Cisco Packet Tracer Exercise: Understanding ARP

Objectives:

In this exercise, you will learn how **ARP (Address Resolution Protocol)** works using Cisco Packet Tracer by performing practical configurations and observing ARP requests and replies.

Instructions:

Part 1: Setting Up the Network

Step 1: Start Cisco Packet Tracer

- Open Cisco Packet Tracer.

Step 2: Add Devices to the Workspace

From the Device-Type Selection Box, add the following devices:

- **3 PCs** (End Devices > PC)
- **1 Server** (End Devices > Server)
- **1 Switch** (Network Devices > Switch)

Step 3: Connect Devices

Connect the devices using **Copper Straight-through cables** as follows:

- Connect **each PC** to the **switch**.
- Connect the **Server0** to the **switch**.

Part 2: Configure IP Addresses

Step 4: Assign Static IP Addresses

Configure each device with the following IP addresses:

Device	IPv4 Address	Subnet Mask
PC0	192.168.11.1	255.255.255.0
PC1	192.168.11.2	255.255.255.0
PC2	192.168.11.3	255.255.255.0
Server0	192.168.11.4	255.255.255.0

Part 3: Observing ARP in Simulation Mode

Step 5: Enter Simulation Mode

- Click the **Simulation** button located at the bottom-right corner of Cisco Packet Tracer.

Step 6: Open ARP Tables

- Click **Inspect (Magnifying glass icon)**.
- Click **PC0**, select the **ARP table**, open it, and resize the window smaller.
- Click **Server0**, select the **ARP table**, open it, and resize the window smaller.

Part 4: ARP Test from PC0 to Server0

Step 7: Open Command Prompt on PC0

- Select **PC0** > Desktop > **Command Prompt**.

Step 8: Check Current ARP Table on PC0

- Type the following command:

  ```
  arp -a
  ```

  (This shows the current ARP entries.)

Step 9: Ping from PC0 to Server0

- From PC0, enter the following command:

  ```
  ping 192.168.11.4
  ```

Step 10: Observe ARP Packets

- Click the **Play** button in Simulation Mode.
- Observe how an ARP packet is sent from PC0 to all devices.
- Notice that only **Server0** responds with an ARP reply.
- Confirm that ARP entries are now added in the ARP tables of PC0 and Server0.

Step 11: ICMP Packet Observation

- After the ARP process, observe that an **ICMP packet** (ping request) is sent from **PC0 to Server0**, and a reply is returned.

Part 5: Additional ARP Test from PC1

Step 12: Observe ARP on PC1

- Open the **ARP Table** on **PC1**.
- Open the **Command Prompt** on **PC1**.
- Type:

  ```
  ping 192.168.11.4
  ```

- Observe the ARP request and reply packets traveling between **PC1** and **Server0**.

Part 6: Finish the Exercise

Step 13: Return to Realtime Mode

- Set the mode back to **Realtime** (bottom-right corner).
- Close Cisco Packet Tracer.