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**Packet Tracer 9.1.3 Questions**

**Part 2: Gather PDU Information for Remote Network Communication**

In order to communicate with remote networks, a gateway device is necessary. Study the process that takes place to communicate with devices on the remote network. Pay close attention to the MAC addresses used.

**Step 1: Gather PDU information as a packet travels from 172.16.31.5 to 10.10.10.2.**

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

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

·         Source MAC Address: 00D0:D311:C788

·         Source IP Address: 172.16.31.5

·         Destination IP Address: 10.10.10.2

·         At Device: 172.16.31.5

Question:

What device has the destination MAC that is shown? The Routers MAC Address

## Reflection Questions

Answer the following questions regarding the captured data:

1.     Were there different types of cables/media used to connect devices? **Yes: copper, fiber, and wireless**

2.     Did the cables change the handling of the PDU in any way? **NO**

3.     Did the **Hub** lose any of the information that it received? **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? **Repackages it as wireless 802.11 frames.**

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? **It is faster for the switch to start sending the frame if it knows the MAC address 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**? The Router is when I noticed it change.**

14.  Which device uses MAC addresses that start with 00D0:BA? **The Router**

15.  What devices did the other MAC addresses belong to? **The Sender and also Receiver MAC Addresses.**

16.  Did the sending and receiving IPv4 addresses change fields in any of the PDUs? **NO**

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

18.  What is the pattern to the IPv4 addressing used in this simulation? **The router ports have individual sets of addresses that cannot be reused by other ports.**

19.  Why do different IP networks need to be assigned to different ports of a router? . **This is the routers job and main purpose is to route traffic and take packets from one IP Network - and put them on another IP Network.**

20.  If this simulation was configured with IPv6 instead of IPv4, what would be different? **The only significant difference would be the actual addresses and how IPv6 numbering structure is different from IPv4. That is the only real difference if IPv6 were used instead of IPv4.**

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| **Ping 172.16.31.5 - 172.16.31.2** | | | | |
| **At Device** | **Dest. MAC** | **Src MAC** | **Src IPv4** | **Dest IPv4** |
| 172.16.31.5 | 000C:85CC:1DA7 | 00D0:D311:C788 | 172.16.31.5 | 172.16.31.2 |
| Switch1 | 000C:85CC:1DA7 | 00D0:D311:C788 | 172.16.31.5 | 172.16.31.2 |
| Hub | 000C:85CC:1DA7 | 00D0:D311:C788 | 172.16.31.5 | 172.16.31.2 |
| 172.16.31.2 | 00D0:D311:C788 | 000C:85CC:1DA7 | 172.16.31.2 | 172.16.31.5 |

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| **Ping 172.16.31.2 from 172.16.31.3** | | | | | |
|  | **At Device** | **Dest. MAC** | **Src MAC** | **Src IPv4** | **Dest IPv4** |
|  | 172.16.31.3 | 000C:85CC:1DA7 | 0060:7036:2849 | 172.16.31.3 | 172.16.31.2 |
|  | Hub | 000C:85CC:1DA7 | 0060:7036:2849 | 172.16.31.3 | 172.16.31.2 |
| Inbound | 172.16.31.2 | 000C:85CC:1DA7 | 0060:7036:2849 | 172.16.31.3 | 172.16.31.2 |
| Outbound | 172.16.31.2 | 0060:7036:2849 | 000C:85CC:1DA7 | 172.16.31.2 | 172.16.31.3 |
|  | Hub | 0060:7036:2849 | 000C:85CC:1DA7 | 172.16.31.2 | 172.16.31.3 |
|  | 172.16.31.3 | 0060:7036:2849 | 000C:85CC:1DA7 | 172.16.31.2 | 172.16.31.3 |

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| **Ping 172.16.31.4 from 172.16.31.5** | | | | | |
|  | **At Device** | **Dest. MAC** | **Src MAC** | **Src IPv4** | **Dest IPv4** |
|  | 172.16.31.5 | 000C:CF0B:BC80 | 00D0:D311:C788 | 172.16.31.5 | 172.16.31.4 |
|  | Switch1 | 000C:CF0B:BC80 | 00D0:D311:C788 | 172.16.31.5 | 172.16.31.4 |
| Inbound | 172.16.31.4 | 000C:CF0B:BC80 | 00D0:D311:C788 | 172.16.31.5 | 172.16.31.4 |
| Outbound | 172.16.31.4 | 00D0:D311:C788 | 000C:CF0B:BC80 | 172.16.31.4 | 172.16.31.5 |
|  | Switch1 | 00D0:D311:C788 | 000C:CF0B:BC80 | 172.16.31.4 | 172.16.31.5 |
|  | 172.16.31.5 | 00D0:D311:C788 | 000C:CF0B:BC80 | 172.16.31.4 | 172.16.31.5 |

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| **Ping 172.16.31.5 to 10.10.10.2** | | | | | |
|  | **At Device** | **Dest. MAC** | **Src MAC** | **Src IPv4** | **Dest IPv4** |
|  | 172.16.31.5 | 00D0:BA8E:741A | 00D0:D311:C788 | 172.16.31.5 | 10.10.10.2 |
|  | Switch1 | 00D0:BA8E:741A | 00D0:D311:C788 | 172.16.31.5 | 10.10.10.2 |
| Inbound | Router | 00D0:BA8E:741A | 00D0:D311:C788 | 172.16.31.5 | 10.10.10.2 |
| Outbound | Router | 0060:2F84:4AB6 | 00D0:588C:2401 | 172.16.31.5 | 10.10.10.2 |
|  | Switch0 | 0060:2F84:4AB6 | 00D0:588C:2401 | 172.16.31.5 | 10.10.10.2 |
|  | Access Point | 0060:2F84:4AB6 | 00D0:588C:2401 | 172.16.31.5 | 10.10.10.2 |
| Inbound | 10.10.10.2 | 0060:2F84:4AB6 | 00D0:588C:2401 | 172.16.31.5 | 10.10.10.2 |
| Outbound | 10.10.10.2 | 00D0:588C:2401 | 0060:2F84:4AB6 | 10.10.10.2 | 172.16.31.5 |