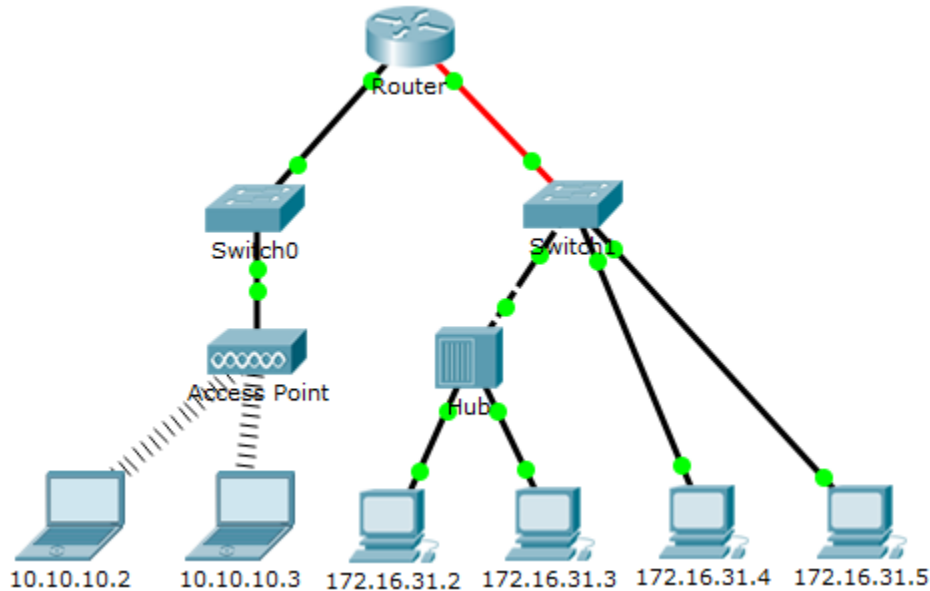# 5.3.1.3 Packet Tracer - Identify MAC and IP Addresses (Instructor Version – Optional Packet Tracer)

Instructor Note: Red font color or gray highlights indicate text that appears in the instructor copy only. Optional activities are designed to enhance understanding and/or to provide additional practice.

Topology

Objectives

Part 1: Gather PDU Information

Part 2: Reflection Questions

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.

Part 1: Gather PDU Information

Note: Review the Reflection Questions in Part 2 before proceeding with Part 1. It will give you an idea of the types of information you will need to gather.

Step 1: Gather PDU information as a packet travels from 172.16.31.2 to 10.10.10.3.

a. Click **172.16.31.2** and open the **Command Prompt**.

b. Enter the **ping 10.10.10.3** command.

c. Switch to simulation mode and repeat the **ping 10.10.10.3** command. A PDU appears next to **172.16.31.2**.

d. Click the PDU and note the following information from the **Outbound PDU Layer** tab:

- Destination MAC Address: 00D0:BA8E:741A

- Source MAC Address: 000C:85CC:1DA7

- Source IP Address: 172.16.31.2
- Destination IP Address: 10.10.10.3
- At Device: Computer

e. Click **Capture / Forward** to move the PDU to the next device. Gather the same information from Step 1d. Repeat this process until the PDU reaches its destination. Record the PDU information you gathered into a spreadsheet using a format like the table shown below:

Example Spreadsheet Format

Test	At Device	Dest. MAC	Src MAC	Src IPv4	Dest IPv4
Ping from 172.16.31.2 to 10.10.10.3	172.16.31.2	00D0:BA8E:741A	000C:85CC:1DA7	172.16.31.2	10.10.10.3
	Hub	--	--	--	--
	Switch1	00D0:BA8E:741A	000C:85CC:1DA7	--	--
	Router	0060:4706:572B	00D0:588C:2401	172.16.31.2	10.10.10.3
	Switch0	0060:4706:572B	00D0:588C:2401	--	--
	Access Point	--	--	--	--
	10.10.10.3	0060:4706:572B	00D0:588C:2401	172.16.31.2	10.10.10.3

Step 2: Gather additional PDU information from other pings.

Repeat the process in Step 1 and gather the information for the following tests:

- Ping 10.10.10.2 from 10.10.10.3.
- Ping 172.16.31.2 from 172.16.31.3.
- Ping 172.16.31.4 from 172.16.31.5.
- Ping 172.16.31.4 from 10.10.10.2.
- Ping 172.16.31.3 from 10.10.10.2.

Part 2: Reflection Questions

Answer the following questions regarding the captured data:

1. Were there different types of wires used to connect devices? Yes, copper and fiber

2. Did the wires change the handling of the PDU in any way? No

3. Did the **Hub** lose any of the information given to it? No

4. What does the **Hub** do with MAC addresses and IP addresses? Nothing

5. Did the wireless **Access Point** do anything with the information given to it? Yes. It repackaged it as wireless 802.11

6. Was any MAC or IP address lost during the wireless transfer? No

7. What was the highest OSI layer that the **Hub** and **Access Point** used? Layer 1

8. Did the **Hub** or **Access Point** ever replicate a PDU that was rejected with a red "X"? Yes

9. When examining the **PDU Details** tab, which MAC address appeared first, the source or the destination? Destination

10. Why would the MAC addresses appear in this order? A switch can begin forwarding a frame to a known MAC address more quickly if the destination is listed first

11. Was there a pattern to the MAC addressing in the simulation? No

12. Did the switches ever replicate a PDU that was rejected with a red "X"? No

13. Every time that the PDU was sent between the 10 network and the 172 network, there was a point where the MAC addresses suddenly changed. Where did that occur? It occurred at the Router

14. Which device uses MAC addresses starting with 00D0? The Router

15. To what devices did the other MAC addresses belong? To the sender and receiver

16. Did the sending and receiving IPv4 addresses switch in any of the PDUs? No

17. If you follow the reply to a ping, sometimes called a *pong*, do the sending and receiving IPv4 addresses switch? Yes

18. What is the pattern to the IPv4 addressing in this simulation? Each port of a router requires a set of non-overlapping addresses

19. Why do different IP networks need to be assigned to different ports of a router? The function of a router is to inter-connect different IP networks.

20. If this simulation was configured with IPv6 instead of IPv4, what would be different? The IPv4 addresses would be replaced with IPv6 addresses, but everything else would be the same.

Suggested Scoring Rubric

There are 20 questions worth 5 points each for a possible score of 100.