

Packet Tracer - Examine the ARP Table

Addressing Table

Device	Interface	MAC Address	Switch Interface
Router0	Gg0/0	0001.6458.2501	G0/1
	S0/0/0	N/A	N/A
Router1	G0/0	00E0.F7B1.8901	G0/1
	S0/0/0	N/A	N/A
10.10.10.2	Wireless	0060.2F84.4AB6	F0/2
10.10.10.3	Wireless	0060.4706.572B	F0/2
172.16.31.2	F0	000C.85CC.1DA7	F0/1
172.16.31.3	F0	0060.7036.2849	F0/2
172.16.31.4	G0	0002.1640.8D75	F0/3

Objectives

Part 1: Examine an ARP Request

Part 2: Examine a Switch MAC Address Table

Part 3: Examine the ARP Process in Remote Communications

Background

This activity is optimized for viewing PDUs. The devices are already configured. You will gather PDU information in simulation mode and answer a series of questions about the data you collect.

Instructions

Part 1: Examine an ARP Request

Step 1: Generate ARP requests by pinging 172.16.31.3 from 172.16.31.2.

- Click **172.16.31.2** and open the **Command Prompt**.
- Enter the **arp -d** command to clear the ARP table.
- Enter **Simulation** mode and enter the command **ping 172.16.31.3**. Two PDUs will be generated. The **ping** command cannot complete the ICMP packet without knowing the MAC address of the destination. So the computer sends an ARP broadcast frame to find the MAC address of the destination.
- Click **Capture/Forward** once. The ARP PDU moves **Switch1** while the ICMP PDU disappears, waiting for the ARP reply. Open the PDU and record the destination MAC address.

Is this address listed in the table above?

- e. Click **Capture/Forward** to move the PDU to the next device.
How many copies of the PDU did **Switch1** make?

What is the IP address of the device that accepted the PDU?
- f. Open the PDU and examine Layer 2.
What happened to the source and destination MAC addresses?
- g. Click **Capture/Forward** until the PDU returns to **172.16.31.2**.
How many copies of the PDU did the switch make during the ARP reply?

Step 2: Examine the ARP table.

- a. Note that the ICMP packet reappears. Open the PDU and examine the MAC addresses.
Do the MAC addresses of the source and destination align with their IP addresses?
- b. Switch back to **Realtime** and the ping completes.
- c. Click **172.16.31.2** and enter the **arp -a** command.
To what IP address does the MAC address entry correspond?

In general, when does an end device issue an ARP request?

Part 2: Examine a Switch MAC Address Table

Step 1: Generate additional traffic to populate the switch MAC address table.

- a. From **172.16.31.2**, enter the ping **172.16.31.4** command.
- b. Click **10.10.10.2** and open the **Command Prompt**.
- c. Enter the **ping 10.10.10.3** command.
How many replies were sent and received?

Step 2: Examine the MAC address table on the switches.

- a. Click **Switch1** and then the **CLI** tab. Enter the **show mac-address-table** command.
Do the entries correspond to those in the table above?
- b. Click **Switch0**, then the **CLI** tab. Enter the **show mac-address-table** command.
Do the entries correspond to those in the table above?

Why are two MAC addresses associated with one port?

Part 3: Examine the ARP Process in Remote Communications

Step 1: Generate traffic to produce ARP traffic.

- a. Click **172.16.31.2** and open the **Command Prompt**.
- b. Enter the **ping 10.10.10.1** command.
- c. Type **arp -a**.

What is the IP address of the new ARP table entry?

- d. Enter **arp -d** to clear the ARP table and switch to **Simulation** mode.
- e. Repeat the ping to 10.10.10.1.

How many PDUs appear?

- f. Click **Capture/Forward**. Click the PDU that is now at **Switch1**.

What is the target destination IP destination address of the ARP request?

- g. The destination IP address is not 10.10.10.1.

Why?

Step 2: Examine the ARP table on Router1.

- a. Switch to **Realtime** mode. Click **Router1** and then the **CLI** tab.
- b. Enter privileged EXEC mode and then the **show mac-address-table** command.

How many MAC addresses are in the table? Why?

- c. Enter the **show arp** command.

Is there an entry for **172.16.31.2**?

What happens to the first ping in a situation where the router responds to the ARP request?