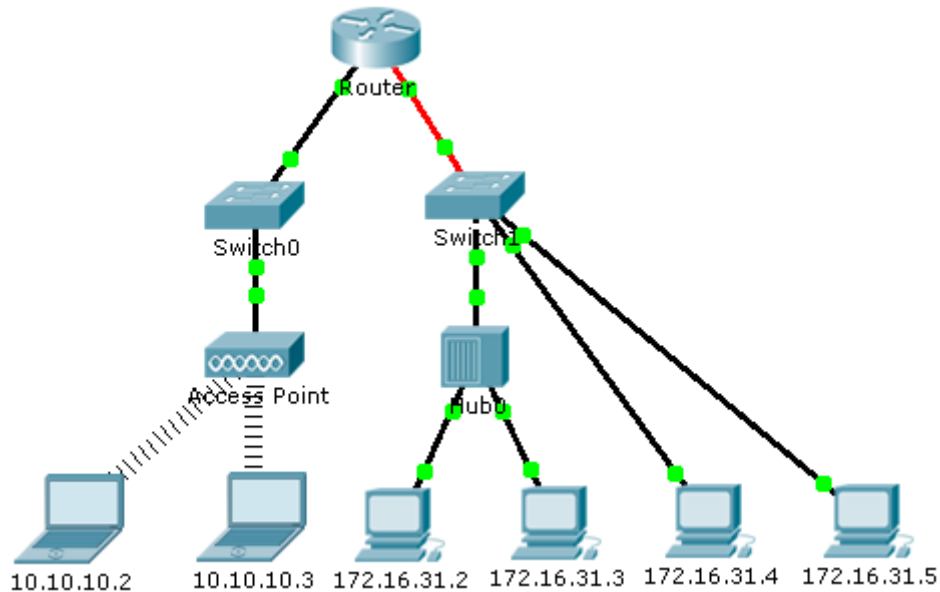


Packet Tracer - Identify MAC and IP Addresses

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 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

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- 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**

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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.