

Block ARP Packets with Use of MAC Access Lists and VLAN Access Maps on Catalyst 2970, 3550, 3560, and 3750 Series Switches

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Introduction

In a network, you can block Address Resolution Protocol (ARP) request packets to restrict user access. In some network scenarios, you want to block ARP packets based, not on the IP address, but on the Layer 2 MAC addresses. You can accomplish this type of restriction if you create MAC address access control lists (ACLs) and VLAN access maps and apply them to a VLAN interface.

This document discusses the configuration for a Cisco Catalyst 3550 Series Switch. You can use any Catalyst 2970, 3560, or 3750 Series Switch in this scenario in order to obtain the same results. The document demonstrates how to configure a MAC ACL to block communication among devices within a VLAN. You can block a single host or a range of hosts, based on the host network interface card (NIC) adapter manufacturer. You can block a range of hosts if you disallow ARP packets that originate from these devices based on the IEEE Organizational Unique Identifier (OUI) and company_id assignments.

Prerequisites

Requirements

Refer to IEEE OUI and Company_id Assignments in order to determine IEEE OUI and company_id assignments.

Components Used

The information in this document is based on the Cisco Catalyst 3550 Switch.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Related Products

Other switches that support the commands in this configuration include:

- Catalyst 2970, 3560, or 3750 Series Switches

Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

Configure

In this section, you are presented with the information to configure the features described in this document.

In order to configure MAC address filtering and apply it to the VLAN interface, you must complete several steps. First, you create the VLAN access maps for each type of traffic that requires filtering. You select a MAC address or range of MAC addresses for blocking. You also need to identify the ARP traffic in the access list. According to RFC 826, an ARP frame uses the Ethernet protocol type of value 0x806. You can filter on this protocol type as interesting traffic for the access list.

1. In global configuration mode, create a named MAC extended access list with the name ARP_Packet.

Issue the **mac access-list extended** *ACL_name* command and add the host MAC address or addresses that you want to block.

```
Switch(config)#mac access-list extended ARP_Packet
Switch(config-ext-nacl)#permit host 0000.861f.3745 host 0006.5bd8.8c2f 0x806 0x0
Switch(config-ext-nacl)#end
Switch(config)#
```

2. Issue the **vlan access-map** *map_name* command and the **action drop** command, which is the action to perform.

The **vlan access-map** *map_name* command uses the MAC access list that you created to block ARP traffic from the hosts.

```
Switch(config)#vlan access-map block_arp 10

Switch (config-access-map)#action drop
Switch (config-access-map)#match mac address ARP_Packet
```

3. Add an additional line to the same VLAN access map in order to forward the rest of the traffic.

```
Switch(config)#vlan access-map block_arp 20
Switch (config-access-map)#action forward
```

4. Choose a VLAN access map and apply it to a VLAN interface.

Issue the **VLAN filter** *vlan_access_map_name* **vlan-list** *vlan_number* command.

```
Switch(config)#vlan filter block_arp vlan-list 2
```

Sample Configuration

This sample configuration creates three MAC access lists and three VLAN access maps. The configuration applies the third VLAN access map to VLAN interface 2.

3550 Switch

```
mac access-list extended ARP_Packet
permit host 0000.861f.3745 host 0006.5bd8.8c2f 0x806 0x0

!--- This blocks communication between hosts with this MAC.

!
mac access-list extended ARP_ONE_OUI
permit 0000.8600.0000 0000.00ff.ffff any 0x806 0x0

!--- This blocks any ARP packet that originates from this vendor OUI.

!
mac access-list extended ARP_TWO_OUI
permit 0000.8600.0000 0000.00ff.ffff any 0x806 0x0
permit 0006.5b00.0000 0000.00ff.ffff any 0x806 0x0

!--- This blocks any ARP packet that originates from these two vendor OUIs.

!
vlan access-map block_arp 10
action drop
match mac address ARP_Packet
vlan access-map block_arp 20
action forward

vlan access-map block_one_oui 10
action drop
match mac address ARP_ONE_OUI
vlan access-map block_one_oui 20
action forward

vlan access-map block_two_oui 10
action drop
match mac address ARP_TWO_OUI
vlan access-map block_two_oui 20
action forward

!
vlan filter block_two_oui vlan-list 2

!--- This applies the MAC ACL name block_two_oui to VLAN 2.
```

Verify

Use this section to confirm that your configuration works properly.

You can verify if the switch has learned the MAC address or ARP entry before you apply the MAC ACL. Issue the **show mac-address-table** command, as this example shows.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

```
switch#show mac-address-table dynamic vlan 2
      Mac Address Table
-----
Vlan    Mac Address      Type      Ports
```

```
-----
      2      0000.861f.3745      DYNAMIC      Fa0/21
      2      0006.5bd8.8c2f      DYNAMIC      Fa0/22
Total Mac Addresses for this criterion: 2
```

```
switch#show ip arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.1.1.2	26	0000.861f.3745	ARPA	Vlan2
Internet	10.1.1.3	21	0006.5bd8.8c2f	ARPA	Vlan2
Internet	10.1.1.1	-	000d.65b6.9700	ARPA	Vlan2

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [Configuring Network Security with ACLs on the Catalyst 3550 Series Switches](#)
 - [LAN Product Support Pages](#)
 - [LAN Switching Support Page](#)
 - [Technical Support & Documentation – Cisco Systems](#)
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