

## Port's Additional Features Configuration

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# Chapter 1 Port's Additional Features Configuration

## 1.1 Port Isolation

Under normal condition, data packet could be forwarded among different ports of switches. Under some circumstances, flows among ports need to be forbidden, and port isolation function is the one to provide this kind of control. For isolation which is not based on group, data communication could not work between isolated ports, but data packets among non-isolated ports and isolated and non-isolated ports could be forwarded normally. For isolation based on group, isolated ports in group cannot do data communication, but they can do data communication with any ports outside group. To be noticed, port isolation function works for layer 2 messages, but it does not support isolation based on group.

Isolation based on non-group:

Command	Purpose
config	Entering global configuration mode
interface g0/1	Entering the interface which to be configured
[no] <b>switchport protected</b>	Enable/cancel port isolation function
exit	Back to global configuration mode
exit	Back to management configuration mode

Isolation based on group:

Command	Purpose
config	Entering global configuration mode.
[no] <b>port-protected</b> <i>group-id</i>	Create and enable the isolation group mode. <i>group-id</i> means to configure the the isolation group ID.
[no] <b>description</b> <i>word</i>	Description of the group. <i>Word</i> stand for the character string of the group.
exit	Back to global configuration mode.
interface g0/1	Entering the interface which to be configured
[no] <b>switchport protected</b> <i>group-id</i>	Add/remove isolation group. <i>group-id stand for</i> the isolation group ID that is configured.
exit	Back to global configuration mode.
exit	Back to management configuration mode.

## 1.2 Storm Control

Switch's ports could be attacked by constant abnormal unicast (MAC address locating failure), multicast or broadcast messages. It might cause switch's ports and even the whole switch's failure. Therefore, a mechanism has be provided to restrain this phenomenon. Storm control function could set different rates at the ingress for different kinds of messages which are allowed to enter switch.

Command	Purpose
config	Entering global configuration mode
interface g0/1	Entering the interface which to be configured
[no] <b>storm-control</b> { <b>broadcast</b>   <b>multicast</b>   <b>unicast</b> } <b>threshold</b> <i>count</i>	Configuring port's storm control function. <b>Unicast</b> means it works for unknown unicast. <b>Multicast</b> means it works for multicast. <b>Broadcast</b> means it works for broadcast. <b>Count</b> means the threshold which is to be configured.
exit	Back to global configuration mode
exit	Back to management configuration mode

### 1.3 Port's Rate Limitation

Port's rate limitation is used for limiting the rate of flow which comes in and goes out of ports. Use the following commands to limit port's flow rate after entering management mode:

Command	Purpose
config	Entering global configuration mode
interface g0/1	Entering the interface which to be configured
[no] <b>switchport rate-limit</b> { <i>band</i>   <b>Bandwidth</b> <i>percent</i> } { <b>ingress</b>   <b>egress</b> }	Configuring the flow rate limitation for port. <i>Band</i> is the limited flow rate. <i>Percent</i> is the limited flow percentage. <b>Ingress</b> means it works for ingress; <b>Egress</b> means it works for egress.
exit	Back to global configuration mode
exit	Back to management configuration mode

### 1.4 Port Loop Detection

Port loop detection function is used for detecting whether port has loop. Time interval of loop detection messages sent by port could be configured. Use the following command to set time interval of loop detection messages sent by port after entering management mode.

Command	Purpose
config	Entering global configuration mode
Interface g0/1	Entering the interface which to be configured
[no] <b>keepalive</b> [ <i>second</i> ]	Configuring time interval of loop detection messages sent by port. <i>Second</i> is the time interval of sending

	messages.
exit	Back to global configuration mode
exit	Back to management configuration mode

## 1.5 Port MAC-address learning

Port MAC address learning is used to enable/disable port MAC address learning. The configuration method is as follows:

Command	Purpose
config	Entering global configuration mode
interface g0/1	Entering the interface which to be configured
[no] <b>switchport disable-learning</b>	Configure port MAC address learning. Enable/disable port MAC address learning function.
exit	Back to global configuration mode
exit	Back to management configuration mode

## 1.6 Port's Security

Port's security does controlling by accessing port according to MAC address. Port's security has three kinds of modes: dynamic security mode, static accepting mode, and static rejecting mode. Under dynamic security mode, maximum MAC address quantity which is allowed to be learnt by ports can be configured. When the maximum mac quantity has been learnt from some port by switch, mac address would not be learnt; at the meantime, switch drops all the DLF messages. Under static security mode, static security MAC address can be configured at port. Under static accepting mode, only messages which source MAC is safe MAC address are allowed to get in, and others would be dropped. Under static rejecting mode, messages which source MAC is safe MAC address would be dropped, and other messages would be allowed to get in.

Command	Purpose
config	Entering global configuration mode
interface g0/1	Entering the interface which to be configured
[no] <b>switchport port-security mode</b> { <b>dynamic</b>   <b>static</b> <i>accept/reject</i>   <b>sticky</b> }	Configuring port's security mode. <b>Dynamic</b> means dynamic security mode. <b>static</b> <i>accept</i> means static accepting mode <b>static</b> <i>reject</i> means static rejecting mode
[no] <b>switchport port-security dynamic</b> <b>maximum</b> <i>num</i>	Configuring maximum learnable MAC address quantity
[no] <b>switchport port-security static</b> <b>mac-address</b> <i>H.H.H</i>	Configuring static security address
[no] <b>switchport port-security sticky</b> { <b>maximum</b> <i>sticky_number</i>   <b>mac-address</b> <i>H.H.H</i>   <b>aging-time</b> <i>aging_time</i> }	Configuring port MAC address sticky. <b>maximum</b> <i>sticky_number</i> means maximum sticky MAC address quantity.

	<p><b>mac-address</b> <i>H.H.H</i> means to configure sticky MAC address manually.</p> <p><b>aging-time</b> <i>aging_time</i> means to configure aging time of sticky MAC address manually.</p>
exit	Back to global configuration mode
exit	Back to management configuration mode

## 1.7 Interface's binding

This switch could be bind with IP address and MAC address on interface at the same time, or be bind with only IP address or MAC address. It works for IP and ARP messages.

Use the following commands to do configuration after entering management mode:

Command	Purpose
config	Entering global configuration mode
interface g0/1	Entering the interface which to be configured
[no] <b>switchport port-security bind block {ip arp both-arp-ip A.B.C.D   mac H.H.H}</b>	<p>Configuring interface's binding function.</p> <p><b>Bind</b> only allows messages which conform to binding requirements to pass, and other messages would not be allowed to pass. <b>Block</b> only reject messages which conform to binding requirements, and others would be allowed to pass.</p> <p><b>Ip</b> means it would only work for IP messages which conform to binding requirements;</p> <p><b>Arp</b> means it would only work for arp messages which conform to binding requirements;</p> <p><b>both-arp-ip</b> means it would work for ip and arp messages conforming to binding requirements.</p>
exit	Back to global configuration mode
exit	Back to management configuration mode

## 1.8 SVL/IVL

This switch can be configured with Shared (SVL)/independent (IVL) vlan learning mode. By default, the ports are all in IVL mode.

This switch could be bind with IP address and MAC address on interface at the same time, or be bind with only IP address or MAC address. It works for IP and ARP messages.

Use the following commands to do configuration after entering management mode:

Command	Purpose
config	Entering global configuration mode
[no]vlan <b>shared-learning</b>	Configuring SVL/IVL
exit	Back to management configuration mode

## 1.9 Configuring Link Scan

### 1.9.1 Overview

Configuring port's scanning time interval is to scan port's up/down status quickly.

### 1.9.2 Link scan Configuration Task

- Configuring port's scanning time interval.

#### 1. Setting up port's scanning time interval

When setting up port's scanning time interval, use the following command under global configuration mode:

Command	Purpose
<b>[no] Link scan {normal interval / fast interval}</b>	<p>Mode means to choose optical port's scanning mode.</p> <p><b>Normal</b> means standard link scanning mode.</p> <p><b>Fast</b> means quick link scanning mode. Fast mode mainly applies to service protocol, like rstp.</p> <p><b>Interval</b> means configuring port's scanning time interval.</p>

### 1.9.3 Configuration Example

Configuring standard scanning interval as 20 millisecond

```
link scan normal 20
```

## 1.10 Configuring Port Enhanced Link Status Check

### 1.10.1 Overview

Configuring port's enhanced link status check is to scan port's link status quickly.

## 1.10.2 Configuration Task

- Enable/disable port's enhanced link status check.

### 1. Enable/disable port's enhanced link status check

When enable/disable port's enhanced link status check, use the following command under interface configuration mode:

Command	Purpose
<b>[no] switchport enhanced-link</b>	Enable/disable port's enhanced link status check.

## 1.10.3 Configuration Example

Enable enhanced link status check of interface g0/1.

```
Switch_config#interface g0/1
```

```
Switch_config_g0/1#switchport enhanced-link
```

## 1.11 Configuring system mtu

### 1.11.1 Overview

Configuring system mtu

### 1.11.2 Configuration Task

- Configuring system mtu

#### 1. Setting up mtu

Use the following command under global configuration mode:

Command	Purpose
<b>[no] system mtu <i>mtu</i></b>	Configuring system mtu value

### 1.11.3 Configuration Example

Configuring system mtu 2000 bytes

```
Switch_config#system mtu 2000
```