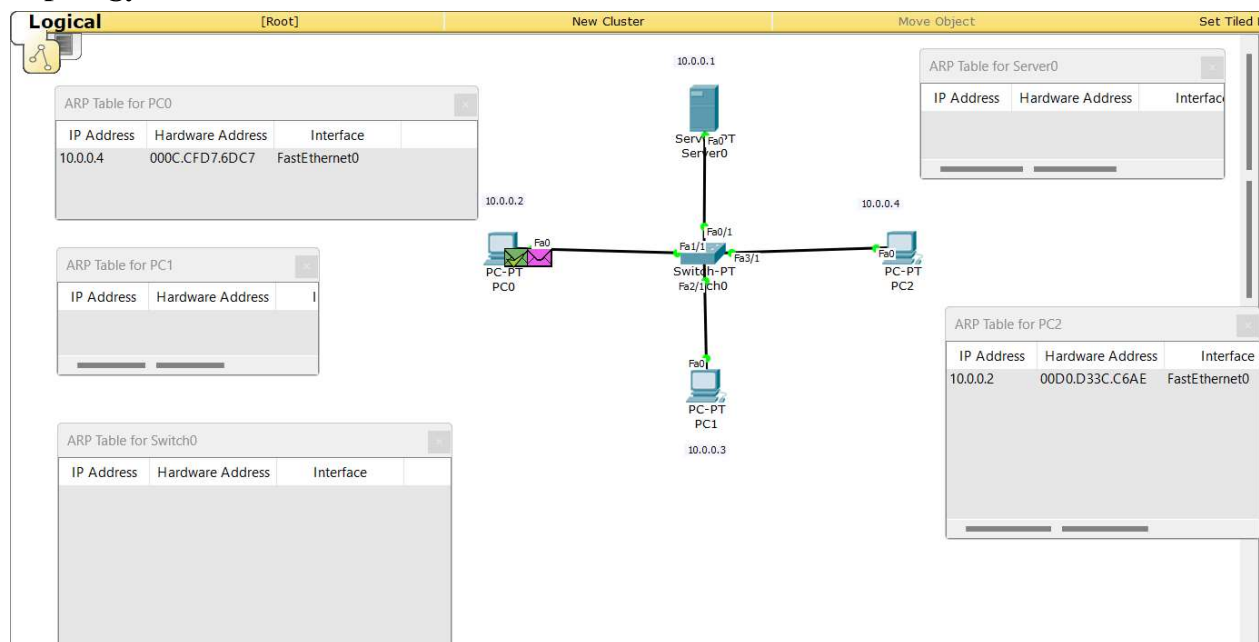**DATE :   27-NOVEMBER-2024**

LAB- 8

Question:

construct simple LAN and understand the concept and operation
of Address Resolution Protocol (ARP)

Aim:

To construct simple LAN and simulate the concept and operation
of Address Resolution Protocol (ARP)

Topology:

Topology Description:

This network topology includes the following components:

1. **Server0**:
   - IP Address: 10.0.0.1
   - Connected to the switch via port Fa0/0.
2. **Switch-PT**:
   - Connects all devices (Server0, PC0, PC1, PC2) using its FastEthernet ports.
3. **PC0**:

- - IP Address: 10.0.0.2
  - Connected to the switch via port Fa0.
4. **PC1**:
  - IP Address: 10.0.0.3
  - Connected to the switch via port Fa0.
5. **PC2**:
  - IP Address: 10.0.0.4
 - Connected to the switch via port Fa0.

Procedure:

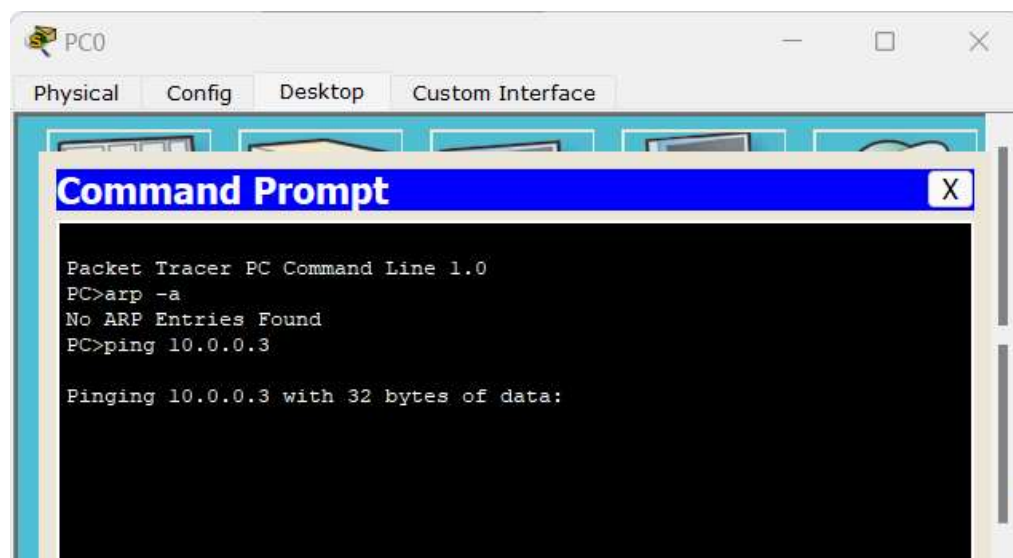**Setup the network devices** (PCs, server, and switch) with the corresponding IP addresses as shown.

Establish physical connections between each device and the switch using the appropriate FastEthernet ports.

Verify connectivity:

- Ensure all devices are powered on.
- Check that each device can ping the server at 10.0.0.1 to ensure they can communicate over the network.
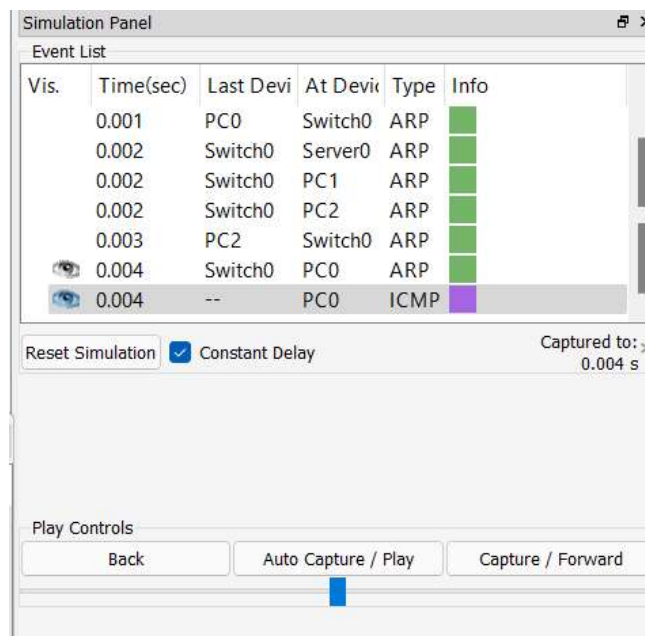
Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Periodic	Num	Edit	Delete
●	In Progress	PC2	PC1	ICMP		0.000	N	0	(edit)	(delete)

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>arp -a
No ARP Entries Found
PC>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:
```

Capture/forward each step and use [magnifying glass icon] for the ARP table of each end - device.

[envelope icon] use this simple PDU and click the source and destination PC.

Switch:

```
Switch>
Switch>show mac address-table
          Mac Address Table
-------------------------------------------

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

  1     0009.7c3c.0719     DYNAMIC        Fa2/1
  1     000c.cfd7.6dc7     DYNAMIC        Fa3/1
  1     0090.2b9d.194b     DYNAMIC        Fa0/1
  1     00d0.d33c.c6ae     DYNAMIC        Fa1/1
Switch>
```

Copy   Paste

<u>Observation</u>

- **Connectivity Checks**:
  - ○ From each PC, attempt to ping the server as well as the other PCs.
  - ○ If pings are successful, it confirms proper configuration and connectivity.
  - ○ If any pings fail, troubleshoot connections, check IP configurations, and ensure all devices are operational.
- **Traffic Analysis**:
  - ○ Observe the traffic flow through the switch to check for any collisions or broadcasting issues.
  - ○ Monitor the performance of the network and make any adjustments as necessary to optimize traffic flow and reduce latency.

This setup is useful for a basic understanding of network connections, IP addressing, and the use of switches in a local area network (LAN).