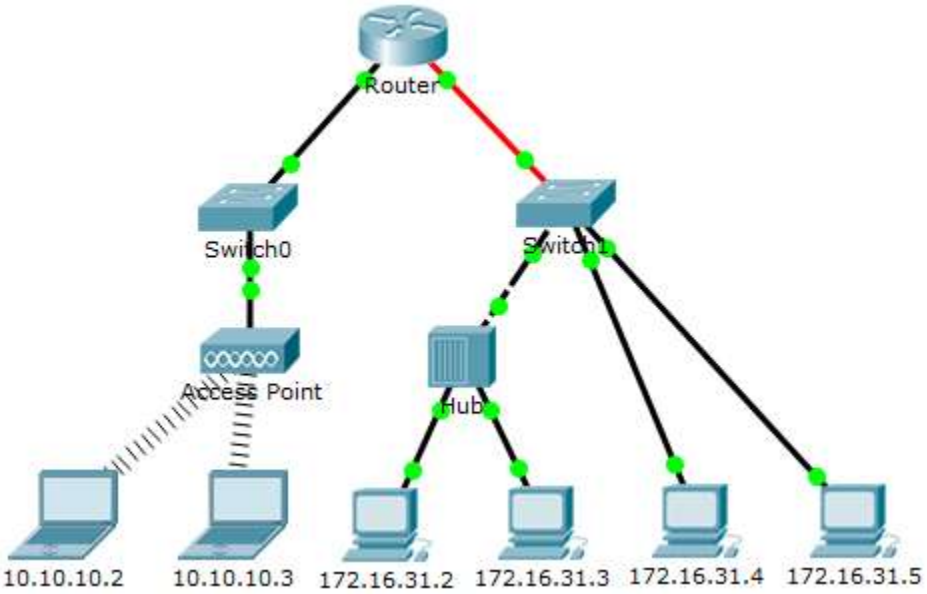
Packet Tracer - Identify MAC and IP Addresses

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 0: Gather Device Information

- Before starting any of the activity steps, change the **Display Name** for the following devices:
  - Change **Switch0** to be **Switch####-0** where #### represents the last 4 numbers of YOUR student #
    - E.g.: Switch1234-0
  - Change **Switch1** to be **Switch####-1** where #### represents the last 4 numbers of YOUR student #
  - NOTE: Do not change the **Host Name**

Complete the table in the worksheet document entitled "**Part 0 – Preamble**" by entering the MAC address and IP address for each device in this network

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

Take a FULL SCREEN SHOT and paste it into your answer document at the indicated location

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?

_____

2. Did the wires change the handling of the PDU in any way? _____
3. Did the **Hub** lose any of the information given to it? _____
4. What does the **Hub** do with MAC addresses and IP addresses? _____
5. Did the wireless **Access Point** do anything with the information given to it?

   _____
6. Was any MAC or IP address lost during the wireless transfer? _____
7. What was the highest OSI layer that the **Hub** and **Access Point** used? _____
8. Did the **Hub** or **Access Point** ever replicate a PDU that was rejected with a red "X"? _____
9. When examining the **PDU Details** tab, which MAC address appeared first, the source or the destination?

   _____
10. Why would the MAC addresses appear in this order?

    _____
11. Was there a pattern to the MAC addressing in the simulation? _____
12. Did the switches ever replicate a PDU that was rejected with a red "X"?_____
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?

    _____
14. Which device uses MAC addresses starting with 00D0? _____
15. To what devices did the other MAC addresses belong? _____
16. Did the sending and receiving IPv4 addresses switch in any of the PDUs? _____
17. If you follow the reply to a ping, sometimes called a *pong*, do the sending and receiving IPv4 addresses switch? _____
18. What is the pattern to the IPv4 addressing in this simulation?

    _____
19. Why do different IP networks need to be assigned to different ports of a router?

    _____
20. If this simulation was configured with IPv6 instead of IPv4, what would be different?

    _____