

COMPUTER NETWORKS LAB

Designing and Simulation of Network Topology using Cisco Packet Tracer

WEEK 3

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SECTION: F

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Objectives:

Using Cisco packet tracer understand the life of packet in internet. Create the following topology in packet tracer.

/--- DNS

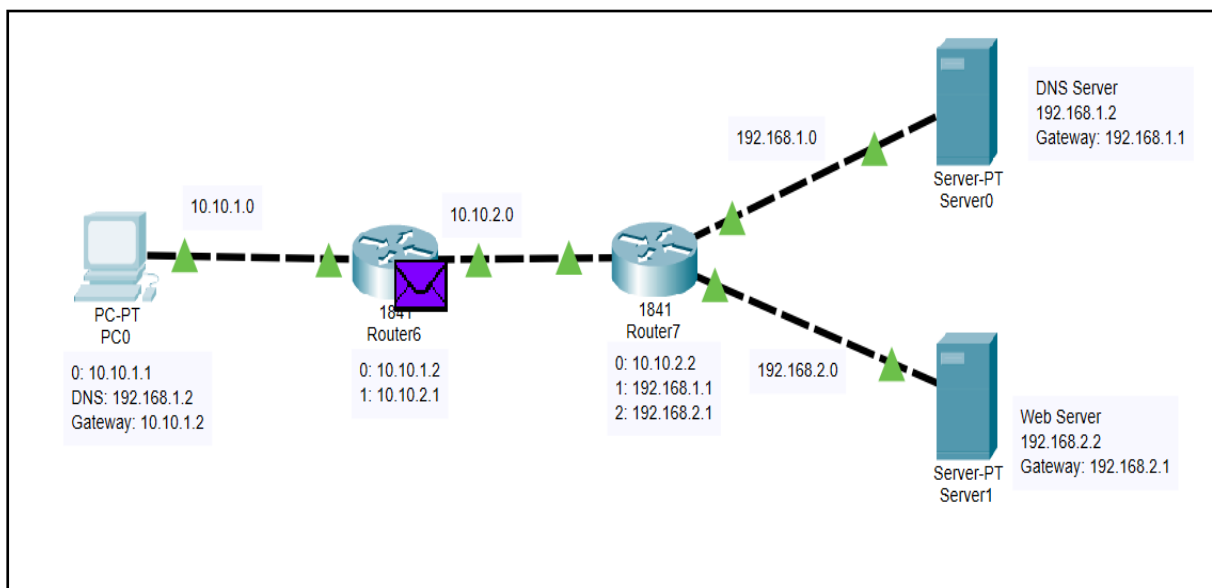
A-R1-R2

\--- Web Server

Open the browser in A and access the web server using site name (not using IP Address). Traverse each packet (in simulation mode) and answer the following for each packet

Src IP, Dstn IP, Src Mac, Dstn MAC, pkt type (e.g. DNS, ARP, HTTP, TCP)

Task 1:



PC & Router Configuration Details:

PC 0:

IP Address ---> 10.10.1.1

Gateway ---> 10.10.1.2

Router 6:

FastEthernet0/0 ---> 10.10.1.2

FastEthernet0/1 ---> 10.10.2.1

Router 7:

FastEthernet0/0 ---> 10.10.2.2

FastEthernet0/1 ---> 192.168.1.1

Ethernet0/1/0 ---> 192.168.2.1

Server 0:

IP Address ---> 192.168.1.2

Gateway ---> 192.168.1.1

Server 1:

IP Address ---> 192.168.2.2

Gateway ---> 192.168.2.1

Routing Table Entries:

<u>Router</u>	<u>Network</u>	<u>Next Hop</u>
Router6	192.168.1.0	10.10.2.2
	192.168.2.0	10.10.2.2
Router7	10.10.1.0	10.10.2.1

OBSERVATIONS:

1. When the request for the domain "google.com" was made then because DNS server did not have the address in the cache hence the query took more time to resolve the page (access the page back to the client from the web server) than in the following request.

Time for 1st request: 0.030s

Time for 2nd request: 0.028s

2. The reason for such a difference in time in the 2 requests being that DNS upon the first request of the web-server from the client cached the DNS-name and the IP address in its local DNS cache and on the subsequent request again doesn't need to search for the web-server again.

3. The ARP packets flowing were only seen in the first DNS request and not in the subsequent request as because of the DNS cache. All other packets i.e. TCP, HTTP and DNS were seen in both the web-server requests.

4. The colour coding was observed in the simulation mode:

ARP: Green
 HTTP: Purple
 DNS: Brown
 TCP: Light green

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	DNS
	0.000	--	PC0	ARP
	0.001	PC0	Router6	ARP
	0.002	Router6	PC0	ARP
	0.002	--	PC0	DNS
	0.003	PC0	Router6	DNS
	0.004	Router6	Router7	DNS
	0.005	Router7	Server0	DNS
	0.006	Server0	Router7	DNS
	0.007	Router7	Router6	DNS
	0.008	Router6	PC0	DNS
	0.008	--	PC0	TCP
	0.009	PC0	Router6	TCP

Reset Simulation ☒ Constant Delay Capturing...

Play Controls

Event List Filters - Visible Events
 ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.014	Router6	PC0	TCP
	0.014	--	PC0	HTTP
	0.015	PC0	Router6	TCP
	0.015	--	PC0	HTTP
	0.016	PC0	Router6	HTTP
	0.016	Router6	Router7	TCP
	0.017	Router6	Router7	HTTP
	0.017	Router7	Server1	TCP
	0.018	Router7	Server1	HTTP
	0.019	Server1	Router7	HTTP
	0.020	Router7	Router6	HTTP
	0.021	Router6	PC0	HTTP
	0.021	--	PC0	TCP

Reset Simulation ☒ Constant Delay Captured to: 0.021 s

Play Controls

Event List Filters - Visible Events
 ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

