Lab 4 plus

*Lab 4 plus is a combination of Lab 4 and an extra activity on ARP.

Packet Tracer Simulation – Exploration of ARP and Switch Table Communications

Objectives

- To explore ARP and switching operations.

Introduction

The topology is given to you. All IP addresses have been assigned to all devices. Please follow each step in sequence.

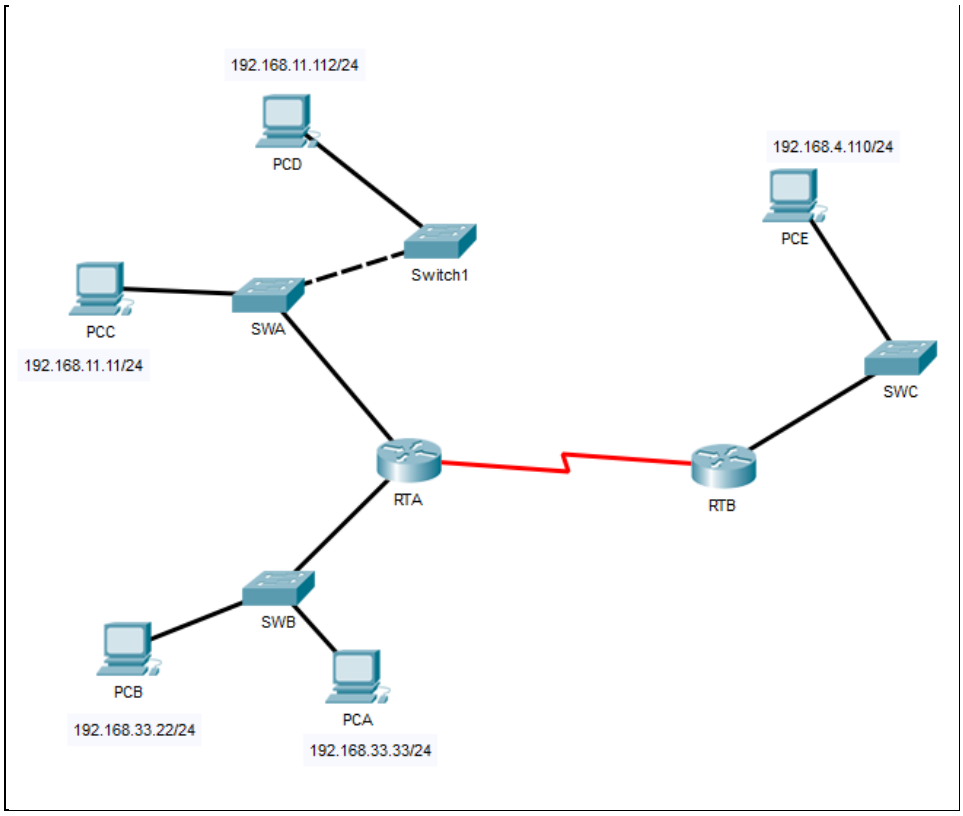


Figure 1

Part 1: Review the topology

Step 1: Perform the following tasks.

a. At Router RTA, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
RTA>enable
RTA#show arp
```

```
RTA>enable
RTA#show arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  192.168.11.1           -   0002.4A00.0E91  ARPA   FastEthernet1/0
Internet  192.168.33.1           -   000C.CF0C.593A  ARPA   FastEthernet0/0
RTA#
```

b. At Router RTB, enter the CLI. At the command prompt type the commands as in Figure 2. Snap the results after the last command and paste it here.

```
RTB>enable
RTB#show arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  192.168.4.1              -   0001.977A.B614  ARPA   FastEthernet0/0
RTB#
```

c. At Switches SWA, SWAB and SWC, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
SWA>enable
SWA#show arp

SWA#show mac-address-table
```

SWA:

```
SWA>enable
SWA#show arp

SWA#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0002.4a00.0e91    DYNAMIC     Fa0/1
   1    000c.8546.7d85    DYNAMIC     Fa1/1
SWA#
```

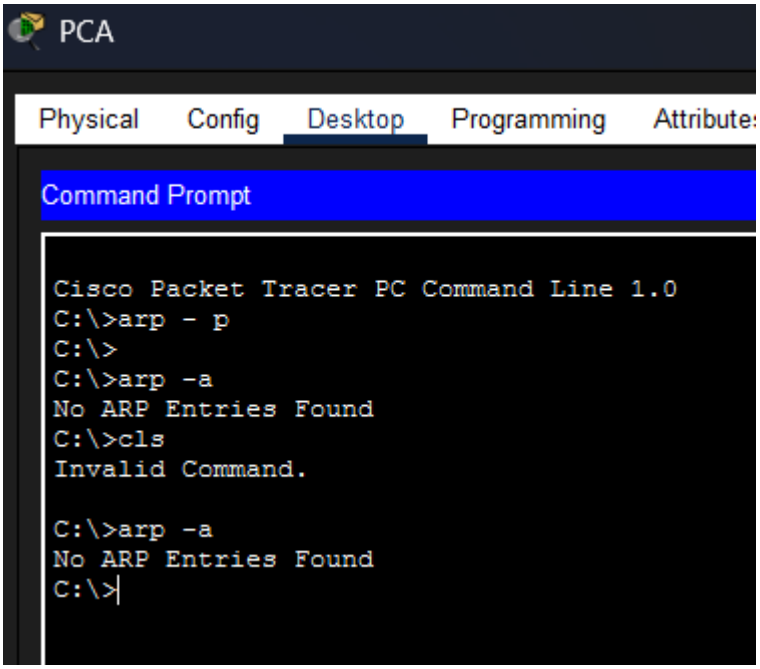
SWB:

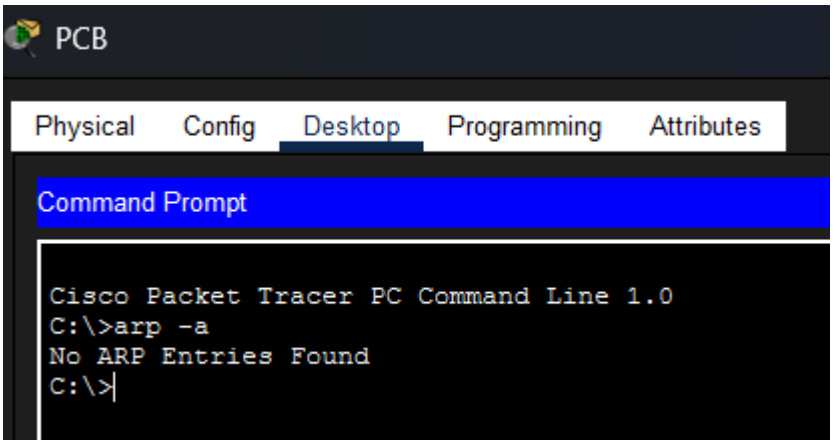
```
SWB>enable
SWB#show arp

SWB#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    000c.cf0c.593a    DYNAMIC     Fa0/1
SWB#
```

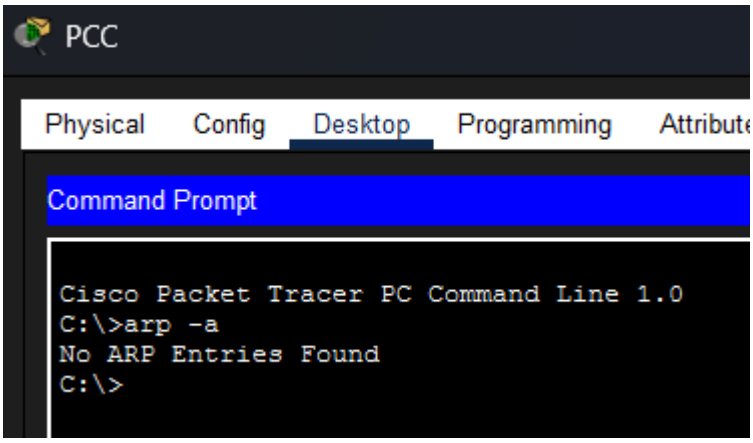
SWC:

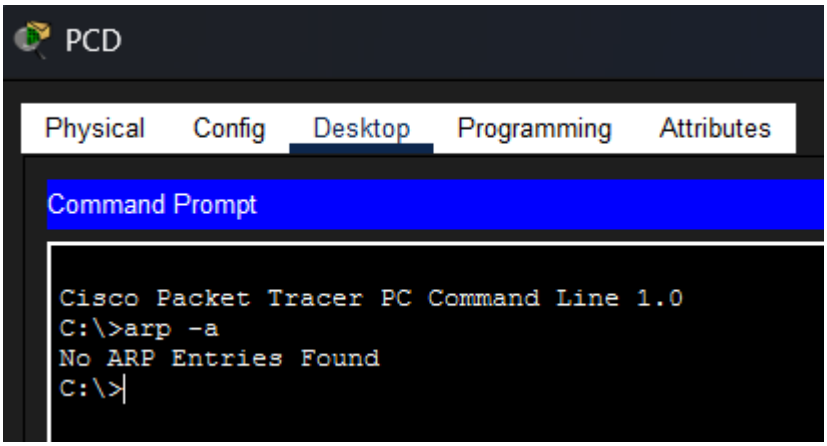
```
SWC>enable
SWC#show arp

SWC#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0001.977a.b614    DYNAMIC     Fa0/1
SWC#
```

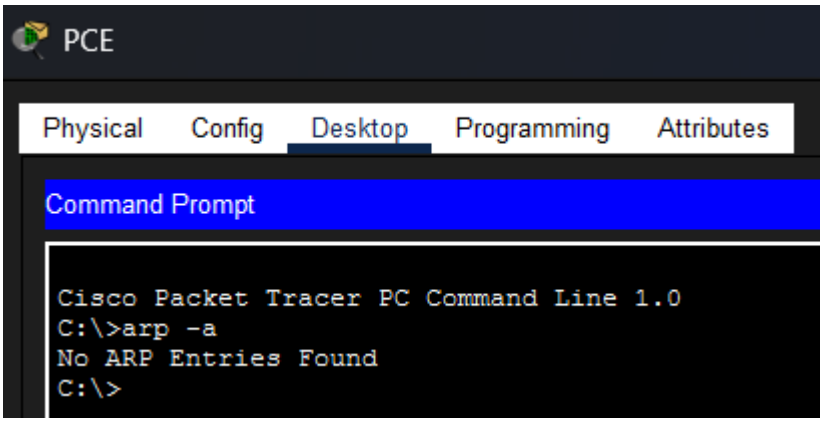
d. At PCA, click on the PC icon, and then choose Desktop-Command Prompt. At the command prompt type **`arp –a`** and click enter. Snap the results after the last command and paste it here. Do this to all PCs in the topology.











e. What are your thoughts on the results?

There is no traffic generated yet. So the PC has not needed to resolve any MAC addresses.

Part 2: Generate Network Traffic

Step 1: Generate traffic between PCA and PCB.

In the command prompt Perform the following tasks task to reduce the amount of network traffic viewed in the simulation.

a. Click **PCA** and click the Desktop tab > Command Prompt.
b. Enter the **ping 192.168.33.22** command. This may take a few seconds.
c. In the Command prompt of PCA, type **arp –a**. Paste the result of this command here.

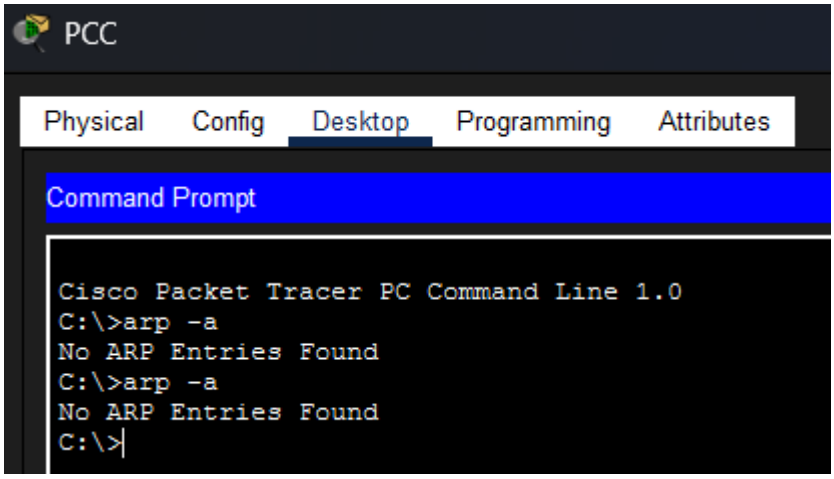
```
C:\>arp -a
  Internet Address      Physical Address      Type
  192.168.33.22         0060.47ea.a746        dynamic

C:\>
```

d. In the Command prompt of PCB, type **arp –a**. Paste the result of this command here

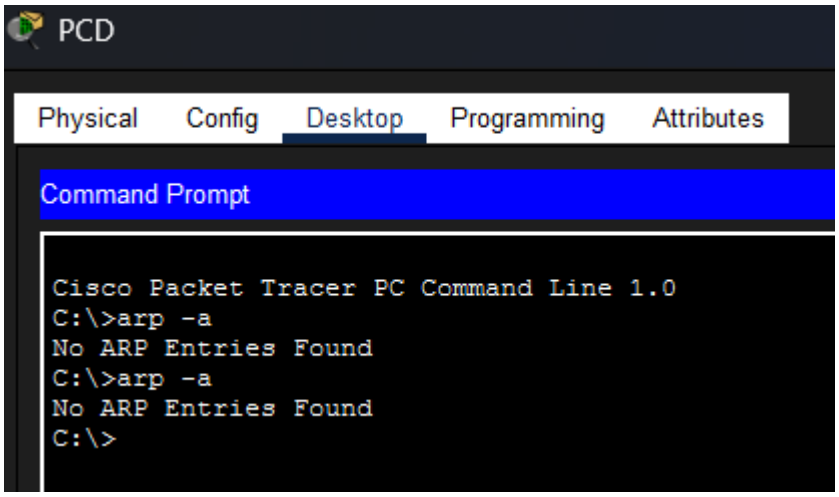
```
C:\>arp -a
  Internet Address      Physical Address      Type
  192.168.33.33         0002.1755.9a06        dynamic

C:\>
```

e. In the Command prompt of PCC, PCD abd PCE, type **arp –a**. Paste the result of this command here.

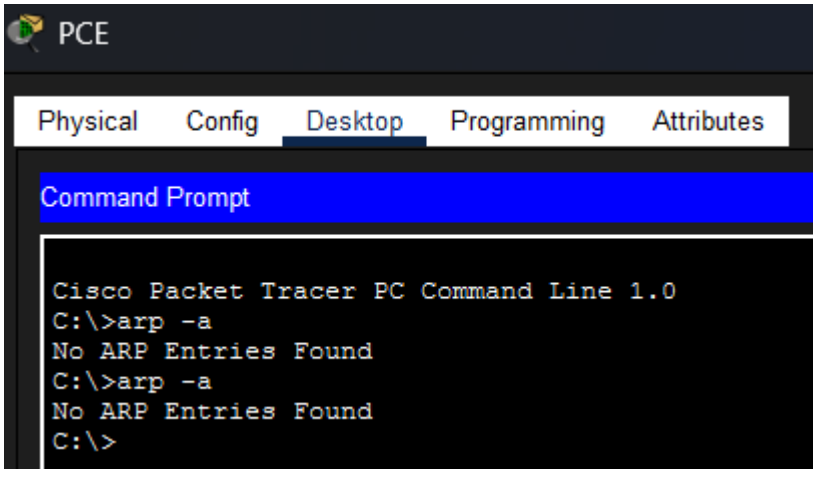
a. PCC:

i. 

b. PCD:

i. 

c. PCE:

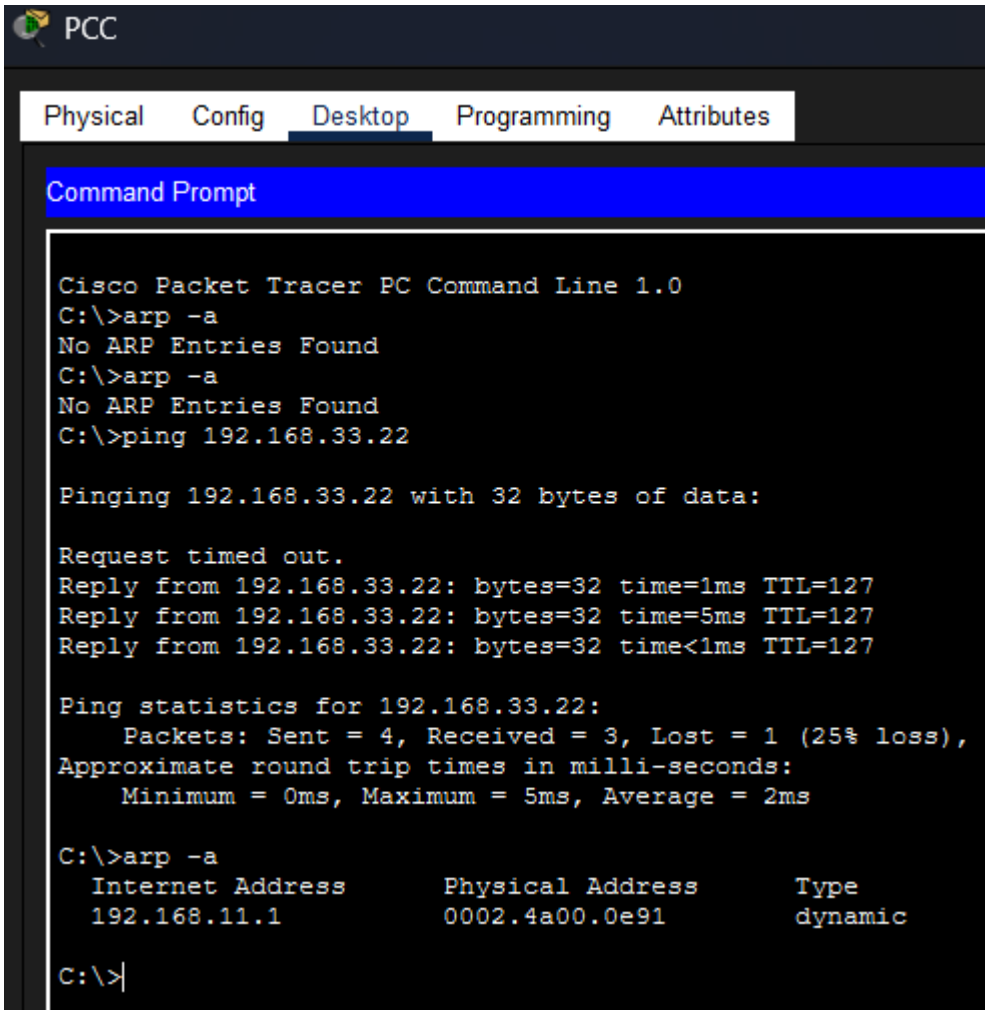
i. 

Step 2: Generate traffic between PCC to all other PC except PCA.

a. Click **PCC** and click the Desktop tab > Command Prompt.

b. Enter the **ping 192.168.33.22** command (ping to PCB). Then type **arp –a**. Paste the result after these commands here.

a.



c. Enter the **ping 192.168.11.112** command (ping to PCD). Then type **arp –a**. Paste the result after these commands here.

a.

```
C:\>ping 192.168.11.112

Pinging 192.168.11.112 with 32 bytes of data:

Reply from 192.168.11.112: bytes=32 time<1ms TTL=128
Reply from 192.168.11.112: bytes=32 time<1ms TTL=128
Reply from 192.168.11.112: bytes=32 time<1ms TTL=128
Reply from 192.168.11.112: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.11.112:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>arp -a
  Internet Address      Physical Address      Type
  192.168.11.1          0002.4a00.0e91        dynamic
  192.168.11.112        0001.6462.0278        dynamic

C:\>
```

d. Enter the **ping 192.168.4.110** command (ping to PCE). Then type **arp –a**. Paste the result after these commands here.

a.

```
C:\>ping 192.168.4.110

Pinging 192.168.4.110 with 32 bytes of data:

Request timed out.
Reply from 192.168.4.110: bytes=32 time=4ms TTL=126
Reply from 192.168.4.110: bytes=32 time=7ms TTL=126
Reply from 192.168.4.110: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.4.110:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 7ms, Average = 4ms

C:\>arp -a
  Internet Address      Physical Address      Type
  192.168.11.1          0002.4a00.0e91        dynamic
  192.168.11.112        0001.6462.0278        dynamic

C:\>
```

e. Discuss the results you got from all the commands on PCC.

a. The results confirm successful connectivity, as all pings worked after a brief initial timeout caused by the normal ARP resolution process. The commands demonstrate correct routing behavior: PCC resolved the specific MAC address for the local device (192.168.11.112) but correctly used the Default Gateway's MAC address (192.168.11.1) to reach the remote networks (192.168.33.22 and 192.168.4.110).

f. At Router RTA, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
RTA>enable
RTA#show arp
```

```
RTA>enable
RTA#show arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  192.168.11.1            -   0002.4A00.0E91  ARPA   FastEthernet1/0
Internet  192.168.11.11         117 00D0.D39A.C0D9  ARPA   FastEthernet1/0
Internet  192.168.33.1            -   000C.CF0C.593A  ARPA   FastEthernet0/0
Internet  192.168.33.22         117 0060.47EA.A746  ARPA   FastEthernet0/0
RTA#
```

g. At Router RTB, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
RTB>enable
RTB#show arp
```

```
RTB>enable
RTB#show arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  192.168.4.1            -   0001.977A.B614  ARPA   FastEthernet0/0
Internet  192.168.4.110        117 0060.702D.7C08  ARPA   FastEthernet0/0
RTB#
```

Step 3: Switch MAC address table.

a. At Switch SWA, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
SWA>enable
SWA#show arp

SWA#show mac-address-table
```

```
SWA>enable
SWA#show arp

SWA#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0002.4a00.0e91    DYNAMIC     Fa0/1
   1    000c.8546.7d85    DYNAMIC     Fa1/1
SWA#
```

b. At Switch SWB, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
SWB>enable
SWB#show arp

SWB#show mac-address-table
```

```
SWB>enable
SWB#show arp

SWB#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    000c.cf0c.593a    DYNAMIC     Fa0/1
SWB#
```

c. At Switches SWC and Switch1, enter the CLI. At the command prompt type the following commands. Snap the results after the last command and paste it here.

```
SWC>enable
SWC#show arp

SWC#show mac-address-table
```

```
SWC>enable
SWC#show arp

SWC#show mac-address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----

   1    0001.977a.b614    DYNAMIC     Fa0/1
SWC#
```

d. Do switches use arp table? (Y/N)

a. Y

e. Explain your answer in (d) **Hint: the answer may surprise you. Google for the explanation. It is not part of NetComm syllabi, it is just for knowledge..*

~~b.~~a. If you assign an IP address to a switch (to Ping, Telnet, or SSH into it), the switch needs to reply to you. To send that reply, it must map your IP address to your MAC address, just like a PC does. Therefore, it maintains its own ARP Table strictly for its own management traffic, even though it doesn't need one to switch data between other devices.

~~d.~~f. What information does the command ***show mac-address-table*** gives?

It lists the mapping between MAC addresses and switch ports, telling you exactly which physical port a specific device is plugged into and which VLAN it is on.

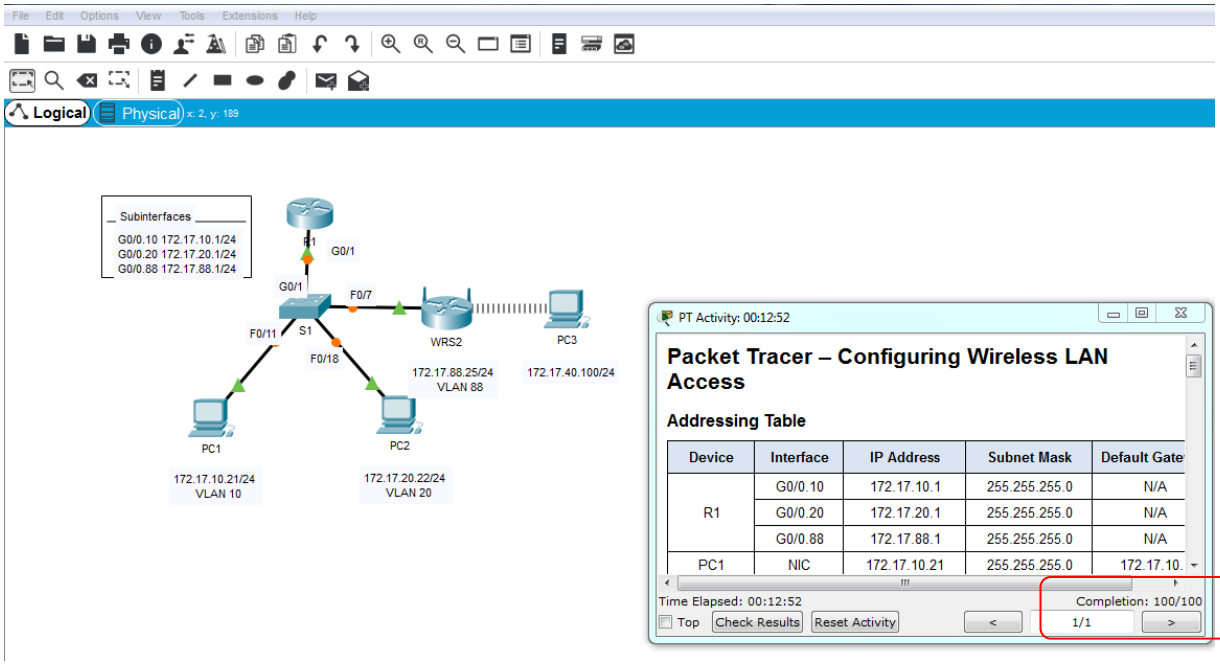
Part 3: Attach wireless lab results.

In this part, you will use Lab 4 .pka file.

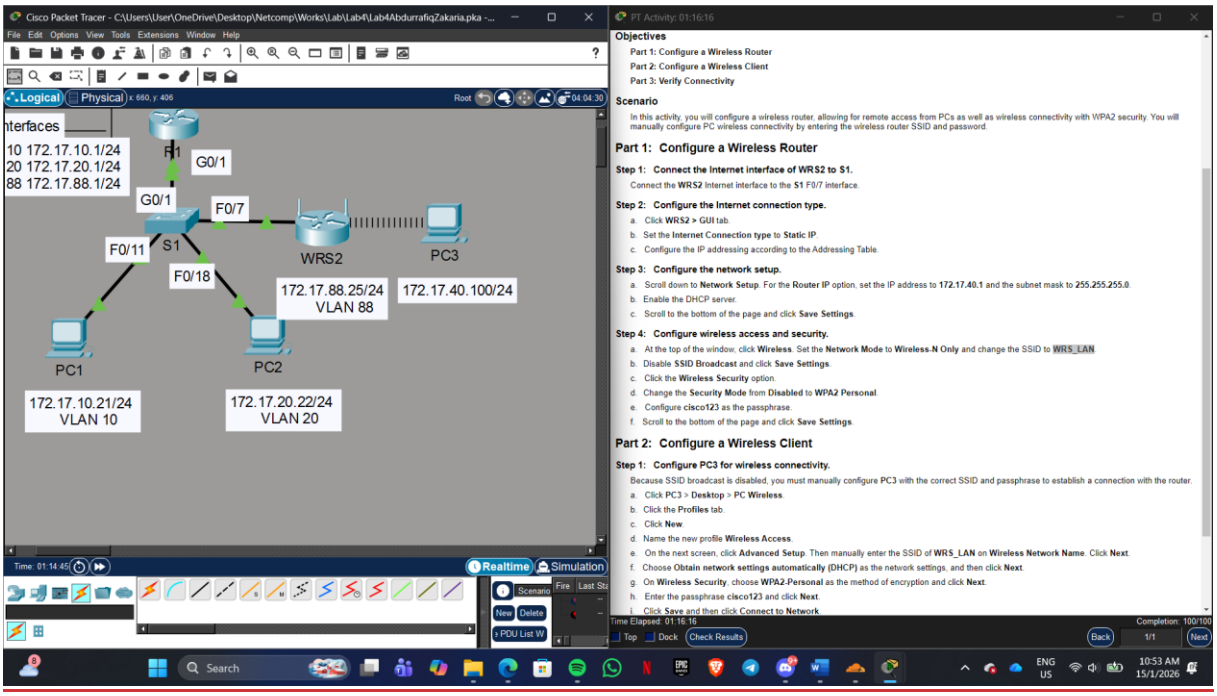
Step1: Change the filename of Lab 4.

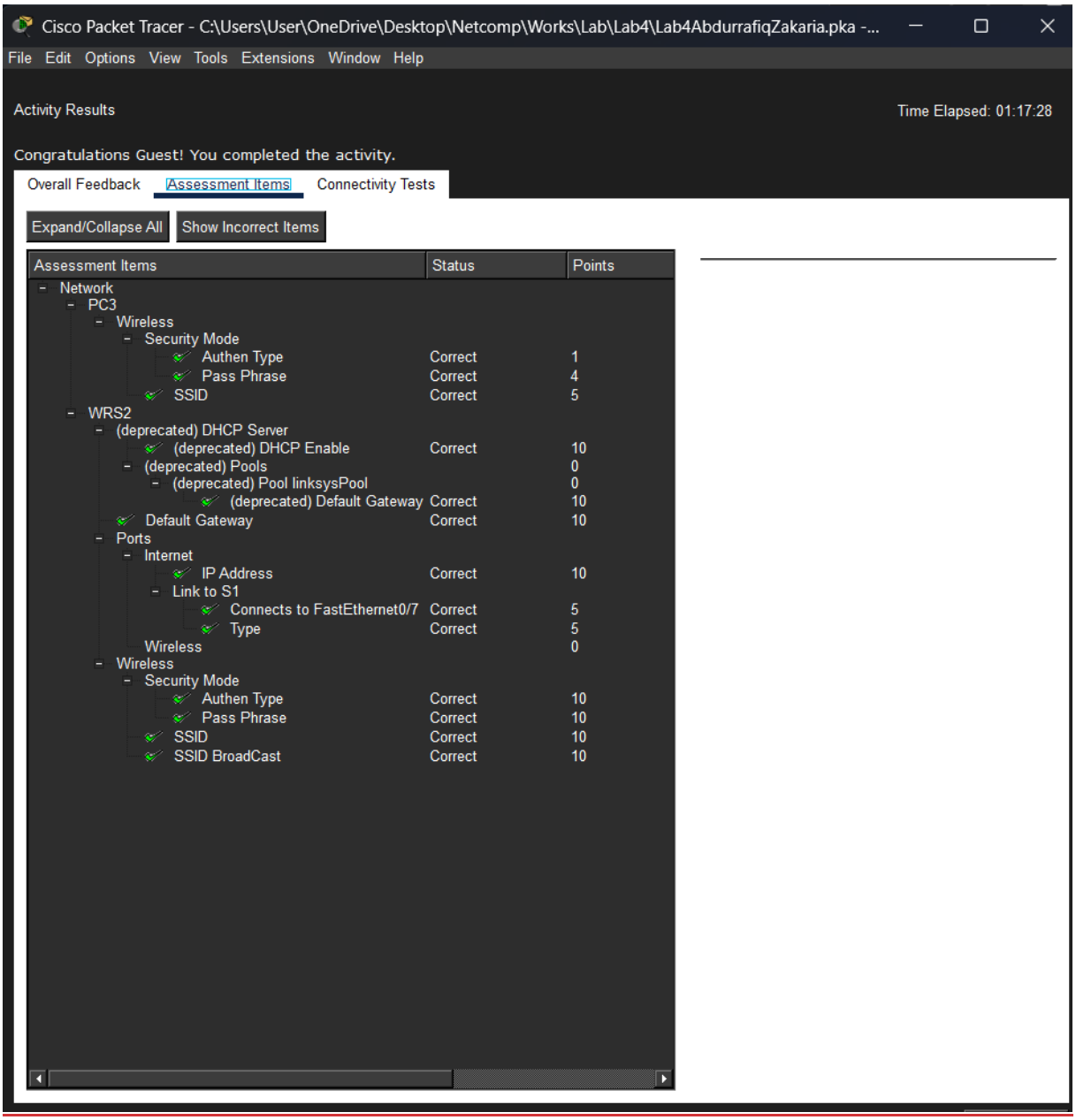
a. Change the Lab 4 filename to include your name. **Example: Lab4AliAhmad.pkt*

b. Go through the instructions. As you complete the tasks, you will see the bottom right hand corner of the pkt file increase in completion percentage, until you get 100/100.



c. Once you have completed fully, capture the screen (which includes the filename, the topology and the activity wizard showing completion) and paste it here.




Cisco Packet Tracer - C:\Users\User\OneDrive\Desktop\Netcomp\Works\Lab\Lab4\Lab4AbdurrafiqZakaria.pka -...
File Edit Options View Tools Extensions Window Help
Activity Results
Time Elapsed: 01:17:28
Congratulations Guest! You completed the activity.
Overall Feedback
Assessment Items
Connectivity Tests
Expand/Collapse All
Show Incorrect Items
Assessment Items
Status
Points
Network
PC3
Wireless
Security Mode
Authen Type Correct 1
Pass Phrase Correct 4
SSID Correct 5
WRS2
(deprecated) DHCP Server
(deprecated) DHCP Enable Correct 10
(deprecated) Pools 0
(deprecated) Pool linksysPool 0
(deprecated) Default Gateway Correct 10
Default Gateway Correct 10
Ports
Internet
IP Address Correct 10
Link to S1
Connects to FastEthernet0/7 Correct 5
Type Correct 5
Wireless 0
Wireless
Security Mode
Authen Type Correct 10
Pass Phrase Correct 10
SSID Correct 10
SSID BroadCast Correct 10