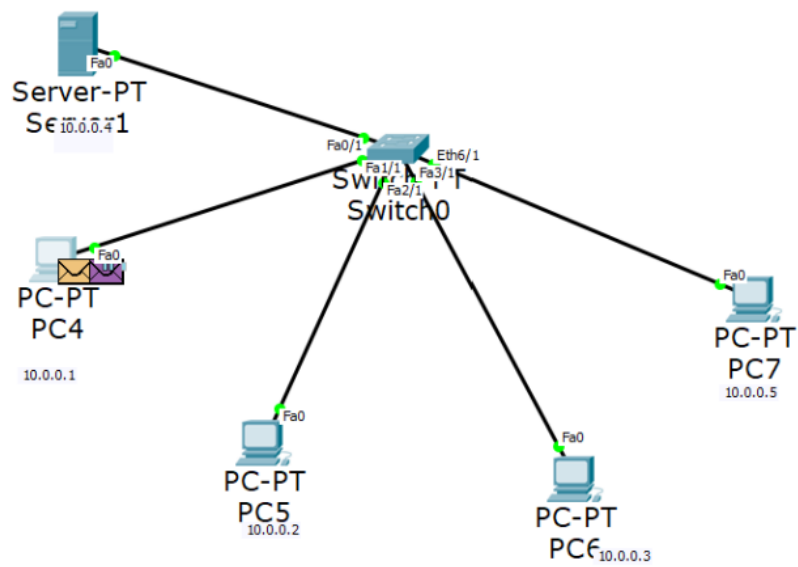


Experiment - 8

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

Topology:



Cisco Packet Tracer Student

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

```
graph TD
    S[Server-PT Server1] --- SW[Switch]
    SW --- PC4[PC-PT PC4]
    SW --- PC5[PC-PT PC5]
    SW --- PC6[PC-PT PC6]
    SW --- PC7[PC-PT PC7]
    SW --- PC8[PC-PT PC8]
```

ARP Table for PC5

Address	Interface
10.0.0.1	FastEthernet...

ARP Table for PC4

Address	Interface
10.0.0.2	FastEthernet...
10.0.0.4	FastEthernet...

ARP Table for PC6

Address	Interface
10.0.0.1	FastEthernet...

ARP Table for PC7

Address	Interface
10.0.0.1	FastEthernet...

ARP Table for Server1

Address	Interface
10.0.0.1	FastEthernet...

Simulation Panel

Set Titled Background Viewport

Simulation Panel

Event List

Vis.	Time(sec)	Last I	At D	Type	Info
	0.005	Swit...	PC5	ARP	
	0.005	Swit...	PC6	ARP	
	0.005	Swit...	PC7	ARP	
	0.005	--	PC4	ICMP	

Reset Simulation Constant Delay Captured to: 0.005 s

Play Controls

Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CD, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NTP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

Edit Filters Show All/None

Time: 00:17:53.673 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture

Scenario 0

New Delete

Toggle PDU List Window

Fin	Last St	Sou	Destina	Tyr	Col	Time	Peric	Nu	Edi	Delete
● Suce...	PC4	Server1	I			0.0...	N	0	(e...	(delete)
● In Pro...	PC4	PC5	I			0.0...	N	1	(e...	(delete)

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet2/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet3/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet3/1, changed state to up
%LINK-5-CHANGED: Interface Ethernet6/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet6/1, changed state to up
Switch(config)#show mac address-table
^
% Invalid input detected at '^' marker.

Switch(config)#exit
Switch#show mac address-table
      Mac Address Table
-----
Vlan    Mac Address      Type      Ports
----    -
1       0001.6383.ddb2   DYNAMIC   Fa0/1
1       0003.e49d.b2d9   DYNAMIC   Fa1/1
1       0004.9a42.616c   DYNAMIC   Eth6/1
1       0005.5e6a.7da2   DYNAMIC   Fa2/1
1       0030.f285.7a19   DYNAMIC   Fa3/1
Switch#
```

Copy

Paste

PC4

Physical Config Desktop Custom Interface

Command Prompt

Packet Tracer PC Command Line 1.0

```
PC>arp -a
No ARP Entries Found
PC>arp -a
```

Internet Address	Physical Address	Type
10.0.0.4	0001.6383.ddb2	dynamic

```
PC>arp -a
```

Internet Address	Physical Address	Type
10.0.0.2	0005.5e6a.7da2	dynamic
10.0.0.4	0001.6383.ddb2	dynamic

```
PC>arp -a
```

Internet Address	Physical Address	Type
10.0.0.2	0005.5e6a.7da2	dynamic
10.0.0.3	0030.f285.7a19	dynamic
10.0.0.4	0001.6383.ddb2	dynamic
10.0.0.5	0004.9a42.616c	dynamic

```
PC>
```

3/2/23 Lab-8

Aim:- To construct single LAN and understand the concept and operating of Address Resolution Protocol (ARP)

Topology:-

Procedure:-

- Create a topology of PC's and server
- Assign IP address to all PC's and server
- Connect them through the switch
- Use the inspect ~~test~~ tool to click on PC to see ARP table
- Command in cmd for the same is arp -a
- Initially ARP table is empty
- Also in ~~CLI~~ CLI of switch, the command show mac address-table can be given an entry transaction to see how the switch learns from transactions and build its address table
- Use the capture button in the simulation panel to go step by step to track the changes in ARP can be clearly noted.

Final Output:-

```
PC>ping 10.0.0.4
Pinging 10.0.0.4 with 32 bytes of data:
```

Reply from 10.0.0.4: bytes=32 time=0ms TTL=128
Reply from 10.0.0.4: bytes=32 time=0ms TTL=128
Reply from 10.0.0.4: bytes=32 time=0ms TTL=128
Reply from 10.0.0.4: bytes=32 time=0ms TTL=128

Ping statistics for 10.0.0.4:

Packets: sent=4 received=4 lost=0 (0% loss)

Approximate round trip times in milliseconds:

min=0ms max=0ms avg=0ms

PC>arp -a

Internet address	Physical Address	Type
10.0.0.4	0060.2f00.324d	dynamic

Observation:-

→ When we ping 1 PC and server the address of server is known to PC & vice versa.

→ When we ping up other 2 PC's simultaneously the addresses of each other are known.

→ Every time a host requests a MAC address in order to send a packet to another host in the LAN, it checks its ARP cache to see if the IP to mac address translation address already exists. If no translation doesn't exist it performs ARP.

N/D
9/8/2023