports segregate packet flows by using load balancing algorithms based on packet features, such as the source and destination MAC addresses, source and destination IP addresses, and source and destination port numbers. The packet flow with the consistent feature is transmitted by one member link, and different packet flows are evenly distributed to member links. For example, in source MAC address-based load balancing, packets are distributed to the member links based on the source MAC addresses of the packets. Packets with different source MAC addresses are evenly distributed to member links. Packets with the identical source MAC address are forwarded by one member link.

Currently, there are several AP load balancing modes as follows:

- Source MAC address or destination MAC address
- Source MAC address + destination MAC address
- Source IP address or destination IP address
- Source IP address + destination IP address

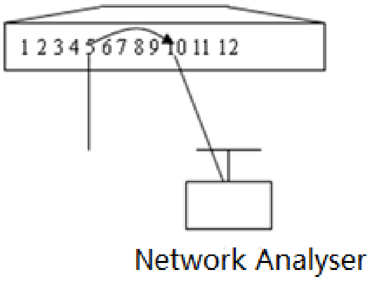
Different products may support different load balancing algorithms.

SPAN

The Switched Port Analyzer (SPAN) is to copy packets of a specified port to another switch port that is connected to a network monitoring device, so as to achieve network monitoring and troubleshooting.

All input and output packets of a source port can be monitored through SPAN. For example, as shown in the following figure, all packets on Port 5 are mapped to Port 10, and the network analyzer connected to Port 10 receives all packets that pass through Port 5.

Figure 1-8 SPAN Configuration Instance



The SPAN function is mainly applied in network monitoring and troubleshooting scenarios, to monitor network information and rectify network faults.

Source Port

A source port is called a monitored port. In a SPAN session, data streams of the source port are monitored for network analysis and troubleshooting. In a single SPAN session, users can monitor the input, output, and bidirectional data streams, and the number of source ports is not restricted.

A source port has the following features:

- A source port can be a switched port, routed port, or AP.
- A source port cannot be used as a destination port simultaneously.
- A source port and a destination port can belong to the same VLAN or different VLANs.

Destination Port

A SPAN session has one destination port (called a monitoring port) for receiving packets copied from a source port.

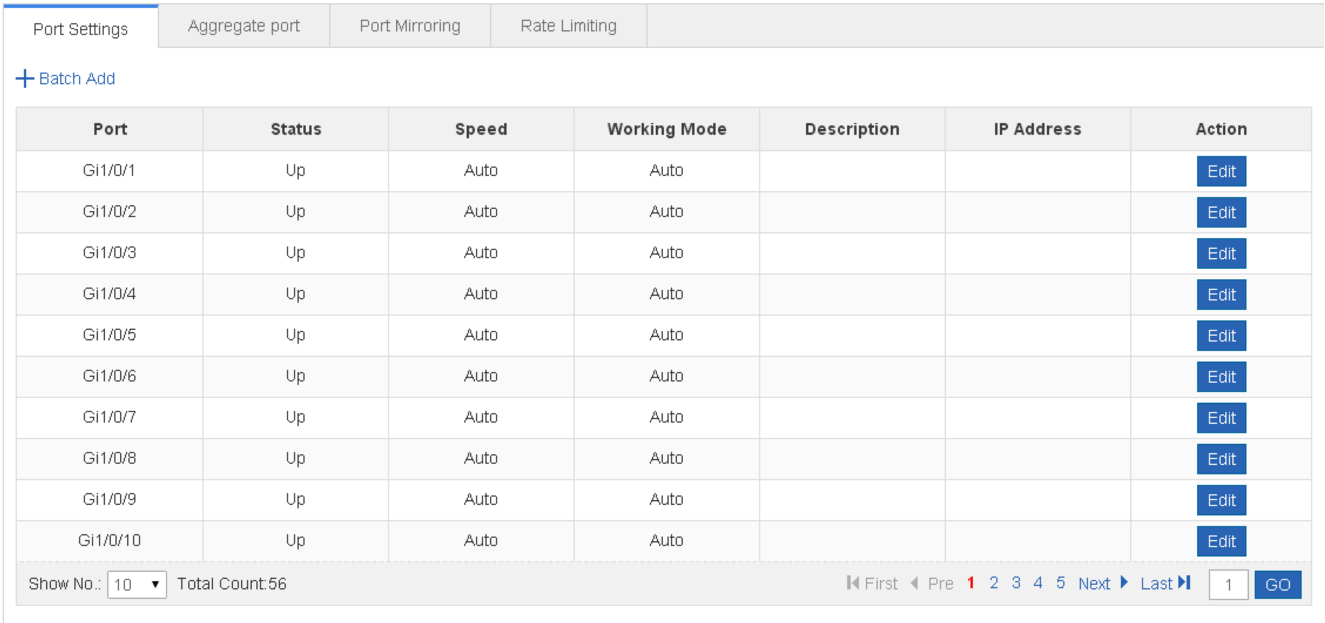
A destination port has the following features:

- A destination port can be a switched port, routed port, or AP.
- A destination port cannot be used as a source port simultaneously.

The Port menu allows you to perform basic settings on a port and configure port aggregation, port mirroring, and port rate limiting.

↘ Basic Settings

Figure 1-9 Basic Settings



Port	Status	Speed	Working Mode	Description	IP Address	Action
Gi1/0/1	Up	Auto	Auto			Edit
Gi1/0/2	Up	Auto	Auto			Edit
Gi1/0/3	Up	Auto	Auto			Edit
Gi1/0/4	Up	Auto	Auto			Edit
Gi1/0/5	Up	Auto	Auto			Edit
Gi1/0/6	Up	Auto	Auto			Edit
Gi1/0/7	Up	Auto	Auto			Edit
Gi1/0/8	Up	Auto	Auto			Edit
Gi1/0/9	Up	Auto	Auto			Edit
Gi1/0/10	Up	Auto	Auto			Edit

Show No.: 10 Total Count:56

- Basic port settings

Select the port for configuring, and then select Status, Speed, and Working Mode. “Keep” indicates that the original configuration is retained. During batch setting, you can select “Keep” to implement batch setting for one or two items.

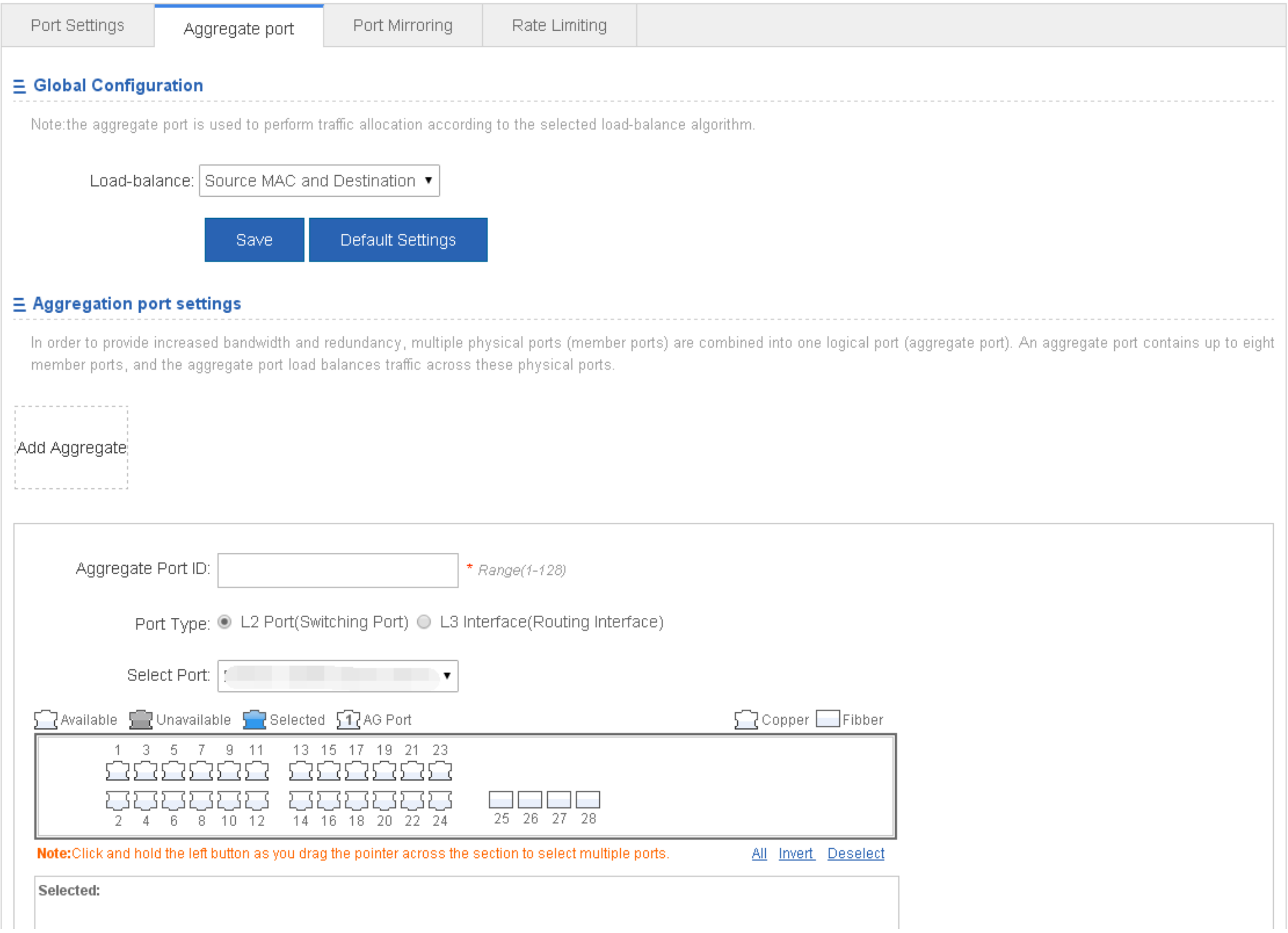
- Editing port

After you click **Edit** in the **Action** column, the information of the corresponding port is displayed on the page. After editing the information, click **Save**. A ”Configuration succeeded.” message is displayed.

Aggregate Port

The following figure shows the Aggregate port page.

Figure1-10 Aggregate Port



Global Configuration

Note:the aggregate port is used to perform traffic allocation according to the selected load-balance algorithm.

Load-balance: Source MAC and Destination ▾

Aggregation port settings

In order to provide increased bandwidth and redundancy, multiple physical ports (member ports) are combined into one logical port (aggregate port). An aggregate port contains up to eight member ports, and the aggregate port load balances traffic across these physical ports.

Aggregate Port ID: * Range(1-128)

Port Type: ● L2 Port(Switching Port) ○ L3 Interface(Routing Interface)

Select Port: ▾

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

- Adding aggregate port

After specifying Aggregate Port ID and selecting the member port, click **Add**. A “Configuration succeeded.” message is displayed. The newly added aggregate port is displayed on the panel.

- Editing an aggregate port

The aggregate ports displayed on the panel are unavailable ports. To edit them, you can click a certain aggregate port in the aggregate port list. Afterwards, the member port becomes a selected port. Click this port to deselect it. Afterwards, you can click **Edit** to modify the aggregate port.

- Deleting an aggregate port

After you move the cursor to an aggregate port in the aggregate port list and click **Delete**, the message, ”Are you sure you want to delete the aggregate port?” is displayed. After confirming the operation, the aggregate port becomes an available port on the panel.

- Deleting aggregate ports in batches

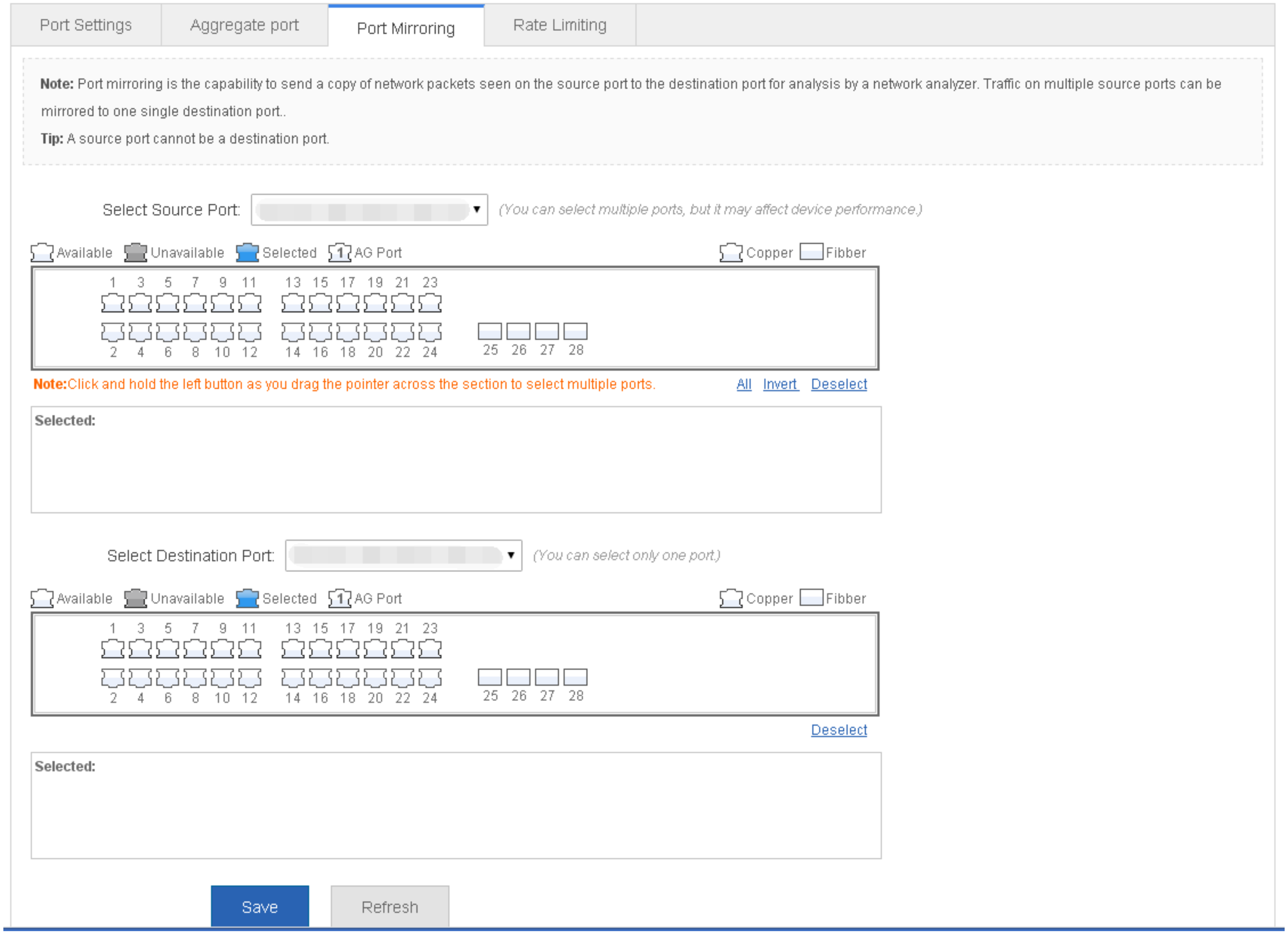
After you select the aggregate ports to be deleted in the aggregate port list and click **Batch Del**, an “Are you sure you want to delete the aggregate port?” message is displayed. After you confirm the operation, these aggregate ports become available ports on the panel.

The port enabled with ARP check, anti-ARP-spoofing, or MAC VLAN and the monitoring port in port mirroring cannot be added to the aggregate port. They are displayed as unavailable ports on the panel. After the cursor is moved to an unavailable port, a message is displayed to indicate that a function has been enabled for the port, so the port is unavailable.

Port Mirroring

The following figure shows the Port Mirroring page.

Figure 1-11 Port Mirroring



Note: Port mirroring is the capability to send a copy of network packets seen on the source port to the destination port for analysis by a network analyzer. Traffic on multiple source ports can be mirrored to one single destination port..

Tip: A source port cannot be a destination port.

Select Source Port: ▾ *(You can select multiple ports, but it may affect device performance.)*

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

Select Destination Port: ▾ *(You can select only one port.)*

Selected:

Initially, the Port Mirroring page is in an edit state because only one mirroring port is allowed to be set on the Web. Two panels are available on the page. The port selected from the upper panel will serve as a source port (mirrored port, multiple mirrored ports are allowed). Only one port can be selected from the lower panel to serve as the destination port (mirroring port). After selecting or modifying a port on the panel, click **Save**. The “Configuration succeeded.” message is displayed.

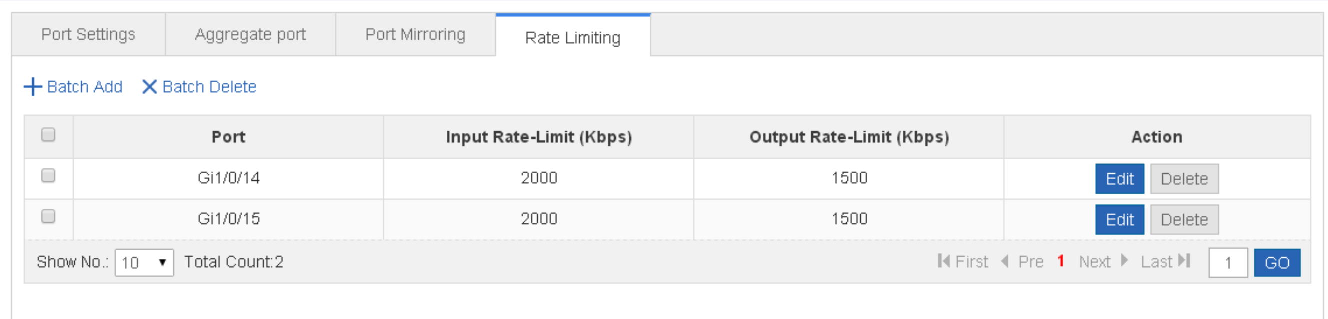
The current port mirroring status is displayed on the panel, which is in edit state. If you do not want to edit a port after modifying it, click Refresh to make the panel display the current status of port mirroring.

⚠ The member port of the aggregate port cannot serve as a destination or source port. A port cannot serve as a destination port and source port at the same time.

Rate Limiting

The following figure shows the Rate Limiting page.

Figure 1-12 Rate Limiting



□	Port	Input Rate-Limit (Kbps)	Output Rate-Limit (Kbps)	Action
□	Gi1/0/14	2000	1500	Edit Delete
□	Gi1/0/15	2000	1500	Edit Delete

Show No.: 10 Total Count:2

- Adding a rate limiting port

To add a rate limiting port, you must specify at least the input rate limit or output rate limit, and click **Save**. The new rate limiting port is displayed in the rate limiting port list after a "Configuration succeeded." message is displayed.

- Editing rate limiting port

After clicking **Edit** in the Action column, the information of the corresponding rate limiting port is displayed on the page. After editing the information, click **Save**. The "Configuration succeeded." message is displayed.

- Deleting rate limiting port

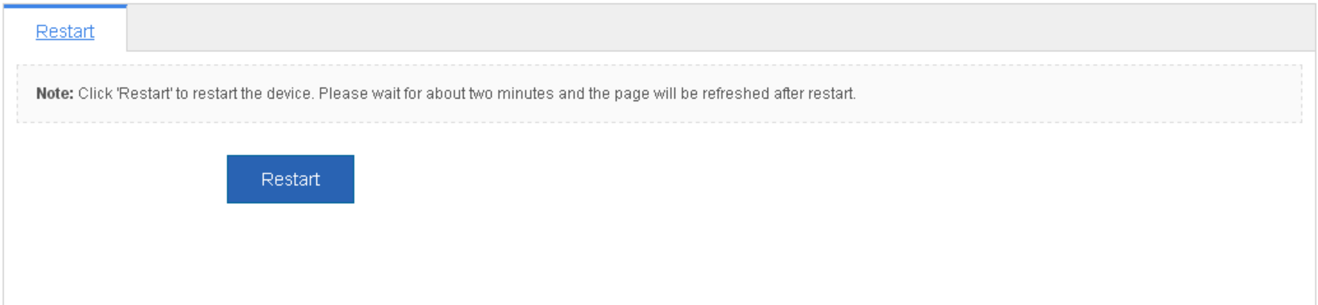
1) Select multiple ports from the rate limiting port list and click **Batch Delete** to delete the ports in batches.

2) After clicking **Delete** in the **Action** column, the message, "Are you sure you want to delete the port configuration?" is displayed. After confirming the operation, a "Delete succeeded." message is displayed.

1.3.2.4 Restart

The following figure shows the Restart page.

Figure 1-13 Restart



Note: Click 'Restart' to restart the device. Please wait for about two minutes and the page will be refreshed after restart.

After clicking **Restart,** the message, "Are you sure you want to restart the device?" is displayed.

After confirming the operation, the device is restarted. Restart takes several minutes. Please be patient. The page is refreshed automatically after the device is restarted.

1.3.3 Network

Secondary menus can be accessed through the primary menu Network, including MAC Address, Routing, STP, IGMP Snooping, Authentication and DHCP Relay.

1.3.3.1 MAC Address

A media access control address (MAC address) of a computer is a unique identifier assigned to network interfaces for communications at the data link layer of a network segment. MAC addresses are used as a network address for most IEEE 802 network technologies, including Ethernet and Wi-Fi. Logically, MAC addresses are used in the media access control protocol sub-layer of the OSI reference model.

A static address is a manually configured MAC address. A static address is the same as a dynamic address in terms of function. However, you can only manually add and delete a static address rather than learn and age out a static address. A static address is stored in the configuration file and will not be lost even if the device restarts.

By configuring the static address manually, you can bind the MAC address for the network device with the interface in the MAC address table.

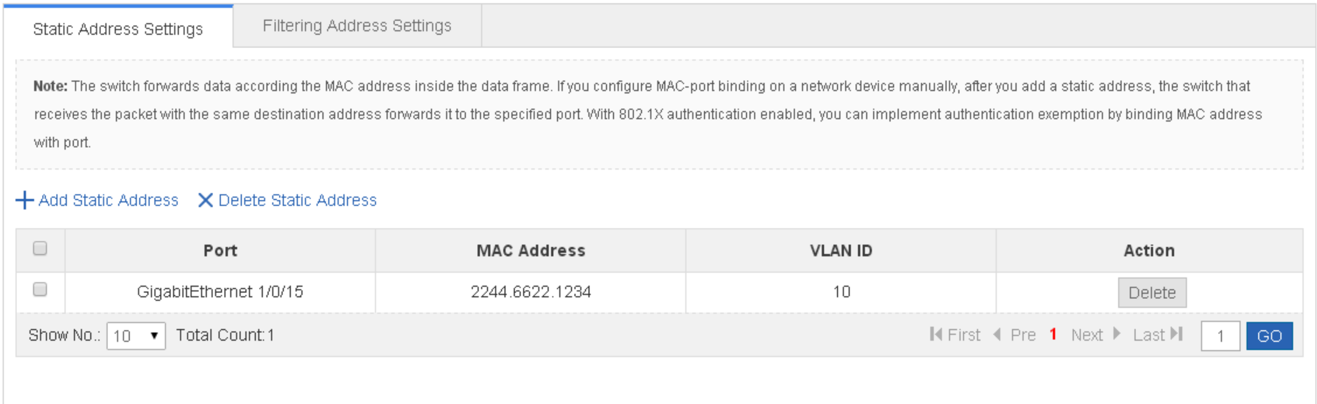
A filtering address is a manually configured MAC address when the device receives the packets from a filtering address, it will directly discard them. You can only manually add and delete a filtering address rather than age it out. A filtering address is stored in the configuration file and will not be lost even if the device restarts.

If you want the device to filter some invalid users, you can specify their source MAC addresses as filtering addresses. Consequently, these invalid users cannot communicate with outside through the device.

Two tab pages are available on the MAC Address page: Static Address Settings and Filtering Address Settings.

↘ Static Address Settings

Figure 1-14 Static Address Settings



Note: The switch forwards data according the MAC address inside the data frame. If you configure MAC-port binding on a network device manually, after you add a static address, the switch that receives the packet with the same destination address forwards it to the specified port. With 802.1X authentication enabled, you can implement authentication exemption by binding MAC address with port.

□	Port	MAC Address	VLAN ID	Action
□	GigabitEthernet 1/0/15	2244.6622.1234	10	Delete

- Adding Static Addresses

To add a static address, input the MAC address, VLAN ID and select a port, and then click **Save**. The newly added static address is displayed in the address list after the ”Configuration succeeded.” message is displayed.

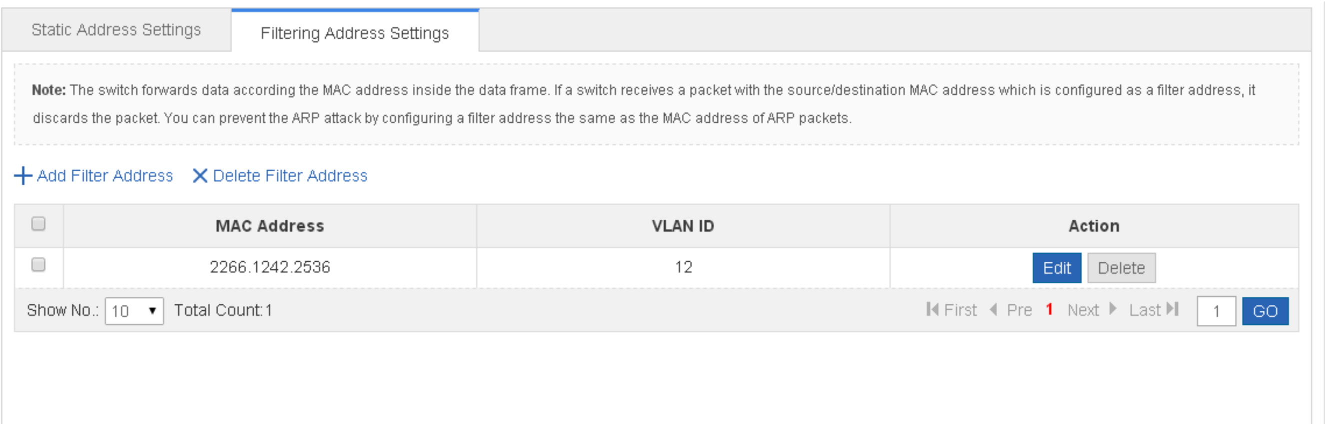
- Deleting Static Address

1) You can select multiple static addresses and click **Delete Static Address** to delete the addresses in batches.

2) After clicking **Delete** in the Action column, the message, “Are you sure you want to delete the static address?” is displayed. After confirming the operation, a ”Delete succeeded.” message is displayed.

↘ Filtering Address Settings

Figure 1-15 Filtering Address Settings



Note: The switch forwards data according the MAC address inside the data frame. If a switch receives a packet with the source/destination MAC address which is configured as a filter address, it discards the packet. You can prevent the ARP attack by configuring a filter address the same as the MAC address of ARP packets.

□	MAC Address	VLAN ID	Action
□	2266.1242.2536	12	Edit Delete

Show No.: 10 ▾ Total Count:1

- Adding Filtering Address

To add a filtering address, input the MAC address and VLAN ID, and then click **Save**. The newly added filtering address is displayed in the address list after a ”Configuration succeeded.” message is displayed.

- Editing Filtering Address

After clicking **Edit** in the Action column, the information of the corresponding filtering address is displayed on the page. After editing the information, click **Save**, the ”Configuration succeeded.” message is then displayed.

- Deleting Filtering Address

1) You can select multiple filtering addresses and click **Delete Filter Address** to batch delete addresses.

2) After you click **Delete** in the Action column, an “Are you sure you want to delete the filter address?” message is displayed. After you confirm the operation, the ”Delete succeeded.” message is displayed.

1.3.3.2 Routing

Routing is the process of selecting a path for traffic in a network, or between or across multiple networks.

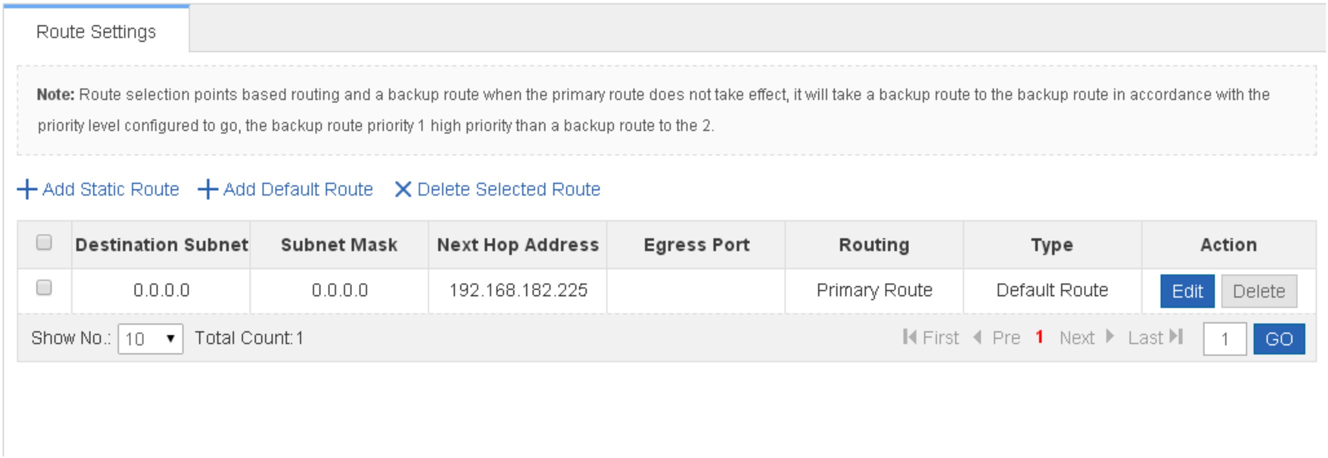
Static routing is a form of routing that occurs when a router uses a manually-configured routing entry. In many cases, static routes are manually configured by a network administrator by adding in entries into a routing table, though this may not always be the case.

Default route is a setting on a computer that defines the packet forwarding rule to use when no specific route can be determined for a given Internet Protocol (IP) destination address. All packets for destinations not established in the routing table are sent via the default route.

The Route Settings page allows you to manage routes.

The following figure shows the Route Settings page.

Figure 1-16 Route Settings



Note: Route selection points based routing and a backup route when the primary route does not take effect, it will take a backup route to the backup route in accordance with the priority level configured to go, the backup route priority 1 high priority than a backup route to the 2.

□	Destination Subnet	Subnet Mask	Next Hop Address	Egress Port	Routing	Type	Action
□	0.0.0.0	0.0.0.0	192.168.182.225		Primary Route	Default Route	Edit Delete

- Adding static routes

To add a static route, IP Type, Destination Subnet, Subnet Mask, and Next Hop Address must be set. Afterwards, click **Save**. The newly added route is displayed in the route list after a “Save succeeded.” message is displayed.

- Editing routes

After clicking **Edit** in the **Action** column, information for the corresponding route is displayed on the page. After editing the information, click **Save**. The message, ”Save succeeded.” is displayed.

- Deleting routes

1) Multiple routes can be selected from the route list. Click **Delete Selected Route** to batch delete routes.

2) After clicking **Delete** in the **Action** column, the message, “Are you sure you want to delete the route?” is displayed.

After confirming the operation, the message, ”Delete succeeded.” is displayed.

- Adding default routes

To add a default route, you must set IP Type and Next Hop Address. Afterwards, click **Save**. The newly added route is displayed in the route list after the ”Save succeeded.” message is displayed.

1.3.3.3 STP

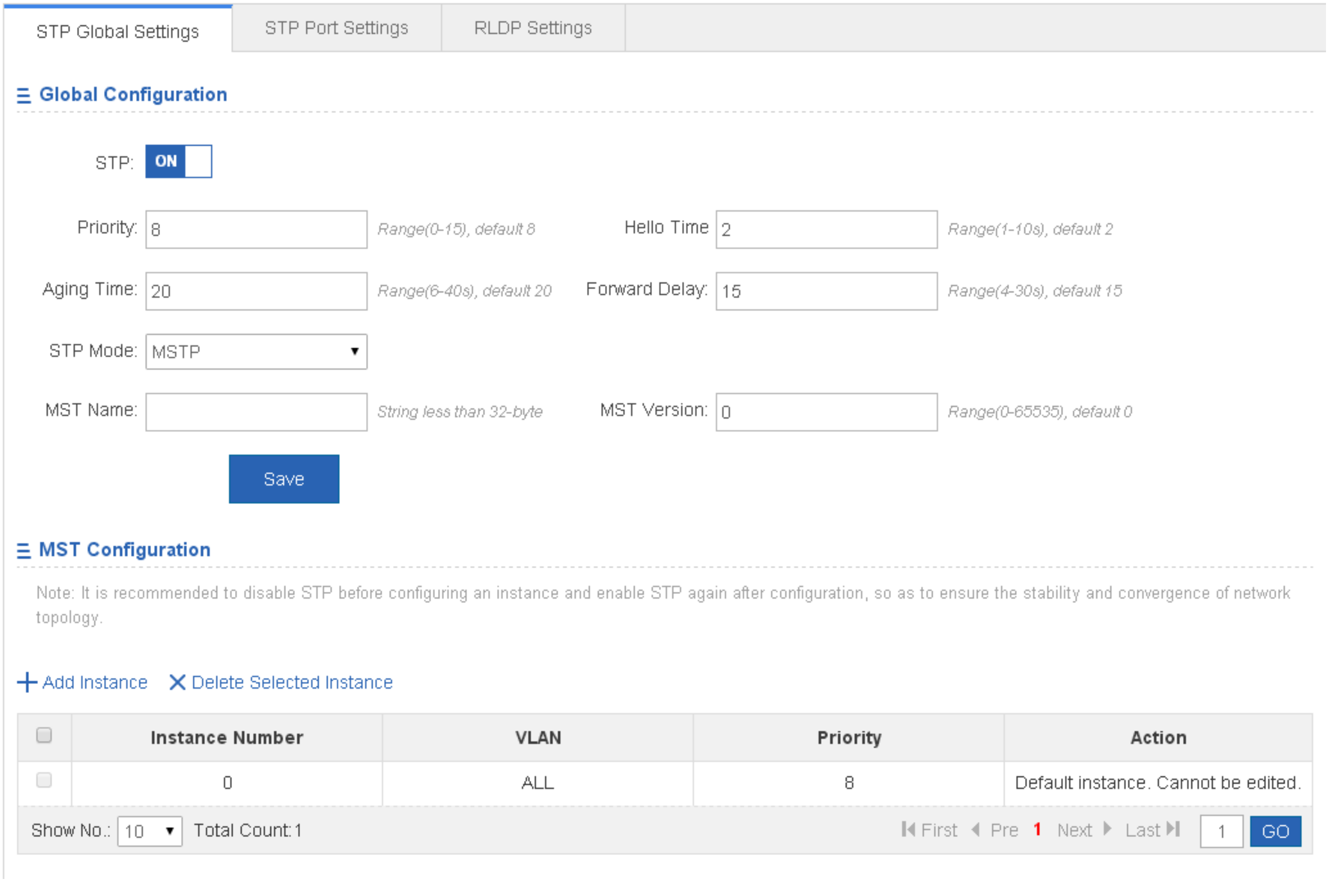
The Spanning Tree Protocol (STP) is a network protocol that builds a logical loop-free topology for Ethernet networks. The basic function of STP is to prevent bridge loops and the broadcast radiation that results from them. Spanning tree also allows a network design to include spare (redundant) links to provide automatic backup paths, if an active link fails. This is done without the danger of bridge loops, or the need for manual enabling or disabling of these backup links.

The Rapid Link Detection Protocol (RLDP) achieves rapid detection of unidirectional link failures, directional forwarding failures and downlink loop failures of an Ethernet. When a failure is found, relevant ports will be closed automatically according to failure treatment configuration or the user will be notified to manually close the ports to avoid wrong flow forwarding or an Ethernet layer-2 loop.

The STP Global Settings page enables setting the global parameters and STP ports.

↘ STP Global Settings

Figure 1-17 STP Global Settings



Global Configuration

STP: ON

Priority: 8 Range(0-15), default 8

Hello Time 2 Range(1-10s), default 2

Aging Time: 20 Range(6-40s), default 20

Forward Delay: 15 Range(4-30s), default 15

STP Mode: MSTP

MST Name: String less than 32-byte

MST Version: 0 Range(0-65535), default 0

MST Configuration

Note: It is recommended to disable STP before configuring an instance and enable STP again after configuration, so as to ensure the stability and convergence of network topology.

□	Instance Number	VLAN	Priority	Action
□	0	ALL	8	Default instance. Cannot be edited.

Show No.: 10 Total Count:1

STP global parameters can be configured. When MSTP is selected from the STP Mode drop-down list, you can configure the MST instance.

- Adding instances

To add an instance, input the instance value and VLAN range and input other information as required. Afterwards, click **Save**. The newly added instance is displayed in the instance list after a "Configuration succeeded." message is displayed.

- Editing instances

After clicking **Edit** in the Action column, the information of the corresponding instance is displayed on the page. After editing the information, click **Save**. A"Configuration succeeded" message is displayed.

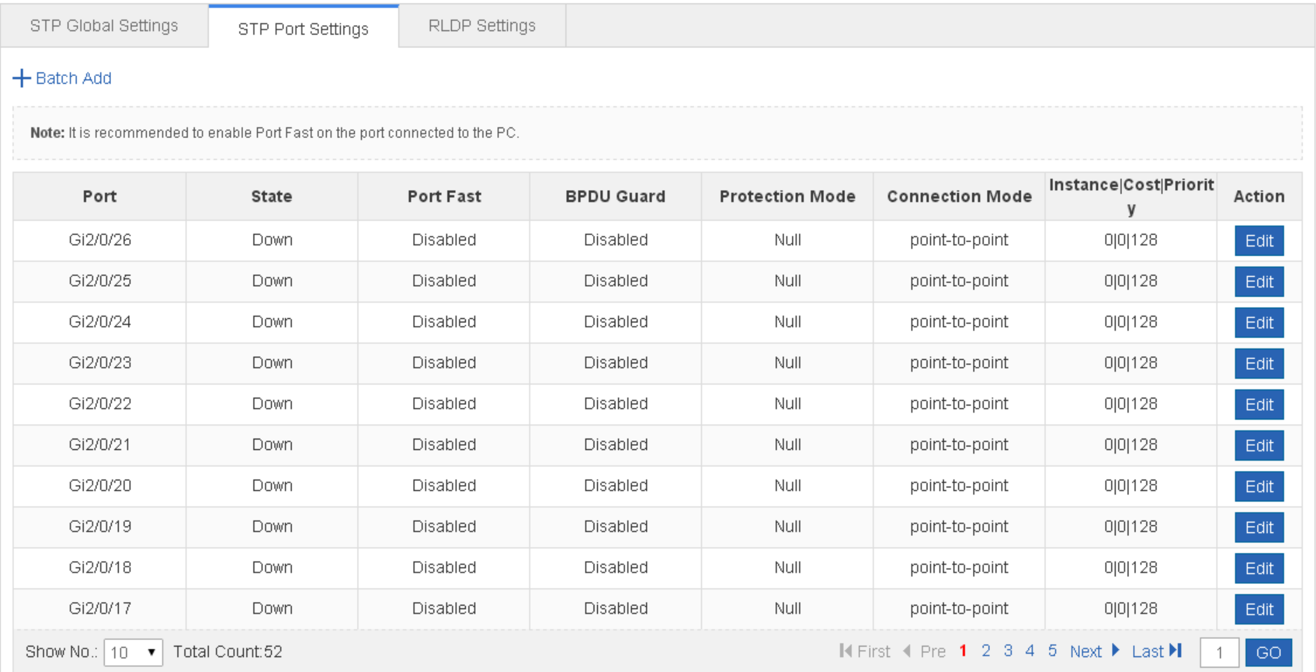
- Deleting instances

1) Multiple instances can be selected from the instance list. Click **Delete Selected Instance** to batch delete instances.

2) After clicking **Delete** in the **Action** column, the message, "Are you sure you want to delete the instance?" is displayed. After confirming the operation, he "Delete succeeded." message is displayed. Instance 0 is the default instance and cannot be deleted.

STP Port Settings

Figure 1-18 STP Port Settings



Note: It is recommended to enable Port Fast on the port connected to the PC.

Port	State	Port Fast	BPDU Guard	Protection Mode	Connection Mode	Instance|Cost|Priority	Action
Gi2/0/26	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/25	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/24	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/23	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/22	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/21	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/20	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/19	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/18	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit
Gi2/0/17	Down	Disabled	Disabled	Null	point-to-point	0|0|128	Edit

Show No.: 10 ▾ Total Count:52

- Batch setting

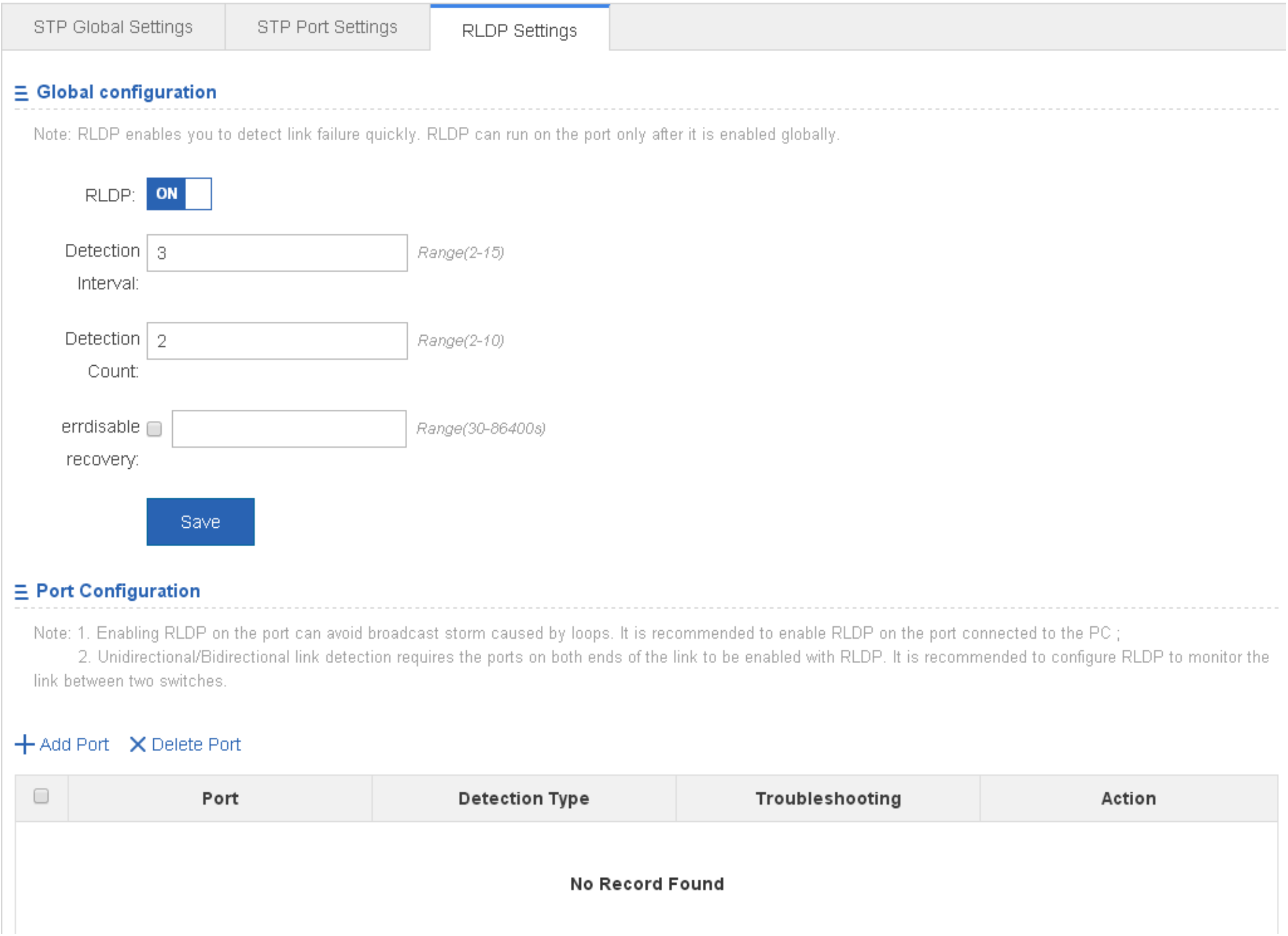
Specify Protection Mode, Port Fast, BPDU Guard, Connection Mode, and Port Priority. Then select ports for batch setting.

- Editing STP ports

After clicking **Edit** in the **Action** column, the information of the corresponding port is displayed on the page. After editing the information, click **Save**. The message, "Configuration succeeded" is displayed.

RLDP Settings

Figure 1-19 RLDP Settings



Global configuration

Note: RLDP enables you to detect link failure quickly. RLDP can run on the port only after it is enabled globally.

RLDP: ON

Detection Interval: 3 Range(2-15)

Detection Count: 2 Range(2-10)

errdisable recovery: □ Range(30-86400s)

Port Configuration

Note: 1. Enabling RLDP on the port can avoid broadcast storm caused by loops. It is recommended to enable RLDP on the port connected to the PC ;
2. Unidirectional/Bidirectional link detection requires the ports on both ends of the link to be enabled with RLDP. It is recommended to configure RLDP to monitor the link between two switches.

□	Port	Detection Type	Troubleshooting	Action
		No Record Found		

1. Global Configuration

Enable/Disable RLDP by turning on/off the switch. After setting detection interval and count, click **Save**. The message, "Configuration succeeded" is displayed.

2. Port Configuration

- Adding RLDP Ports

Select detection mode, troubleshooting mode and port. Afterwards, click **Save**. The newly added RLDP port is displayed in the RLDP port list after the message, “Configuration succeeded.” is displayed.

- Editing RLDP Ports

After clicking **Edit** in the **Action** column, the information of the corresponding RLDP port is displayed on the page. After editing the information, click **Save**. An “Edit succeeded.” message is displayed.

- Deleting RLDP Port

1) Multiple RLDP ports can be selected from the RLDP port list. Click **Delete Selected Port** to batch delete RLDP ports.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the item?” message is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

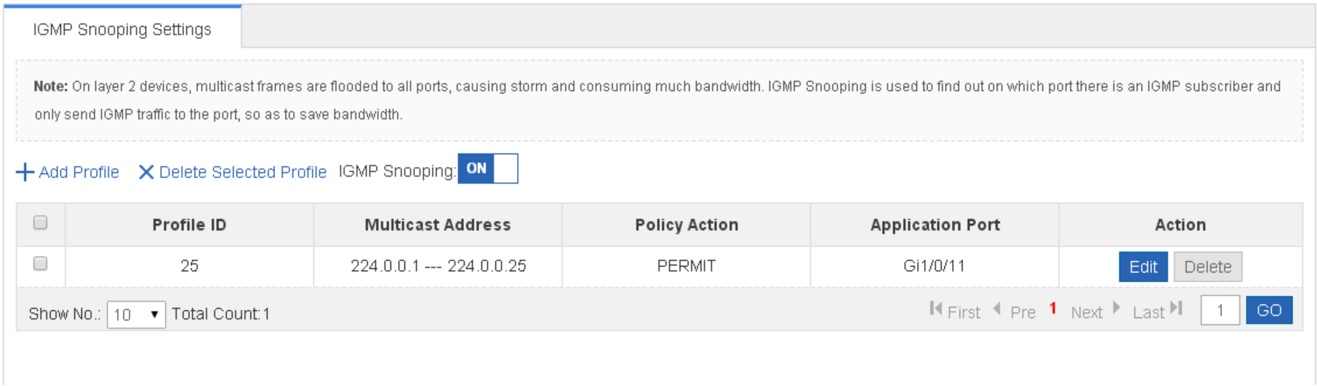
1.3.3.4 IGMP Snooping

Internet Group Management Protocol (IGMP) snooping is a mechanism of listening to IP multicast. It is used to manage and control the forwarding of IP multicast traffic within VLANs, realizing Layer-2 multicasting.

The IGMP snooping examines IGMP protocol messages within a VLAN to discover which interfaces are connected to hosts or other devices interested in receiving this traffic. Using the interface information, IGMP snooping can reduce bandwidth consumption in a multi-access LAN environment to avoid flooding the entire VLAN. The IGMP snooping feature tracks which ports are attached to multicast-capable routers to help it manage the forwarding of IGMP membership reports.

The following figure shows the IGMP Snooping Settings page.

Figure 1-20 IGMP Snooping Settings



IGMP Snooping Settings

Note: On layer 2 devices, multicast frames are flooded to all ports, causing storm and consuming much bandwidth. IGMP Snooping is used to find out on which port there is an IGMP subscriber and only send IGMP traffic to the port, so as to save bandwidth.

IGMP Snooping: ON

□	Profile ID	Multicast Address	Policy Action	Application Port	Action
□	25	224.0.0.1 --- 224.0.0.25	PERMIT	Gi1/0/11	Edit Delete

Show No.: 10 ▾ Total Count:1

- Adding profiles

To add a profile, you must input the profile identifier and multicast address range. Other information can be inputted as required. Afterwards, click **Save**. The newly added profile is displayed in the profile list after the ”Add succeeded” message is displayed.

- Editing profiles

After clicking **Edit** in the Action column, information for the corresponding profile is displayed on the page. After editing the information, click **Save**. The message, ”Edit succeeded.” message is then displayed.

- Deleting profiles

1) Multiple profiles from the profile list can be selected. Click **Delete Selected Profile** to batch delete the profiles.

2) After clicking **Delete** in the **Action** column the message, “Are you sure you want to delete the profile?” is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

1.3.3.5 DHCP Relay

Based on the RFC 2131, DHCP server assigns IP addresses to clients and manages these IP addresses.

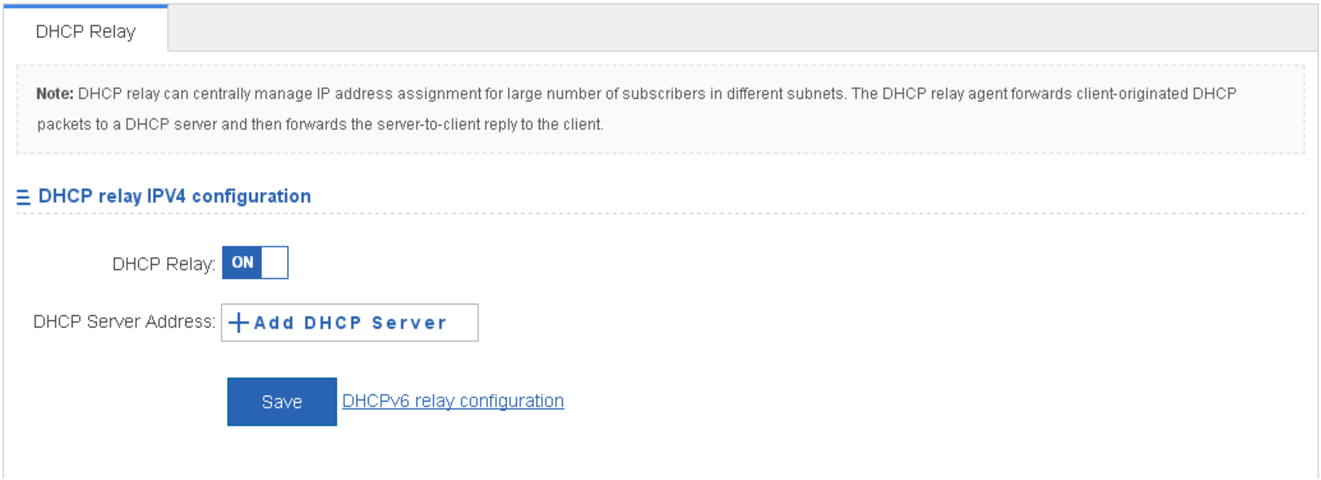
DHCP Client enables a device to automatically obtain an IP address and configurations from a DHCP server.

When a DHCP client and a DHCP server are not in a same subnet, they need a DHCP relay to forward DHCP request and reply packets.

A DHCP relay agent is any host that forwards DHCP packets between clients and servers. Relay agents are used to forward requests and replies between clients and servers when they are not on the same physical subnet. Relay agent forwarding is distinct from the normal forwarding of an IP router, where IP datagrams are switched between networks somewhat transparently. By contrast, relay agents receive DHCP messages and then generate a new DHCP message to send on another interface.

The following figure shows the DHCP Relay Settings page.

Figure 1-21 DHCP Relay Settings



Note: DHCP relay can centrally manage IP address assignment for large number of subscribers in different subnets. The DHCP relay agent forwards client-originated DHCP packets to a DHCP server and then forwards the server-to-client reply to the client.

DHCP relay IPV4 configuration

DHCP Relay: ON

DHCP Server Address: + Add DHCP Server

When DHCP Relay is enabled, multiple DHCP server addresses can be configured.

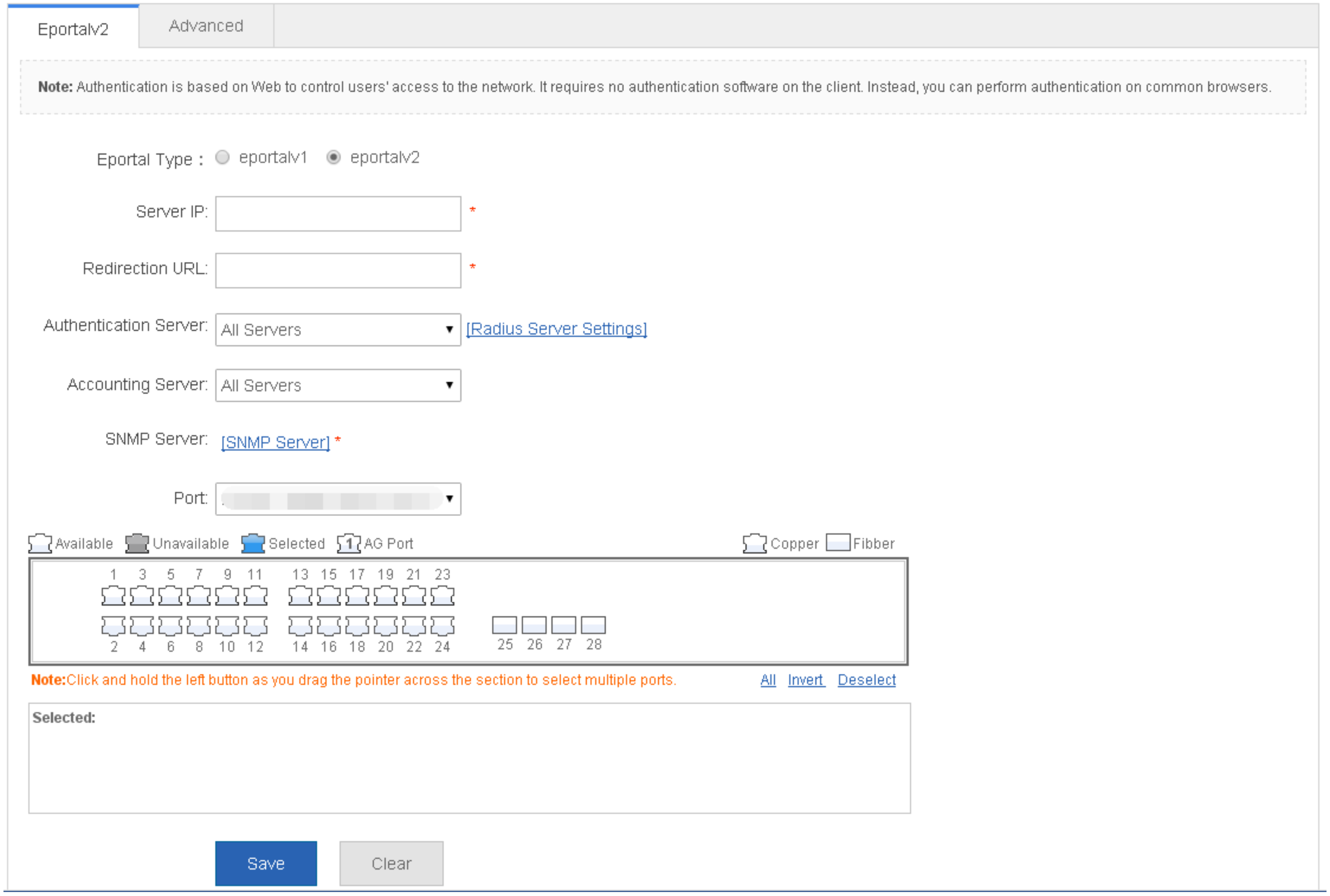
1.3.3.6 Authentication

The Authentication page allows setting of Eportalv2 and Advanced.

Eportalv2

The following figure shows the Eportalv2 page.

Figure 1-22 Eportalv2



Note: Authentication is based on Web to control users' access to the network. It requires no authentication software on the client. Instead, you can perform authentication on common browsers.

Eportal Type : ○ eportalv1 ● eportalv2

Server IP: *

Redirection URL: *

Authentication Server: All Servers [Radius Server Settings]

Accounting Server: All Servers

SNMP Server: [SNMP Server] *

Port:

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

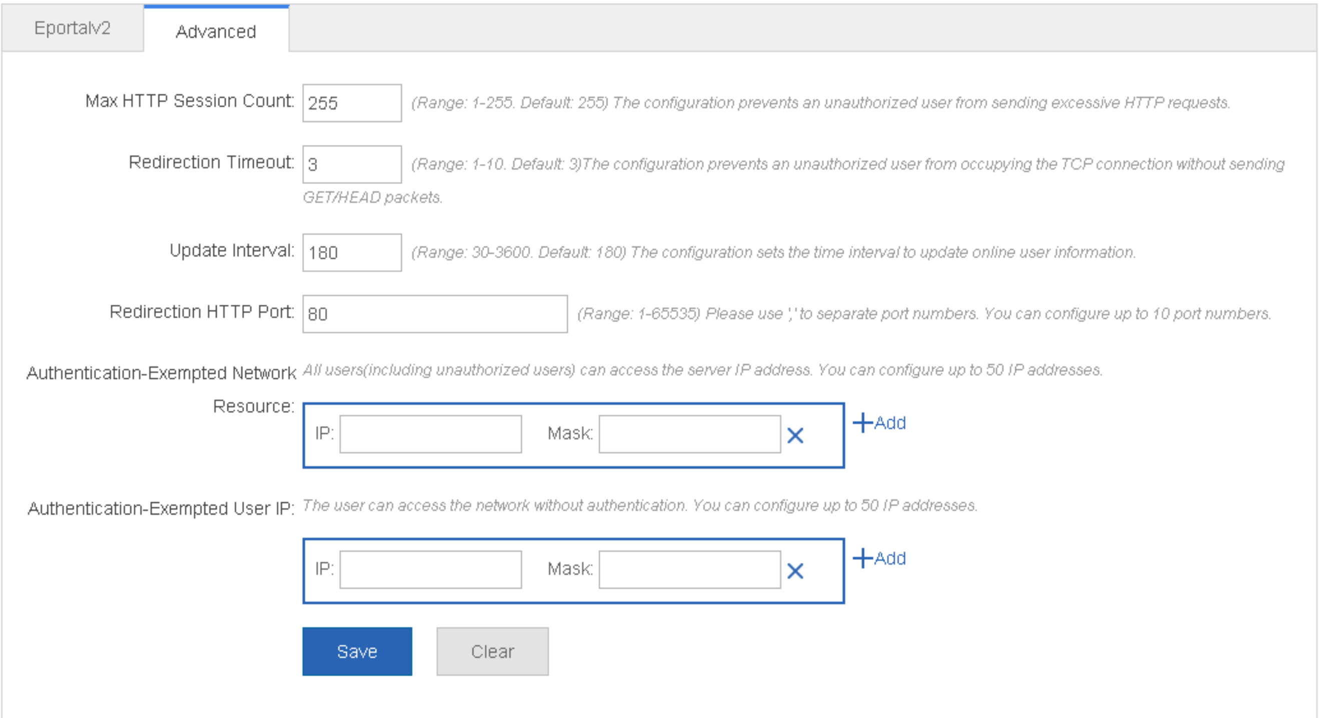
Selected:

Enter the server IP address and redirection URL and click **Save**. The message, "Configuration succeeded." is displayed.

Advanced

The following figure shows the Advanced page.

Figure 1-23 Advanced Settings



Max HTTP Session Count: 255 (Range: 1-255. Default: 255) The configuration prevents an unauthorized user from sending excessive HTTP requests.

Redirection Timeout: 3 (Range: 1-10. Default: 3)The configuration prevents an unauthorized user from occupying the TCP connection without sending GET/HEAD packets.

Update Interval: 180 (Range: 30-3600. Default: 180) The configuration sets the time interval to update online user information.

Redirection HTTP Port: 80 (Range: 1-65535) Please use ',' to separate port numbers. You can configure up to 10 port numbers.

Authentication-Exempted Network Resource: All users(including unauthorized users) can access the server IP address. You can configure up to 50 IP addresses.

IP: Mask: ✕ +Add

Authentication-Exempted User IP: The user can access the network without authentication. You can configure up to 50 IP addresses.

IP: Mask: ✕ +Add

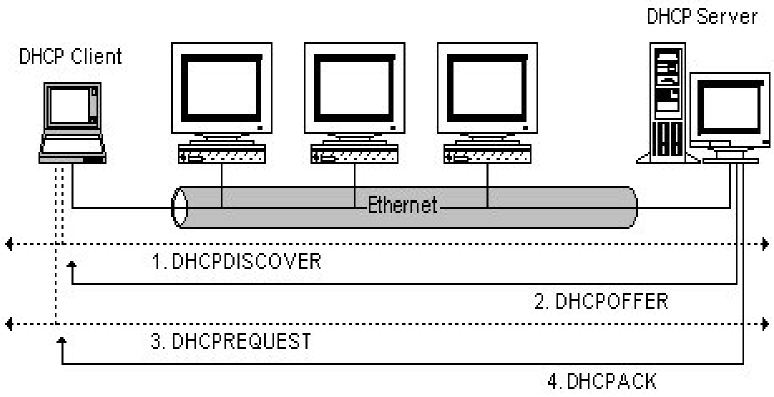
Multiple authentication-exempted network resources and user IP addresses can be set. Click **Save**, and the message, "Configuration succeeded." is then displayed

1.3.4 Security

Secondary menus are accessed through the primary Security menu that includes DHCP Snooping, Anti-ARP-Attack, IP Source Guard, Port Security, NFPP, and Storm Control.

1.3.4.1 DHCP Snooping

DHCP Snooping: DHCP Snooping snoops DHCP interactive packets between clients and servers to record and monitor users' IP addresses and filter out illegal DHCP packets, including client request packets and server response packets. The legal user database generated from DHCP Snooping records may serve security applications like IP Source Guard.



Request packets are sent from a DHCP client to a DHCP server, including DHCP-DISCOVER packets, DHCP-REQUEST packets, DHCP-DECLINE packets, DHCP-RELEASE packets and DHCP-INFORM packets.

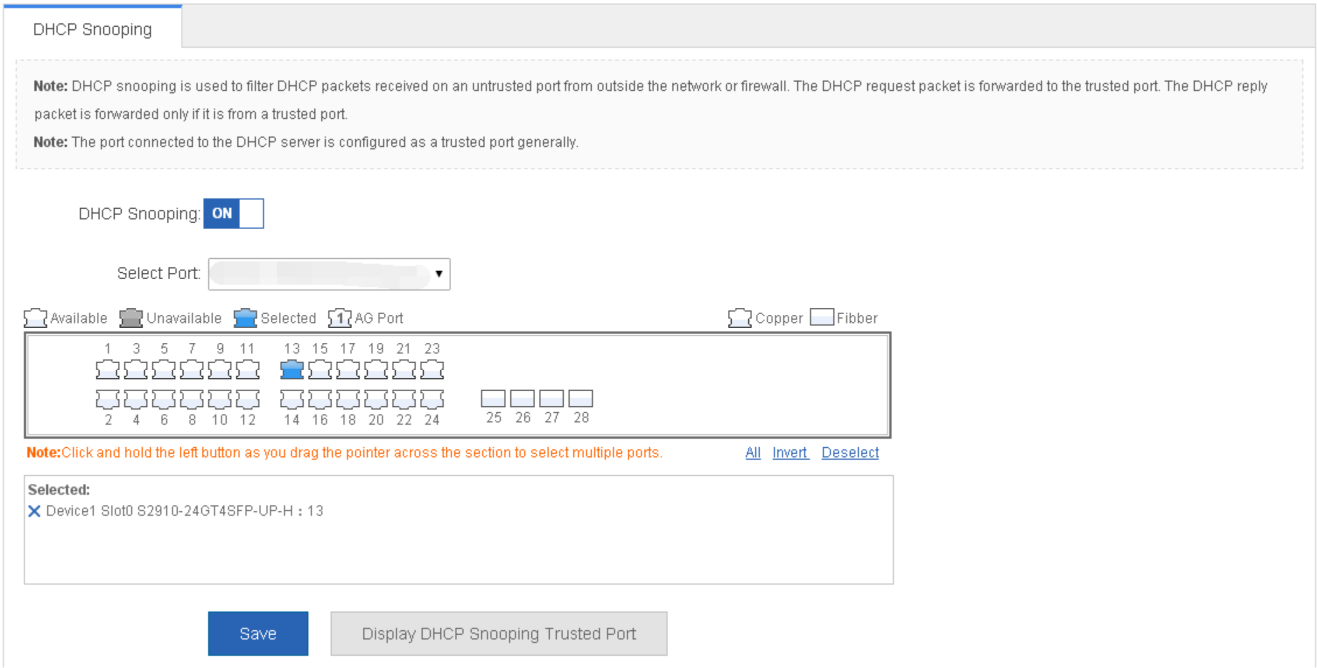
Response packets are sent from a DHCP server to a DHCP client, including DHCP-OFFER packets, DHCP-ACK packets and DHCP-NAK packets.

IP address request interaction is complete via broadcast. Therefore, illegal DHCP services will influence normal clients' acquisition of IP addresses and lead to service spoofing and stealing. To prevent illegal DHCP services, DHCP Snooping ports are divided into two types: trusted ports and untrusted ports. The access devices only transmit DHCP response packets received on trusted ports, while such packets from untrusted ports are discarded. In this way, we may configure the ports connected to a legal DHCP Server as trusted and the other ports as untrusted to shield illegal DHCP Servers.

On switches, all switching ports or layer-2 aggregate ports are defaulted as untrusted, while trusted ports can be specified.

The following figure shows the DHCP Snooping Settings page.

Figure 1-24 DHCP Snooping Settings



Note: DHCP snooping is used to filter DHCP packets received on an untrusted port from outside the network or firewall. The DHCP request packet is forwarded to the trusted port. The DHCP reply packet is forwarded only if it is from a trusted port.

Note: The port connected to the DHCP server is configured as a trusted port generally.

DHCP Snooping: ON

Select Port:

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

✕ Device1 Slot0 S2910-24GT4SFP-UP-H : 13

The port connected to the DHCP server must be configured as a DHCP trusted port. The DHCP server connected to a non-trusted port cannot work properly. If the selected port on the panel is a DHCP trusted port, a port can be directly selected on the panel, then click the **Save** button.

1.3.4.2 Anti-ARP-Attack

ARP is a TCP/IP protocol that obtains physical addresses according to IP addresses. Its function is as follows: The host broadcasts ARP requests to all hosts on the network and receives the returned packets to determine physical addresses of the target IP addresses, and saves the IP addresses and hardware addresses in the local ARP cache, which can be directly queried in response to future requests. On the same network, all the hosts using the ARP are considered as mutually trustful to each other. Each host on the network can independently send ARP response packets; the other hosts receive the response packets and record them in the local ARP cache without detecting their authenticity. In this way, attackers can send forged ARP response packets to target hosts so that the messages sent from these hosts cannot reach the proper host or reach a wrong host, thereby causing ARP spoofing.

The Address Resolution Protocol (ARP) packet check filters all ARP packets under ports (including wired layer-2 switching ports, layer-2 aggregate ports (APs), and layer-2 encapsulation sub-interfaces, as well as WLAN interfaces) and discards illegal ARP packets, so as to effectively prevent ARP deception via networks and to promote network stability. On devices supporting ARP check, illegal ARP packets in networks will be ignored according to the legal user information (IP-based or IP-MAC based) generated by security application modules such as IP Source Guard.

Dynamic Address Resolution Protocol (ARP) inspection (DAI) checks the validity of received ARP packets. Invalid ARP packets will be discarded.

ARP packet check is performed according to the trust status of ports. DAI considers packets received from trusted ports as valid without checking their validity, but it checks the validity of packets received from untrusted ports.

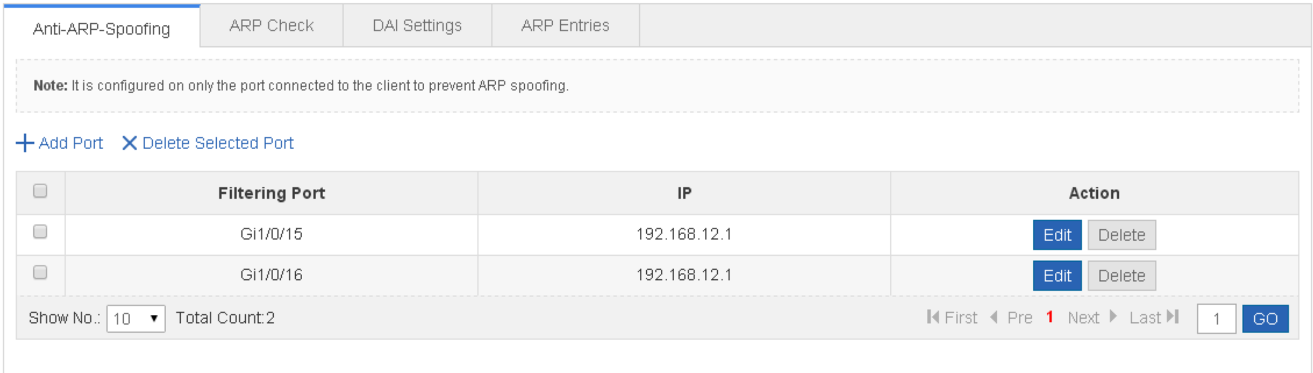
For a typical network configuration, you should configure Layer-2 ports connected to network devices as trusted ports, and configure Layer-2 ports connected to hosts as untrusted ports.

⚠ Network communication may be affected if a Layer-2 port connected to a network device is configured as an untrusted port.

The Anti-ARP-attack page enables anti-ARP-spoofing settings, ARP check settings, DAI settings, and ARP entry settings.

Anti-ARP-Spoofing

Figure 1-25 Anti-ARP-Spoofing



Note: It is configured on only the port connected to the client to prevent ARP spoofing.

□	Filtering Port	IP	Action
□	Gi1/0/15	192.168.12.1	Edit Delete
□	Gi1/0/16	192.168.12.1	Edit Delete

Show No.: 10 ▾ Total Count:2

- Adding filtering port

To add a filtering port, first input the IP address. Afterwards, click **Save**. The newly added filtering port is displayed in the filtering port list after the ”Add succeeded.” message is displayed.

- Editing filtering port

After you click **Edit** in the Action column, the information of the corresponding filtering port is displayed on the page. After editing the information, click **Save**. An “Edit succeeded” message is displayed.

- Deleting filtering port

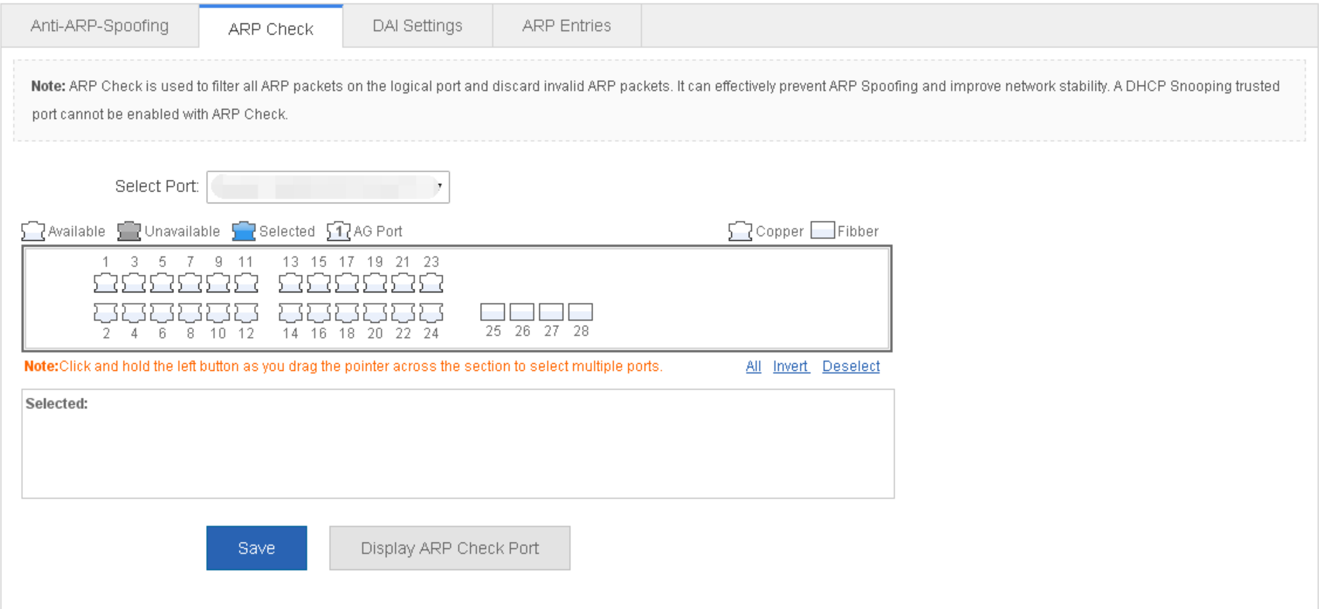
1) You can select multiple filtering ports from the filtering port list and click **Delete Selected Port** to batch delete the filtering ports.

2) Click **Delete** in the Action column, and the “Are you sure you want to delete the port?” message is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

ARP Check

Figure 1-26 ARP Check



Note: ARP Check is used to filter all ARP packets on the logical port and discard invalid ARP packets. It can effectively prevent ARP Spoofing and improve network stability. A DHCP Snooping trusted port cannot be enabled with ARP Check.

Select Port:

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

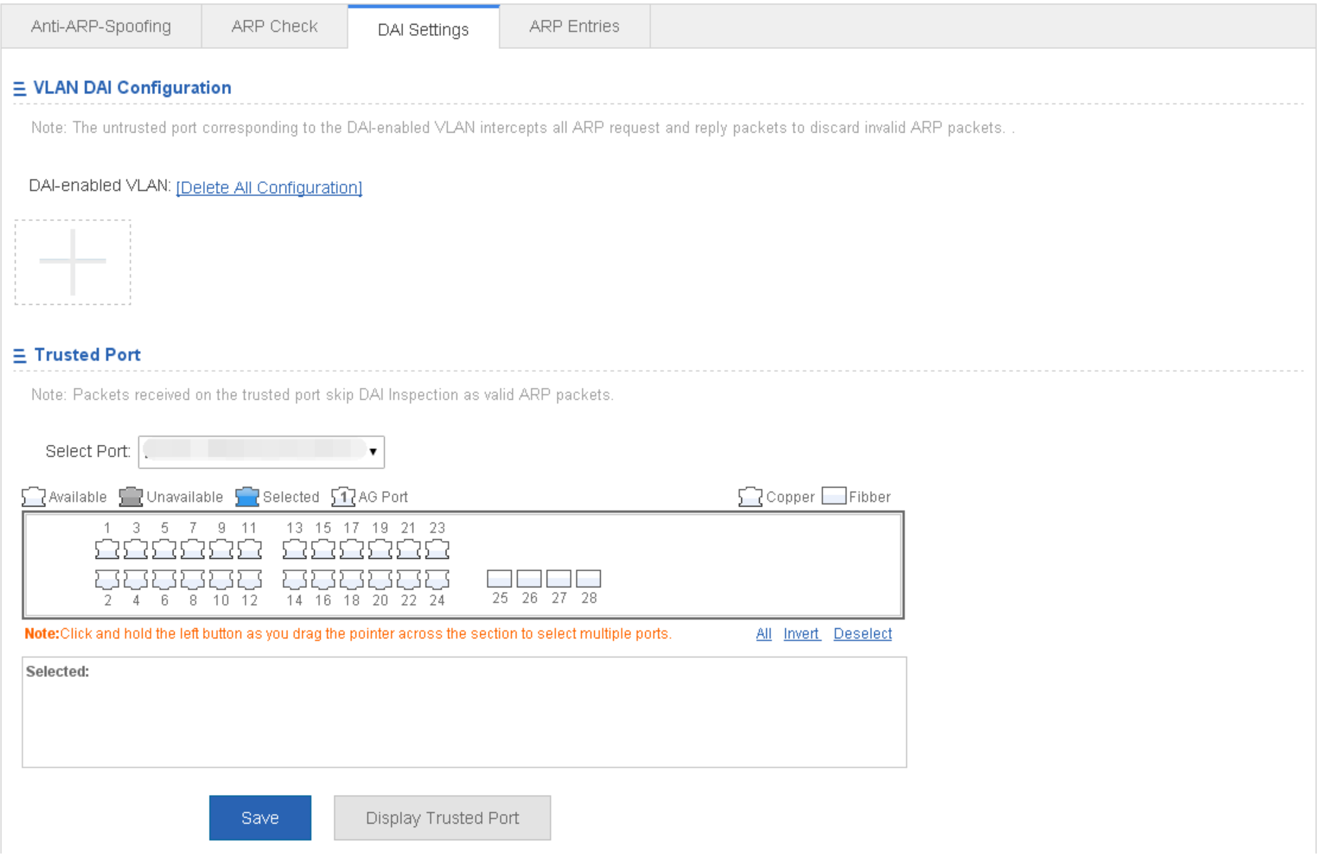
The selected port on the panel is enabled with ARP Check.

The selected port on the panel is enabled with ARP Check and in edit state. If you do not want to edit a port after modifying it, click Display ARP Check Port for the panel display to show the current status of the ARP check.

ARP check cannot be enabled on a DHCP Snooping trusted port.

DAI Settings

Figure 1-27 DAI Settings



Anti-ARP-Spoofing | ARP Check | DAI Settings | ARP Entries

VLAN DAI Configuration

Note: The untrusted port corresponding to the DAI-enabled VLAN intercepts all ARP request and reply packets to discard invalid ARP packets. .

DAI-enabled VLAN: [Delete All Configuration]

Trusted Port

Note: Packets received on the trusted port skip DAI Inspection as valid ARP packets.

Select Port:

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

1. VLAN DAI settings

   Click the add icon to add a VLAN enabled with the DAI function.

2. DAI trusted port

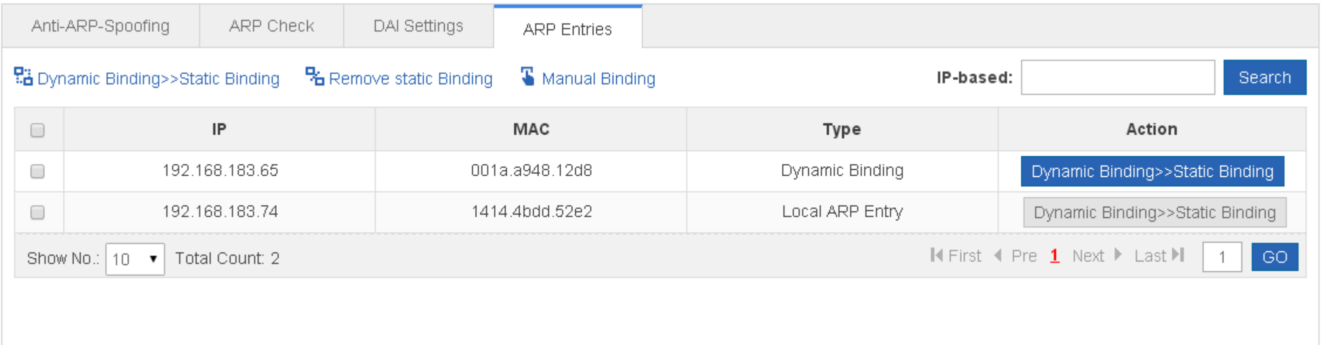
   The selected port on the panel is enabled with the DAI function.

The selected port on the panel is enabled with the DAI function and is in edit state. If you do not want to edit a port after modifying it, click Display Trusted Port for the panel display to the current status of the DAI trusted port.

ARP check cannot be enabled on a DHCP Snooping trusted port.

ARP Entries

Figure 1-28 ARP Entries



☐	IP	MAC	Type	Action
☐	192.168.183.65	001a.a948.12d8	Dynamic Binding	Dynamic Binding>>Static Binding
☐	192.168.183.74	1414.4bdd.52e2	Local ARP Entry	Dynamic Binding>>Static Binding

Show No.: 10 Total Count: 2

- Remove Static Binding

1) Select multiple dynamic binding from the ARP entry list to configure them as static binding in batches.

2) Click the **Dynamic Binding>>Static Binding** icon in the **Action** column. The "Configuration succeeded.” message is displayed.

- Remove Static Binding

1) You can select and remove multiple static bindings from the ARP entry list.

2) Click the **Remove static Binding** icon in the **Action** column. The ”Configuration succeeded.” message is displayed.

- Manual Binding

To add a static binding, it is necessary to configure the IP and MAC Addresses. Afterwards, click **Save**. The newly added static binding is displayed in the ARP entry list after the ”Configuration succeeded.” message is displayed.

1.3.4.3 IP Source Guard

The IP Source Guard function realizes hardware-based IP packet filtering to ensure that only the users having their information in the binding database can access networks normally, preventing users from forging IP packets.

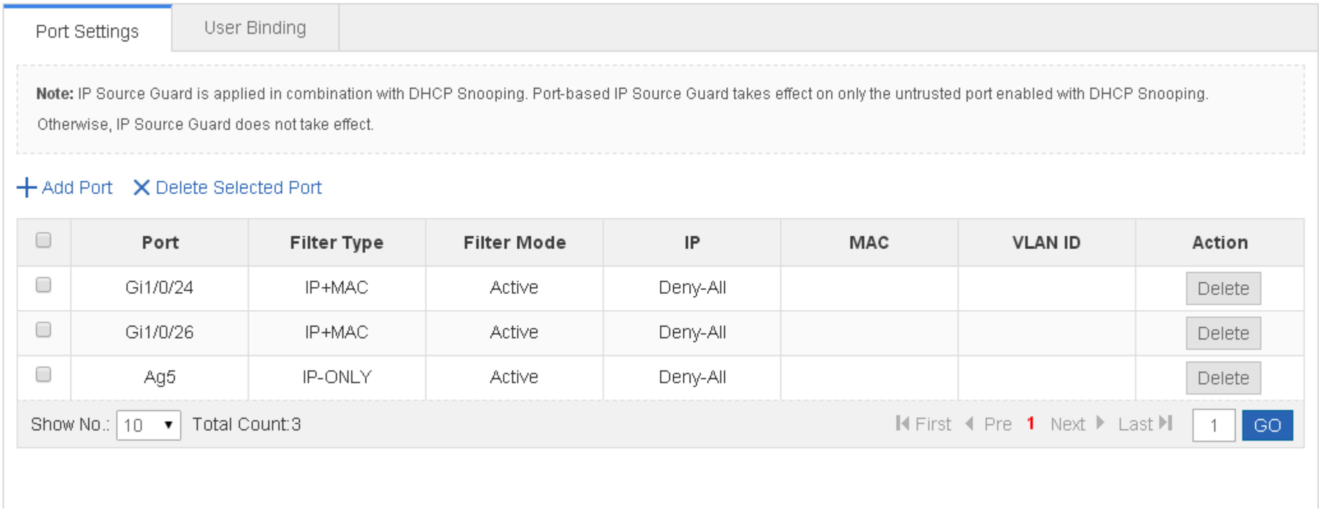
Usually IP Source Guard needs to work with DHCP Snooping. Therefore, DHCP Snooping should also be enabled. DHCP Snooping can be enabled at any time on Ruijie devices, either before or after IP Source Guard is enabled.

When IP Source Guard is enabled, the source addresses of packets passing through a port will be checked. The port can be a wired switching port, a layer-2 aggregate port (AP), or a layer-2 encapsulation sub-interface, or a WLAN interface. Such packets will pass the port only when the source address fields of the packets match the set of the address binding records generated by DHCP Snooping, or the static configuration set by the administrator.

The IP Source Guard page allows you to perform port settings and user binding.

↘ Port Settings

Figure 1-29 Port Settings



Note: IP Source Guard is applied in combination with DHCP Snooping. Port-based IP Source Guard takes effect on only the untrusted port enabled with DHCP Snooping. Otherwise, IP Source Guard does not take effect.

□	Port	Filter Type	Filter Mode	IP	MAC	VLAN ID	Action
□	Gi1/0/24	IP+MAC	Active	Deny-All			Delete
□	Gi1/0/26	IP+MAC	Active	Deny-All			Delete
□	Ag5	IP-ONLY	Active	Deny-All			Delete

Total Count:3

- Adding IP Source Guard port

Enable the IP Source Guard port, specify Filter Type and Port, and click **Save**. The newly added IP Source Guard port is displayed in the IP Source Guard port list after the “Configuration succeeded.” message is displayed.

- Editing IP Source Guard port

After clicking **Edit** in the Action column, the information of the corresponding filtering port is displayed on the page. After editing the information, click **Save**. An “Edit succeeded.” message is displayed.

- Deleting IP Source Guard port

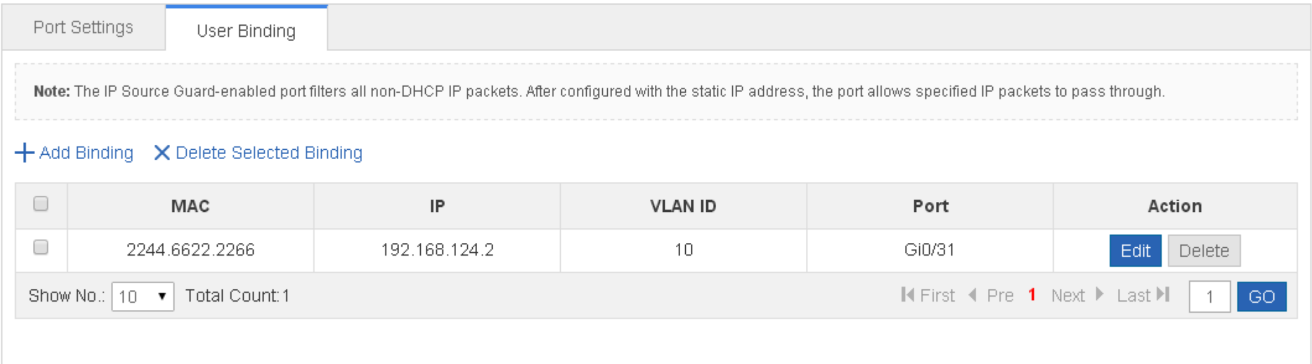
1) You can select multiple ports from the IP Source Guard port list and click **Delete Selected Port** to batch delete ports .

2) After clicking **Delete** in the **Action** column, the “Are you sure you want to delete the item?” message is displayed.

After you confirm the operation, the ”Delete succeeded.” message is displayed.

↘ User Binding

Figure 1-30 User Binding



Note: The IP Source Guard-enabled port filters all non-DHCP IP packets. After configured with the static IP address, the port allows specified IP packets to pass through.

□	MAC	IP	VLAN ID	Port	Action
□	2244.6622.2266	192.168.124.2	10	Gi0/31	Edit Delete

Total Count:1

- Adding user binding

To add a user binding, you must set MAC Address, IP Address, and VLAN ID. Afterwards, click **Save**. The newly added user binding is displayed in the user binding list after the ”Configuration succeeded.” message is displayed.

- Editing user binding

After clicking **Edit** in the Action column, the binding information of the corresponding user is displayed on the page. After editing the information, click **Save**. The ”Configuration succeeded.” message is displayed.

- Deleting user binding

1) You can select multiple user bindings from the user binding list and click **Delete Selected Binding** to delete the user bindings in batches.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the binding?” message is displayed.

After confirming the operation, a ”Delete succeeded.” message is displayed.

1.3.4.4 Port Security

Port security is used to restrict access to a port. Source MAC addresses of packets can be used to restrict the packets that enter the ports of a switch. You can set the number of static MAC addresses or the number of MAC addresses that are dynamically learned to restrict the packets that can enter the port. Ports enabled with port security are called secure ports.

⚠ At present, Ruijie devices require that secure ports cannot be destination ports of mirroring.

Addresses bound to secure ports are called secure addresses. Secure addresses can be layer-2 addresses, namely MAC addresses, and can also be layer-3 addresses, namely, IP or IP+MAC addresses. When a secure address is bound to IP+MAC and a static secure MAC address is configured, the static secure MAC address must be the same as the MAC address bound to IP+MAC; otherwise, communication may fail due to inconsistency with the binding. Similarly, if only IP binding is set, only packets whose secure MAC addresses are statically configured or learned and whose source IP addresses are the bound IP address can enter the device.

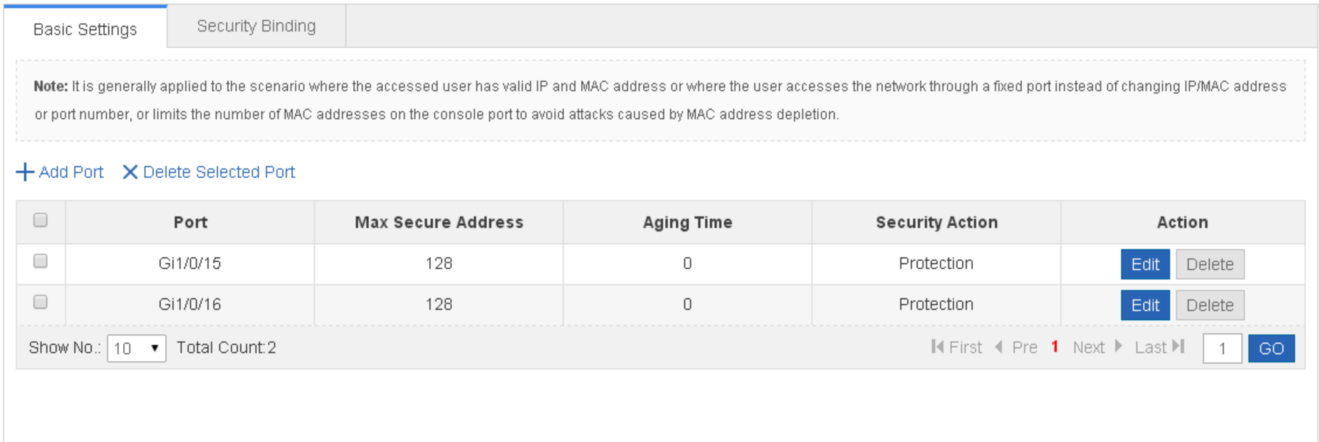
Dynamic Binding is a method for a device to automatically learn addresses and convert learned addresses into secure addresses.

Static Binding is a command for manually binding secure addresses.

Aging of Secure Addresses regularly delete secure address records. Secure addresses for port security support aging configuration. You can specify only dynamically learned addresses for aging or specify both statically configured and dynamically learned secure addresses for aging.

↘ Basic Settings

Figure 1-31 Basic Settings



Note: It is generally applied to the scenario where the accessed user has valid IP and MAC address or where the user accesses the network through a fixed port instead of changing IP/MAC address or port number, or limits the number of MAC addresses on the console port to avoid attacks caused by MAC address depletion.

□	Port	Max Secure Address	Aging Time	Security Action	Action
□	Gi1/0/15	128	0	Protection	Edit Delete
□	Gi1/0/16	128	0	Protection	Edit Delete

Show No.: 10 ▾ Total Count:2 First Pre 1 Next Last 1 GO

- Adding user binding

To add a user binding, you must input the IP address and input other information as required. Afterwards, click **Save**. The newly added user binding is displayed in the security port list after a “Configuration succeeded.” message is displayed.

- Editing security ports

After clicking **Edit** in the **Action** column, the binding information of the corresponding user is displayed on the page. After editing the information, click **Save**. The “Configuration succeeded.” message is displayed.

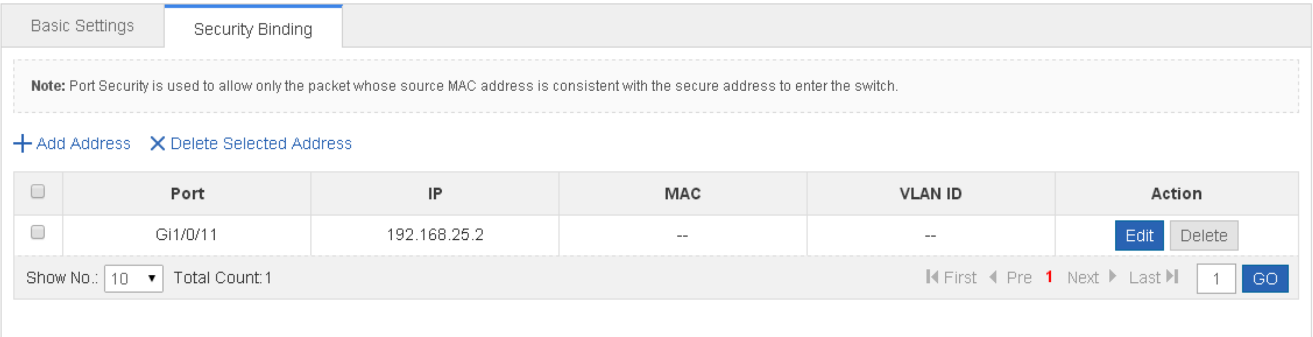
- Deleting security port

1) Multiple security ports can be selected from the security port list. Click **Delete Selected Port** to batch delete security ports.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the security port?” message is displayed. Confirm the operation, and the ”Delete succeeded.” message is displayed.

↘ Security Binding

Figure 1-32 Security Binding



Note: Port Security is used to allow only the packet whose source MAC address is consistent with the secure address to enter the switch.

□	Port	IP	MAC	VLAN ID	Action
□	Gi1/0/11	192.168.25.2	--	--	Edit Delete

Show No.: 10 ▾ Total Count:1 First Pre 1 Next Last 1 GO

- Adding security binding address

To add a security binding address, it is necessary to input the IP address. Other information can be input as required. Afterwards, click **Save**. The newly added security binding address is displayed in the security binding address list after the ”Configuration succeeded.” message is displayed.

- Editing security port

After clicking **Edit** in the **Action** column, the binding information of the corresponding user is displayed on the page. After editing the information, click **Save**. The ”Configuration succeeded.” message is displayed.

- Deleting security binding address

1) You can select multiple addresses from the security binding address list and click **Delete Selected Address** to batch delete addresses.

2) After clicking **Delete** in the **Action** column, the “Are you sure you want to delete the port?” message is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

1.3.4.5 NFPP

Network Foundation Protection Policy (NFPP) provides guards for switches.

Malicious attacks are always found in the network environment. These attacks bring heavy burdens to switches, resulting in high CPU usage and operational troubles. NFPP can effectively protect the system from these attacks. Facing attacks, NFPP maintains the proper running of various system services with a low CPU load, thereby ensuring the stability of the entire network.

ARP Guard

In local area networks (LANs), IP addresses are mapped to MAC addresses through ARP, which has a significant role in safeguarding network security. ARP-based DoS attacks mean that a large number of unauthorized ARP packets are sent to the gateway through the network, causing the failure of the gateway to provide services for normal hosts. To prevent such attacks, limit the rate of ARP packets and identify and isolate the attack source.

IP Guard

Many hacker attacks and network virus intrusions start from scanning active hosts in the network. Therefore, many scanning packets rapidly occupy the network bandwidth, causing network communication failure. To solve this problem, Ruijie switches provide IP guard function to prevent hacker scanning and Blaster Worm viruses and reduce the CPU load.

ICMP Guard

ICMP is a common approach to diagnose network failures. After receiving an ICMP echo request from a host, the router or switch returns an ICMP echo reply. The preceding process requires the CPU to process the packets, thereby definitely consuming part of CPU resources. If an attacker sends a large number of ICMP echo requests to the destination device, massive CPU resources on the device will be consumed heavily, and the device may even fail to work properly. This type of attacks is called ICMP flood. To prevent this type of attacks, limit the rate of ICMP packets and find and isolate the attack source.

DHCP Guard

DHCP is widely used in LANs to dynamically assign IP addresses. It is significant to network security. Currently, the most common DHCP attack, also called DHCP exhaustion attack, uses faked MAC addresses to broadcast DHCP requests. Various attack tools on the Internet can easily complete this type of attack. A network attacker can send sufficient DHCP requests to use up the address space provided by the DHCP server within a period. In this case, authorized hosts will fail to request DHCP IP addresses and thereby fail to access the network. To prevent this type of attacks, limit the rate of DHCP packets and find and isolate the attack source.

DHCPv6 Guard

DHCP version 6 (DHCPv6) is widely used in LANs to dynamically assign IPv6 addresses. Both DHCP version 4 (DHCPv4) and DHCPv6 have security problems. Attacks to DHCPv4 apply also to DHCPv6. A network attacker can send a large number of DHCPv6 requests to use up the address space provided by the DHCPv6 server within a period. In this case, authorized hosts will fail to request IPv6 addresses and thereby fail to access the network. To prevent this type of attacks, limit the rate of DHCPv6 packets and find and isolate the attack source.

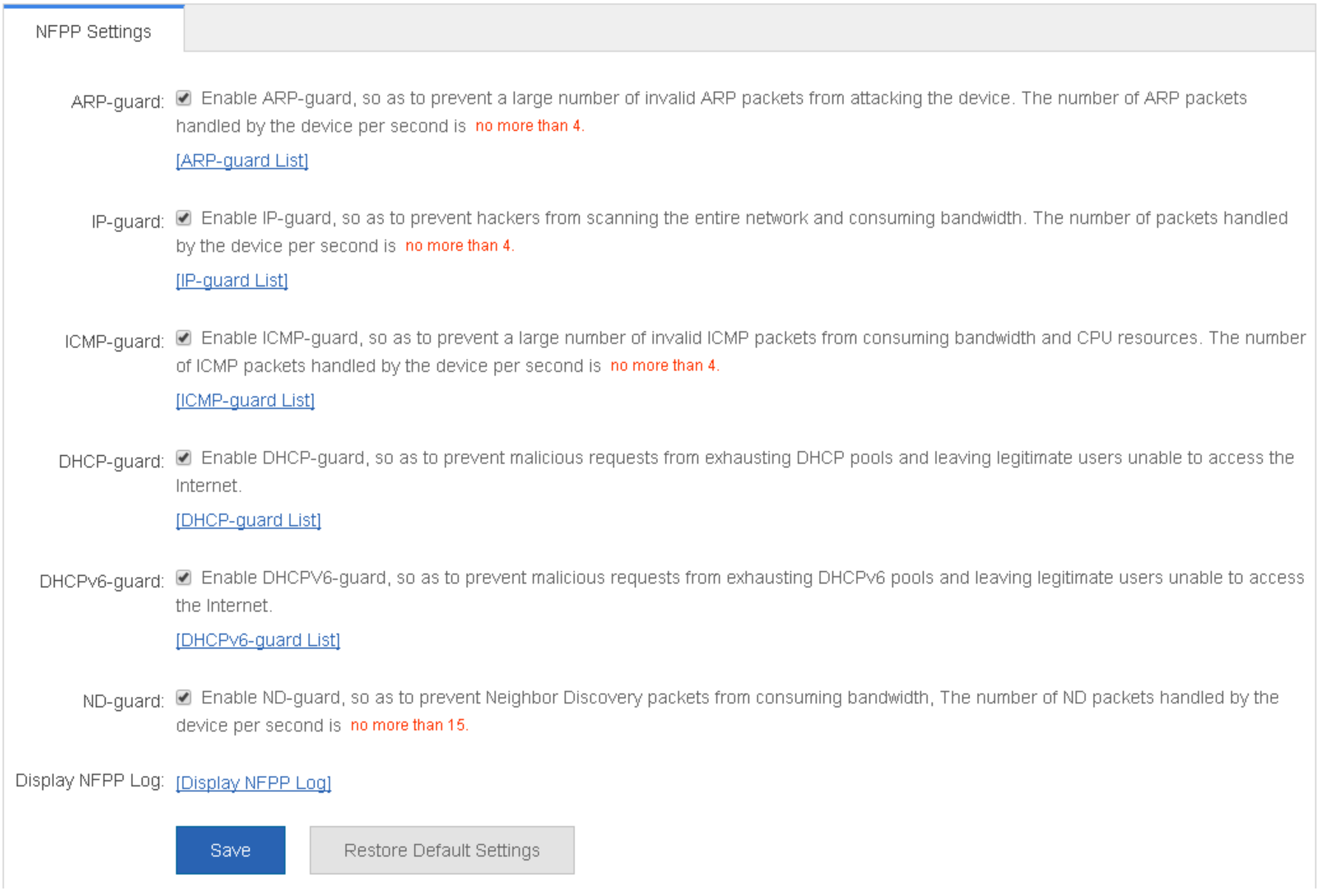
ND Guard

Neighbor Discovery (ND) is mainly used in IPv6 networks to perform address resolution, router discovery, prefix discovery, and redirection. ND uses five types of packets: Neighbor Solicitation (NS), Neighbor Advertisement (NA), Router Solicitation (RS), Router Advertisement (RA), and Redirect. These packets are called ND packets.

ND snooping listens to ND packets in the network to filter unauthorized ND packets. It also monitors IPv6 hosts in the network and bind monitored ones to ports to prevent IPv6 address stealing. ND snooping requires ND packets to be sent to the CPU. If ND packets are sent at a very high rate, the CPU will be attacked. Therefore, ND guard must be provided to limit the rate of ND packets.

The following figure shows the NFPP Settings page.

Figure 1-33 NFPP



NFPP Settings

ARP-guard: ☑ Enable ARP-guard, so as to prevent a large number of invalid ARP packets from attacking the device. The number of ARP packets handled by the device per second is no more than 4.

[ARP-guard List]

IP-guard: ☑ Enable IP-guard, so as to prevent hackers from scanning the entire network and consuming bandwidth. The number of packets handled by the device per second is no more than 4.

[IP-guard List]

ICMP-guard: ☑ Enable ICMP-guard, so as to prevent a large number of invalid ICMP packets from consuming bandwidth and CPU resources. The number of ICMP packets handled by the device per second is no more than 4.

[ICMP-guard List]

DHCP-guard: ☑ Enable DHCP-guard, so as to prevent malicious requests from exhausting DHCP pools and leaving legitimate users unable to access the Internet.

[DHCP-guard List]

DHCPv6-guard: ☑ Enable DHCPV6-guard, so as to prevent malicious requests from exhausting DHCPv6 pools and leaving legitimate users unable to access the Internet.

[DHCPv6-guard List]

ND-guard: ☑ Enable ND-guard, so as to prevent Neighbor Discovery packets from consuming bandwidth, The number of ND packets handled by the device per second is no more than 15.

Display NFPP Log: [Display NFPP Log]

Various guard functions can be enabled or disabled. After setting, click **Save**. The ”Save succeeded.” message is displayed. To restore to default settings, click **Restore Default Settings**.

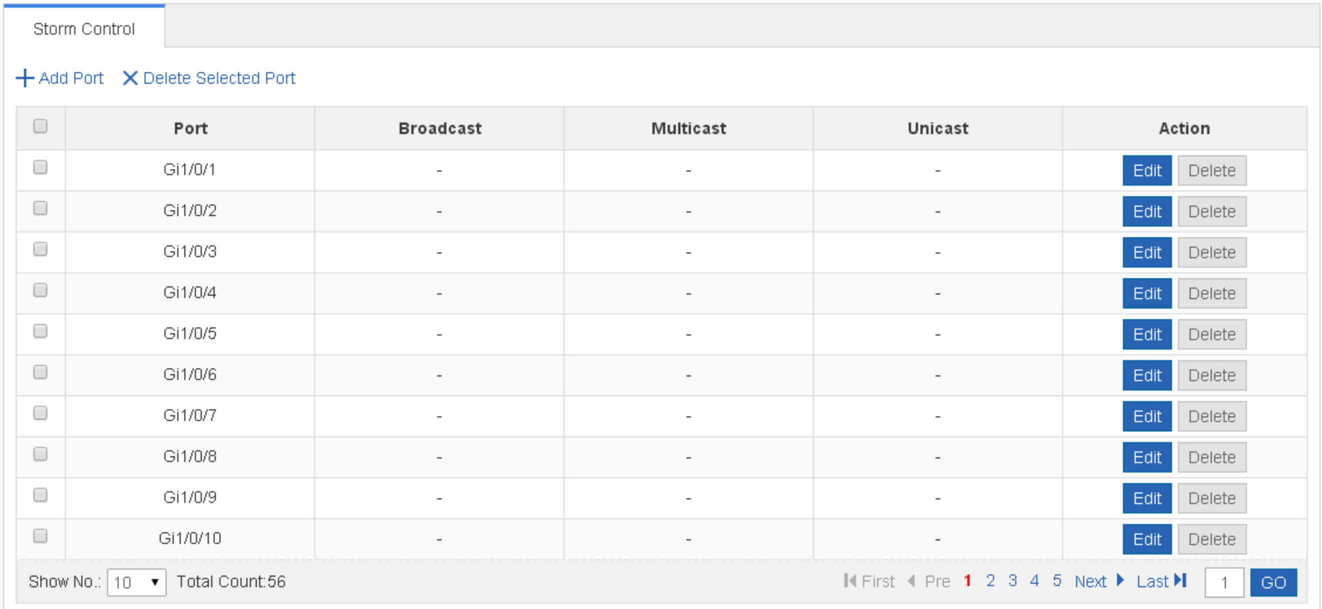
1.3.4.6 Storm Control

When a local area network (LAN) has excess broadcast data flows, multicast data flows, or unknown unicast data flows, the network speed will slow down and packet transmission will have an increased timeout probability. This situation is called a LAN storm. A storm may occur when topology protocol execution or network configuration is incorrect.

Storm control can be implemented to limit broadcast data flows, multicast data flows, or unknown unicast data flows. If the rate of data flows received by a device port is within the configured bandwidth threshold, packets-per-second threshold, or kilobits-per-second threshold, the data flows are permitted to pass through. If the rate exceeds the thresholds, excess data flows are discarded until the rate falls within the thresholds. This prevents flood data from entering the LAN causing a storm.

The following figure shows the Storm Control Settings page.

Figure 1-34 Storm Control Settings



Storm Control

+ Add Port ✕ Delete Selected Port

□	Port	Broadcast	Multicast	Unicast	Action
□	Gi1/0/1	-	-	-	Edit Delete
□	Gi1/0/2	-	-	-	Edit Delete
□	Gi1/0/3	-	-	-	Edit Delete
□	Gi1/0/4	-	-	-	Edit Delete
□	Gi1/0/5	-	-	-	Edit Delete
□	Gi1/0/6	-	-	-	Edit Delete
□	Gi1/0/7	-	-	-	Edit Delete
□	Gi1/0/8	-	-	-	Edit Delete
□	Gi1/0/9	-	-	-	Edit Delete
□	Gi1/0/10	-	-	-	Edit Delete

Show No.: 10 ▾ Total Count:56

First Pre 1 2 3 4 5 Next Last 1 GO

- Adding storm control ports

To add a storm control port, it is necessary to set at least Broadcast, Unicast, or Multicast. Afterwards, click **Save**. The newly added storm control port is displayed in the storm control list after a “Configuration succeeded.” message is displayed.

- Editing storm control ports

After clicking **Edit** in the **Action** column, the information of the corresponding storm control port is displayed on the page. After editing the information, click **Save**. The ”Configuration succeeded.” message is displayed.

- Deleting storm control ports

1) Multiple ports can be selected from the storm control port list. Click **Delete Selected Port** to batch delete ports.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the port?” message is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

1.3.5 Advanced

1.3.5.1 Port Protection

In some application environments, it is required that communication be disabled between some ports. For this purpose, you can configure some ports as protected ports. You can also disable routing between protected ports.

After ports are configured as protected ports, protected ports cannot communicate with each other, but can communicate with non-protected ports.

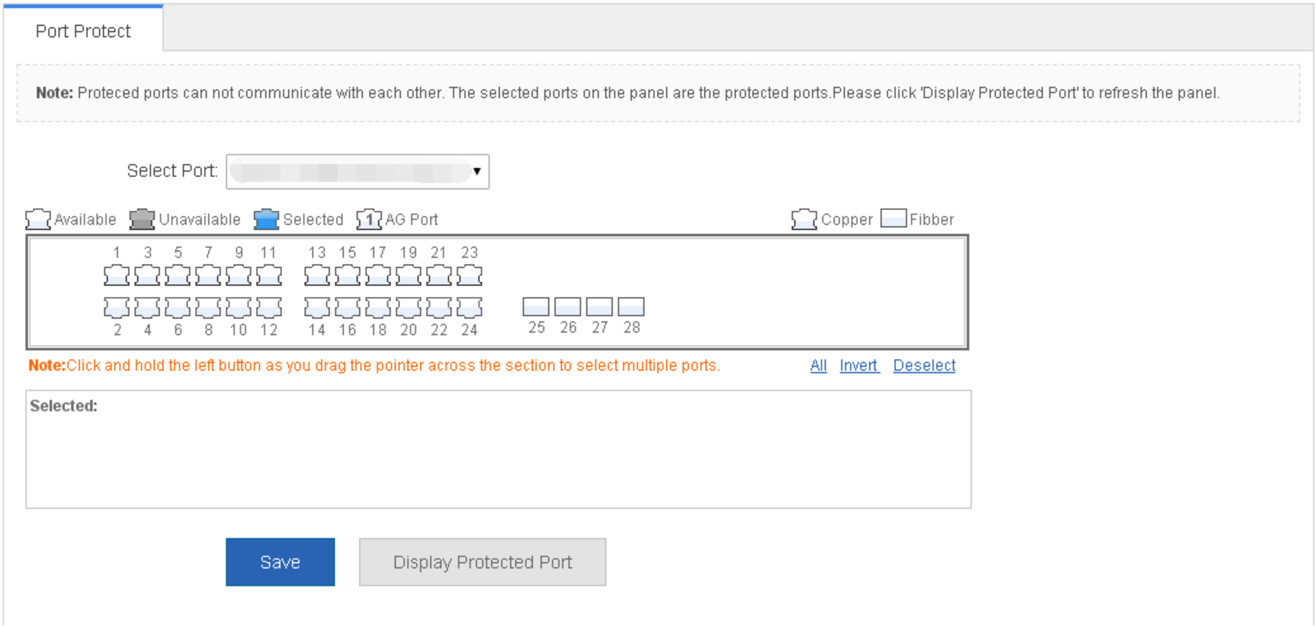
Protected ports work in either of the two modes. In the first mode, L2 switching is blocked but routing is allowed between protected ports. In the second mode, both L2 switching and routing are blocked between protected ports. If a protected port supports both modes, the first mode is used by default.

When two protected port are configured as a pair of mirroring ports, frames sent or received by the source port can be mirrored to the destination port.

Currently, only an Ethernet physical port or AP port can be configured as a protected port. When an AP port is configured as a protected port, all of its member ports are configured as protected ports.

The following figure shows the Port Protect Settings page.

Figure 1-35 Port Protect Settings



Note: Proteced ports can not communicate with each other. The selected ports on the panel are the protected ports.Please click 'Display Protected Port' to refresh the panel.

Select Port:

Note: Click and hold the left button as you drag the pointer across the section to select multiple ports.

Selected:

To set a port as a protection port, select a port on the panel and click **Save**. The ”Save succeeded.” message is displayed.

1.3.5.2 DHCP

Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway. RFCs 2131 and 2132 define DHCP as an Internet Engineering Task Force (IETF) standard based on Bootstrap Protocol (BOOTP), a protocol with which DHCP shares many implementation details. DHCP allows hosts to obtain required TCP/IP configuration information from a DHCP server.

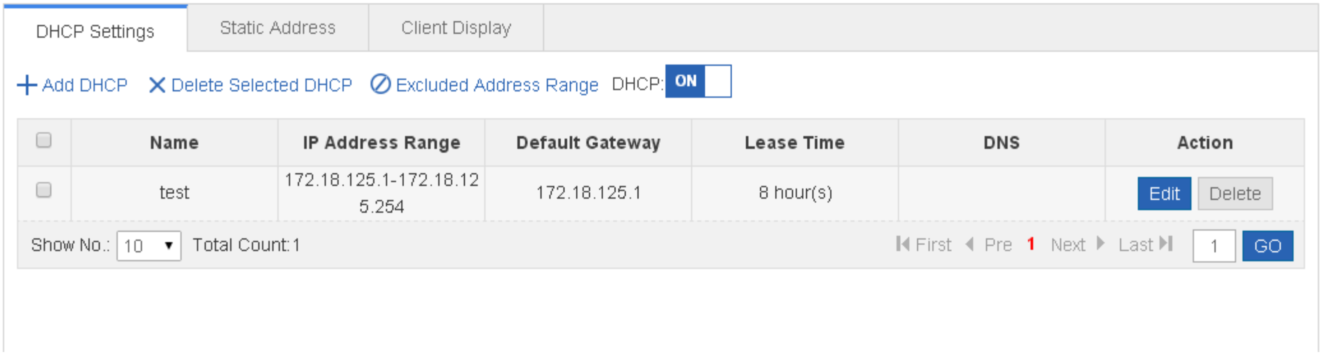
DHCP supports three mechanisms for IP address allocation. In "automatic allocation", DHCP assigns a permanent IP address to a client. In "dynamic allocation", DHCP assigns an IP address to a client for a limited period of time (or until the client explicitly relinquishes the address). In "static allocation", a client's IP address is assigned by the network administrator, and DHCP is used simply to convey the assigned address to the client. A particular network will use one or more of these mechanisms, depending on the policies of the network administrator.

DCHP allows you to perform DHCP settings and static address allocation, and access the client list.

↘ DHCP Settings

The following figure shows the DHCP Settings page.

Figure 1-36 DHCP Settings



DHCP: ON

□	Name	IP Address Range	Default Gateway	Lease Time	DNS	Action
□	test	172.18.125.1-172.18.125.254	172.18.125.1	8 hour(s)		Edit Delete

Show No.: 10 ▾ Total Count:1

- Adding DHCP

To add an address pool name, you must configure IP Address Range, Mask, Default Gateway, and Lease Time. Afterwards, click **Save**. The newly added address pool name is displayed in the DHCP list after the ”Save succeeded.” message is displayed.

- Editing DHCP

After clicking **Edit** in the **Action** column, the information of the corresponding DHCP is displayed on the page. After editing the information, click **Save**. The “Save succeeded.” message is displayed.

- Deleting DHCP

1) Multiple DHCPs from the DHCP list can be selected. Click **Delete Selected DHCP** to batch delete DHCPs.

2) After you click **Delete** in the **Action** column, the “Are you sure you want to delete the address pool?” message is displayed. After confirming the operation, a “Delete succeeded.” message is displayed.

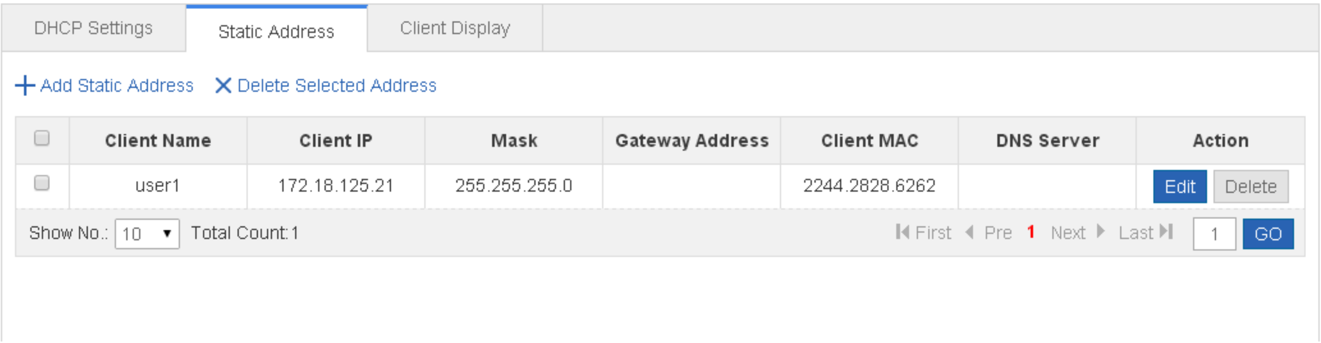
- Enabling DHCP

Turn on the DHCP service switch to enable the DHCP service.

Static Address

The following figure shows the Client Display page.

Figure 1-37 Client Display



□	Client Name	Client IP	Mask	Gateway Address	Client MAC	DNS Server	Action
□	user1	172.18.125.21	255.255.255.0		2244.2828.6262		Edit Delete

Show No.: 10 ▾ Total Count:1

- Adding static address

To add a static address, you must configure Client Name, Client IP Address, and Client MAC Address and you can configure other parameters as required. Afterwards, click **Save**. The newly added static address is displayed in the static address list after the ”Save succeeded.” message is displayed.

- Editing static address

After you click **Edit** in the **Action** column, the information of the corresponding static address is displayed on the page. After editing the information, click **Save**. the ”Save succeeded.” message is displayed.

- Deleting static address

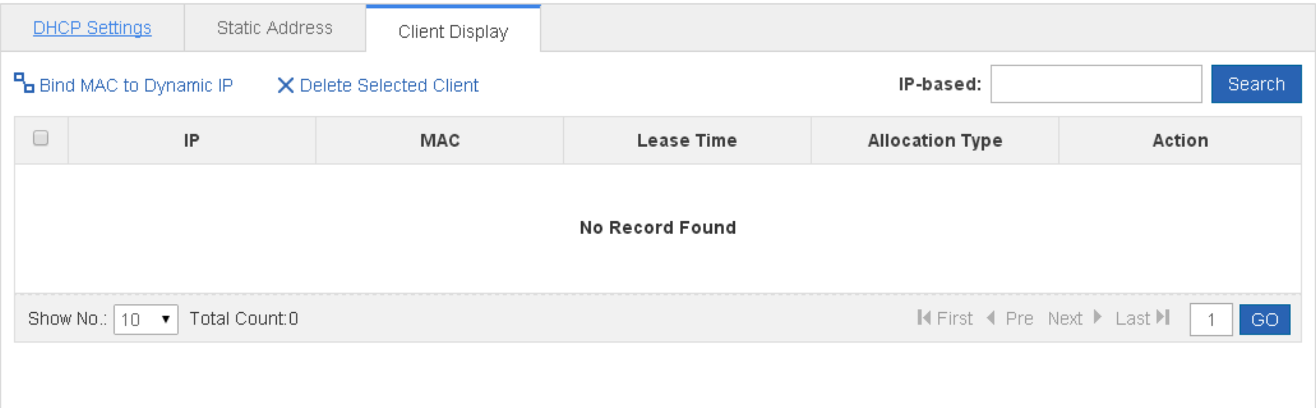
1) Multiple static addresses from the static address list can be selected. Click **Delete Selected Address** to batch delete static addresses.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the static address?” message is displayed. After confirming the operation, the ”Delete succeeded.” message is displayed.

Client Display

The following figure shows the ACL List page.

Figure 1-38 Client Display



□	IP	MAC	Lease Time	Allocation Type	Action
			No Record Found		

- Search by IP address

  Type an IP address in the search box for search.

- Binding MAC address to dynamic IP addresses

  Multiple clients from the client list can be selected. Click Bind MAC to Dynamic IP for binding.

1.3.5.3 ACL

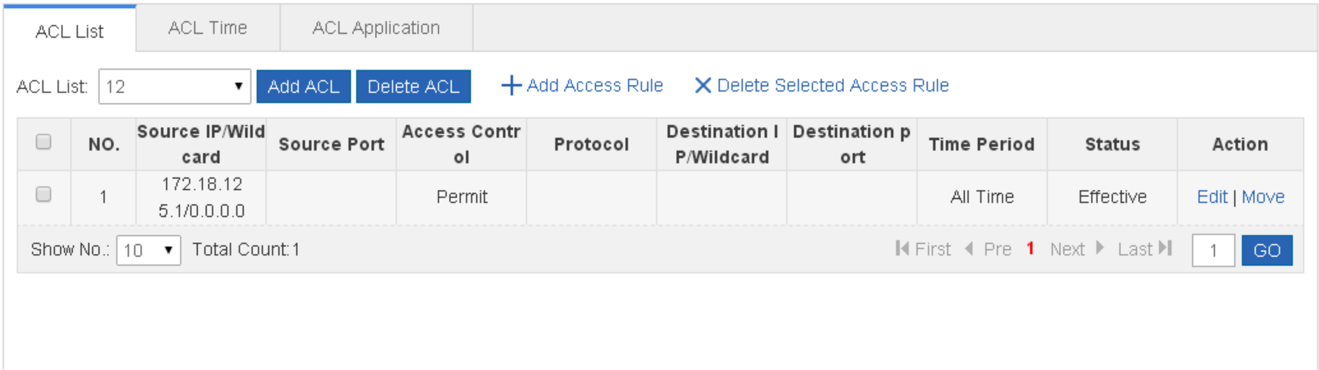
Access control list (ACL) is also called access list or firewall. It is even called packet filtering in some documents. The ACL defines rules to determine whether to forward or drop data packets arriving at a network interface.

Time-bases ACLs are Access Lists that enable you to restrict or allow resources based on time periods.

ACL List

The following figure shows the ACL List page.

Figure 1-39 ACL List



ACL List: 12

□	NO.	Source IP/Wildcard	Source Port	Access Control	Protocol	Destination IP/Wildcard	Destination port	Time Period	Status	Action
□	1	172.18.125.1/0.0.0.0		Permit				All Time	Effective	Edit | Move

Show No.: 10 Total Count:1 1 1

- Adding ACL

To add an ACL, click Add ACL, and perform settings on the displayed page (ACL List is mandatory). Afterwards, click **OK**. If the ”Add succeeded.” message is displayed, the add operation is successful. In this case, the newly added ACL is displayed in the ACL List drop-down list.

- Deleting ACL

Select the ACL to be deleted from the ACL List drop-down list and click Delete ACL. The ”Delete succeeded.’ message is displayed.

- Adding Access rule

To add an ACL rule, it is necessary to select the access control type, protocol, effective time, and IP address. Afterwards, click **Save**. The newly added ACL rule is displayed in the ACL rule list after the ”Add succeeded.” message is displayed.

- Editing access rule

After clicking **Edit** in the **Action** column, the information of the corresponding ACL rule is displayed on the page. After editing the information, click **Save**. The “Edit succeeded.” message is displayed.

- Deleting access rule

1) Multiple access rules from the ACL rule list can be selected. Click **Delete Selected Access Rule** to batch delete access rules.

2) After clicking **Delete** in the **Action** column, the “Are you sure you want to delete the access rule?” message is displayed. After confirming the operation, a ”Delete succeeded.” message is displayed.

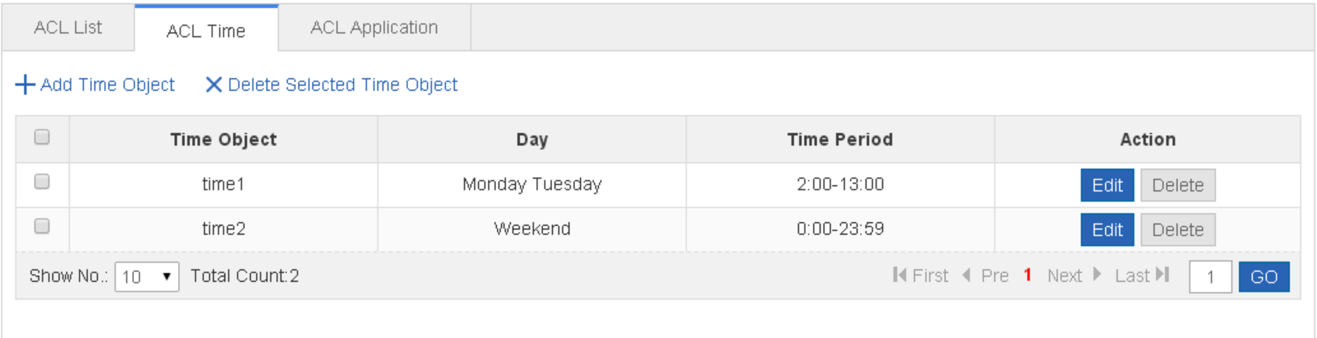
- Moving access rule

Enter the serial number of the ACL to be moved and click Move. The ”Operation succeeded.” message is displayed.

ACL Time

The following figure shows the ACL Time page.

Figure 1-40 ACL Time



□	Time Object	Day	Time Period	Action
□	time1	Monday Tuesday	2:00-13:00	Edit Delete
□	time2	Weekend	0:00-23:59	Edit Delete

Total Count:2

- Adding ACL time

To add an ACL time, you must configure Time Object , Day and Time Period. Afterwards, click **Save**. The newly added ACL time is displayed in the ACL time list after a “Save succeeded.” message is displayed.

- Editing ACL time

After clicking **Edit** in the Action column, the information of the corresponding ACL time is displayed on the page. After editing the information, click **Save**. A “Save succeeded.” message is displayed.

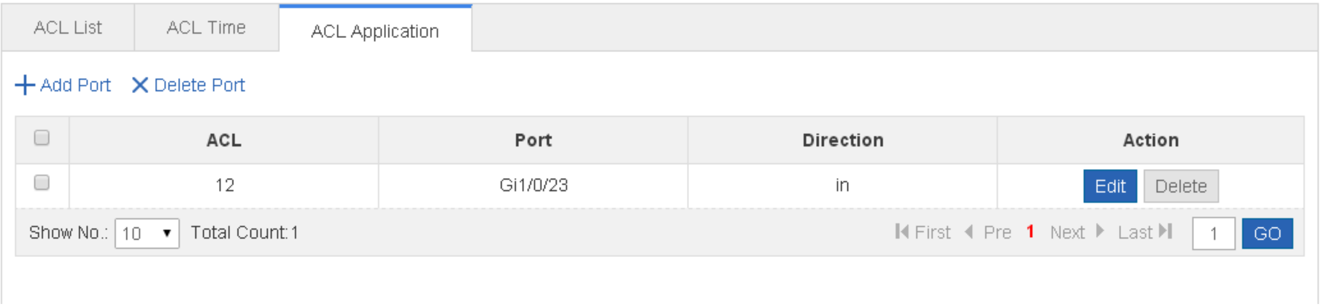
- Deleting ACL time

Multiple time objects can be selected from the ACL time list. Click **Delete Selected Time Object** to batch delete time objects.

ACL Application

The following figure shows the **ACL Application** page.

Figure 1-41 ACL Application



□	ACL	Port	Direction	Action
□	12	Gi1/0/23	in	Edit Delete

Total Count:1

- Add ACL application

To add an ACL application, it is necessary to set the ACL application time and select ACL, filtration direction, and port. Afterwards, click **Save**. The newly added ACL application is displayed in the ACL application list after a “Configuration succeeded.” message is displayed.

- Editing ACL application

After clicking **Edit** in the **Action** column, the information of the corresponding ACL application is displayed on the page. After editing the information, click **Save**. The ”Configuration succeeded.” message is displayed.

- Deleting ACL application

1) Multiple ports from the ACL application list can be selected. Click **Delete Port** to batch delete ports.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the ACL application?” message is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

1.3.5.4 QoS

Quality of Service (QoS) indicates that a network can provide a good service capability for specified network communication by using various infrastructure technologies.

When the network bandwidth is sufficient, all data streams can be properly processed; when network congestion occurs, all data streams may be discarded. To meet users' requirements for different applications and different levels of service quality, a network must be able to allocate and schedule resources based on users' requirements and provide different levels of service quality for different data streams. To be specific, the network can process real-time and important data packets in higher priorities and process non-real-time and common data packets in lower priorities and even discard the data packets upon network congestion.

The "doing the best" forwarding mechanism used by traditional networks cannot meet the requirements any longer and then QoS comes into being. QoS-enabled devices provide transmission QoS quality service. A transmission priority can be assigned to data streams of a type to identify the importance of the data streams. Then, the devices provide forwarding policies for different priorities, congestion mitigation and other mechanisms to provide special transmission services for these data streams. A network environment configured with QoS can provide predictability for network performance, effectively allocate network bandwidth, and reasonably utilize network resources.

A QoS policy comprises three elements: class, policy and flow behavior.

- Class

A class identifies streams and comprises the class name and class rules. You can define the class rules by using commands to classify packets.

- Policy

A policy binds a specific class and specific stream behaviors and comprises the policy name, names of the classes bound, and stream behaviors. You can bind a specified class and stream behaviors by using a QoS policy and apply the policy to one or more interfaces.

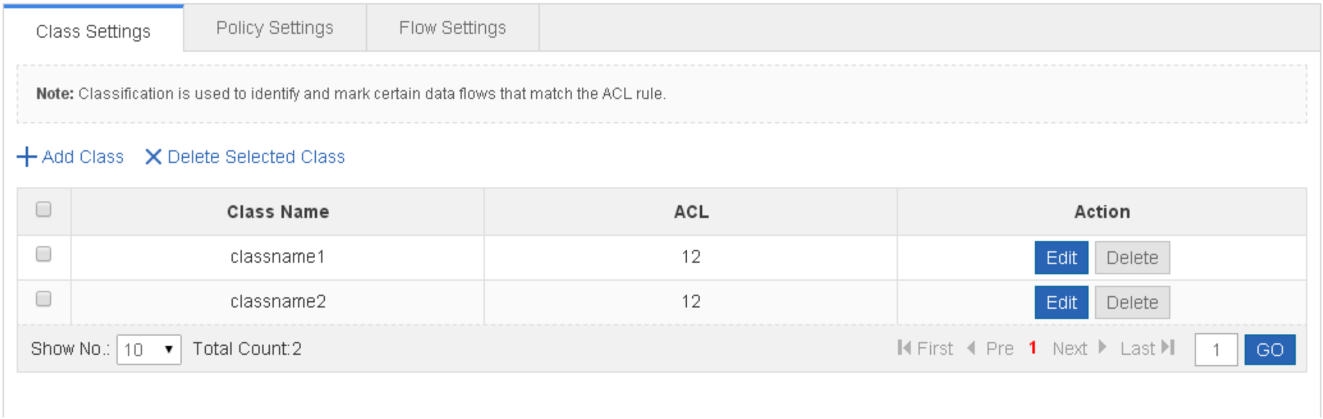
- Flow behavior

Flow behaviors define the QoS actions taken for packets, including priority labeling and traffic supervision for packets.

↘ Class Settings

The following figure shows the Class Settings page.

Figure 1-42 Class Settings



Note: Classification is used to identify and mark certain data flows that match the ACL rule.

□	Class Name	ACL	Action
□	classname1	12	Edit Delete
□	classname2	12	Edit Delete

Show No.: 10 ▾ Total Count:2

- Adding classes

To add a class, select the class name and select an ACL from the ACL list. Afterwards, click **Save**. The newly added class is displayed in the class list after the “Add succeeded.” message is displayed.

- Editing classes

After clicking **Edit** in the **Action** column, the information of the corresponding class is displayed on the page. After editing the information, click **Save**. The ”Edit succeeded.” message is displayed.

- Deleting class

1) Select multiple classes from the class list. Click **Delete Selected Class** to batch delete classes.

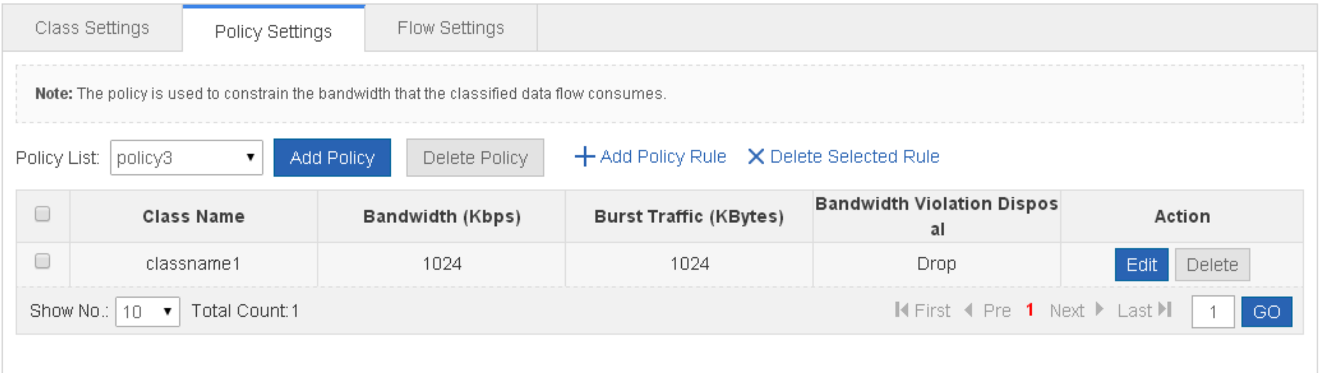
2) After clicking **Delete** in the **Action** column, the “Are you sure you want to delete the item?” message is displayed.

After confirming the operation, the ”Delete succeeded.” message is displayed.

Policy Settings

The following figure shows the Policy Settings page.

Figure 1-43 Policy Settings



Note: The policy is used to constrain the bandwidth that the classified data flow consumes.

Policy List: policy3 ▾

□	Class Name	Bandwidth (Kbps)	Burst Traffic (KBytes)	Bandwidth Violation Disposal	Action
□	classname1	1024	1024	Drop	Edit Delete

Show No.: 10 ▾ Total Count:1

- Adding policy

To add a policy, set the policy name. Afterwards, click **Save**. The newly added policy is displayed in the policy list after an "Add succeeded." message is displayed.

- Deleting policy

Select a specific policy form the policy list and click **Delete**. The "Are you sure you want to delete the item?" message is displayed. After confirming the operation, the ”Delete succeeded.” message is displayed.

- Adding policy rule

To add a policy rule, configure Bandwidth and Burst Traffic. Other parameters can be configured as required. Afterwards, click **Save**. The newly added policy rule is displayed in the policy rule list after the ”Add succeeded.” message is displayed.

- Editing policy rule

After clicking **Edit** in the **Action** column, the information of the corresponding policy rule is displayed on the page. After editing the information, click **Save**. The ”Edit succeeded” message is displayed.

- Deleting policy rule

1) Multiple rules from the policy rule list can be selected. Click **Delete Selected Rule** to batch delete the rule.

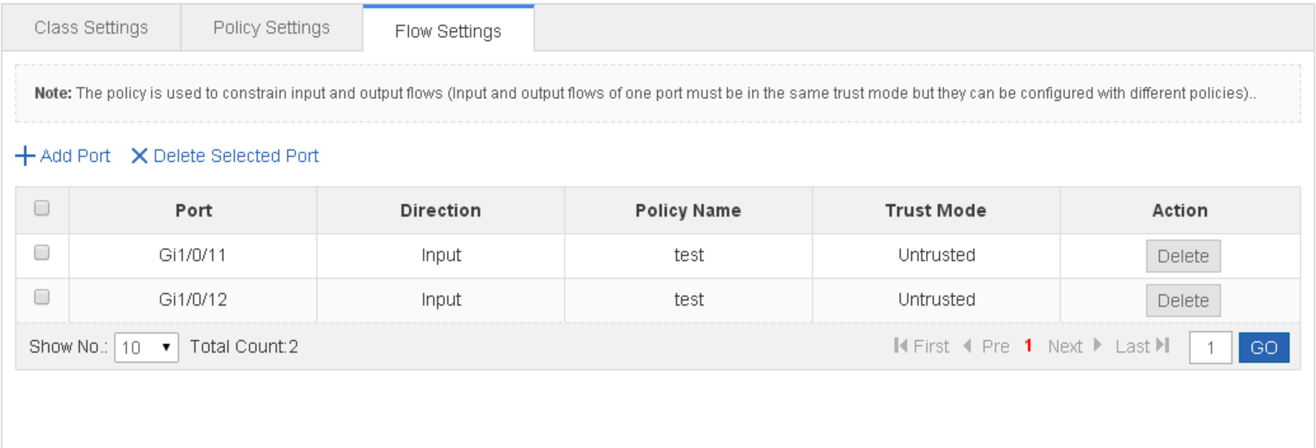
2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the item?” message is displayed.

After you confirm the operation, the ”Delete succeeded.” message is displayed.

Flow Settings

The following figure shows the Flow Settings page.

Figure 1-44 Flow Settings



Note: The policy is used to constrain input and output flows (Input and output flows of one port must be in the same trust mode but they can be configured with different policies)..

□	Port	Direction	Policy Name	Trust Mode	Action
□	Gi1/0/11	Input	test	Untrusted	Delete
□	Gi1/0/12	Input	test	Untrusted	Delete

Total Count:2

- Adding application policy ports

To add an application policy port, select the rate limiting direction, trust mode, policy list, and port. Afterwards, click **Save**. The newly added application policy port is displayed in the application policy port list after the "Add succeeded." message is displayed.

- Deleting application policy port

1) Multiple ports from the application policy port list can be selected. Click **Delete Selected Port** to batch delete ports.

2) After clicking **Delete** in the **Action** column, the ”Are you sure you want to delete the item?” message is displayed.

After confirming the operation, a ”Delete succeeded.” message is displayed.

1.3.6 System

The system management page allows you to perform system settings, system upgrade and configuration management and configure administrator permissions.

1.3.6.1 System Settings

Seven tab pages are available on the system setting page: System Time, Password, Restart, Reset, Enhancement, SNMP, and DNS.

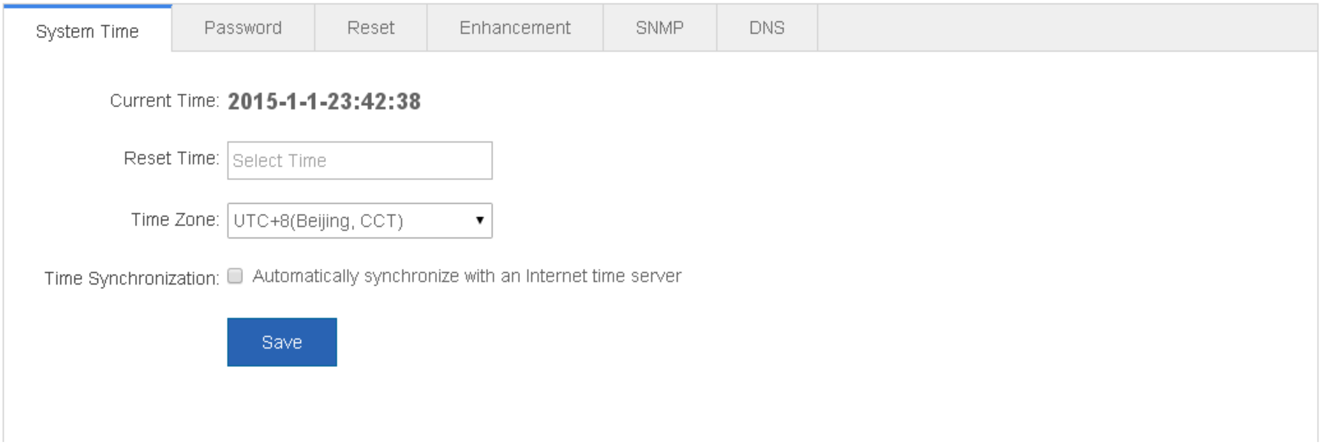
System time

The network device system clock records the time of events on the device. For example, the time shown in system logs is obtained from the system clock. Time is recorded in the format of *year-month-day, hour*:*minute*:*second*, *day of the week*.

When you use a network device for the first time, set its system clock to the current date and time manually.

The following figure shows the System Time page.

Figure 1-45 System Time



Current Time: 2015-1-1-23:42:38

Reset Time: Select Time

Time Zone: UTC+8(Beijing, CCT)

Time Synchronization: □ Automatically synchronize with an Internet time server

- System time

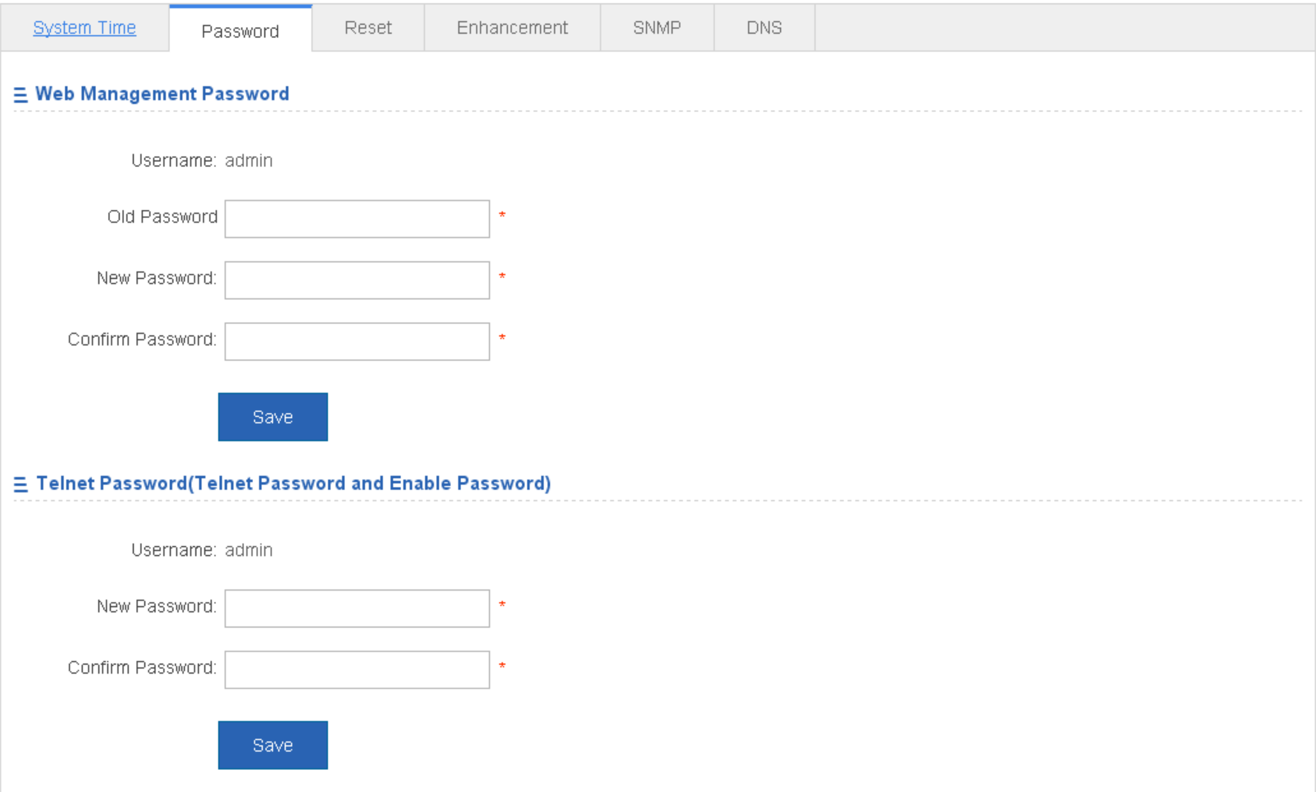
The current system time is displayed on the page. Current system time can be set manually. Alternatively, you can select **Automatically synchronize with an Internet time server** for setting the time. Afterwards, click **Save**. The ”Configuration succeeded.” message is displayed.

When the management IP address changes, you must ensure that the new IP address is reachable. Otherwise, you cannot login to the web-based management system.

Password

The following figure shows the Password page.

Figure 1-46 Passwords



Web Management Password

Username: admin

Old Password: *

New Password: *

Confirm Password: *

Telnet Password(Telnet Password and Enable Password)

Username: admin

New Password: *

Confirm Password: *

- Modifying the Web-based NMS password

To modify a Web user password, input the old password and input the new password twice. When an incorrect old password is inputted, the "Incorrect old password" message is displayed in red. In this case, input a correct old password and click **Save**.

When you change the Web management password, the enable password is changed accordingly by default.

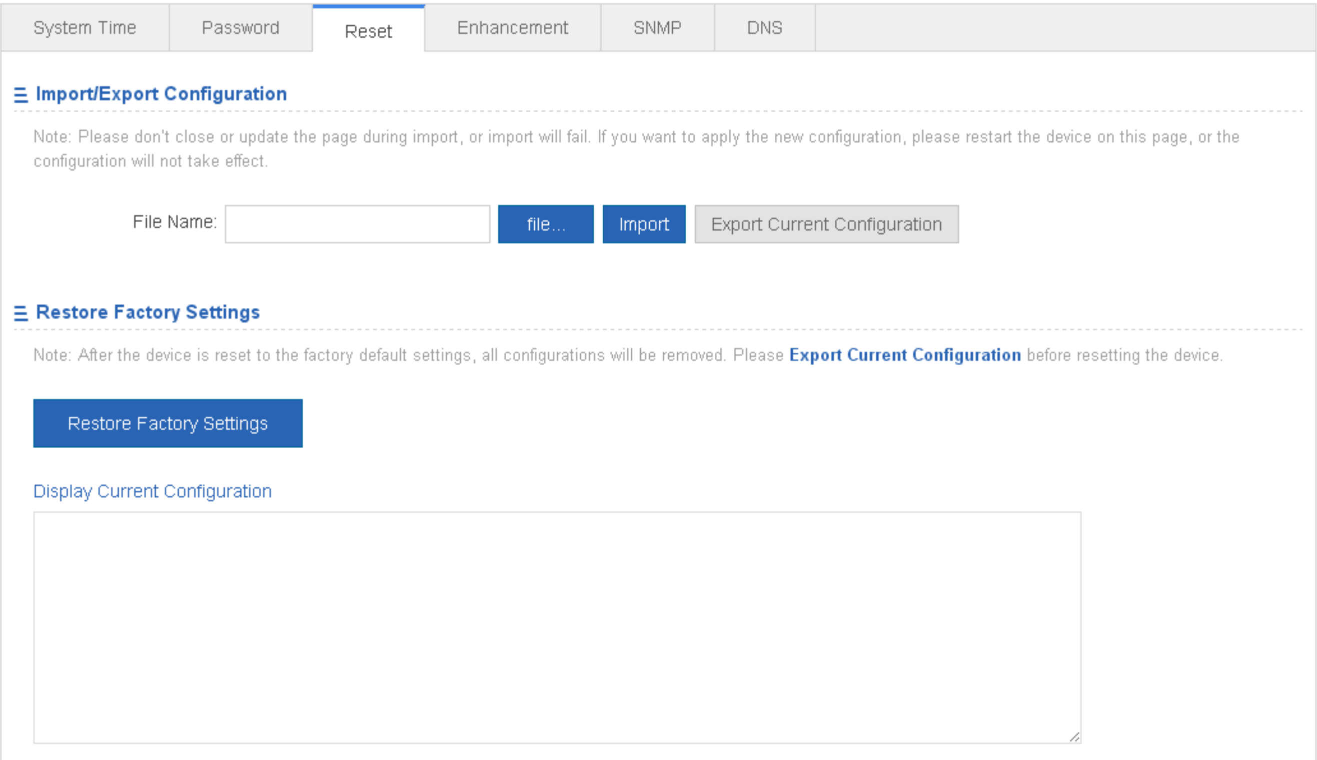
- Modifying the telnet authentication password

You do not need to input the old password before modifying the telnet password. Instead, you only need to input the same new password twice. Other steps are the same as when modifying the superuser password.

Restoring factory settings

The following figure shows the Reset page.

Figure 1-47 Reset



Import/Export Configuration

Note: Please don't close or update the page during import, or import will fail. If you want to apply the new configuration, please restart the device on this page, or the configuration will not take effect.

File Name:

Restore Factory Settings

Note: After the device is reset to the factory default settings, all configurations will be removed. Please **Export Current Configuration** before resetting the device.

Display Current Configuration

- Importing/exporting configurations

Configurations can be imported to modify the device configuration. Restart the device for the new configuration to install. The current configuration can be exported as a backup.

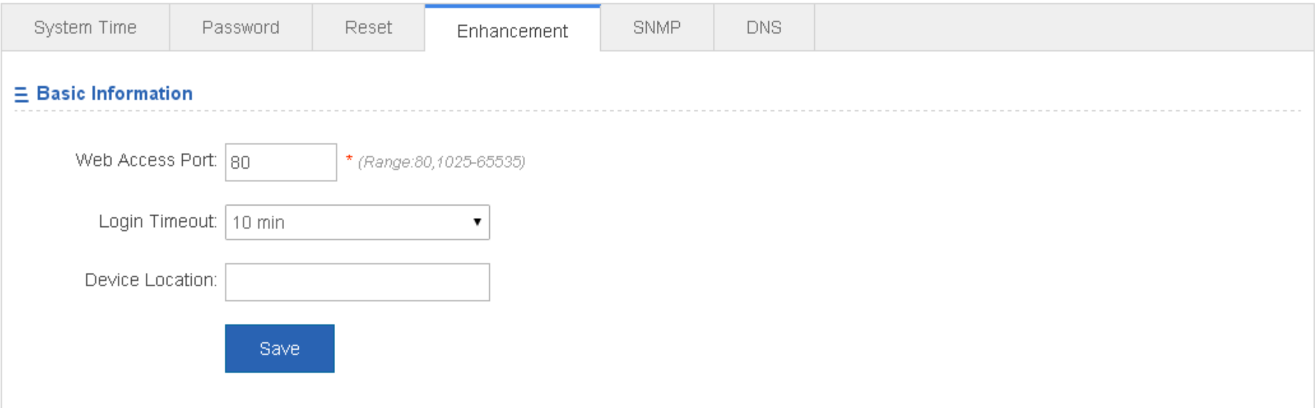
- Restoring factory settings

Click **Restore Factory Settings** to restore the current configuration to factory settings.

Enhancement

The following figure shows the Enhancement page.

Figure 1-48 Enhancement



Basic Information

Web Access Port: 80 * (Range:80,1025-65535)

Login Timeout: 10 min

Device Location:

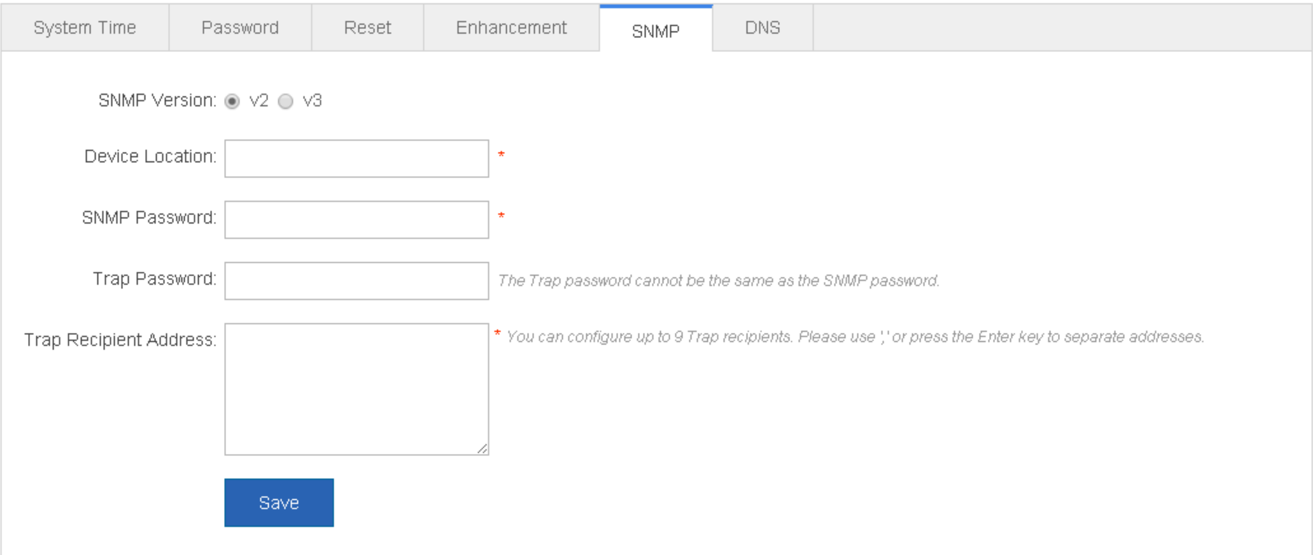
Specify Web Access Port (mandatory) and specify Login Timeout and Device Location as required. Afterwards, click **Save.** The “Configuration succeeded.” message is displayed.

SNMP

The Simple Network Management Protocol (SNMP) is by far the dominant protocol in network management. This Protocol (SNMP) was designed to be an easily implementable, basic network management tool that could be used to meet network management needs. It is named Simple Network Management Protocol as it is really easy to understand. A key reason for its widespread acceptance, besides being the chief Internet standard for network management, is its relative simplicity. There are different versions of SNMP, such as SNMP V1, SNMP V2c, and SNMP V3.

The following figure shows the SNMP page.

Figure 1-49 SNMP



SNMP Version: ● v2 ○ v3

Device Location: *

SNMP Password: *

Trap Password: *The Trap password cannot be the same as the SNMP password.*

Trap Recipient Address: * *You can configure up to 9 Trap recipients. Please use ',' or press the Enter key to separate addresses.*

On this page, SNMP Version, Device Location, SNMP Password, and Trap Password are mandatory and other parameters are optional. After setting, click **Save**. The “Configuration succeeded.” message is displayed.

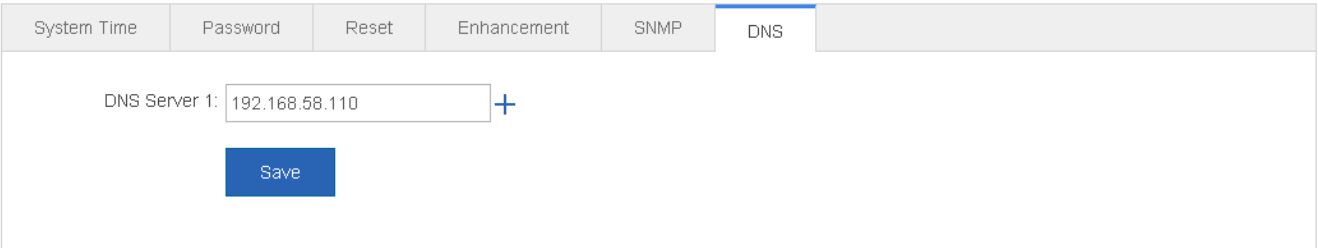
DNS

A Domain Name System (DNS) is a distributed database containing mappings between domain names and IP addresses on the Internet, which facilitate users to access the Internet without remembering IP strings that can be directly accessed by computers. The process of obtaining an IP address through the corresponding host name is called domain name resolution (or host name resolution).

DNS consists of a resolver and a DNS server. The DNS server stores the mappings between domain names and IP addresses of all hosts on the network, and implements mutual conversion between the domain names and IP addresses. Both the TCP and UDP port IDs of DNS are 53, and generally a UDP port is used.

The following figure shows the DNS page.

Figure 1-50 DNS



DNS Server 1: 192.168.58.110

Specify DNS Server and click **Save**. The “Configuration succeeded.” message is displayed.

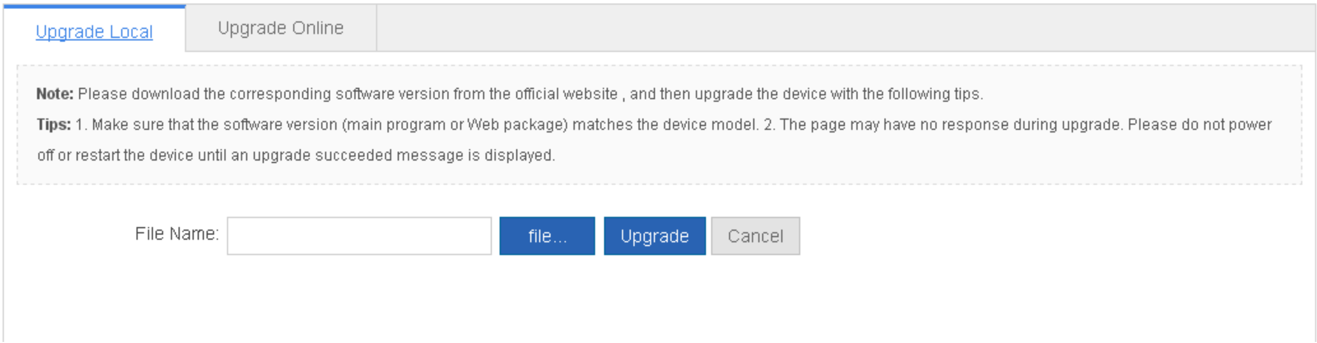
1.3.6.2 System Upgrade

Two tab pages are available on the system upgrade page: Upgrade Local and Upgrade Online.

↘ Upgrade Local

The following figure shows the Upgrade Local page.

Figure 1-51 Upgrade Local



Note: Please download the corresponding software version from the official website , and then upgrade the device with the following tips.

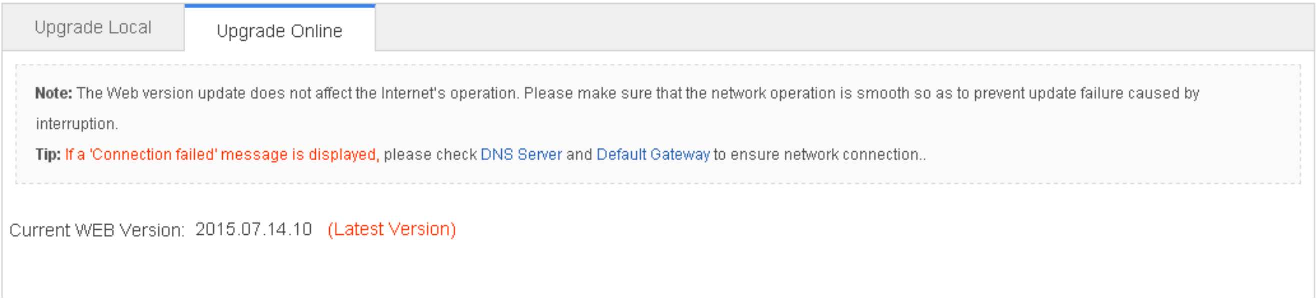
Tips: 1. Make sure that the software version (main program or Web package) matches the device model. 2. The page may have no response during upgrade. Please do not power off or restart the device until an upgrade succeeded message is displayed.

Click **file…**, select a bin file stored locally, and click **Upgrade** to start local upgrade.

↘ Upgrade Online

The following figure shows the Upgrade Online page.

Figure 1-52 Upgrades Online



Note: The Web version update does not affect the Internet's operation. Please make sure that the network operation is smooth so as to prevent update failure caused by interruption.

Tip: If a 'Connection failed' message is displayed, please check DNS Server and Default Gateway to ensure network connection..

Current WEB Version: 2015.07.14.10 (Latest Version)

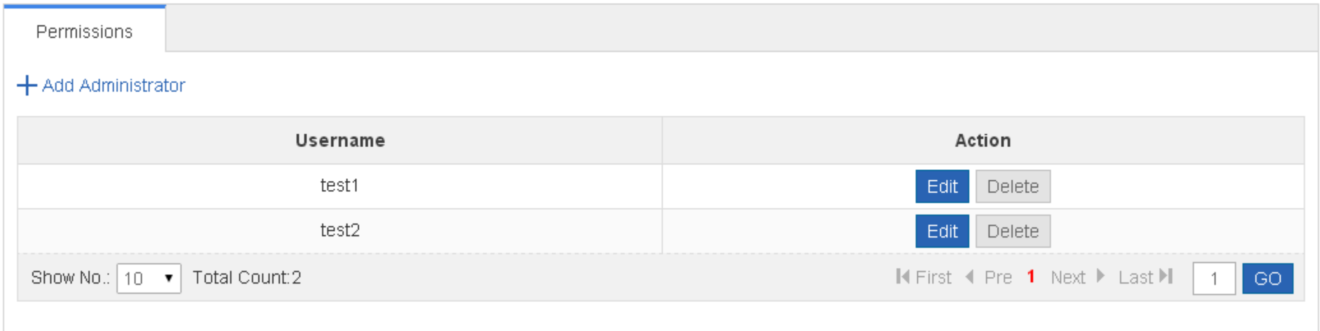
If a version later than the current version is available, click **Detect New Version** to upgrade the Web package to the latest version.

1.3.6.3 Administrator Permissions

The Administrator Permissions page allows configuration of administrator permissions.

The following figure shows the Administrator Permissions page.

Figure 1-53 Administrator Permissions



Username	Action
test1	Edit Delete
test2	Edit Delete

- Adding user

To add a user, input the username, password, and authorized page (by default, the authorized page is all pages). Afterwards, click **Save**. All users are displayed in the administrator list after a “Configuration succeeded.” message is displayed.

Two default users are available, that is, super administrator (admin) and guest (guest). Super administrator admin can modify the permissions of other administrators. An administrator can access all pages except the **Administrator Permissions** page, while a guest can only access the home page. Default users cannot be deleted.

1.3.6.4 System Logging

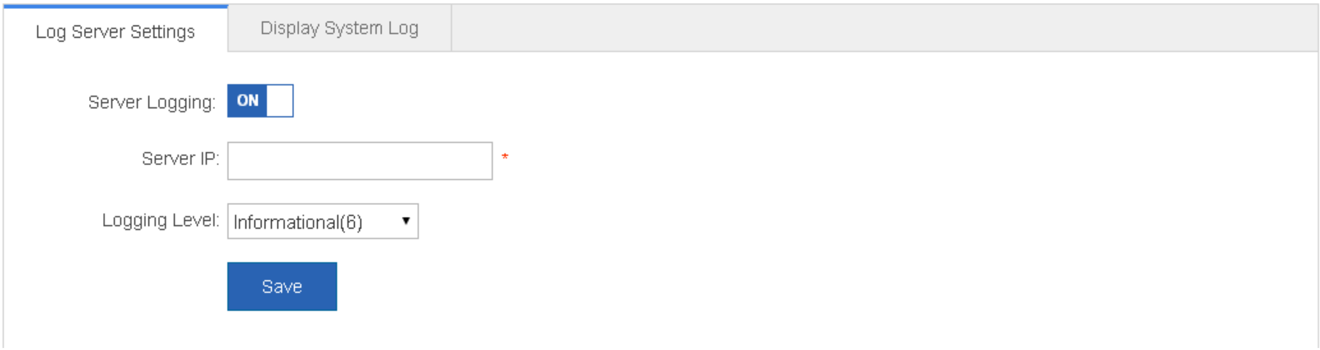
Status changes (such as link up and down) or abnormal events may occur anytime. Ruijie products provide the syslog mechanism to automatically generate messages (log packets) in fixed format upon status changes or occurrence of events. These messages are displayed on the related windows such as the Console or monitoring terminal, recorded on media such as the memory buffer or log files, or sent to a group of log servers on the network so that the administrator can analyze network performance and identify faults based on these log packets. Log packets can be added with the timestamps and sequence numbers and classified by severity level so that the administrator can conveniently read and manage log packets.

Two tab pages are available on the system log page: Log Server Settings and Display System Log.

↘ Log Server Settings

The following figure shows the Log Server Settings page.

Figure 1-54 Log Server Settings



Server Logging: ON

Server IP: *

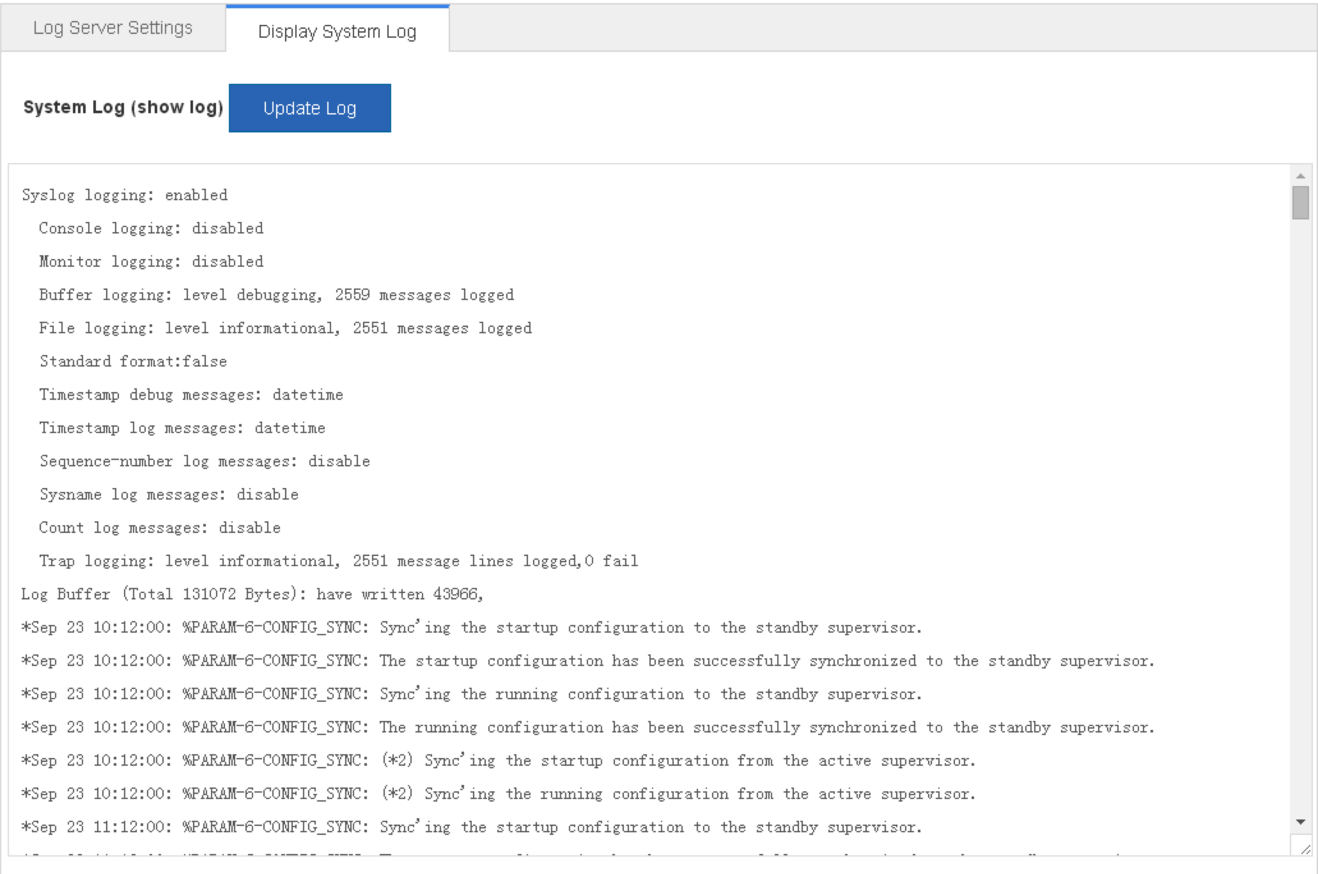
Logging Level: Informational(6)

Set various parameters such as Server IP Address and Logging Level. The device sends the SYSLOG log to the corresponding server after the configuration is complete.

Display System Log

The following figure shows the Display System Log page.

Figure 1-55 Display System Log



```
Syslog logging: enabled
  Console logging: disabled
  Monitor logging: disabled
  Buffer logging: level debugging, 2559 messages logged
  File logging: level informational, 2551 messages logged
  Standard format:false
  Timestamp debug messages: datetime
  Timestamp log messages: datetime
  Sequence-number log messages: disable
  Sysname log messages: disable
  Count log messages: disable
  Trap logging: level informational, 2551 message lines logged,0 fail
Log Buffer (Total 131072 Bytes): have written 43966,
*Sep 23 10:12:00: %PARAM-6-CONFIG_SYNC: Sync'ing the startup configuration to the standby supervisor.
*Sep 23 10:12:00: %PARAM-6-CONFIG_SYNC: The startup configuration has been successfully synchronized to the standby supervisor.
*Sep 23 10:12:00: %PARAM-6-CONFIG_SYNC: Sync'ing the running configuration to the standby supervisor.
*Sep 23 10:12:00: %PARAM-6-CONFIG_SYNC: The running configuration has been successfully synchronized to the standby supervisor.
*Sep 23 10:12:00: %PARAM-6-CONFIG_SYNC: (*2) Sync'ing the startup configuration from the active supervisor.
*Sep 23 10:12:00: %PARAM-6-CONFIG_SYNC: (*2) Sync'ing the running configuration from the active supervisor.
*Sep 23 11:12:00: %PARAM-6-CONFIG_SYNC: Sync'ing the startup configuration to the standby supervisor.
```

The current log information is displayed in the text box. Click **Update Log** to refresh log information.

1.3.6.5 Network Detection

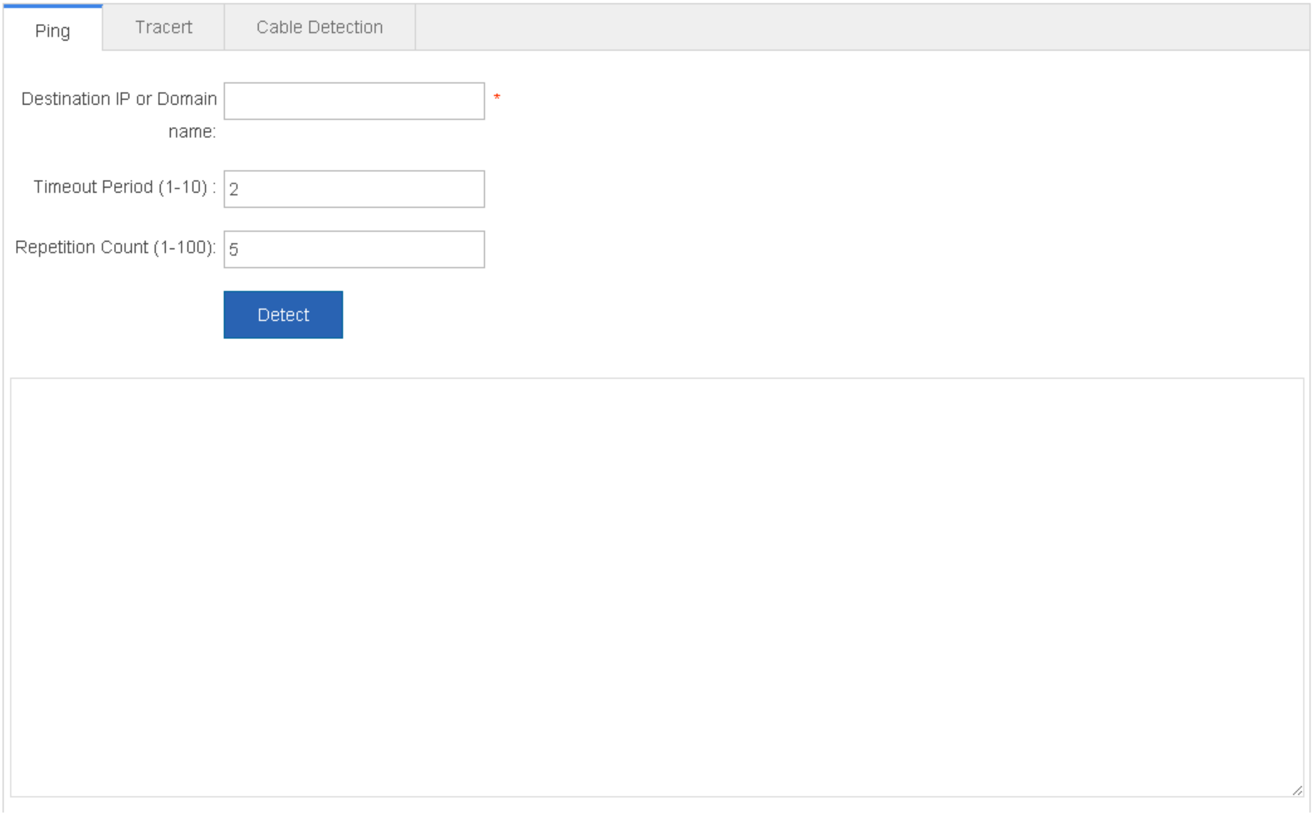
Three tab pages are available on the network connection detection page: Ping, Tracert, and Cable Detection.

Ping

The ping tool sends an Internet Control Message Protocol (ICMP) Request message to the destination host to request the for an ICMP Echo Reply message. In this way, the ping tool determines the delay and the connectivity between the two network devices.

The following figure shows the Ping page.

Figure 1-56 Ping



Destination IP or Domain name: *

Timeout Period (1-10) : 2

Repetition Count (1-100): 5

Input the destination IP address and click **Detect**. The detection result is then displayed in the text box.

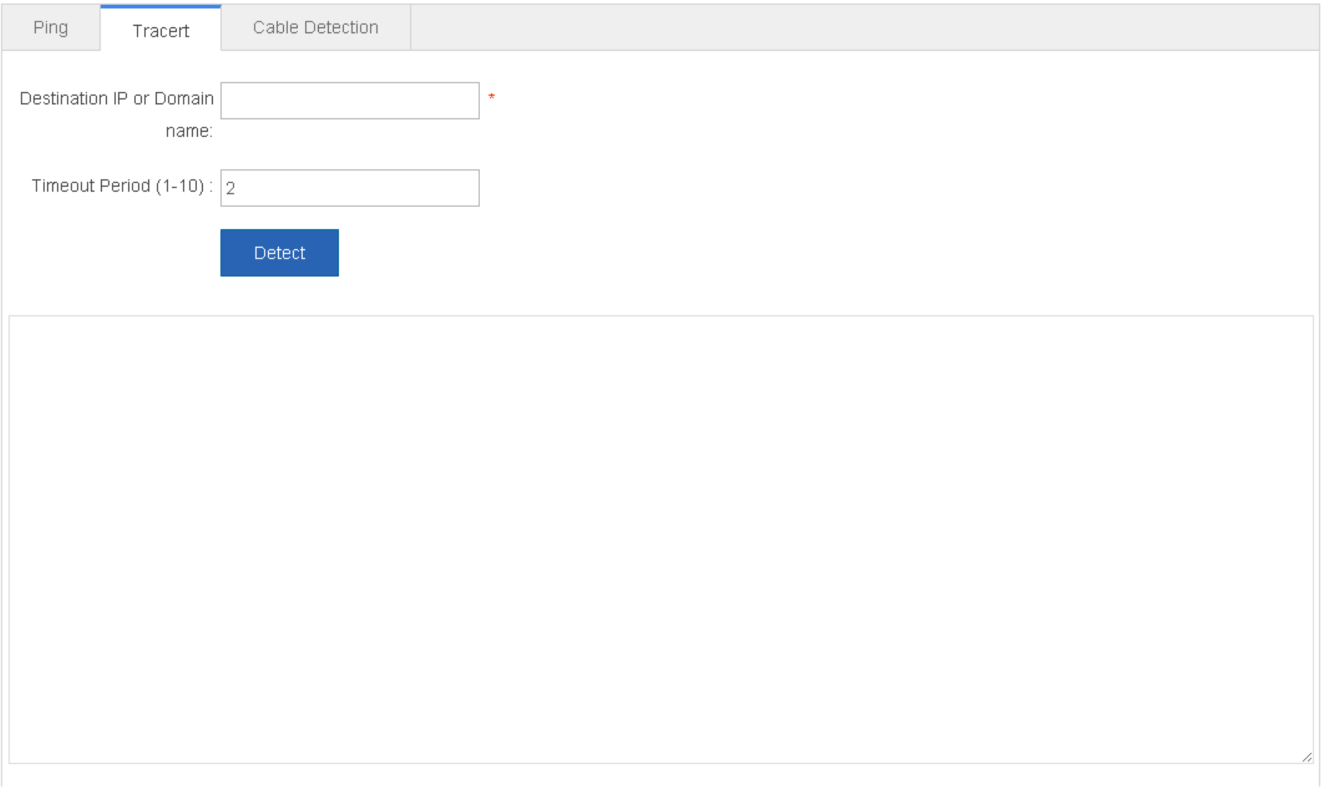
Tracert

The Tracert tool uses the Time To Live (TTL) field in the headers of the ICMP and IP messages for the test First, the Tracert tool on the network device sends an ICMP Request message with TTL 1 to the destination host. After receiving the message, the first router on the path decreases the TTL by 1. As the TTL becomes 0, the router drops the packets and returns an ICMP time exceeded message to the network device. After receiving this message, the Tracert tool learns that this router exists on this path, and then sends an ICMP Request packet with TTL 2 to the destination host to discover the second router. Each time the Tracert tool increases the TTL in the ICMP Request message by 1 to discover one more router. This process is repeated until a data packet reaches the destination host. After the packet reaches the destination host, the host returns an

ICMP Echo message instead of an ICMP time exceeded message to the network device. Then, the Tracert tool finishes the test and displays the path from the network device to the destination host.

The following figure shows the Tracert page.

Figure 1-57 Tracert



Destination IP or Domain name: *

Timeout Period (1-10) : 2

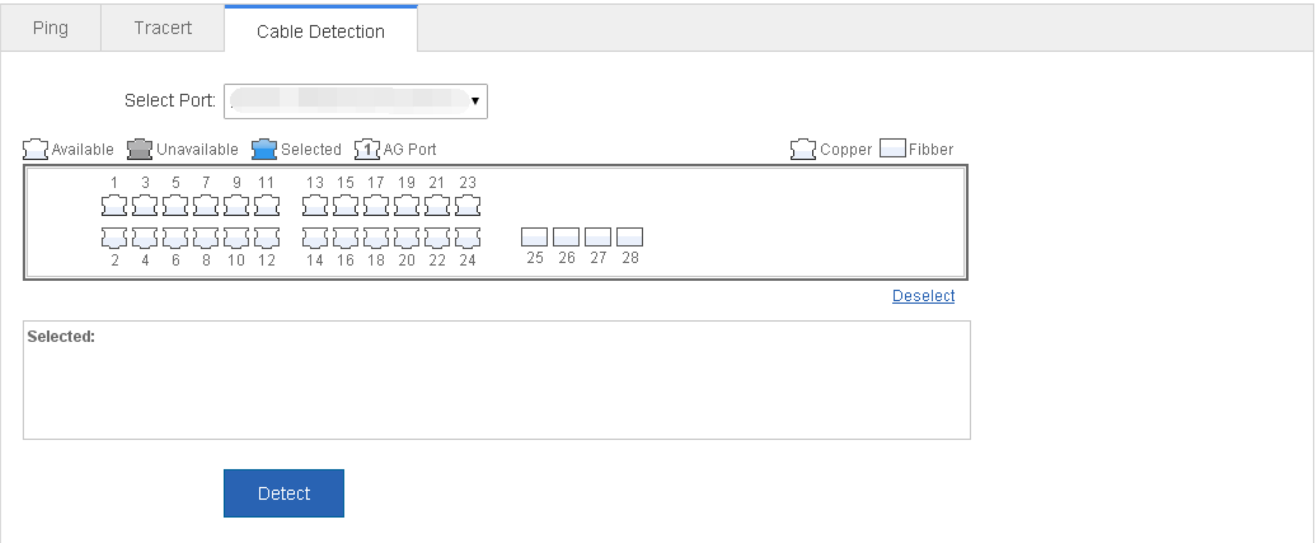
Input the destination IP address and click **Detect**. The detection result is displayed in the text box after a short time.

Cable Detection

When a cable is short-circuited or disconnected, cable detection helps you determine the working status of the cable. Only a physical port using copper as the medium supports cable detection. A physical port using fiber as the medium or an AP port does not support cable detection. When cable detection is performed on an operational interface, the interface will be temporarily disconnected, and then re-connected.

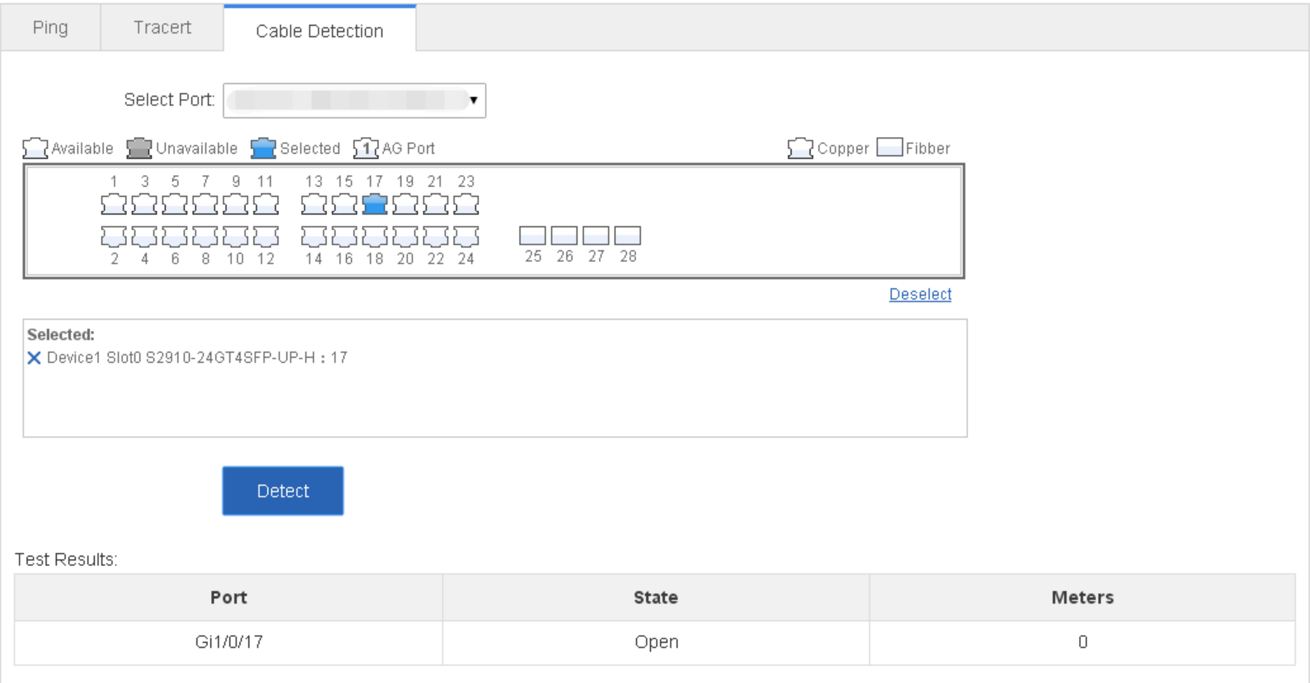
The following figure shows the Cable Detection page.

Figure 1-58 Cable Detection



Select a port on the panel and click Detect. After a short time, the detection result is displayed below the Detect button.

Figure 1-59 Cable detection result.



Selected:

✕ Device1 Slot0 S2910-24GT4SFP-UP-H : 17

Test Results:

Port	State	Meters
Gi1/0/17	Open	0