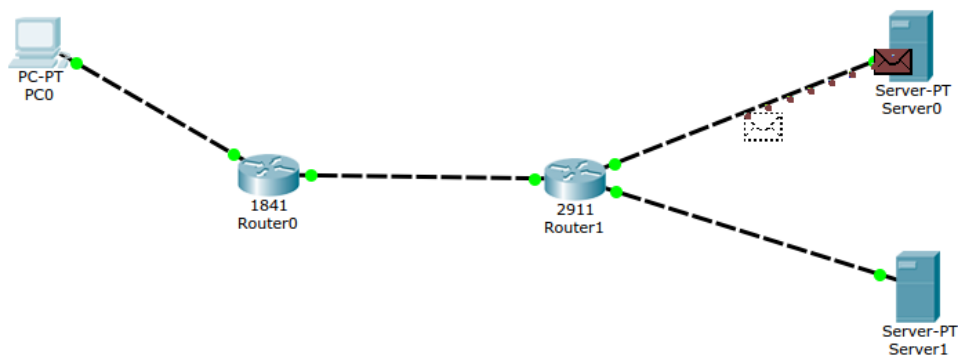# Computer Networks Lab
Week 9

Vishal R

PES1UG19CS571

I Section

Using Cisco packet tracer understand the life of packet in internet

1. **Task 1 : Creating the topology in Cisco Packet Tracer**

The following topology was created in Cisco Packet Tracer.

1. **1. Configuring the Network Topology**

After creating the topology, we need to assign IP addresses to each interface being used on the routers and the end systems.

The IP addresses assigned have been summarized in the table given below

Device	Interface	IP Address	DNS Server	Gateway
PC0	FastEthernet0	10.10.1.1	192.168.1.2	10.10.1.2
Router0	FastEthernet0/1	10.10.1.2	–	–
Router0	FastEthernet1/1	10.10.2.1	–	–
Router1	FastEthernet0/2	10.10.2.2	–	–

Device	Interface	IP Address	DNS Server	Gateway
Router1	FastEthernet1/2	192.168.1.1	-	-
Router1	FastEthernet2/2	192.168.2.1	-	-
Server0 (DNS)	FastEthernet0	192.168.1.2	-	192.168.1.1
Server1 (WEB)	FastEthernet0	192.168.2.2	-	192.168.2.1

Now we need to add the routing tables to the Router0 and Router1. The routing tables added to the routers is given below

Router	Network	Gateway
Router0	192.168.1.0	10.10.2.2
Router0	192.168.2.0	10.10.2.2
Router1	10.10.1.0	10.10.2.1

Note : Gateway is also known as Next Hop.

## 1.   2. Adding DNS Record in the DNS Server

While configuring the topology, we need to add a DNS Record in the DNS Server. To do this, we click Server0 and go to the services tab and select DNS tab.

Record-Type	Type-A
Name	google.com (NAME OF THE DOMAIN)
Address	192.168.2.2 (DOMAIN's IP Address)
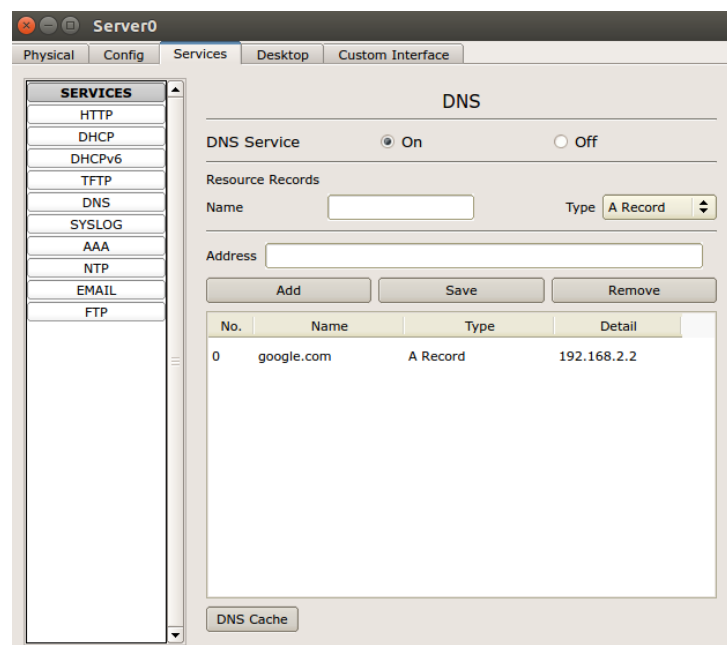
## 1. 3. Configuring Web Server

While configuring the Web Server (with the above information), the HTML page in the HTTP config information is checked and we can add information over there to see the output over there.
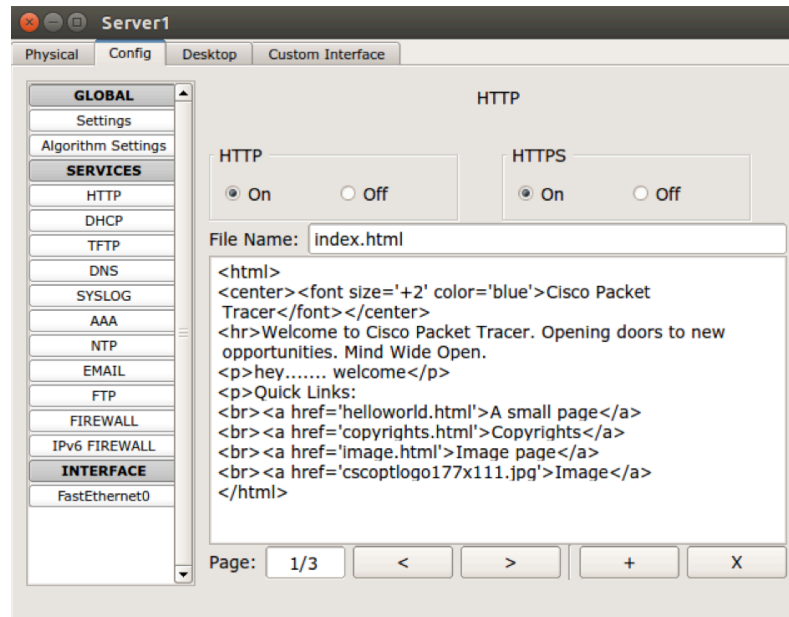
2. Task 2 : Accessing google.com from PC0

Now, since we are done with configuration of the network, we will click PC0 device and go to Desktop Tab and open the Web Browser.

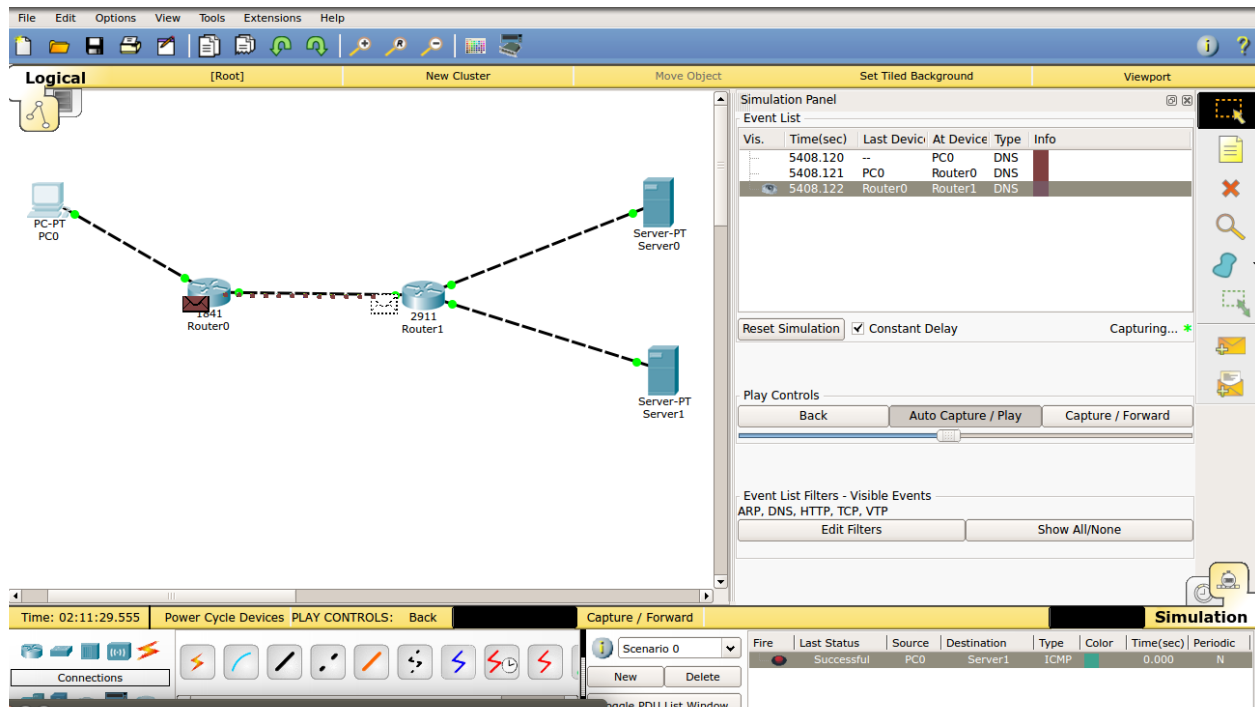In the browser, we will enter google.com in the URL field.
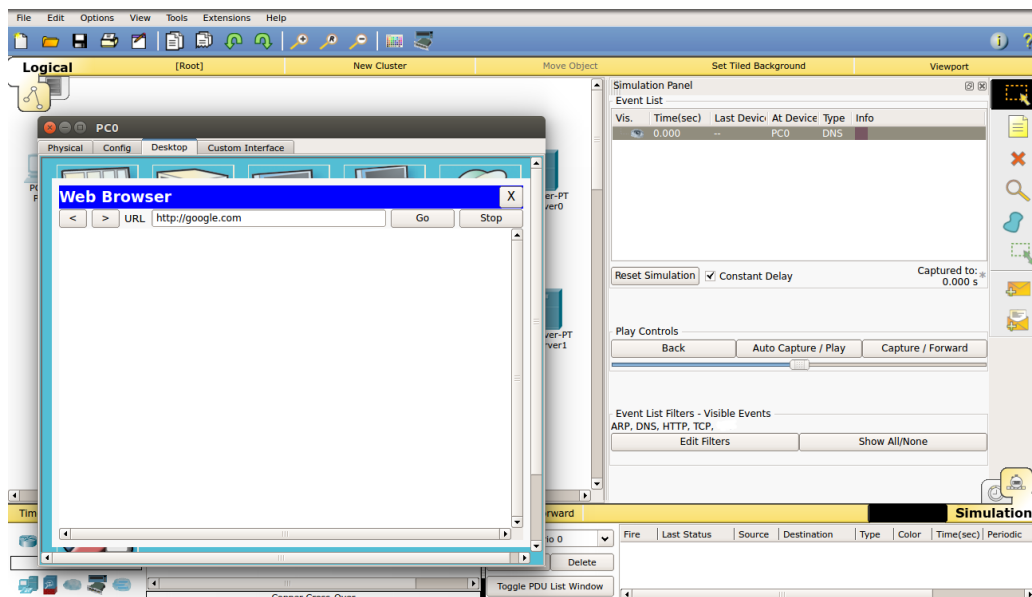
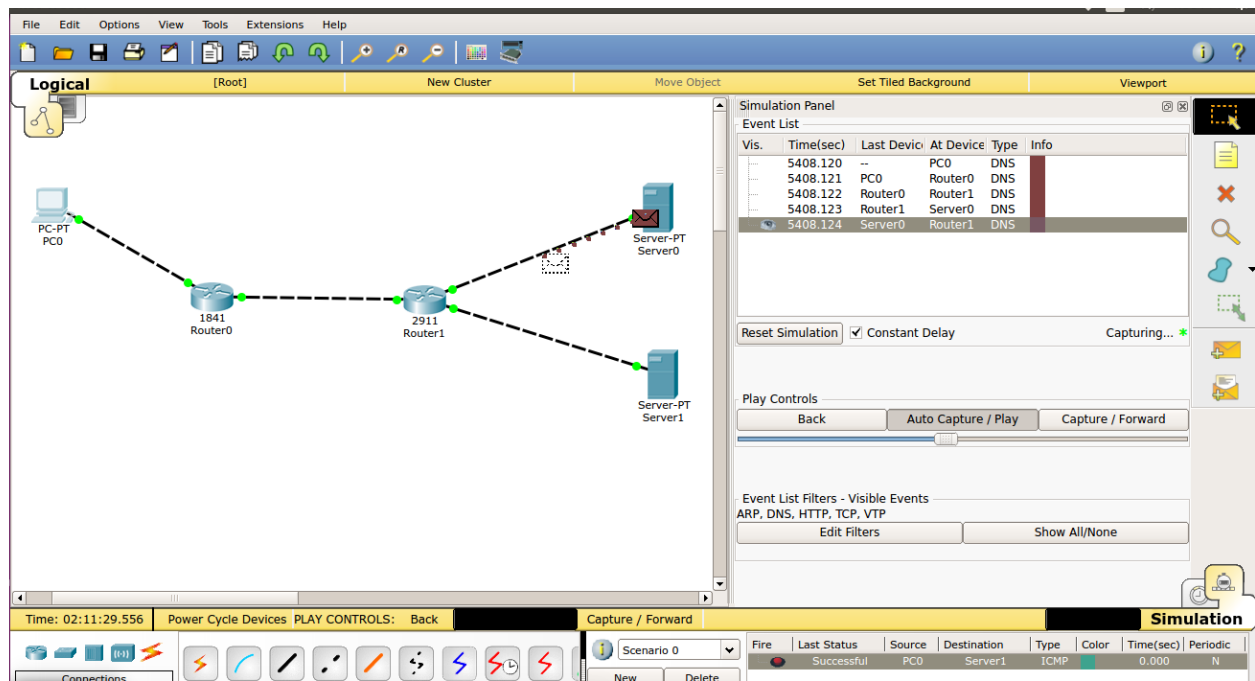Figure : Transmission of packets in Cisco Packet Tracer

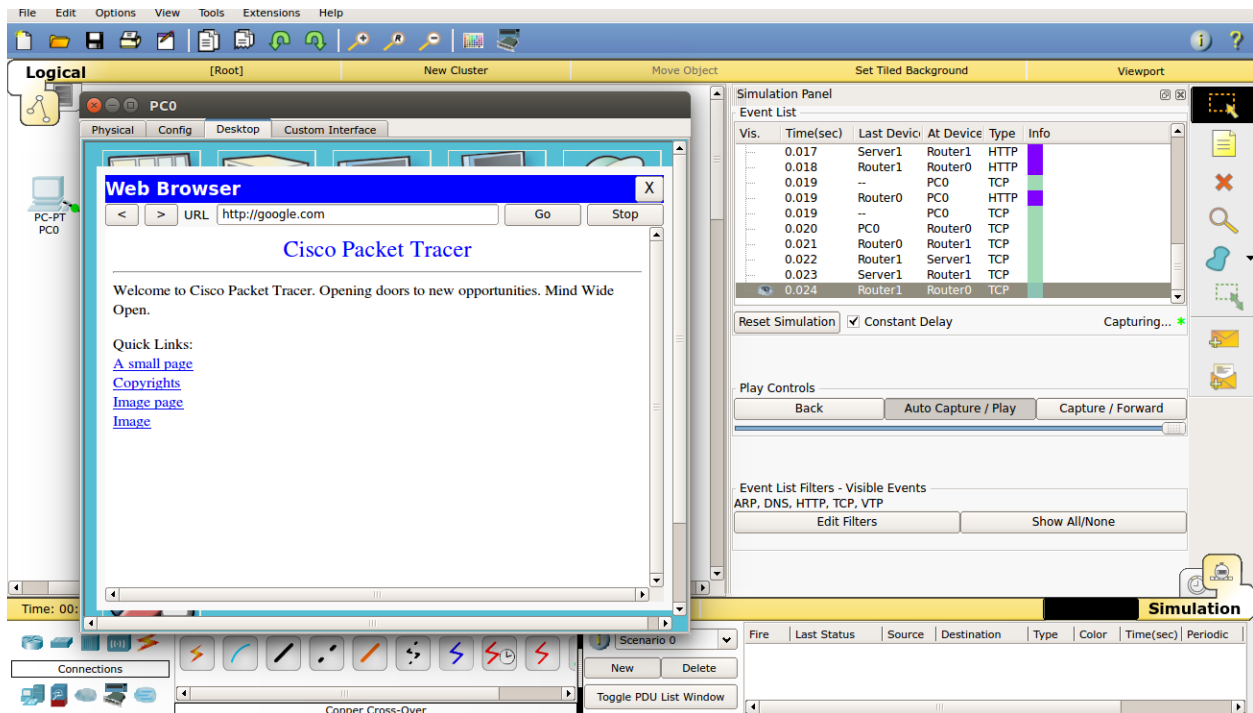Figure : Transmission of packets in Cisco Packet Tracer

Figure : Page Loaded on the web browser

Observations

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

Request	Time
1st Request	0.328 seconds
2nd Request	0.019 seconds

2. The reason for such a difference in time in the two requests is that DNS requests the Web server for the object and stores it locally in its cache and on the subsequent request again doesn't need to search for the web-server again as it will be available in the cache.

3. The ARP packets flowing were only seen in the first DNS request and not in the subsequent request as the requested file would be stored in the DNS Cache. All other packets i.e. TCP, HTTP and DNS were seen in both the web-server requests.

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

ARP	Slightly Dark Green	DNS	Brown
HTTP	Purple	TCP	Green

5. The event list occurring is shown in the screenshots attached at the different places in the topology. The number of packets got decreased by a fair amount as the ARP packets were not in the picture.