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.

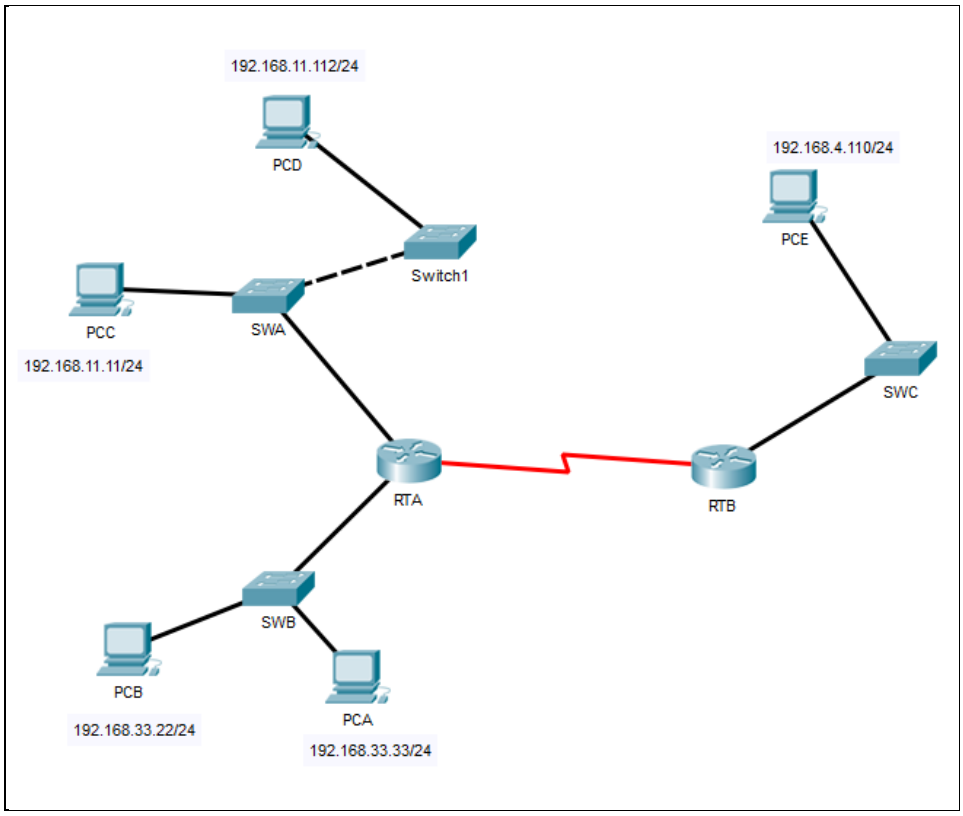


Figure 1

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

```
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
```

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
```

a. 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.

PCA

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
```

PCB

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
```

PCC

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
```

PCD

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
```

PCE

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>
```

b. What are your thoughts on the results?

The PC is not receiving any ARP request so there will be no entry in the PC ARP table.

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.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>arp -a
No ARP Entries Found
C:\>ping 192.168.33.22

Pinging 192.168.33.22 with 32 bytes of data:

Reply from 192.168.33.22: bytes=32 time<1ms TTL=128
Reply from 192.168.33.22: bytes=32 time<1ms TTL=128
Reply from 192.168.33.22: bytes=32 time<1ms TTL=128
Reply from 192.168.33.22: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.33.22:
    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
  192.168.33.22         0060.47ea.a746        dynamic
```

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
```

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

PCC

```
No ARP Entries Found
C:\>arp -a
```

PCD

```
No ARP Entries Found
C:\>arp -a
```

PCE

```
No ARP Entries Found
C:\>arp -a
```

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.

```
C:\>ping 192.168.33.22

Pinging 192.168.33.22 with 32 bytes of data:

Request timed out.
Reply from 192.168.33.22: bytes=32 time<1ms TTL=127
Reply from 192.168.33.22: bytes=32 time<1ms TTL=127
Reply from 192.168.33.22: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.33.22:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% 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
```

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

```
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
```

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

```
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=5ms TTL=126
Reply from 192.168.4.110: bytes=32 time=7ms TTL=126
Reply from 192.168.4.110: bytes=32 time=8ms 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 = 5ms, Maximum = 8ms, Average = 6ms

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

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

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          5   00D0.D39A.C0D9  ARPA   FastEthernet1/0
Internet  192.168.33.1           -   000C.CF0C.593A  ARPA   FastEthernet0/0
Internet  192.168.33.22          5   0060.47EA.A746  ARPA   FastEthernet0/0
RTA#
```

g. 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.

```
RTB>enable
RTB#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          5   00D0.D39A.C0D9  ARPA   FastEthernet1/0
Internet  192.168.33.1           -   000C.CF0C.593A  ARPA   FastEthernet0/0
Internet  192.168.33.22          5   0060.47EA.A746  ARPA   FastEthernet0/0
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          6   00D0.D39A.C0D9  ARPA   FastEthernet1/0
Internet  192.168.33.1           -   000C.CF0C.593A  ARPA   FastEthernet0/0
Internet  192.168.33.22          6   0060.47EA.A746  ARPA   FastEthernet0/0
```

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
```

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
```

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
```

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

Yes

e. Explain your answer in (d) **Hint: the answer may surprise you. Google for the explanation.*

As the packet is being forwarded from one port to another, the switch will looks up the IP address of the device in ARP table in order to obtain the MAC address.

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

It is used to display the infomations about the dynamic MAC address table entries

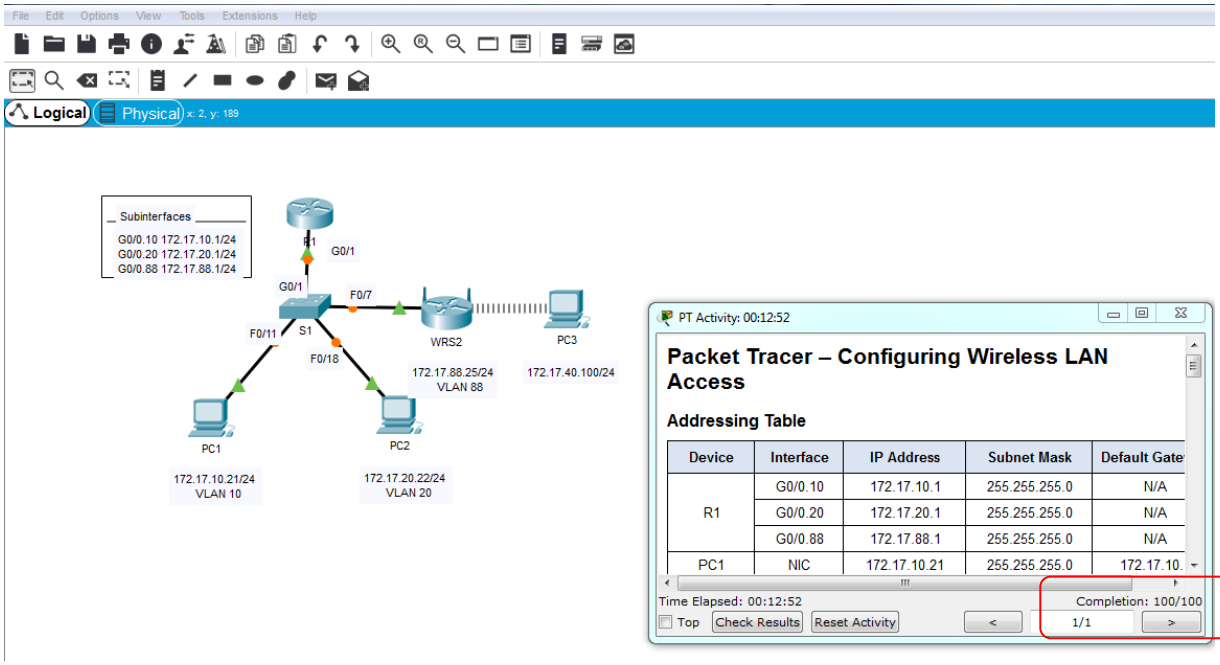
Part 3: Attach wireless lab results.

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.