

18/12/2024

Experiment 9- To construct simple LAN and understand the concept and operation of Address Resolution Protocol (ARP)

Observation Book:

experiment no: 09 18-12-24 98

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

Topology:

```
graph LR
    Switch[Switch-PT] --- Fa0_1[Fa0/1] --- PC0[PC0  
10.0.0.1]
    Switch --- Fa0_2[Fa0/2] --- PC1[PC1  
10.0.0.2]
    Switch --- Fa0_3[Fa0/3] --- PC2[PC2  
10.0.0.3]
    Switch --- Fa0_4[Fa0/4] --- PC3[PC3  
10.0.0.4]
```

procedure:

1. open Cisco packet tracer
2. set up devices as shown in above topology
3. configure the IP addresses for the devices as shown
4. switch to simulation mode.
5. ~~Direct a sample packet from a destination to source~~
6. start simulation and observe
7. Take input from PC and open ARP table for all devices

Issue:

In switch CLI

→ show mac address table

VLAN	mac Address	TYPE	ports
1	0001.0565.6008	Dynamic	fa3/1
1	0001.03cc.2ad3	Dynamic	fa2/1
1	0002.0a35.d3c2	Dynamic	fa1/1
1	0020.d35b.384b	Dynamic	fa4/0/1

Initially ARP tables are empty.

After simulation, begin the ARP tables of source and destination change.

PC1

IP	Hardware	Interface	Source
10.0.0.3	0001.03cc.2ad3	fa2/1	

PC2

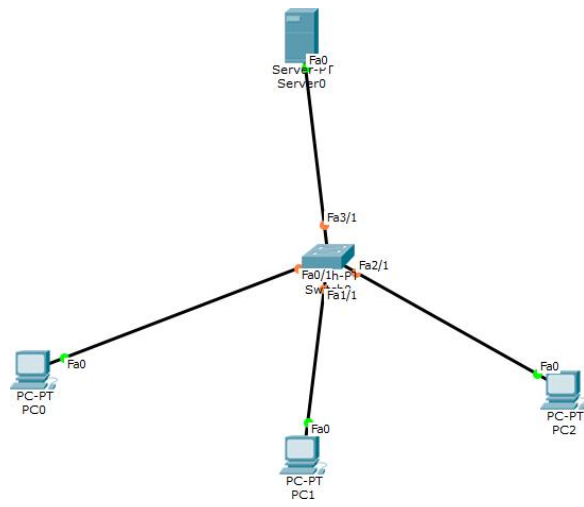
IP	Hardware	Interface	Destination
10.0.0.2	0002.0a35.d3c2	fa1/1	

Observation: Initially, the ARP tables of all all devices are empty because no communication has occurred, and no MAC-IP mapping is established when one device attempts to communicate with another. It sends an ARP request to determine the MAC address corresponding to the IP address of the targeted device. The targeted device with ARP reply, updating ARP table on both ends.

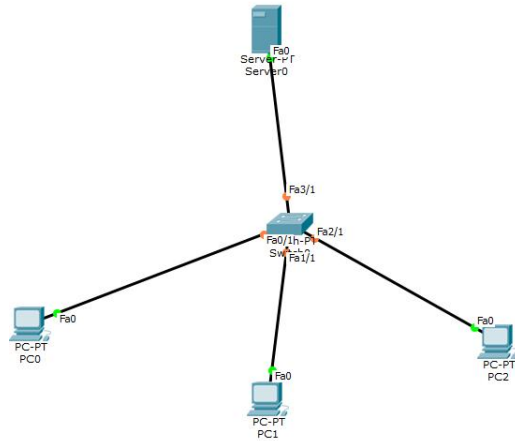
The switch build its MAC address table by mapping MAC address to ports based on receiving.

At the
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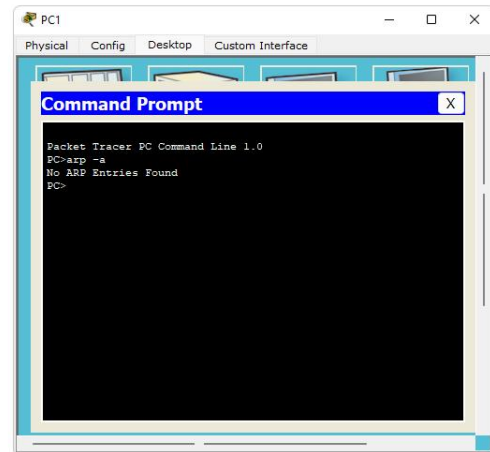
Topology:



Output:

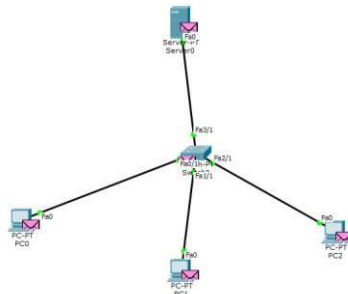


ARP Table for PC0		
IP Address	Hardware Address	Interface



ARP Table for PC2		
IP Address	Hardware Address	Interface
10.0.0.1	000A.41E5.130B	FastE

ARP Table for PC1		
IP Address	Hardware Address	



ARP Table for PC0		
IP Address	Hardware Address	Interface
10.0.0.3	0000.0337.698E	FastE

ARP Table for Switch0		
IP Address	Hardware Address	

Simulation pane

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.948	Switch0	Server0	STP	
	0.948	Switch0	PC1	STP	
	0.948	Switch0	PC2	STP	
	0.948	Switch0	PC0	STP	
	2.947	Switch0	Switch0	STP	
	2.948	Switch0	Server0	STP	
	2.948	Switch0	PC1	STP	
	2.948	Switch0	PC2	STP	
	2.948	Switch0	PC0	STP	

Reset Simulation
☒ Constant Delay

Captured to 2.948 s

Play Controls

Back

Auto Capture / Play

Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, IS-IS, IS-ISv6, LACP, LACPv6, NETCONF, NTP, OSPF, OSPFv6, PAgP, PAgPv6, RADIUS, RADIUSv6, RDP, RDPv6, RTP, SCCP, SMTP, SNMP, SSH, STP, STPv6, TRACER, TFTP, TFTPv6, Telnet, LDP, LDPv6

Edit Filters

Show All/None