Packet Tracer – Examine the ARP Table

Addressing Table

| Device	Interface	MAC Address	Switch Interface
Router0	Gg0/0	000A.F32C.8301	G0/1
	Gg0/1	000A.F32C.8302	G0/1
10.0.0.2 (Laptop0)	F0	0006.2A2C.D4C6	F0/1
10.0.0.3 (Laptop1)	F0	000A.F3D6.A896	F0/2
192.168.13.2 (PC0)	F0	0060.5C83.50D3	F0/1
192.168.13.3 (PC1)	F0	00E0.B09D.227C	F0/2
192.168.13.4 (PC2)	F0	00D0.D3EA.E056	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

Instructions

Part 1: Examine an ARP Request

Step 1: Generate ARP requests by pinging 192.168.13.2 from 192.168.13.3.

a. Enter Simulation mode and enter the command ping 192.168.13.3. 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.
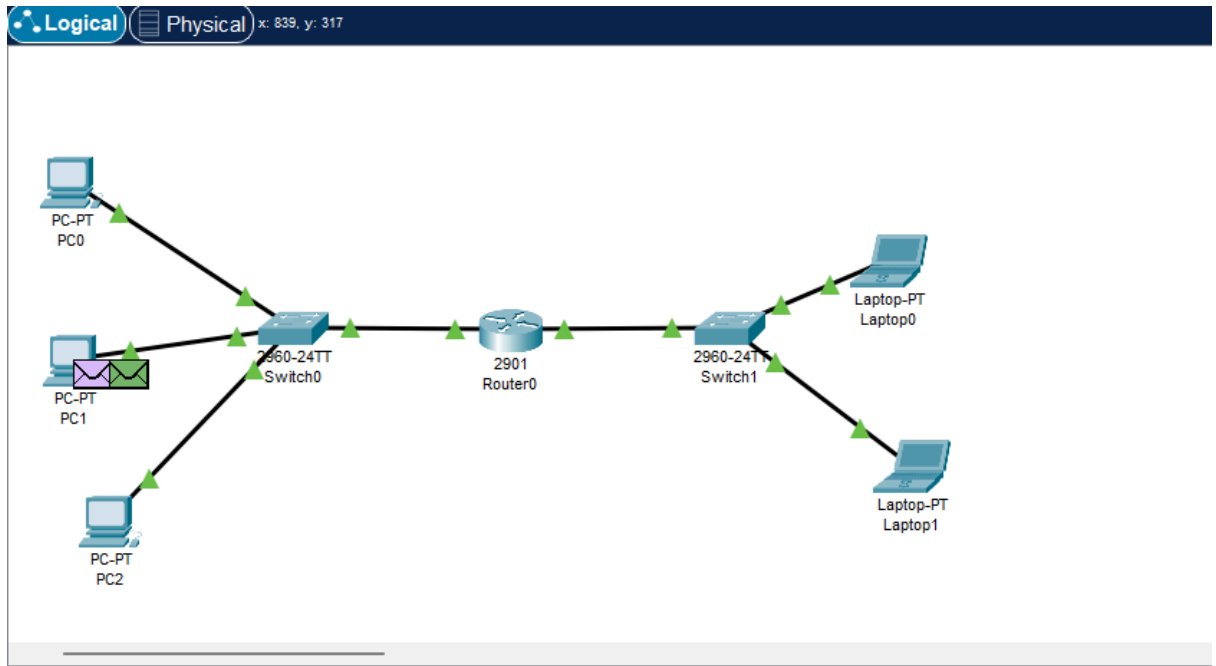
b. Click Capture/Forward once. The ARP PDU moves Switch0 while the ICMP PDU disappears, waiting for the ARP reply. Open the PDU and record the destination MAC address.
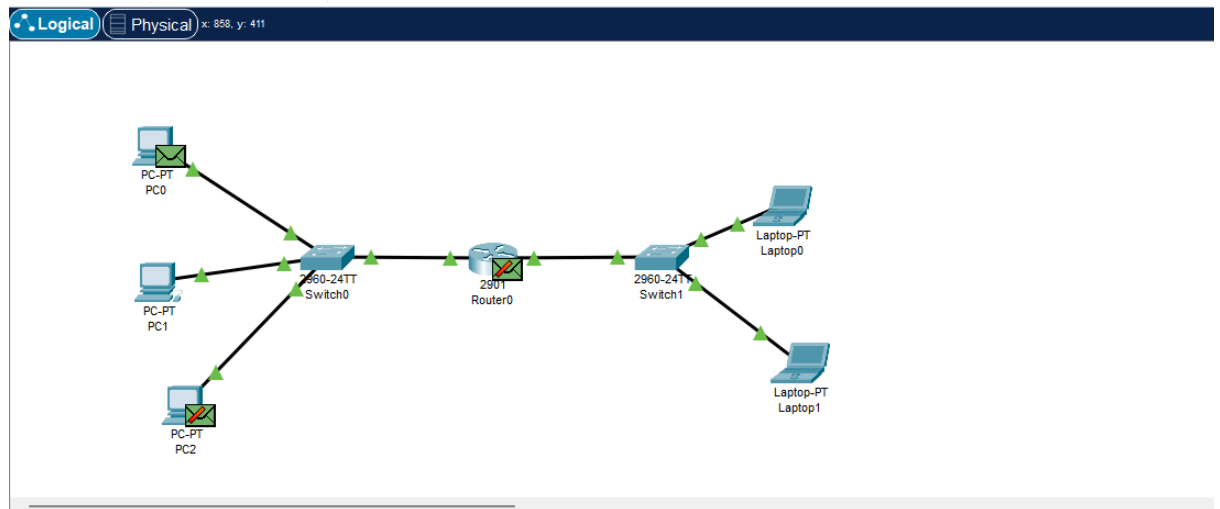
Ans: FFFF.FFFF.FFFF
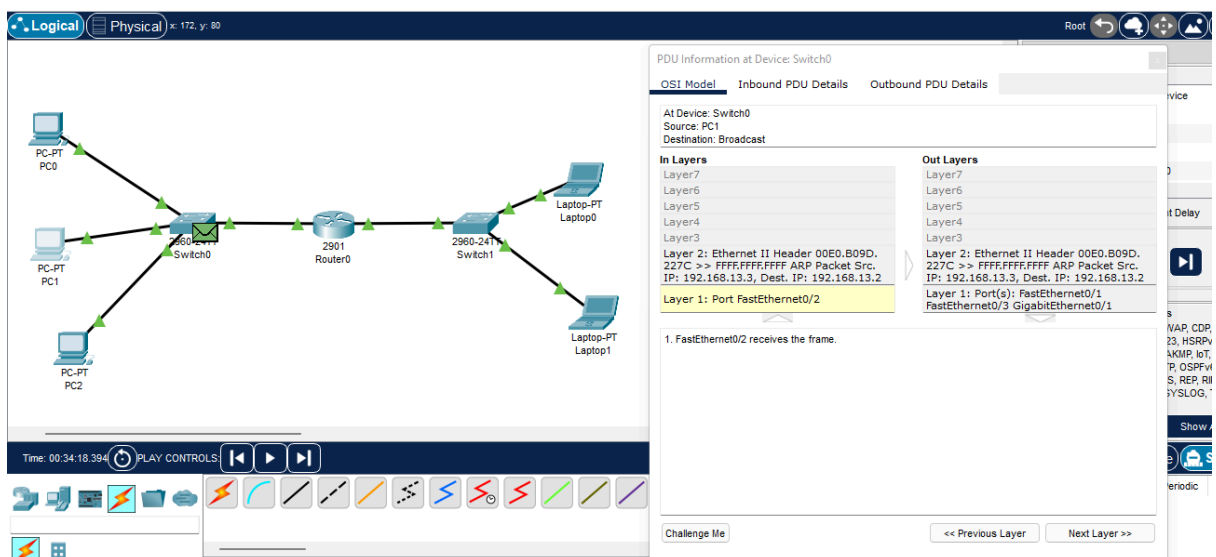
c. Click Capture/Forward to move the PDU to the next device.

How many copies of the PDU did Switch0 make?
Ans: 3

What is the IP address of the device that accepted the PDU?
Ans: 192.168.13.2

d. Open the PDU and examine Layer 2.

What happened to the source and destination MAC addresses?
Ans: source: 0060.5C83.50D3 destination: 00E0.BO9D.227C

e. Click Capture/Forward until the PDU returns to 192.168.13.2.

How many copies of the PDU did the switch make during the ARP reply?
ANS: 1

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?
ANS: yes

b. Switch back to Realtime and the ping completes.

c. Click 192.168.13.2 and enter the arp–a command.

To what IP address does the MAC address entry correspond?
ANS: 192.168.13.3
In general, when does an end device issue an ARP request?
ANS: An end device issues an ARP request when it does not know the MAC addresses of the intended recipient

Part 2: Examine a Switch MAC Address Table

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

a. From 192.168.13.2, enter the ping 192.168.13.4 command.
b. Click 10.0.0.2 and open the Command Prompt.
c. Enter the ping 10.0.0.3 command.

How many replies were sent and received?
ANS: Sent = 4 , Received =4

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?
ANS: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?
ANS: yes

Why are two MAC addresses associated with one port?
ANS:Because the mac addresses are from a different network

Part 3: Examine the ARP Process in Remote Communications

Step 1: Generate traffic to produce ARP traffic.

a. Click 192.168.13.2 and open the Command Prompt.
b. Enter the ping 10.0.0.1 command.

c. Type arp –a.

What is the IP address of the new ARP table entry?
ANS: 192.168.13.1

d. Enter arp -d to clear the ARP table and switch to Simulation mode.
e. Repeat the ping to 10.0.0.1.

How many PDUs appear?
ANS: 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?
ANS: 192.168.13.1

g. The destination IP address is not 10.0.0.1.

Why?
ANS: Destination IP is not in network, therefore it points to the default gateway

Step 2: Examine the ARP table on Router0.

a. Switch to Realtime mode. Click Router0 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?
ANS: 0

c. Enter the show arp command.

Is there an entry for 192.168.13.2?
ANS: yes

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

ARP request?
ANS: It will be time out