

5.3.2.8

Part 1

Step 1

d. 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? **No**

e. Click Capture/Forward to move the PDU to the next device. How many copies of the PDU did Switch1 make? **3**

f. What is the IP address of the device that accepted the PDU? **172.16.31.3**

g. Open the PDU and examine Layer 2. What happened to the source and destination MAC addresses? **Source became destination, FFFF.FFFF.FFFF turned into MAC address of 172.16.31.3**

h. 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? **1**

Step 2

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? **Yes**

c. Click 172.16.31.2 and enter the arp -a command. To what IP address does the MAC address entry correspond? **172.16.31.3**

In general, when does an end device issue an ARP request? **When it does not know the receiver's MAC address.**

Part 2

Step 1

c. Enter the ping 10.10.10.3 command. How many replies were sent and received? **4 sent, 4 received.**

Step 2

- 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? **Yes**
- b. Click Switch0, then the CLI tab. Enter the show mac-address-table command. Do the entries correspond to those in the table above? **Yes**
- c. Why are two MAC addresses associated with one port? **Because both devices connect to one port through the Access Point.**

Part 3

Step 1

- c. Type arp -a. What is the IP address of the new ARP table entry?
172.16.31.1
- e. Repeat the ping to 10.10.10.1. How many PDUs appear? **2**
- f. Click Capture/Forward. Click the PDU that is now at Switch1. What is the target destination IP destination address of the ARP request? **172.16.31.1**
- g. The destination IP address is not 10.10.10.1. Why? **The gateway address of the router interface is stored in the IPv4 configuration of the hosts. If the receiving host is not on the same network, the source uses the ARP process to determine a MAC address for the router interface serving as the gateway.**

Step 2

- b. Enter privileged EXEC mode and then the show mac-address-table command. How many MAC addresses are in the table? Why? **Zero, This**

command means something completely different than the switch command show mac address-table.

c. Enter the show arp command. Is there an entry for 172.16.31.2? **Yes**

d. What happens to the first ping in a situation where the router responds to the ARP request? **It times out.**