NAME: SAKSHI CHHEDA
ROLL NO: 7
UID: 2018130005
BATCH: A
CLASS: T.E. COMPS

CEL 51, DCCN, Monsoon 2020
Lab 3: Learn the usage of Packet Tracer

AIM :

- Develop an understanding of the basic functions of Packet Tracer.
- Create/model a simple Ethernet network using two hosts and a hub.
- Observe traffic behavior on the network.
- Observer data flow of ARP broadcasts and pings.

Step 1: Create a logical network diagram with two PCs and a hub

The bottom left-hand corner of the Packet Tracer screen displays eight icons that represent device categories or groups, such as Routers, Switches, or End Devices.

Moving the cursor over the device categories will show the name of the category in the box. To select a device, first select the device category. Once the device category is selected, the options within that category appear in the box next to the category listings. Select the device option that is required.

a) Select **End Devices** from the options in the bottom left-hand corner. Drag and drop two generic PCs onto your design area.

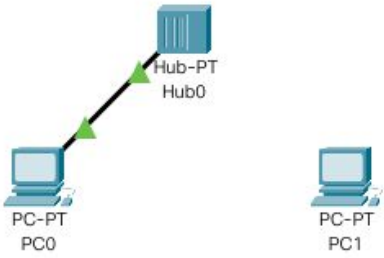
Two generic PCs- PC0 and PC1 added to the design area.

b) Select **Hubs** from the options in the bottom left-hand corner. Add a hub to the prototype network by dragging and dropping a generic hub onto the design area.

A generic Hub added to the design area.

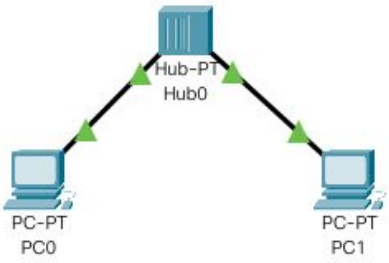
c) Select **Connections** from the bottom left-hand corner. Choose a **Copper Straight-through** cable type. Click the first host, **PC0**, and assign the cable to the **FastEthernet** connector. Click the hub, **Hub0**, and select a connection port, **Port 0**, to connect to **PC0**.

Connecting the PC0 with the Hub0 using a Copper Straight-through cable.



d) Repeat Step c for the second PC, **PC1**, to connect the PC to **Port 1** on the hub.

Connecting the PC1 with the Hub0 using a Copper Straight-through cable.

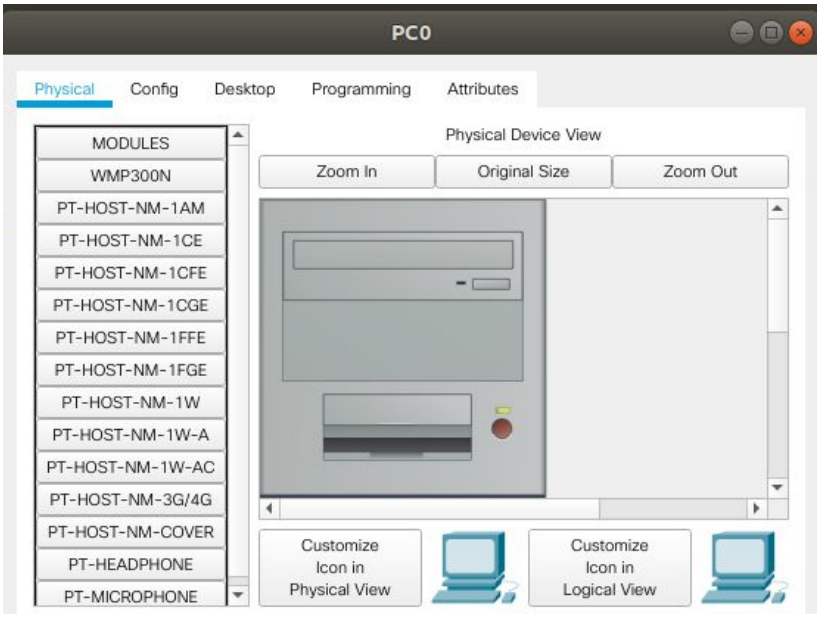


At the end of Step 1, the two generic PCs- PC0 and PC1 have been connected to a Hub0 using a Copper Straight-through cable.

Step 2: Configure host names and IP addresses on the PCs

a) Click PC0. A PC0 window will appear.

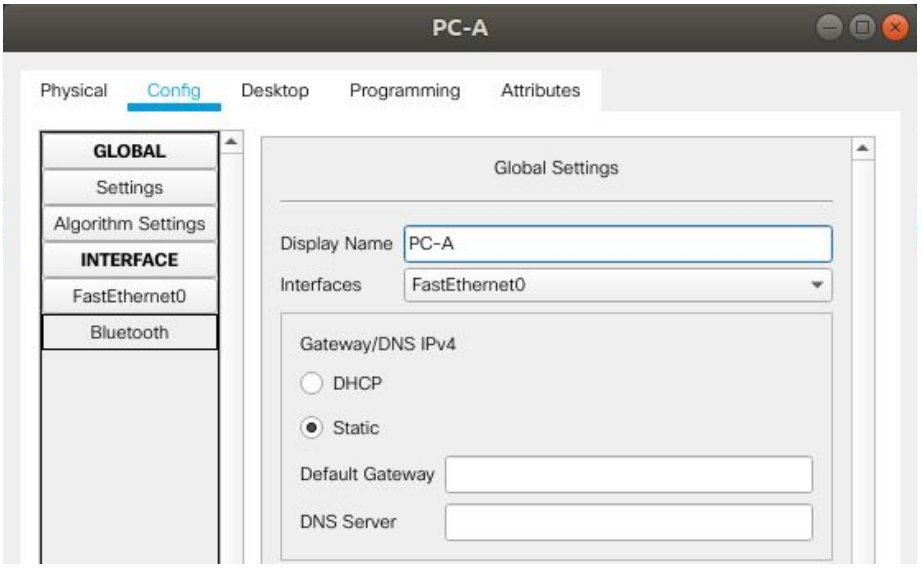
A PC0 window appeared as shown here.



b) From the PC0 window, select the **Config** tab. Change the PC **Display Name** to **PC-A**. (An error message window will appear warning that changing the device name may affect the scoring of the activity. Ignore this error message.) Select the **FastEthernet** tab on the left and add the IP address of **192.168.1.1** and subnet mask of **255.255.255.0**. Close the PC-A configuration window by selecting the **x** in the upper-righthand corner.

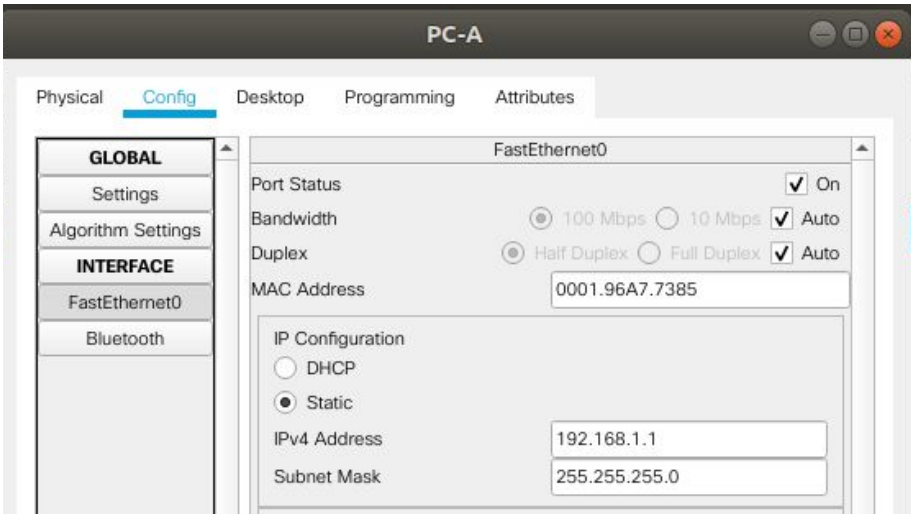
The Configuration tab for PC-A:

Display name of generic PC - PC0 changed to PC-A.



For the FastEthernet() tab :

Adding IP address as **192.168.1.1** and subnet mask as **255.255.255.0**.

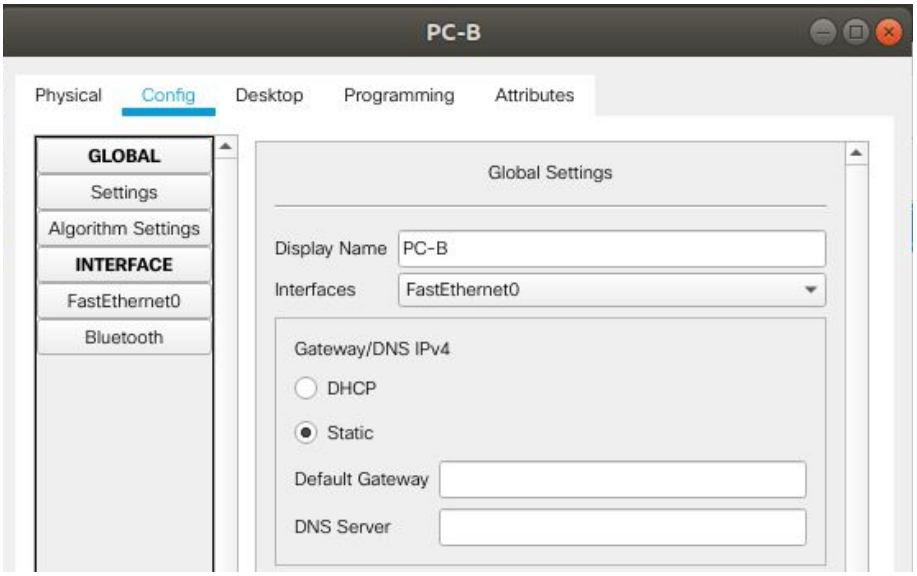


c) Click PC1.

d) Select the **Config** tab. Change the PC **Display Name** to **PC-B**. Select the **FastEthernet** tab on the left and add the IP address of **192.168.1.2** and subnet mask of **255.255.255.0**. Close the PC-B configuration window.

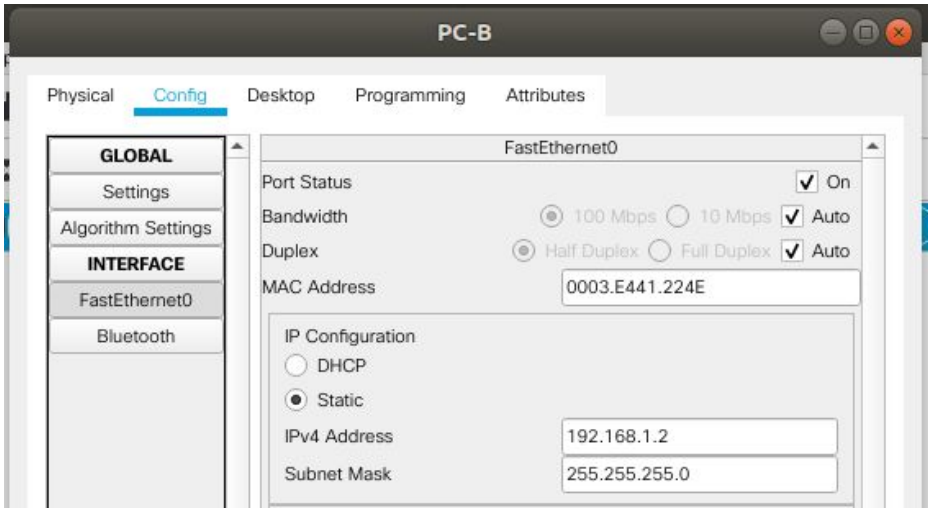
The Configuration tab for PC-B:

Display name of generic PC - PC1 changed to PC-B.

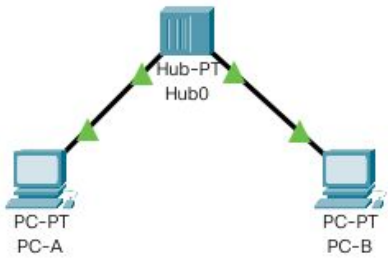


The FastEthernet() tab :

Adding IP address as **192.168.1.2** and subnet mask as **255.255.255.0**.



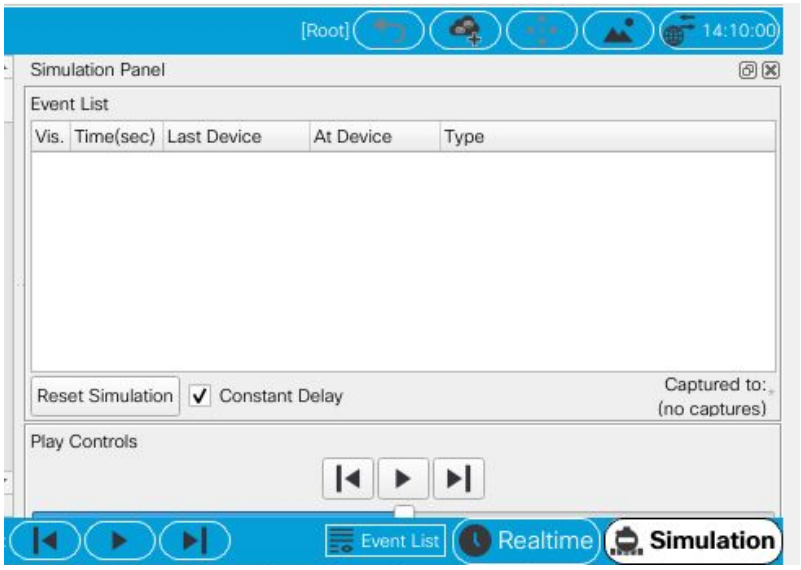
At the end of Step 2, the generic PC0 is named as PC-A and is given an IP address: **192.168.1.1** and subnet mask: **255.255.255.0**. The generic PC1 is named as PC-B and given an IP address: **192.168.1.2** and subnet mask: **255.255.255.0**.



Step 3: Observe the flow of data from PC-A to PC-B by creating network traffic

a) Switch to **Simulation** mode by selecting the tab that is partially hidden behind the **Realtime** tab in the bottom right-hand corner. The tab has the icon of a stopwatch on it.

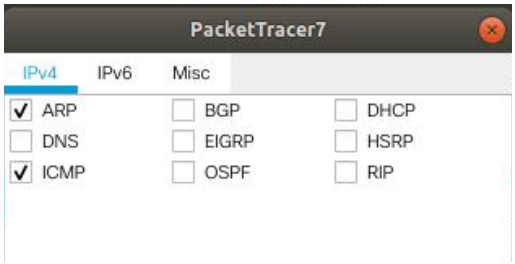
On switching to Simulation mode a Simulation Panel appears as shown here.



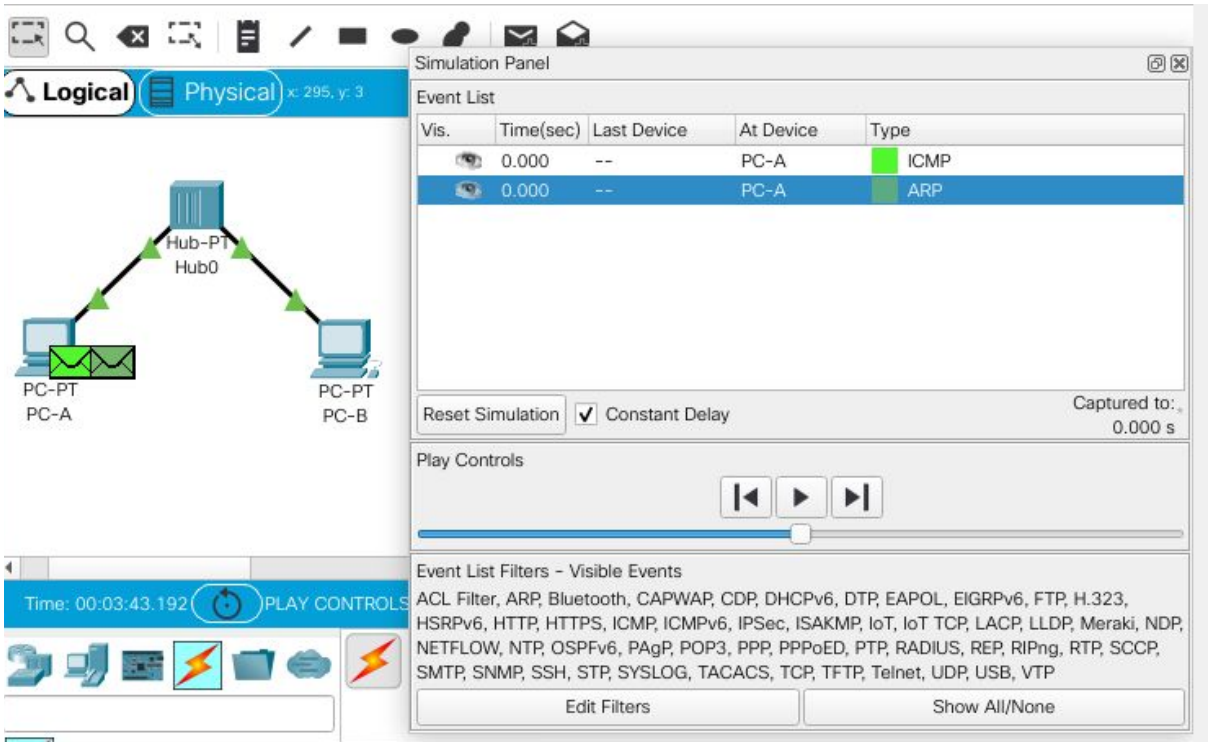
b) Click the **Edit Filters** button in the **Edit List Filters** area. Clicking the **Edit Filters** button will create a pop-up window. In the pop-up window, click the **Show All/None** box to deselect every filter. Select just the **ARP** and **ICMP** filters.

By default, all the filters are selected when the pop-up window appears.

Selecting only ARP and ICMP filters.

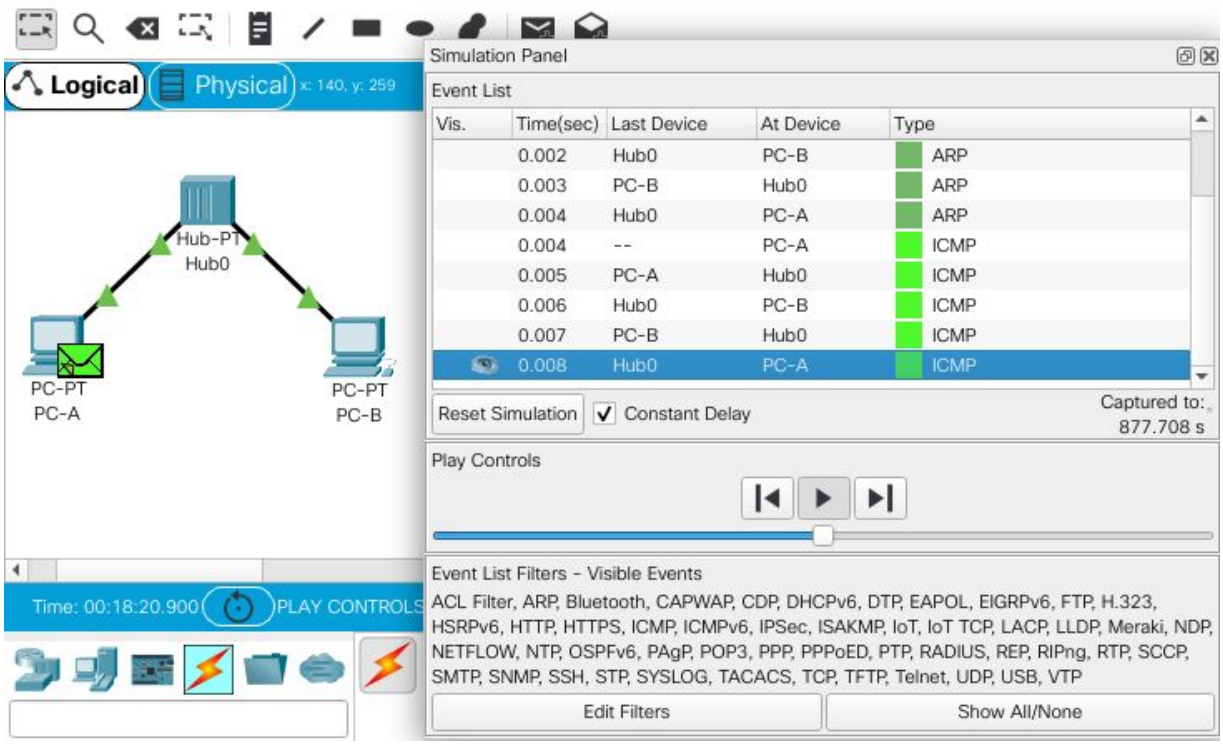


c) Select a **Simple PDU** by clicking the closed envelope on the right vertical toolbar. Move your cursor to the display area of your screen. Click **PC-A** to establish the source. Move your cursor to **PC-B** and click to establish the destination.



Now two envelopes are now positioned beside PC-A. One envelope is ICMP, while the other is ARP. The Event List in the Simulation Panel will identify exactly which envelope represents ICMP and which represents ARP.

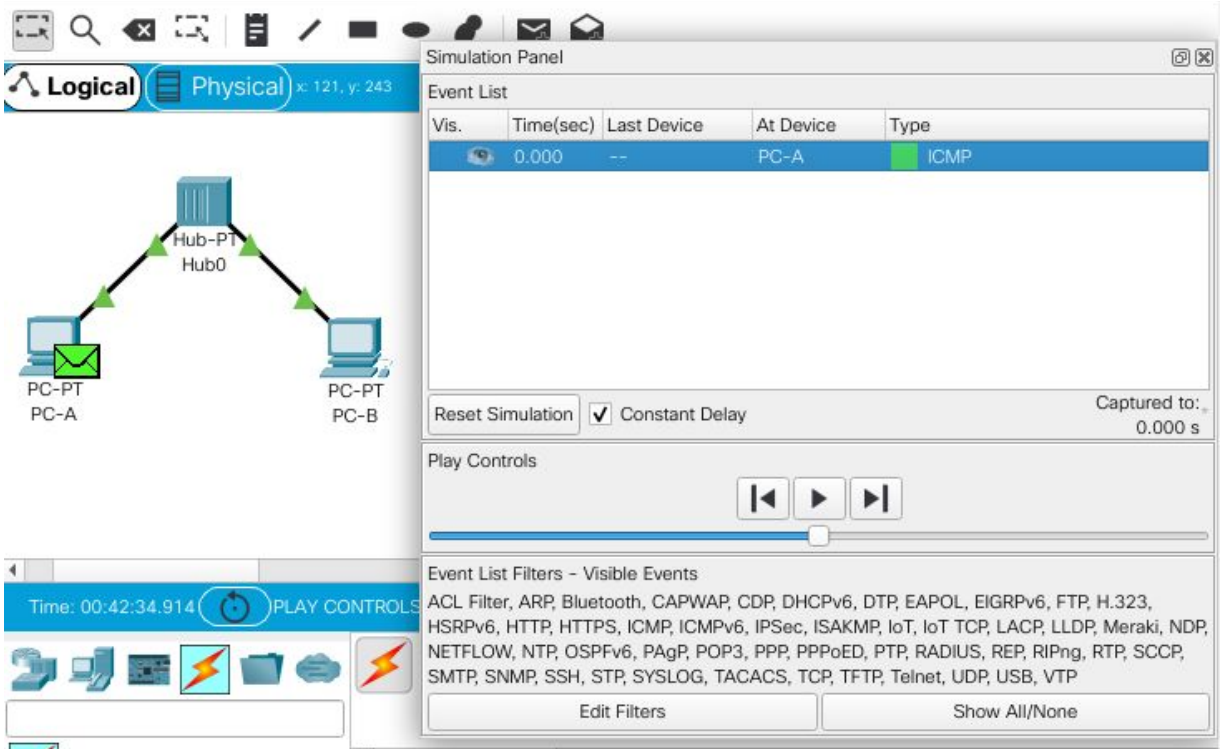
d) Select **Auto Capture / Play** from the **Play Controls** area of the Simulation Panel. Below the **Auto Capture / Play** button is a horizontal bar, with a vertical button that controls the speed of the simulation. Dragging the button to the right will speed up the simulation while dragging is to the left will slow down the simulation.



After the simulation is completed, the ICMP envelope gets positioned at PC-A again.

e) The animation will run until the message window *No More Events* appears. All requested events have been completed. Select OK to close the message box.

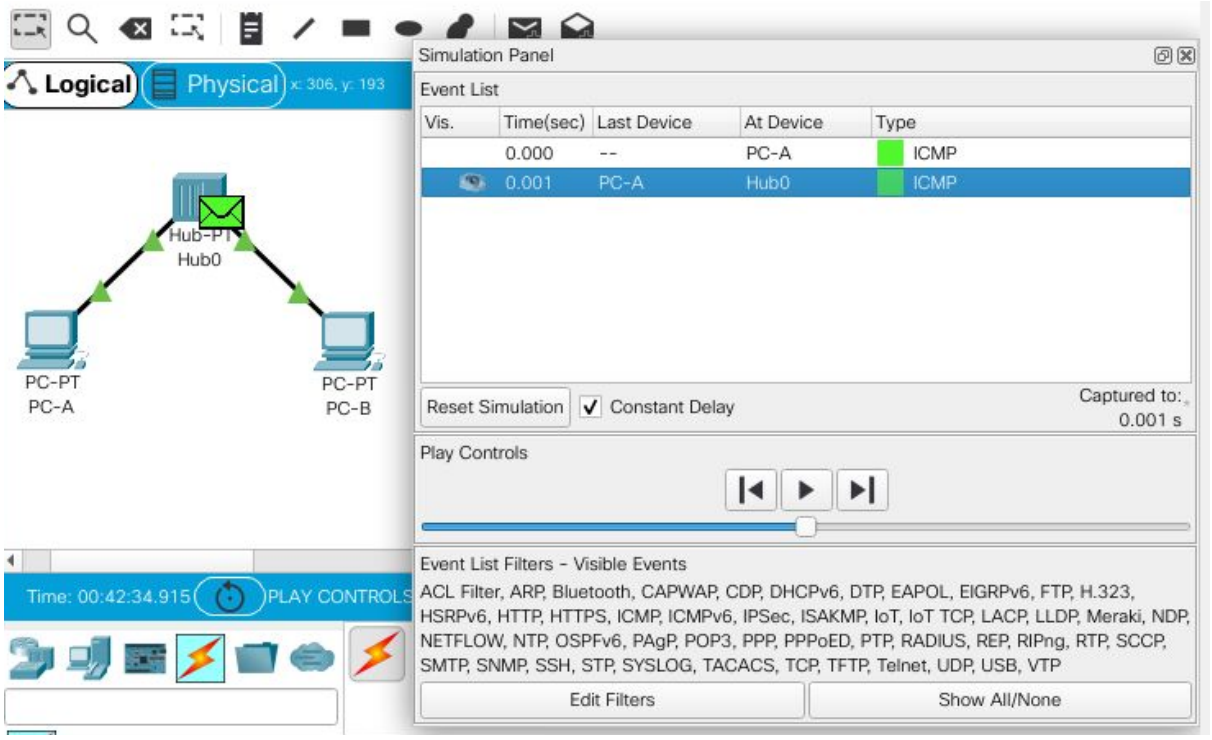
f) Choose the **Reset Simulation** button in the Simulation Panel. Notice that the ARP envelope is no longer present. This has reset the simulation but has not cleared any configuration changes or dynamic table entries, such as ARP table entries. The ARP request is not necessary to complete the **ping** command because PC-A already has the MAC address in the ARP table.



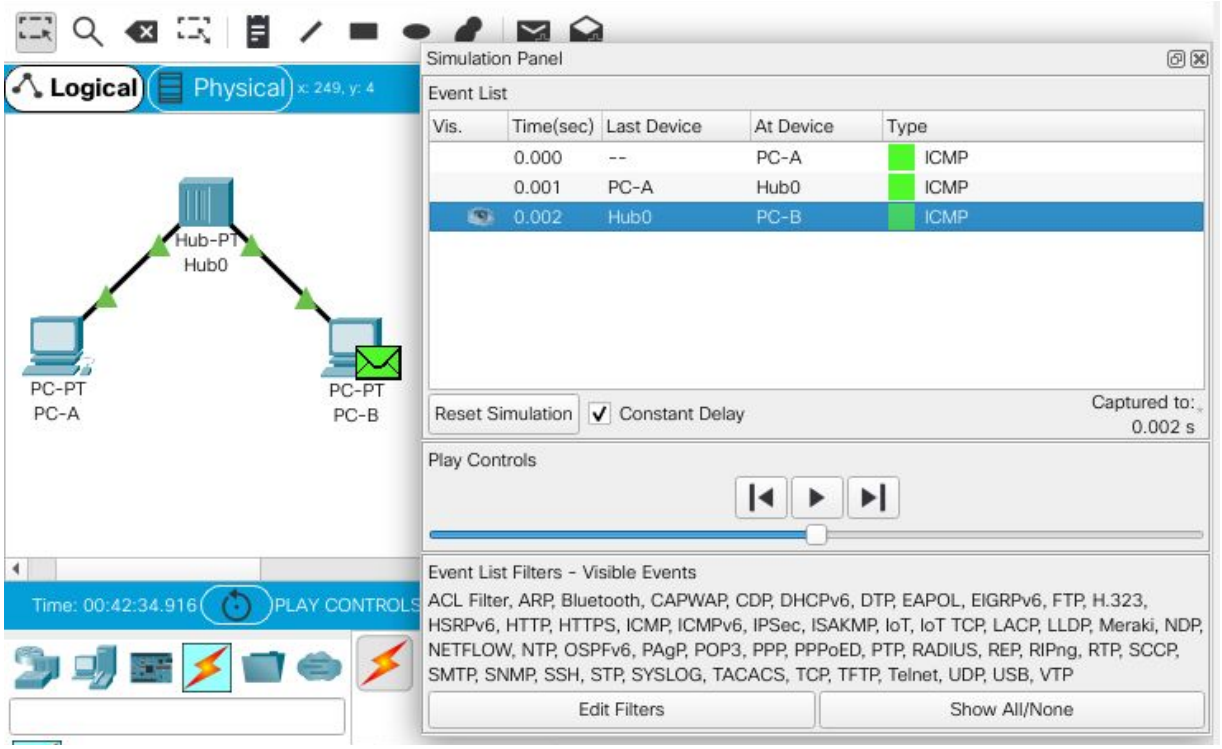
After resetting the simulation, the ARP envelope is no longer present.

g) Choose the **Capture / Forward** button. The ICMP envelope will move from the source to the hub and stop. The **Capture / Forward** button allows you to run the simulation one step at a time. Continue selecting the **Capture / Forward** button until you complete the event.

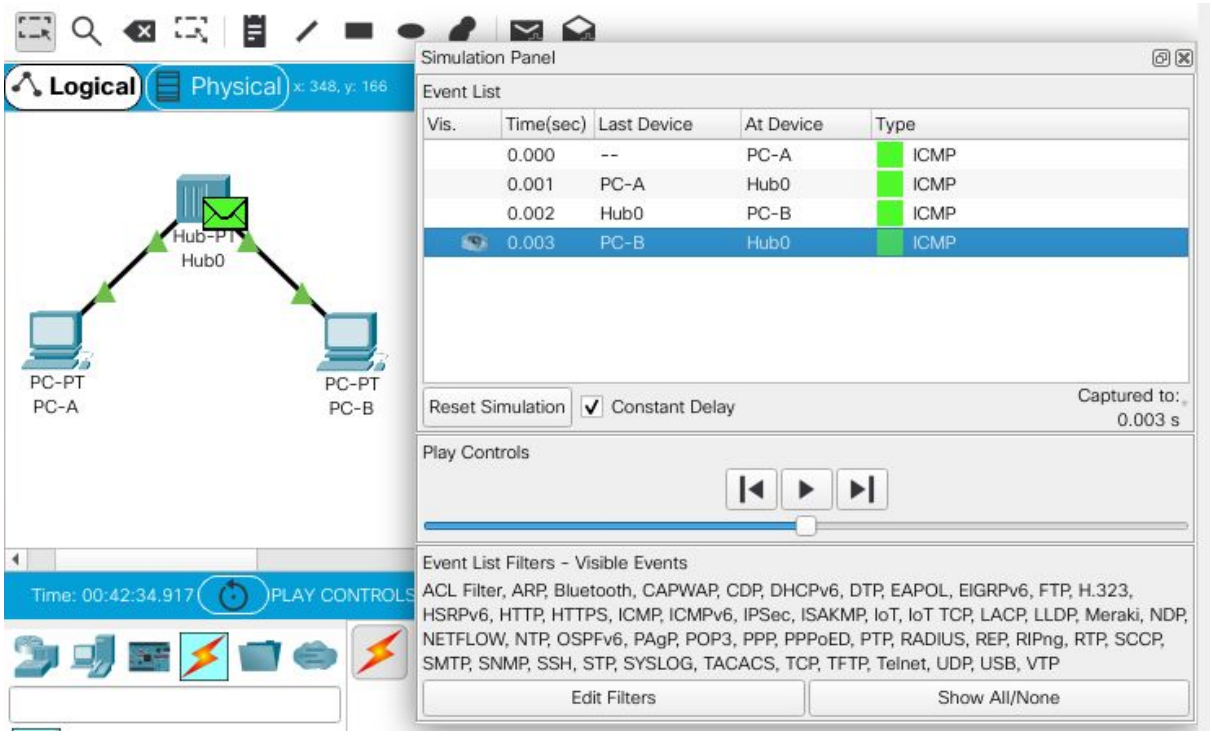
On clicking the forward button, the ICMP envelope moves from the PC-A to the hub as shown in image below.



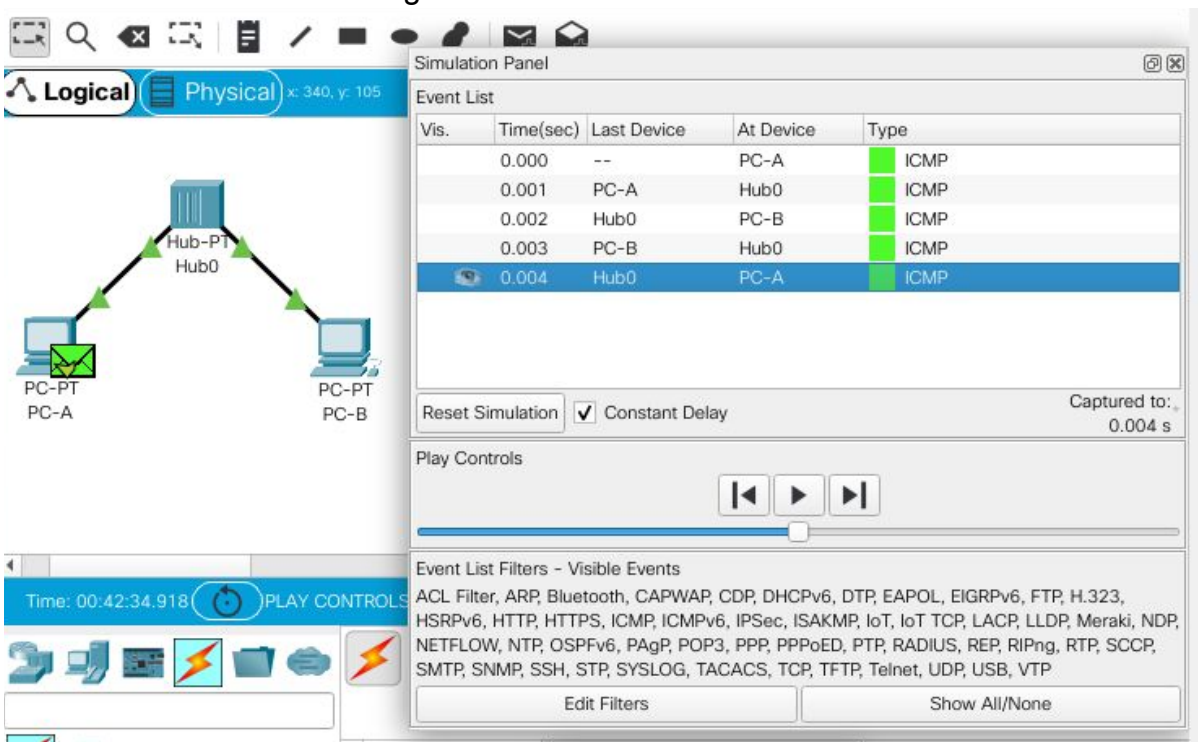
On clicking the forward button again, the ICMP envelope moves from the hub to the PC-B as shown in image below.



On clicking the forward button again, the ICMP envelope moves from the PC-B to the hub as shown in image below.



On clicking the forward button again, the ICMP envelope moves from the hub to the PC-A as shown in image below.



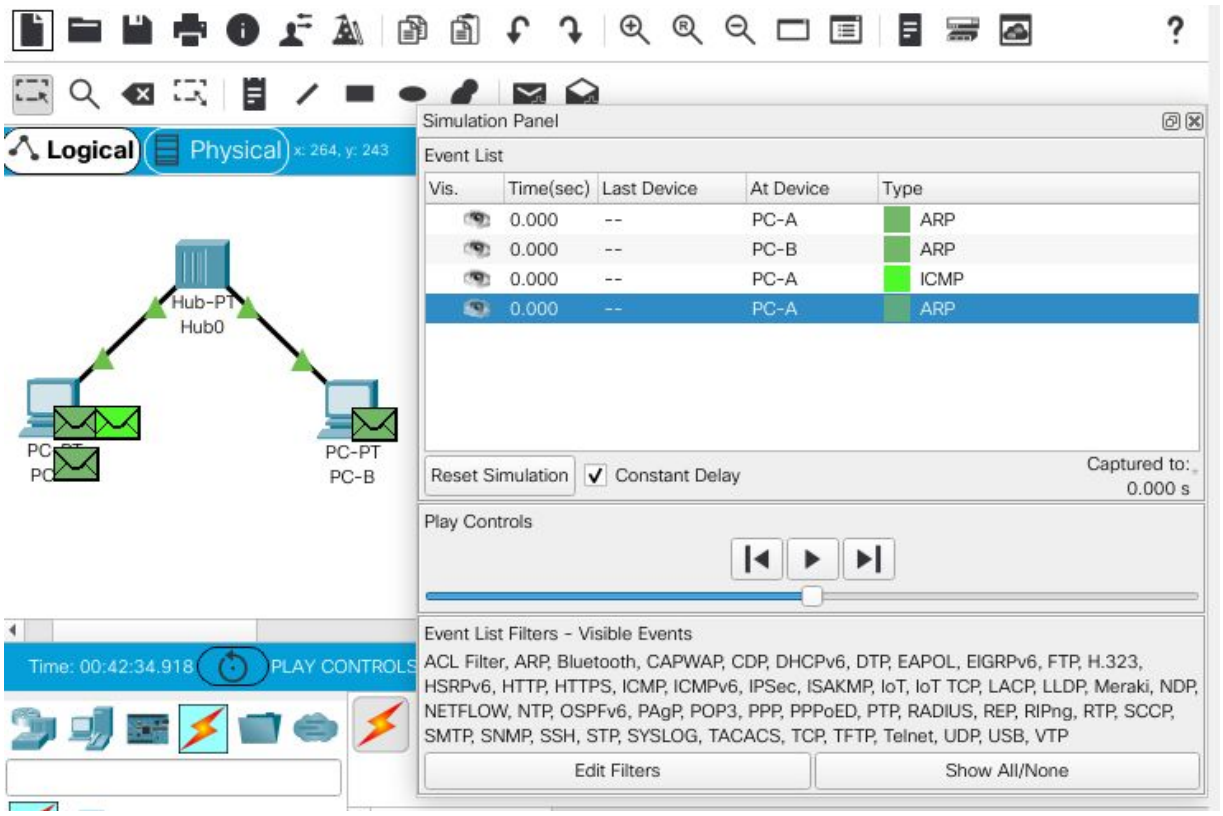
h) Choose the **Power Cycle Devices** button on the bottom left, above the device icons.

i) An error message will appear asking you to confirm reset. Choose **Yes**.

Error message appears as shown here.

j) Now both the ICMP and ARP envelopes are present again. The **Reset Network** button will clear any configuration changes not saved and will clear all dynamic table entries, such as the ARP and MAC table entries.

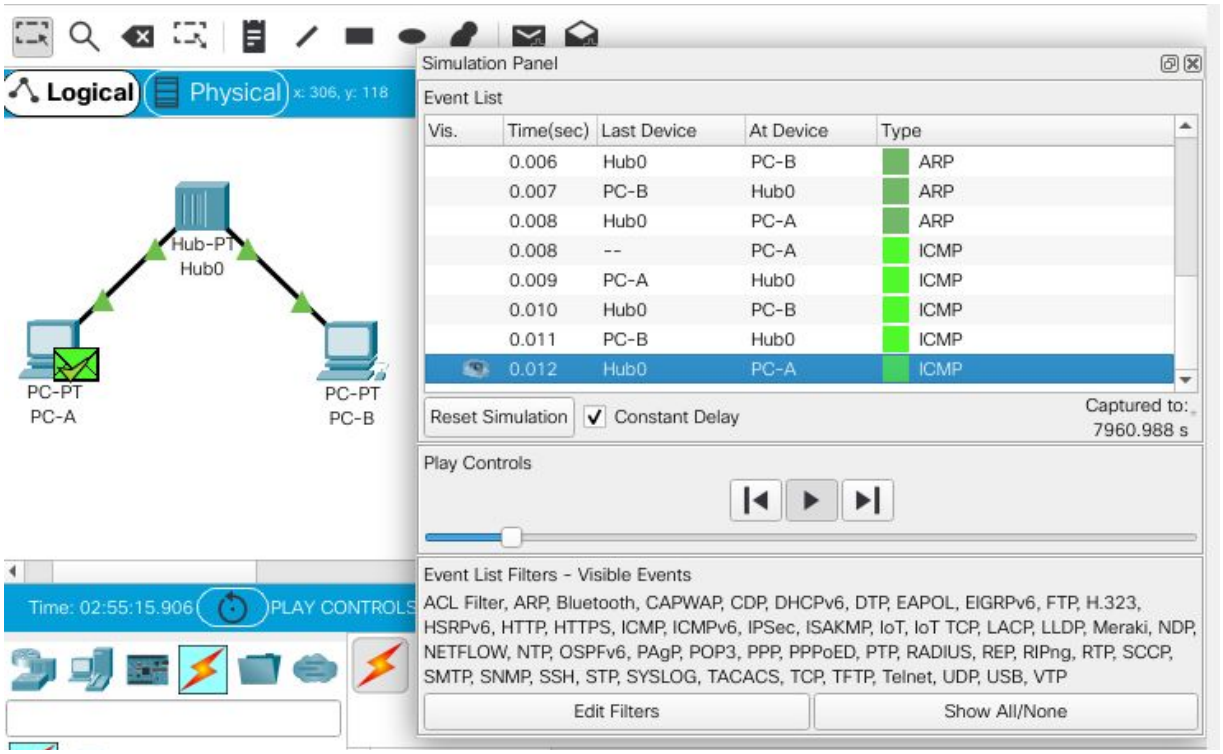
After resetting the network, both the ICMP and ARP envelopes are present again.



Step 4: View ARP Tables on each PC

a) Choose the **Auto Capture / Play** button to repopulate the ARP table on the PCs. Click **OK** when the *No More Events* message appears.

The ARP table gets repopulated on the PCs as shown in image below.



b) Select the magnifying glass on the right vertical tool bar.

c) Click **PC-A**. The ARP table for PC-A will appear. Notice that PC-A does have an ARP entry for PC-C. View the ARP tables for PC-B and PC-C as well. Close all ARP table windows.

The ARP Table for PC-A which has the IP address of PC-B.

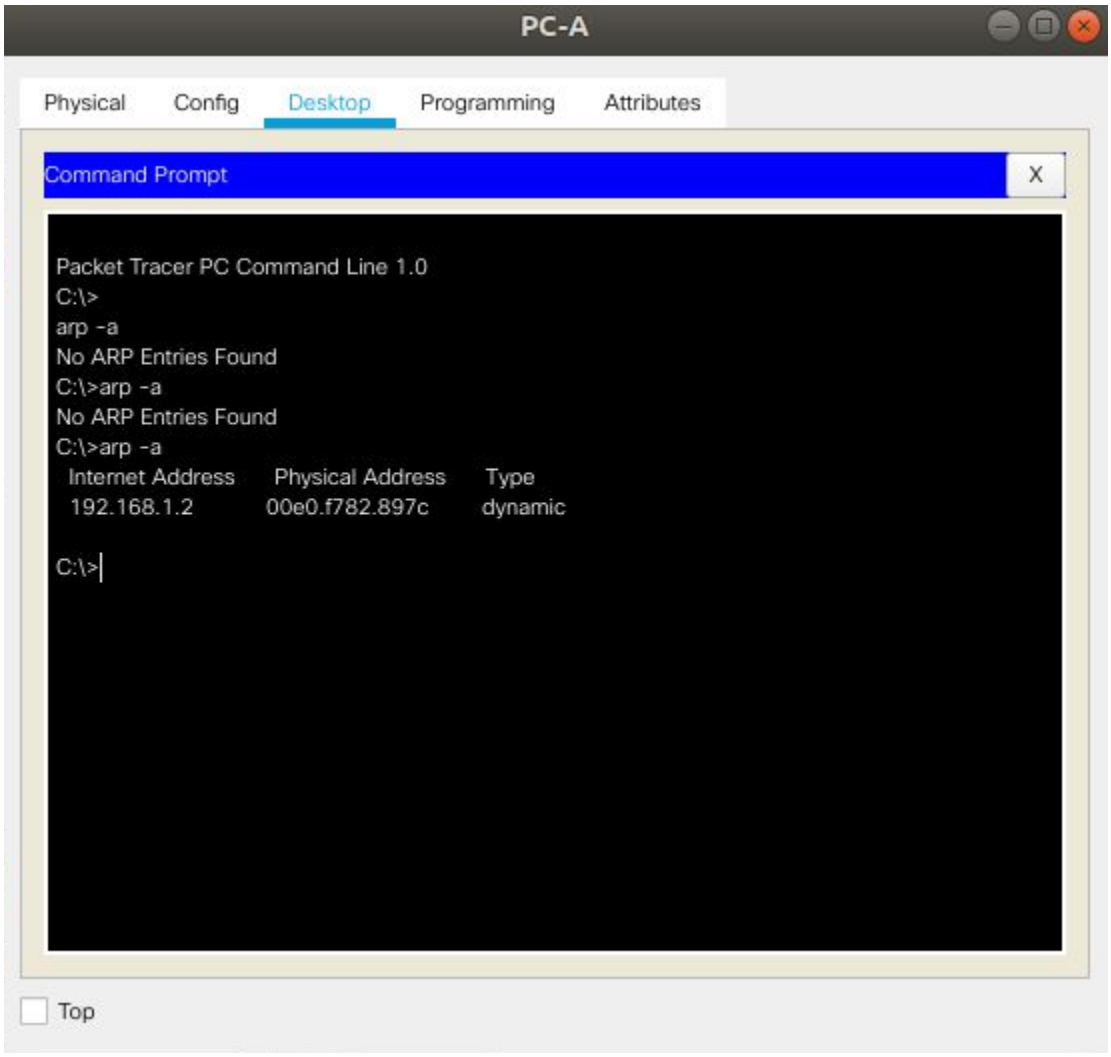
d) Click the **Select Tool** on the right vertical tool bar. (This is the first icon present in the toolbar.)

e) Click **PC-A** and select the **Desktop** tab.

On selecting the Desktop tab in the PC-A configuration window.

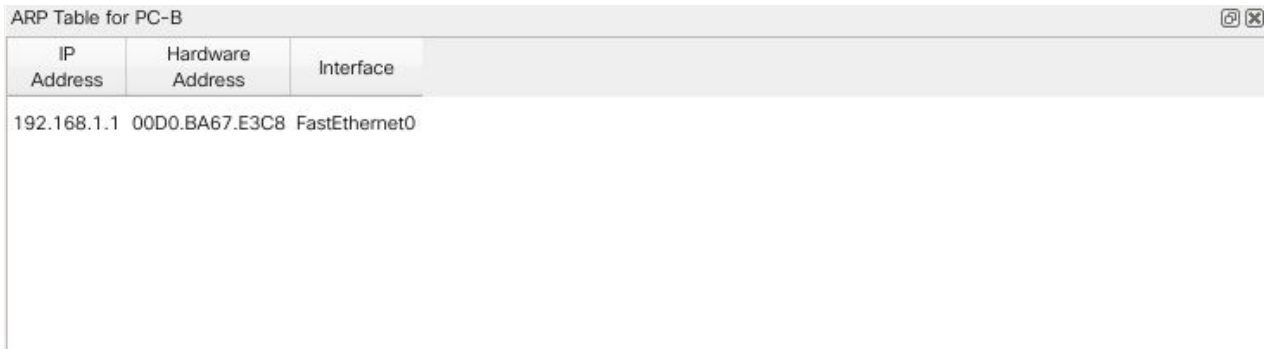
f) Select the **Command Prompt** and type the command **arp -a** and press *enter* to view the ARP table from the desktop view. Close the PC-A configuration window.

Using Command Prompt we view the desktop view of the ARP Table as shown in image below.



g) Examine the ARP table for **PC-B**.

The ARP Table for PC-B which has the IP address of PC-A.



h) Close the PC-B configuration window.

i) Click the **Check Results** button at the bottom of the instruction window to verify that the topology is correct.

On checking results the following window appears.

Conclusion:
By creating a network between two hosts and a hub in this experiment I developed an understanding of the basic functions of Packet Tracer.