# IP Source Guard

**Ethernet Switch**

**ZyNOS 4.0**

## Support Notes

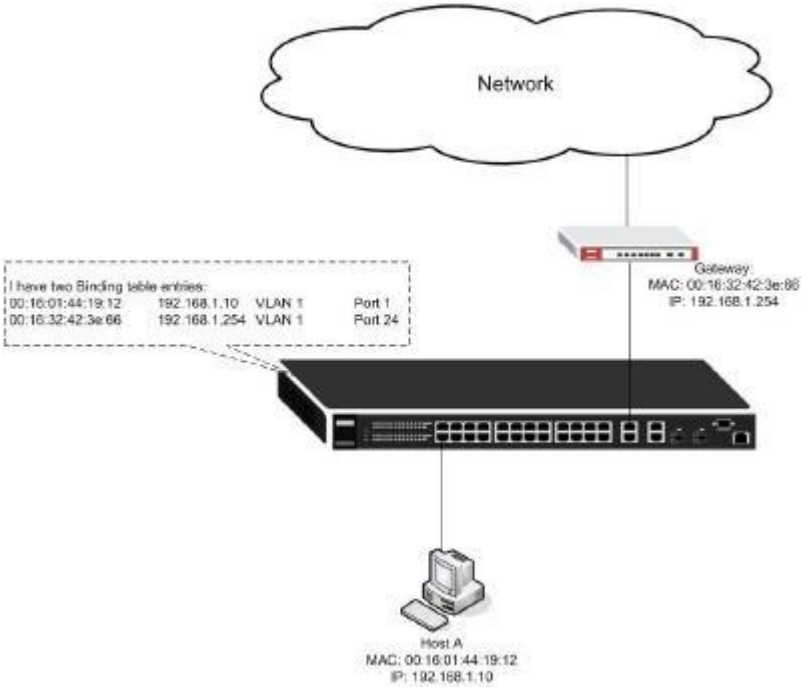
Version 4.0

July 2011

ZyXEL
Unleash Networking Power

# Overview of IP Source Guard

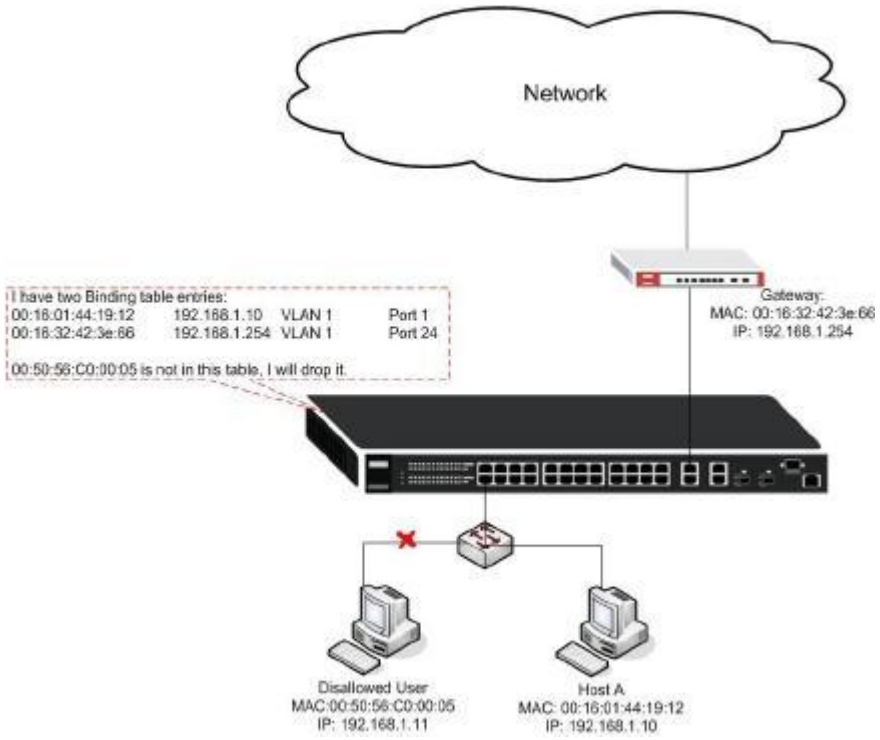
IP Source Guard is a new feature in ZyNOS 3.80. It allows the switch to identify who has the permission to access the network. Furthermore, device can check the binding of MAC address, IP address, VLAN tag, and ingress port of packets. Had any parameter be mismatching, the packet will be dropped. The below scenario is an example:



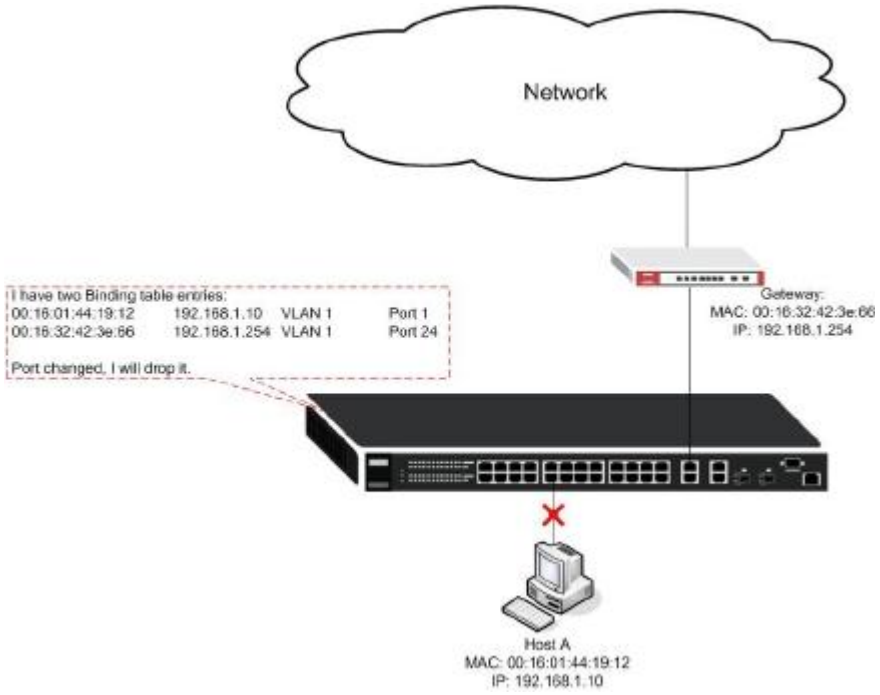

Host A has its own static IP address, MAC address, and the switch knows which Host A has connected and what VLAN this port belongs to.

IP Source Guard can filter packets in the below scenarios:

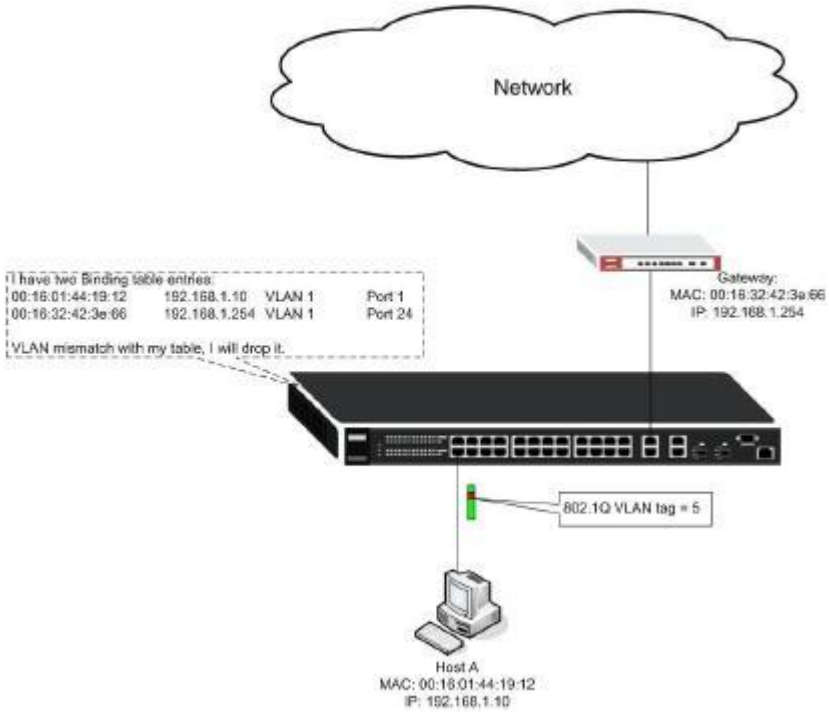
1. If unauthorized user connects to an external switch, IP Source Guard will drop packets coming from the user. IP or MAC address mismatching.




2. If Host A changes the connecting port, the switch will drop packets coming from Host A. port mismatching.




3. If the VLAN tag is different from the table of switch. The packets from Host A will be dropped because of the mismatching of VLAN.



# Scenario

Here we'd like to demonstrate a situation with a port changing. Consider the scenario below:

Figure 1

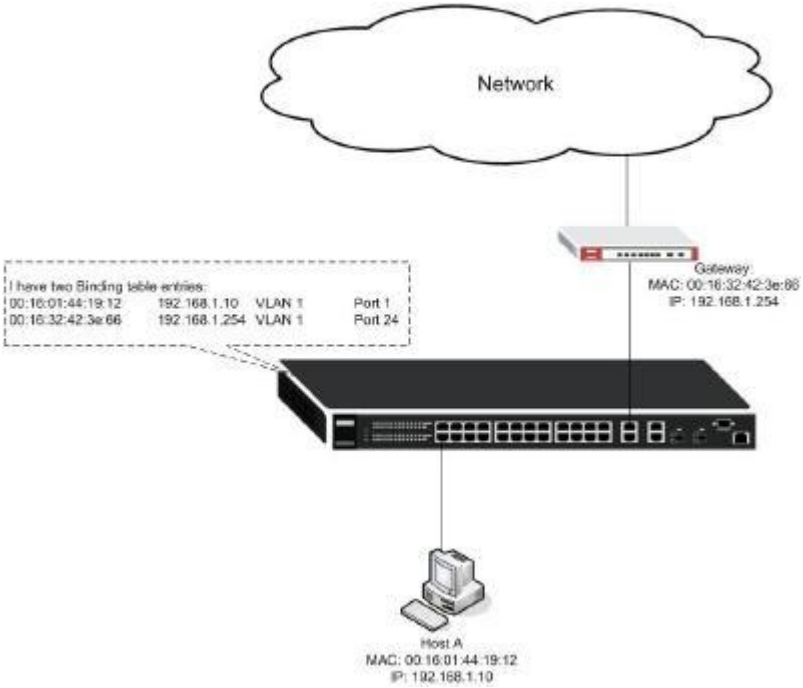
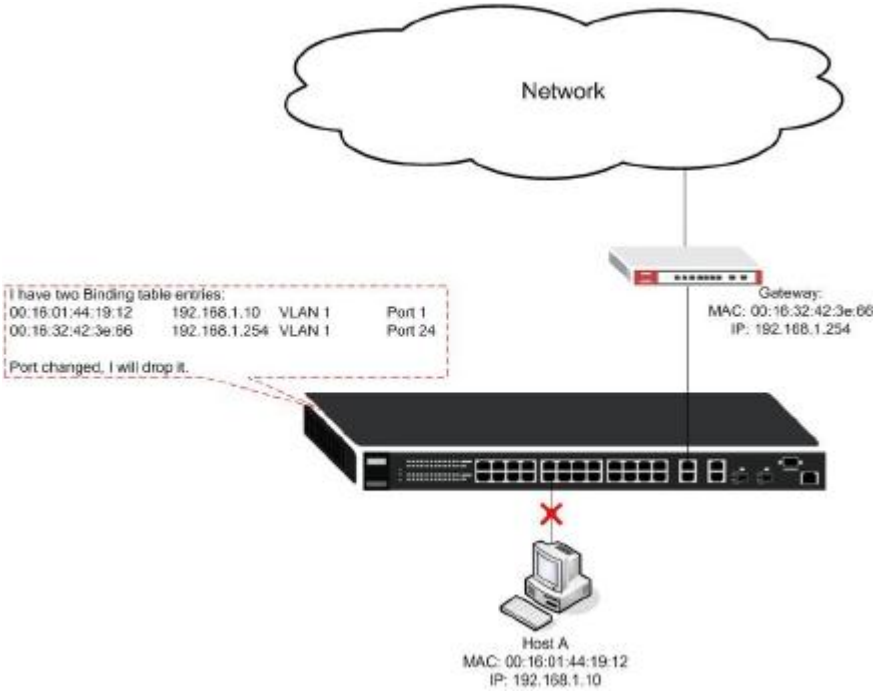



Figure 2

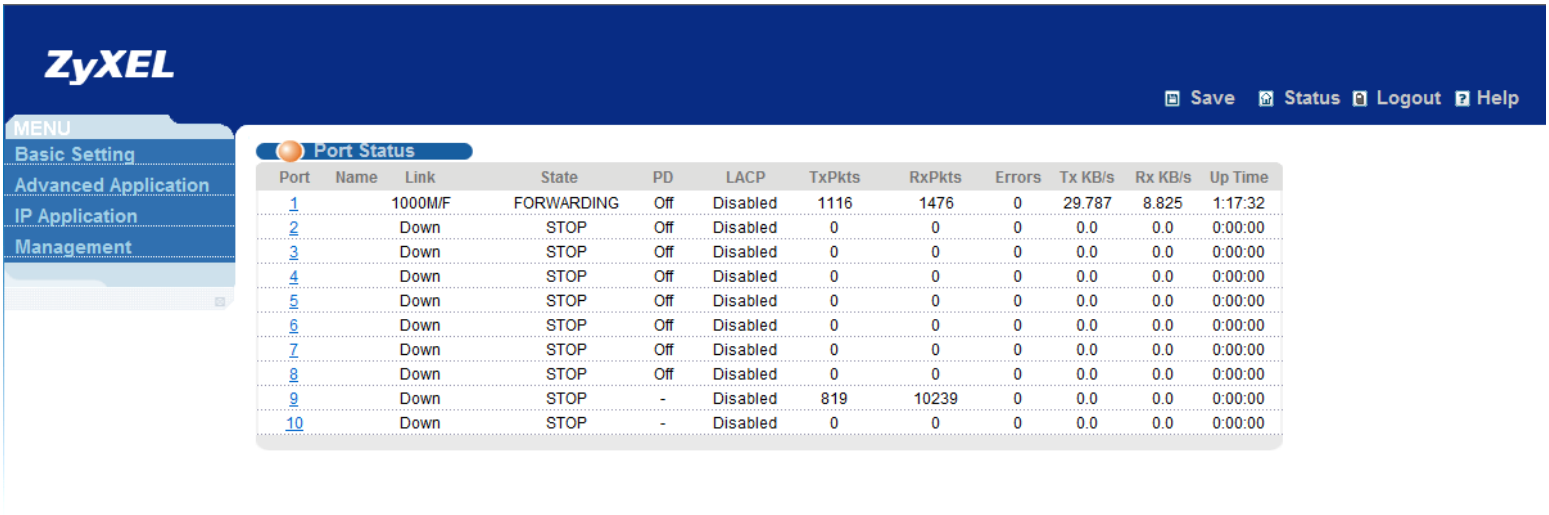



In this example, Host A and Gateway are connected to port 1 and port 26 (Figure 1). Administrator builds a static binding of Host A and Gateway. If any of the two devices

changes its connecting port, the packets will be dropped by the switch.

# Configuration using the Web GUI

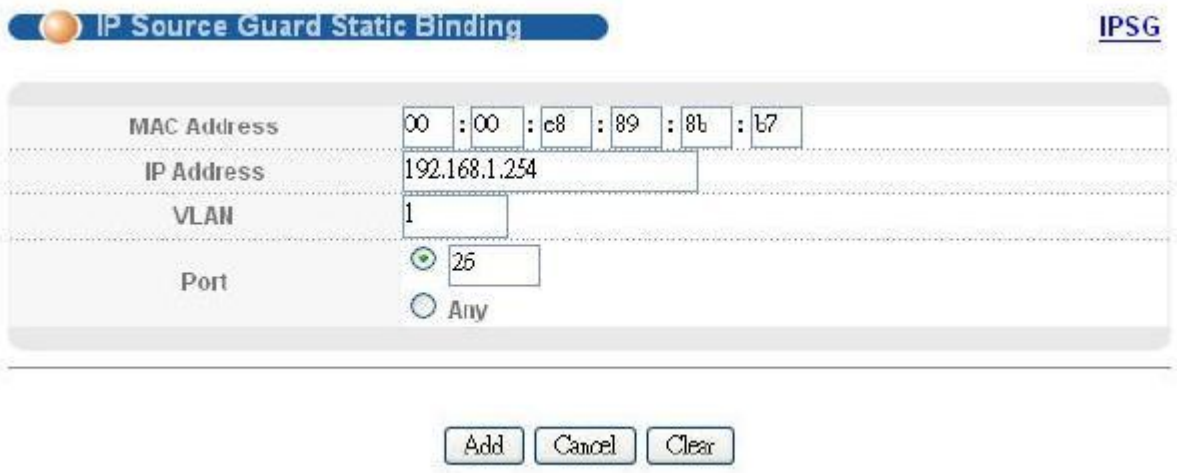
1. Connect the MGMT port to a PC or Notebook using the RJ45 Cable.
2. By default, the MGMT IP address of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter http://192.168.0.1 into the URL field.
5. By default, the username for the administrator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



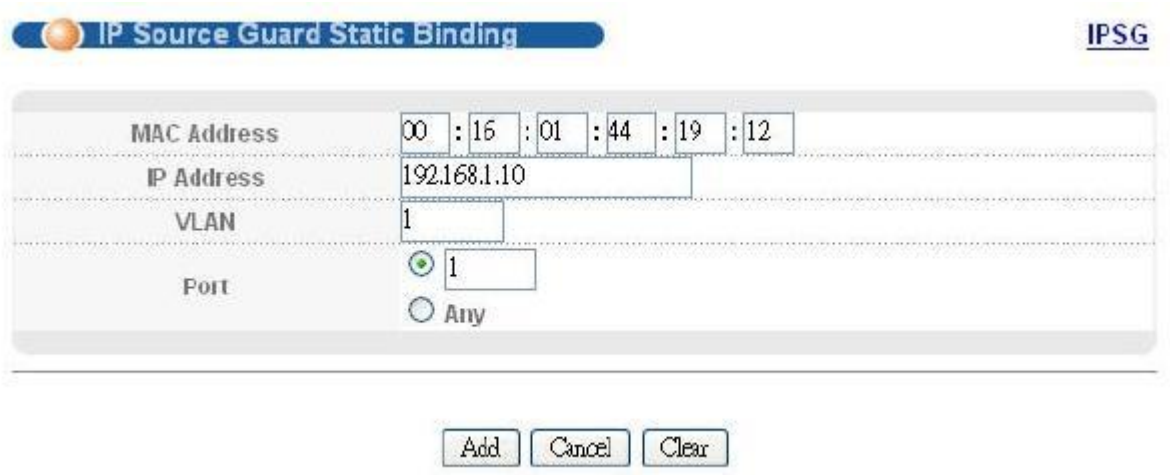

| Port | Name | Link | State | PD | LACP | TxPkts | RxPkts | Errors | Tx KB/s | Rx KB/s | Up Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 1000M/F | FORWARDING | Off | Disabled | 1116 | 1476 | 0 | 29.787 | 8.825 | 1:17:32 |
| 2 | | Down | STOP | Off | Disabled | 0 | 0 | 0 | 0.0 | 0.0 | 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. Click "**Advanced Application**" "**IP Source Guard**" "**Static Binding**" to go to the "**IP Source Guard Static Binding"** page.


8. In the "**IP Source Guard Static Binding**" page, set the MAC, IP, VLAN, and Port binding then click "**Add**". Below is an example of binding the Gateway to port 26.



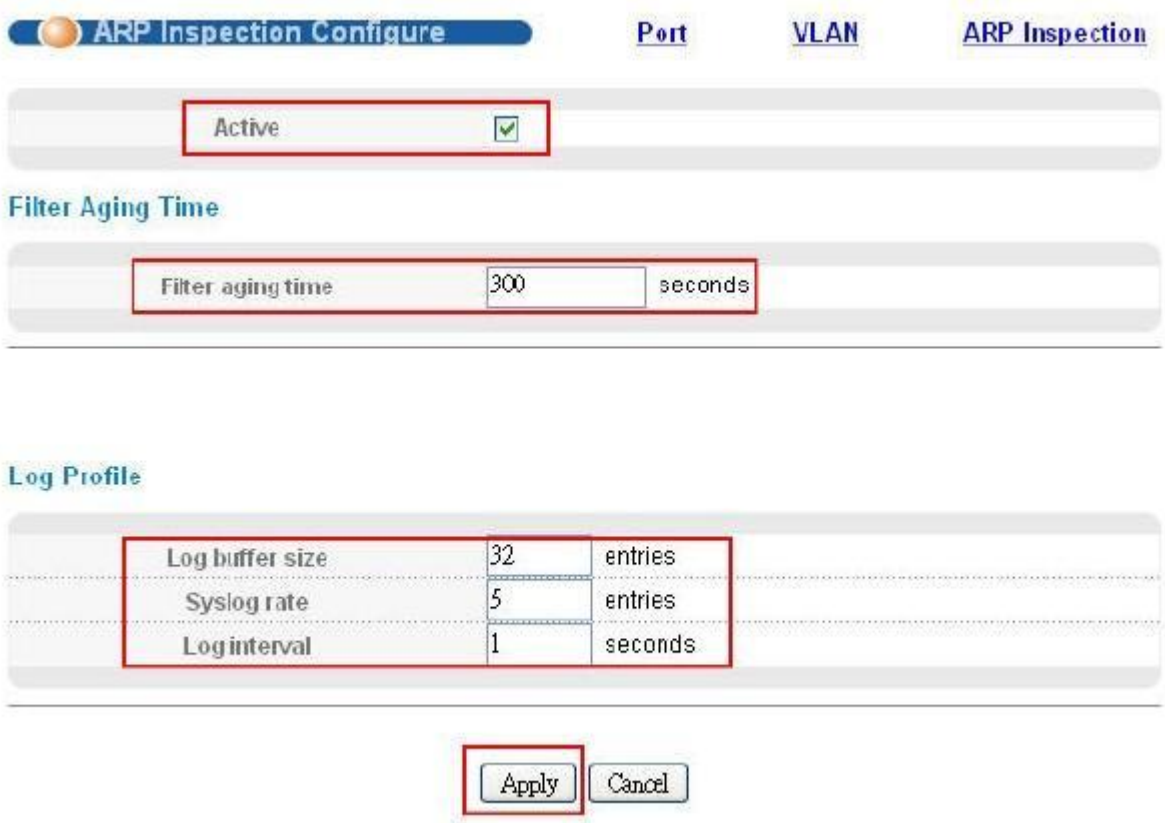

9. Then we continue to add a new binding of Host A.



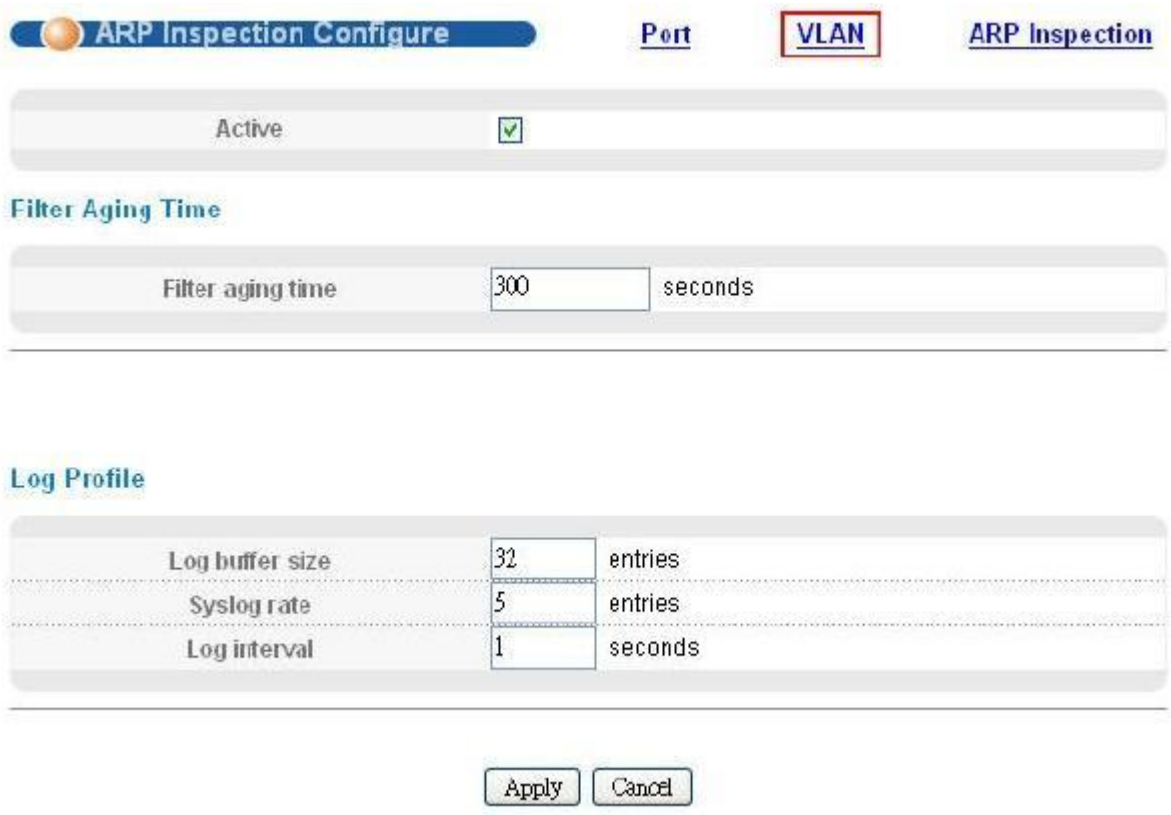

10. After creating the static binding, we need to configure the ARP inspection. Because IP Source Guard filters packets based on the ARP packets before a session was established. After the ARP was inspected, then the switch decides if it will forward the following packets like ICMP, TCP.

Click "**Advanced Application**" "**IP Source Guard**" "**ARP Inspection**" then click "**Configure**" to enter the "ARP Inspection Configure" page.


11. Check the "**Active**" checkbox, enter the "**Filter Aging Time**" and "**Log Profile**" value on the "**ARP Inspection Configure**" page. You can leave "**Filter Aging Time**" and "**Log Profile**" value by default. Click "**Apply**"



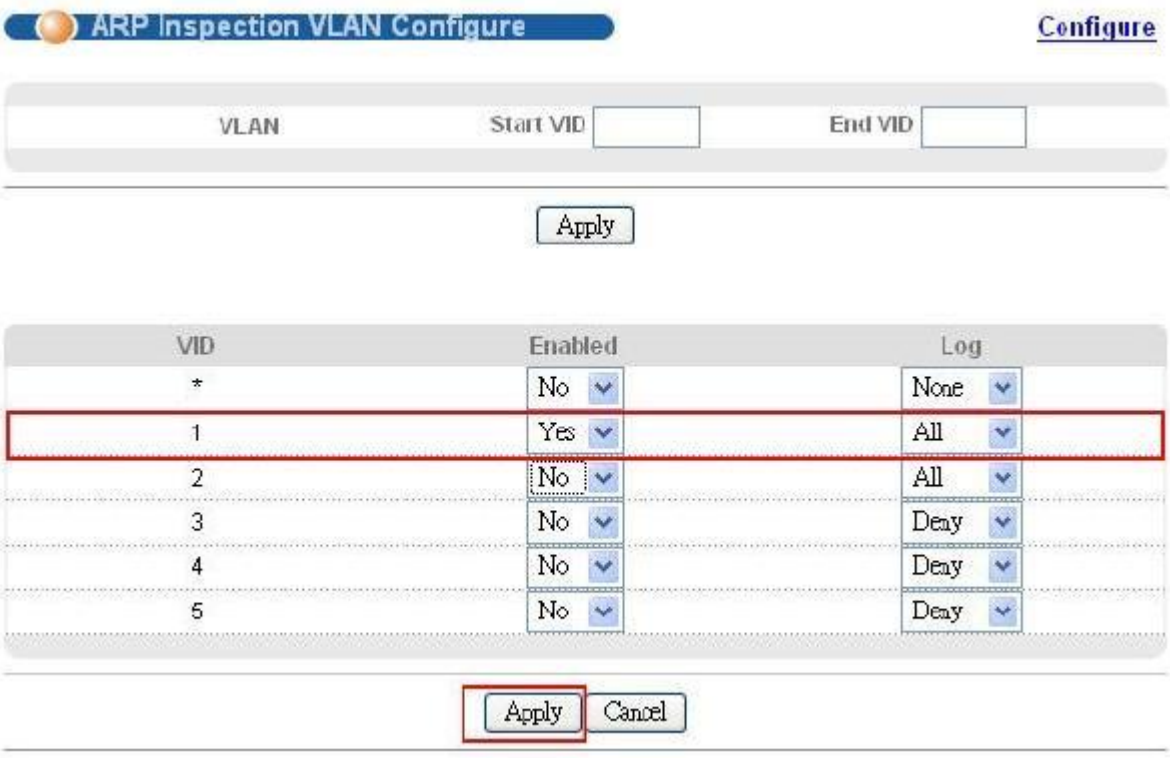

12. Click "**VLAN**" to open the "**ARP Inspection VLAN Configure**" page.




13. There are two parts in the "**ARP Inspection VLAN Configure**" page. The upper part is used to show the list of VLAN setting and the lower part is used to configure which VLAN the ARP Inspection was implemented.

Here we enter "1" as the "**Start VID**" and "5" as the "**End VID**". Click "**Apply**"


Then the lower part will show each VLAN's configuration. Since we use VLAN 1 as Host A's VLAN, we need to enable it on VLAN 1.




14. After step 13, the Static Binding is successfully configured.

# Configuration using the CLI

```
vlan 1 name 1
    normal ""
    fixed 1-10
    forbidden ""
    untagged 1-10
    ip address 192.168.1.1 255.255.255.0
exit
interface route-domain 192.168.1.1/24
exit
ip source binding 00:16:01:44:19:12 vlan 1 192.168.1.11 interface port-channel 1
ip source binding 00:16:32:42:3e:66 vlan 1 192.168.1.254 interface port-channel 26
ip address 192.168.0.1 255.255.255.0
arp inspection vlan 1 logging all
arp inspection vlan 1
arp inspection
```