CIS122 Essentials of Networking

Hands-on project #3: Observing Ethernet packets

1. Open Cisco Packet Tracer. If you have not yet signed up for a free Cisco Academy account, do so now. Follow the instructions as prompted on the screen. After you have completed the signup, you will have to close Packet Tracer and reopen it before you can sign in.
2. Create a New project. Click the “New” icon on the left most side of the toolbar, or use the menu File -> New.
3. In the lower left object selection panel, select “End Devices” (first row, second from the left).
4. Drag five (5) PCs into anywhere into the blank center panel. That is, drag the PC icon, drop it, and do it again 4 more times.
5. Drag one (1) server to the right of the PCs.
6. On the object selection panel, select “Components” (first row, first object), then “Switches” (second row, second object).
7. Drag one (1) 2960 switch to the left of the PCs. Drag a second to the right, underneath the server.
8. On the object selection panel, select “Hubs” (second row, third object).
9. Drag one (1) HubPT to the center of the page.
10. Making connections:
    1. On the object selection panel, select “Connections” (first row, fourth object). Click (don’t drag and drop) the lightning bolt object “Automatically choose connection type”.
    2. Click on switch0 (the one on the left), then move your mouse to the hub in the center and click it.
    3. Click the lightning bolt object, then click on the hub, and move your mouse to switch1 (the one on the right) and click it.
    4. **Question 1: What kind of line was drawn between the switches and the hub?**

Straight dashed line

* 1. **Question 2: What does this line represent (hover your mouse over the connection objects)?**

Copper Cross Over

* 1. **Question 3: Why did the program select this type of cable?**

Because we are connecting two devices of the same type.

* 1. Repeat this step 3 times, once for PC0, PC1, and PC2. Click the lightning bolt object, then click on switch0 (the one on the left), then click the PC.
  2. Repeat this step 3 times, once for PC3, PC4, and Server0. Click the lightning bolt object, then click on switch1 (the one on the right), then click the PC.
  3. **Question 4: What kind of line was drawn between the switches and the PCs?**

A straight black line

* 1. **Question 5: What does this line represent (hover your mouse over the connection objects)?**

Copper Straight-Through

* 1. **Question 6: Why did the program select this type of cable?**

Because we are connecting unlike devices.

1. IP configuration

* 1. Click on Server0. Click on the “Config” tab, and select the “FastEthernet0” interface from the left. In the line next to IPv4 Address, enter the numbers “192.168.1.100”.
  2. **Question 7: On the line above, what is the MAC Address?**

0001.42E5.5451

* 1. Close the box (there is no “OK” button). For each of the PCs numbered 0 through 4, repeat the same process as for the server. Use the following IPv4 addresses:
     1. PC0: 192.168.1.2
     2. PC1: 192.168.1.3 0002.4A7A.E4B7
     3. PC2: 192.168.1.4 0001.978C.3D16
     4. PC3: 192.168.1.5 0009.7CA3.7A02
     5. PC4: 192.168.1.6 0001.969B.EB68

* 1. **Question 8: What is the MAC address of PC0?**

00E0.A387.B623

1. Testing the connection
   1. Click on PC0. Click on the “Desktop” tab, and select “Command Prompt”. Type “ping 192.168.1.10” and press Enter. **Question 9: What happens?**

The request timed out 4 times and then returned a 100% loss.

* 1. Type “ping 192.168.1.100” and press Enter. **Question 10: What happens?**

We got replies and returned a 0% loss with 4 packets sent and received.

* 1. Type “ftp 192.168.1.100” and press Enter. At the prompt for username and password, enter “cisco” for both. Once connected, type “dir” and press Enter. **Question 11: How many files are listed?**

32

* 1. Close the box.

1. In the object selection panel, click on “End Devices” (first row, second icon) and “End Devices” (second row, first icon). Drag the “Sniffer” object to below the hub.
2. In the object selection panel, click on “Connections”, and click the lightning bolt object. Click the Sniffer, then click the Hub.

1. Click the Sniffer, and select the “GUI” tab. Leave this box open and click PC0. Open the Command Prompt again. The FTP connection should still be active. If not, follow the steps above to reconnect and bring up the directory list.
2. Type “get asa842-k8.bin” and press Enter. The message, “File transfer in progress” will remain on the screen for several minutes.
3. Return to the sniffer window. On the left pane, you should see a line of text all saying, “TCP” (If any say “FTP”, use that instead). Click the first one, and answer the following questions.
   1. **Question 12: List the preamble bits.**

101010..10

* 1. **Question 13: What address comes first? What is the value?**

0180.C200.0000 Destination Address

* 1. **Question 14: What is the source MAC address?**

000A.F31A.1601

* 1. **Question 15: What is the destination MAC address?**

0180.C200.0000

* 1. **Question 16: Do these match the MAC addresses you listed earlier?**

No lol

* 1. **Question 17: Hover your mouse over the TY (type) field. What is the value? Use your textbook, and look up what that value represents. Write it here.**

The value is 0 and this represents: Ethernet Frame Format

* 1. **Question 18: In what order are the sections listed in the display (Ethernet is first, then…)? Why is this significant?**

Ethernet, LLC, STP BPDU.

This is significant because the ethernet contains addresses that identify the source and location being sent to of the data packet. The LLC has information pertaining the data packet and the STP BPDU has the rest of the data that belongs to the data packet.

1. Close the PC0 box. Spend some time running the same test from the other PC objects. **Question 19: Are there any differences in the information displayed in the sniffer?**

No

1. Close the Sniffer box and save your file (the third toolbar icon from the left, or File -> Save).
2. Submit the pkt file and this lab form to eLearning before the due date.