

# Port Security

Ethernet Switch

ZyNOS 4.0

## Support Notes

Version 4.0

July 2011



## Port Security Overview

Port security allows only packets with dynamically learned MAC addresses and/or configured static MAC addresses to pass through a port on the Switch. See Chapter 10 on page 105 for information on configuring static MAC address forwarding.

For maximum port security, enable this feature, disable MAC address learning and configure static MAC address(es) for a port. By default, MAC address learning is still enabled even though the port security is not activated.

Functionally the Switch allows for three possible outcomes with port security. You can configure the ports to:

- Forward all packets and learn all MAC addresses.
- Drop all packets from unknown MAC addresses and do not learn MAC addresses.
- Drop all packets from unknown MAC addresses and learn a limited number of MAC addresses.

## Port Security Setup

Click “Advanced Application” > “Port Security” in the navigation panel to display the screen as shown.

**Port Security** [VLAN MAC Address Limit](#)

**MAC Freeze :**

Port List

**Port Security :**

Active ☐

Port	Active	Address Learning	Limited Number of Learned MAC Address
*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 <input type="text"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 <input type="text"/>
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 <input type="text"/>
4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 <input type="text"/>
5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 <input type="text"/>

## VLAN MAC Address Limit

Use this screen to set the MAC address learning limit on per-port and per-VLAN basis. Click “VLAN MAC Address Limit” in the “Advanced Application” > “Port Security” screen to display the screen as shown.

Index	Active	Port	VID	Limit Number	Delete

## Scenario

### Port Security Example 1

The following example demonstrates the various settings and results associated with different port security configurations. Ports 1 to 5 are configured to:

- Port 1 - Forward all packets and learn all MAC addresses.
- Port 2 - Forward all packets and learn all MAC addresses.
- Port 3 - Drop all packets from unknown MAC addresses and do not learn MAC addresses.
- Port 4 - Drop all packets from unknown MAC addresses and do not learn MAC addresses.
- Port 5 - Drop all packets from unknown MAC addresses but forward packets from up to 100 learned MAC addresses.

### Port Security

#### MAC Freeze :

Port List	<input type="text"/>	MAC freeze
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#### Port Security :

Active	<input checked="" type="checkbox"/>
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Port	Active	Address Learning	Limited Number of Learned MAC Address
*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	100
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0
10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0

PORT	SETTINGS			RESULT
	ACTIVATE PORT SECURITY	ACTIVATE ADDRESS LEARNING	LIMIT NO. OF LEARNED MAC ADDRESSES	
1		X	0 (disables limits)	Forward all packets, learn all MAC addresses.
2	X	X	0 (disables limits)	Forward all packets, learn all MAC addresses.
3	X		0 (disables limits)	Drop all packets from unknown MAC addresses, do not learn MAC addresses.
4	X		100	Drop all packets from unknown MAC addresses, do not learn MAC addresses.
5	X	X	100	Drop packets from unknown MAC addresses, learn up to 100 MAC addresses.

## Port Security Example 2

The following example demonstrates the various settings and results associated with different port security configurations. Ports configured to:

- Port 2 - Port 2 can only learn 3 MAC address in the Vlan which VID is 2.
- Port 4 - Port 4 can only learn 5 MAC address in the Vlan which VID is 4

 **VLAN MAC Address Limit**

Port Security

Active	<input checked="" type="checkbox"/>					
Port	2					
VID	2					
Limit Number	3					

Add Cancel Clear

Index	Active	Port	VID	Limit Number	Delete
1	Yes	2	2	3	<input type="checkbox"/>
2	Yes	4	4	5	<input type="checkbox"/>

Delete Cancel

## Configuration ZyXEL switch using the Web GUI

1. Connect the MGMT port to a PC or Notebook with the RJ45 Cable.
2. By default, the MGMT IP address of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter <http://192.168.0.1> into the URL field.
5. By default, the username for the administrator is “admin” and the password is “1234”.
6. After successfully logging in you will see a screen similar to the one below.

Port	Name	Link	State	PD	LACP	TxPkts	RxPkts	Errors	Tx KB/s	Rx KB/s	Up Time
1	1000M/F		FORWARDING	Off	Disabled	1116	1476	0	29.787	8.825	1:17:32
2	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
3	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
4	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
5	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
6	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
7	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
8	Down		STOP	Off	Disabled	0	0	0	0.0	0.0	0:00:00
9	Down		STOP	-	Disabled	819	10239	0	0.0	0.0	0:00:00
10	Down		STOP	-	Disabled	0	0	0	0.0	0.0	0:00:00

7. To enter the “Port Security” page, click “Advanced Application” “Port Security”

## Configuration ZyXEL switch using the CLI

### Port Security Example 1

```

vlan 1 name 1
    normal ""
    fixed 1-10
    forbidden ""
    
```

```
untagged 1-10
ip address inband-default 192.168.1.1 255.255.255.0
exit
ip address 192.168.0.1 255.255.255.0
port-security
port-security 2
port-security 3
port-security 4
port-security 5
port-security 2 learn inactive
port-security 3
port-security 4 address-limit 100
port-security 5 learn inactive
port-security 5 address-limit 100
```

## Port Security Example 2

```
vlan 1 name 1
normal ""
fixed 1-10
forbidden ""
untagged 1-10
ip address inband-default 192.168.1.1 255.255.255.0
exit
ip address 192.168.0.1 255.255.255.0
port-security
port-security 2
port-security 3
port-security 4
port-security 5
port-security 2 vlan 2 address-limit 3
port-security 4 vlan 4 address-limit 5
```