

Practical - 3

Aim: To Design and configure a network using Dynamic Host Configuration Protocol (DHCP).

Scenario:

Mr. Jason has hired a new network admin and asked him to create a network for his company. He has given him the liberty to erase all the previous network setup and create a new one as per his understanding and expertise. Below are the details provided by Mr. Jason to the network admin.

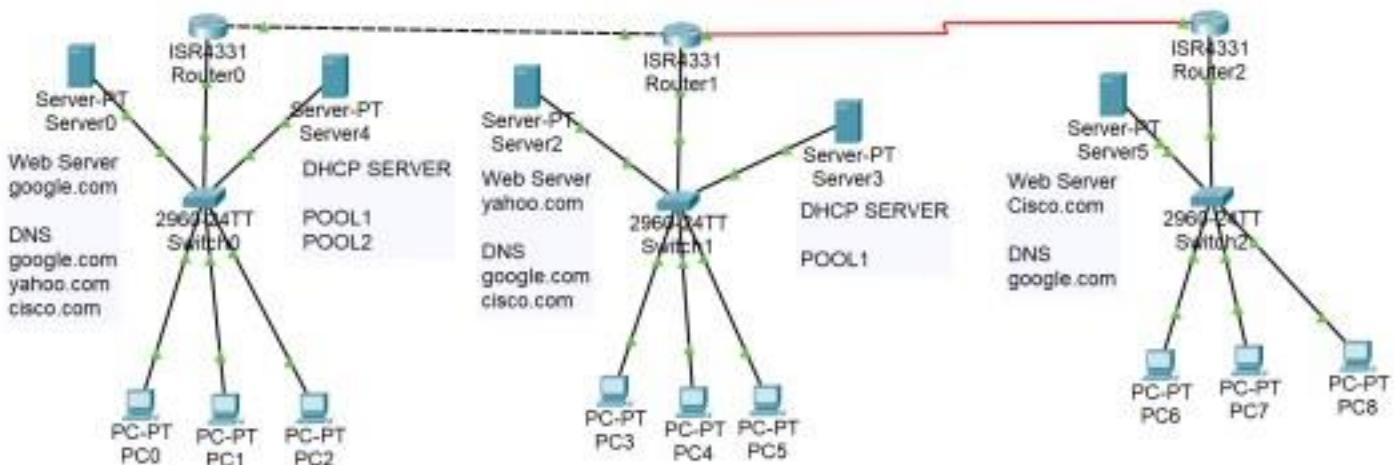
- 1) The company has 3 departments – Admin, HR, Sales.
- 2) Each department have 10 users (add at least 3 devices in each network) 3 The networking device available in the organization is 3 DNS servers, 2 DHCP servers, 3 routers and 3 switches.
- 4) All the users should get the IP address dynamically.
- 5) The organization has their own inbuilt Domain Name Server (DNS) which will have the details of the website that the user can access.
- 6) The users of the company are allowed to access only mentioned websites in the office premises. The list of the website is mentioned below:

Admin – google, yahoo, cisco
HR – google, cisco
Sales – google

Help the admin to create the network and establish the connection between the devices.

Procedure:

- 1) Create network as given below



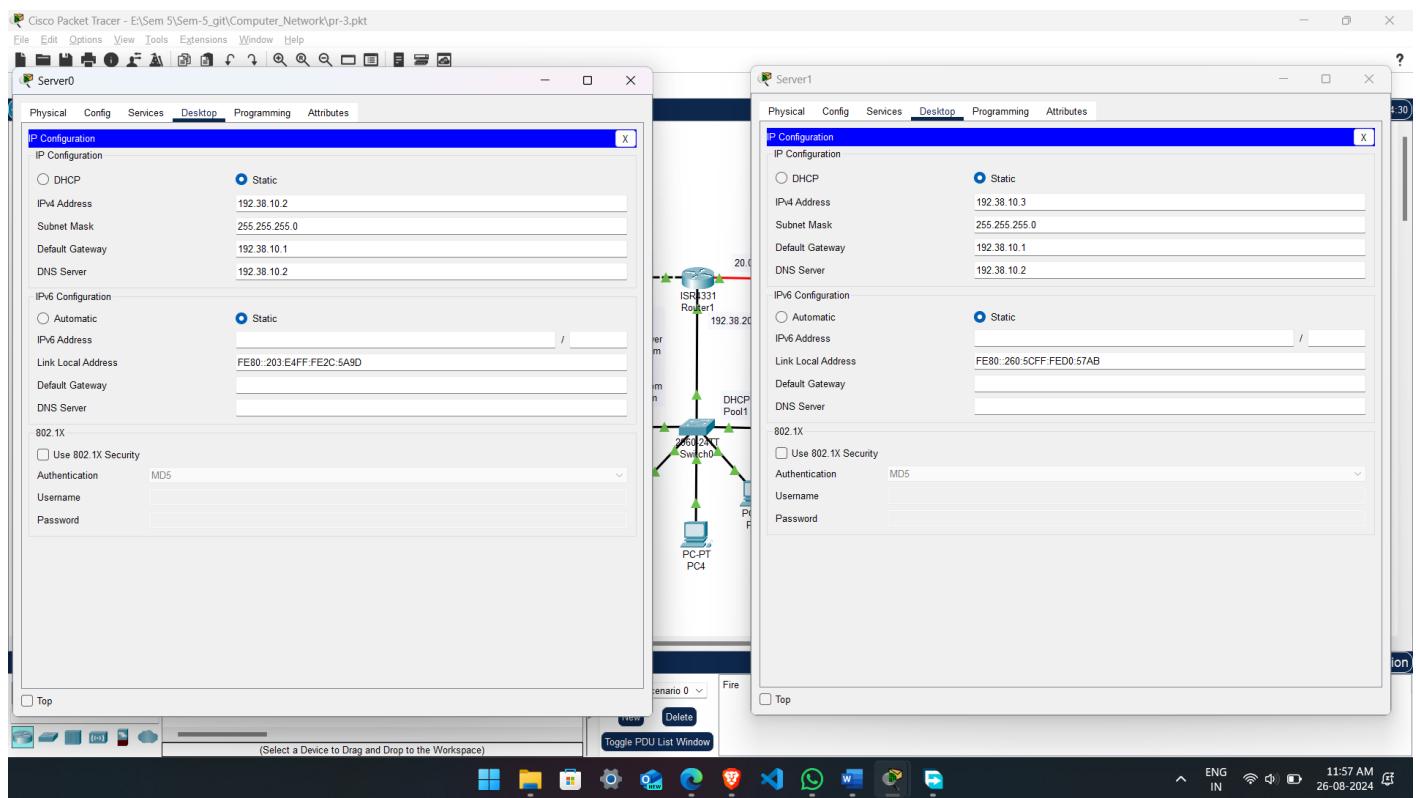
- 2) Configure IP address (Routers, DNS servers, DHCP servers)
- 3) Configure dynamic routing table (RIP in routers)

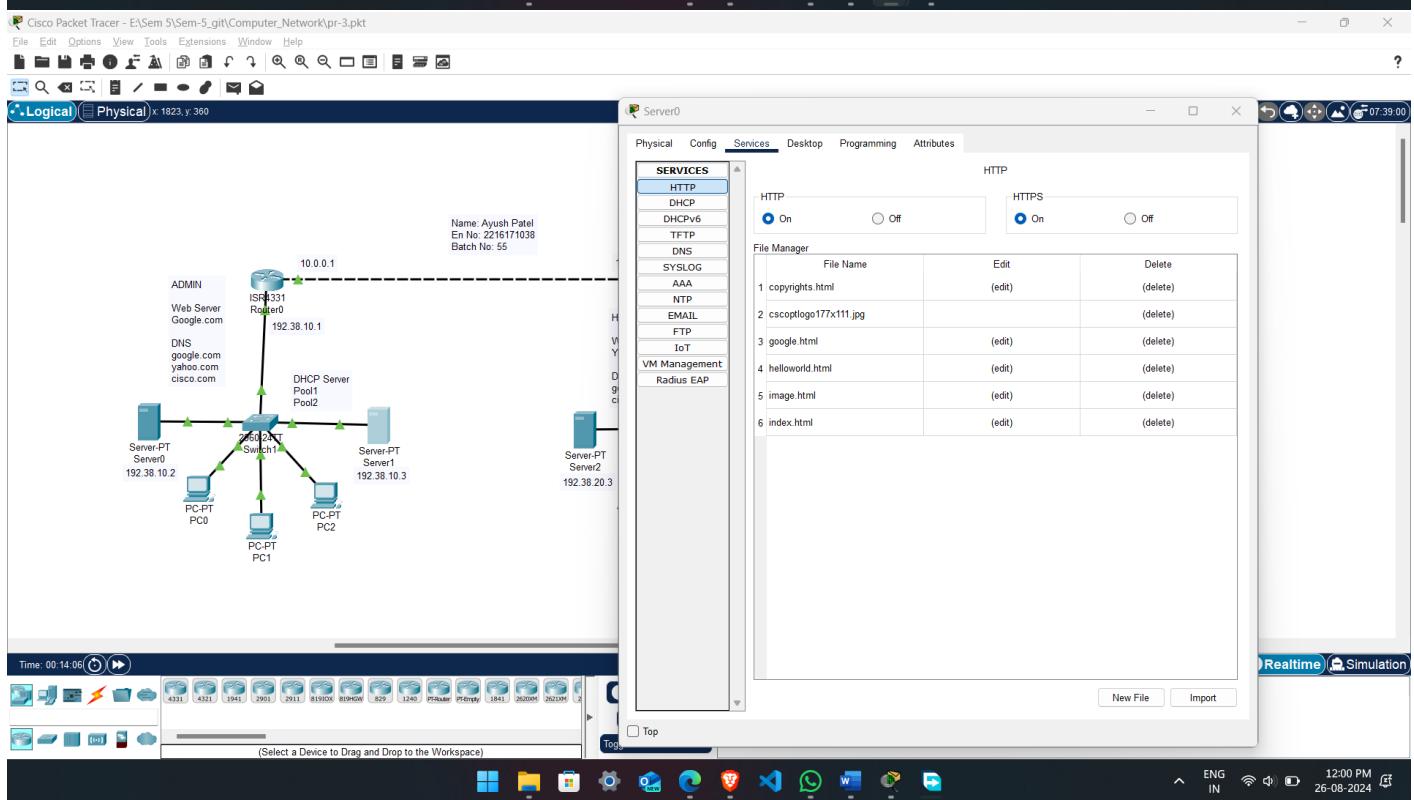
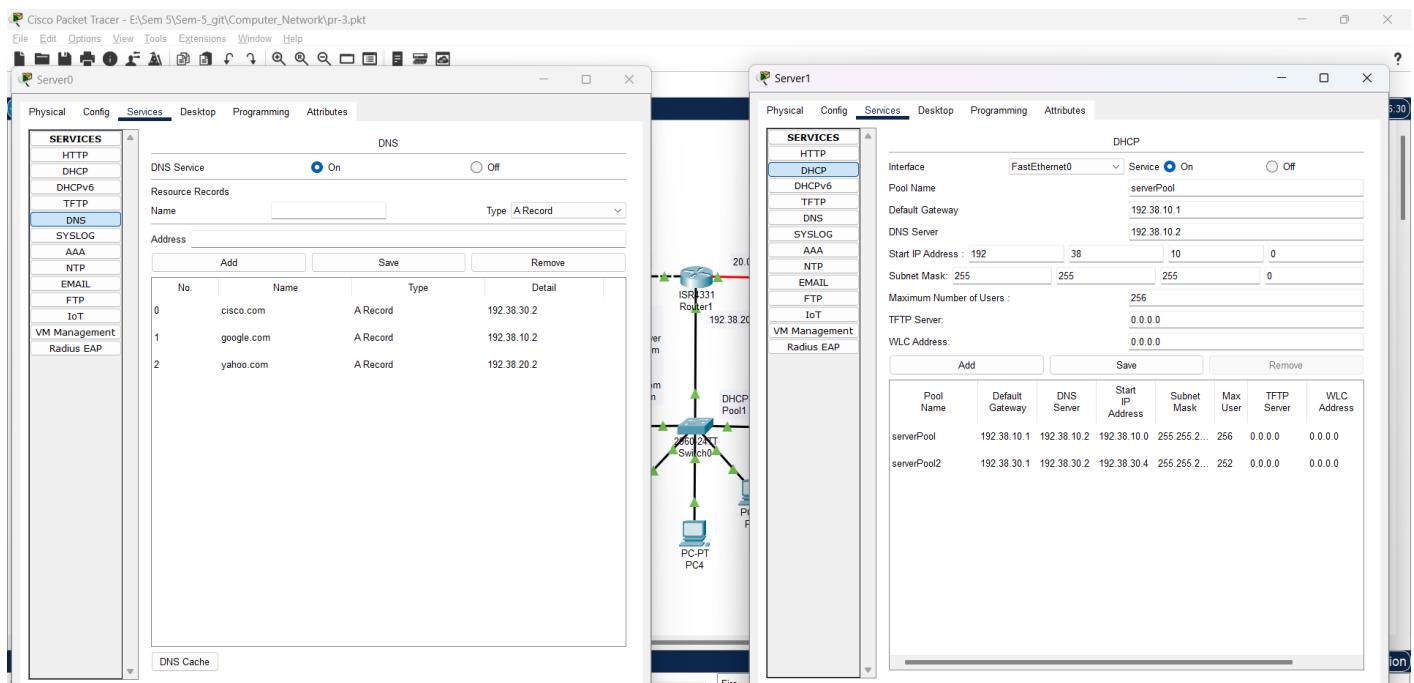
- 4) Configure DNS service
- 5) Configure DHCP server
- 6) Configure IP-Helper command to appropriate interface of a router
- 7) Set PC to get IP address based on DHCP

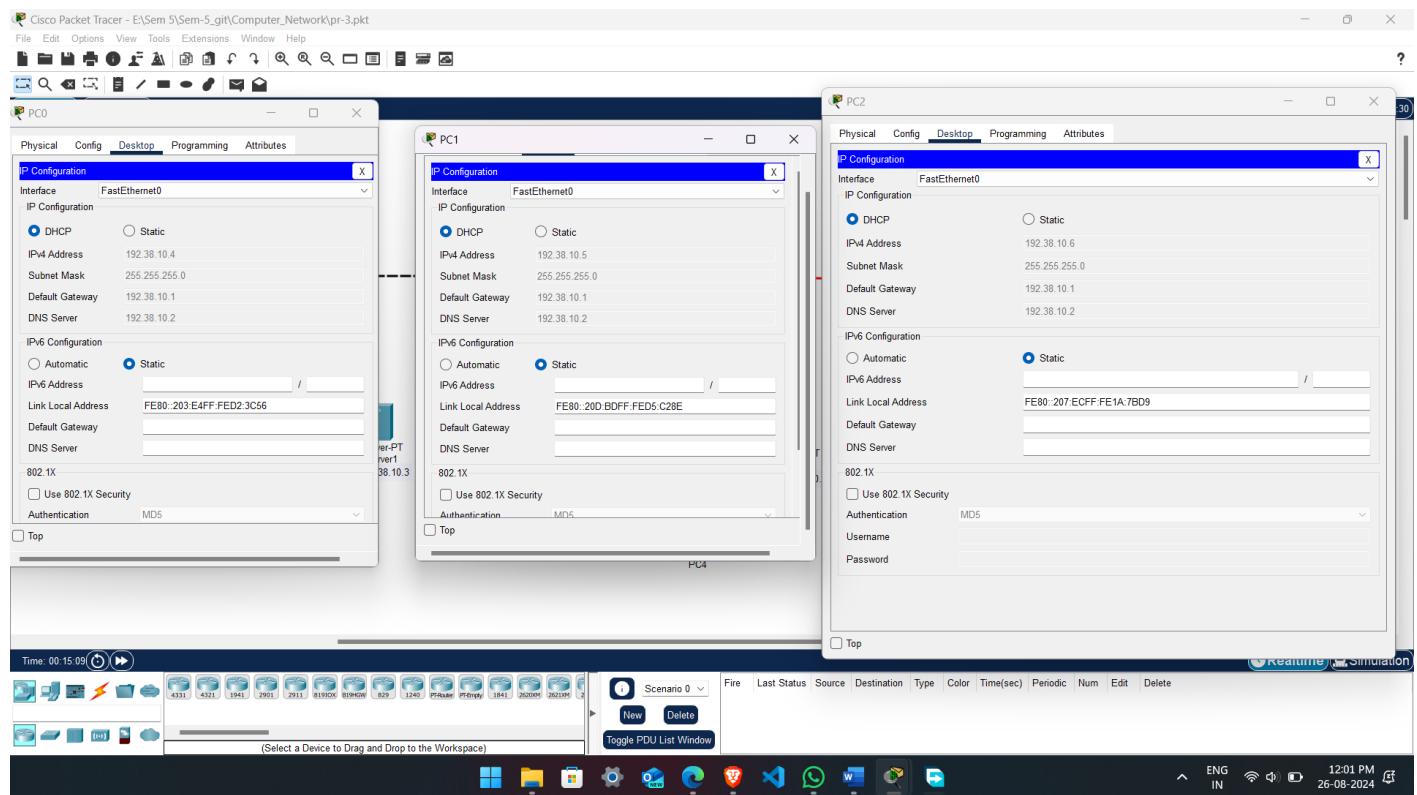
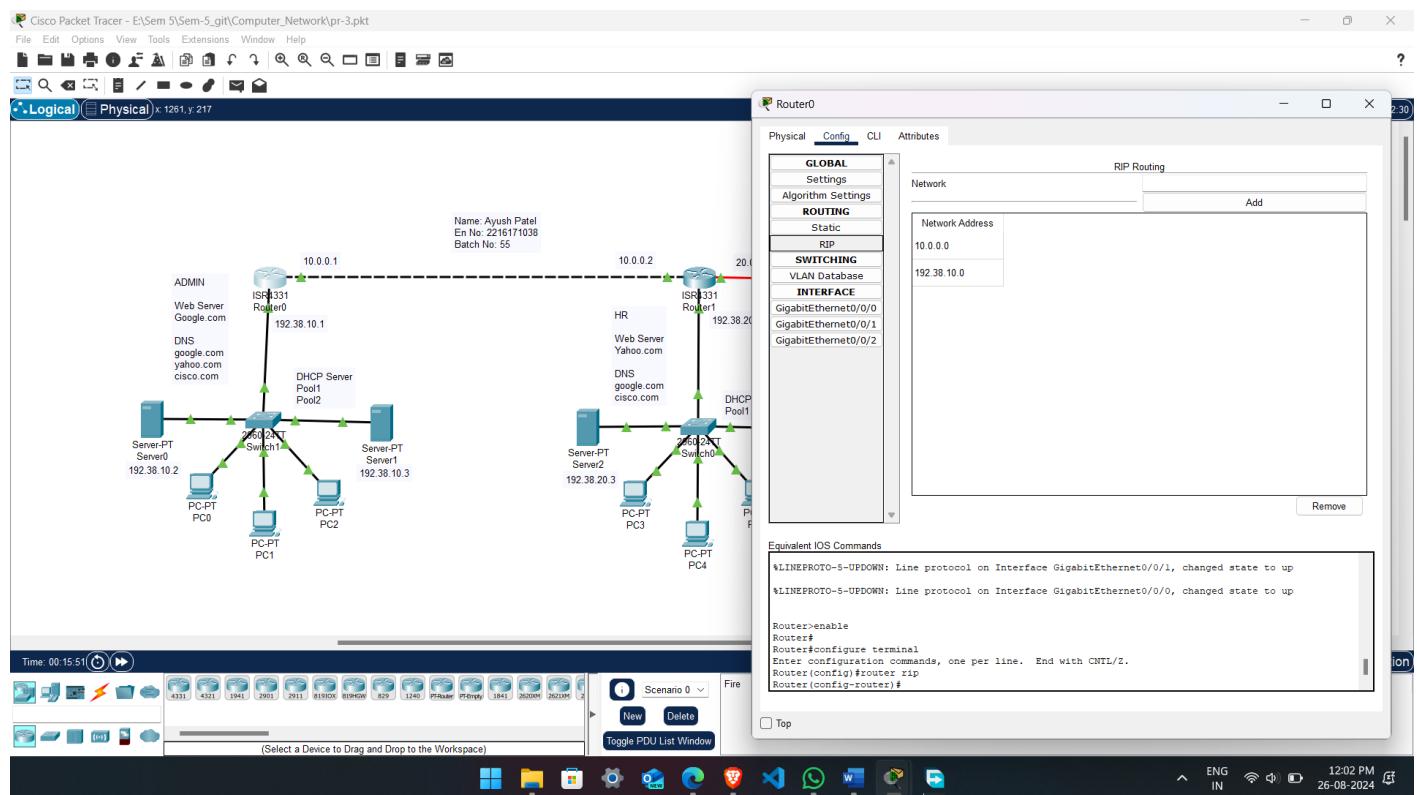
Configuration:

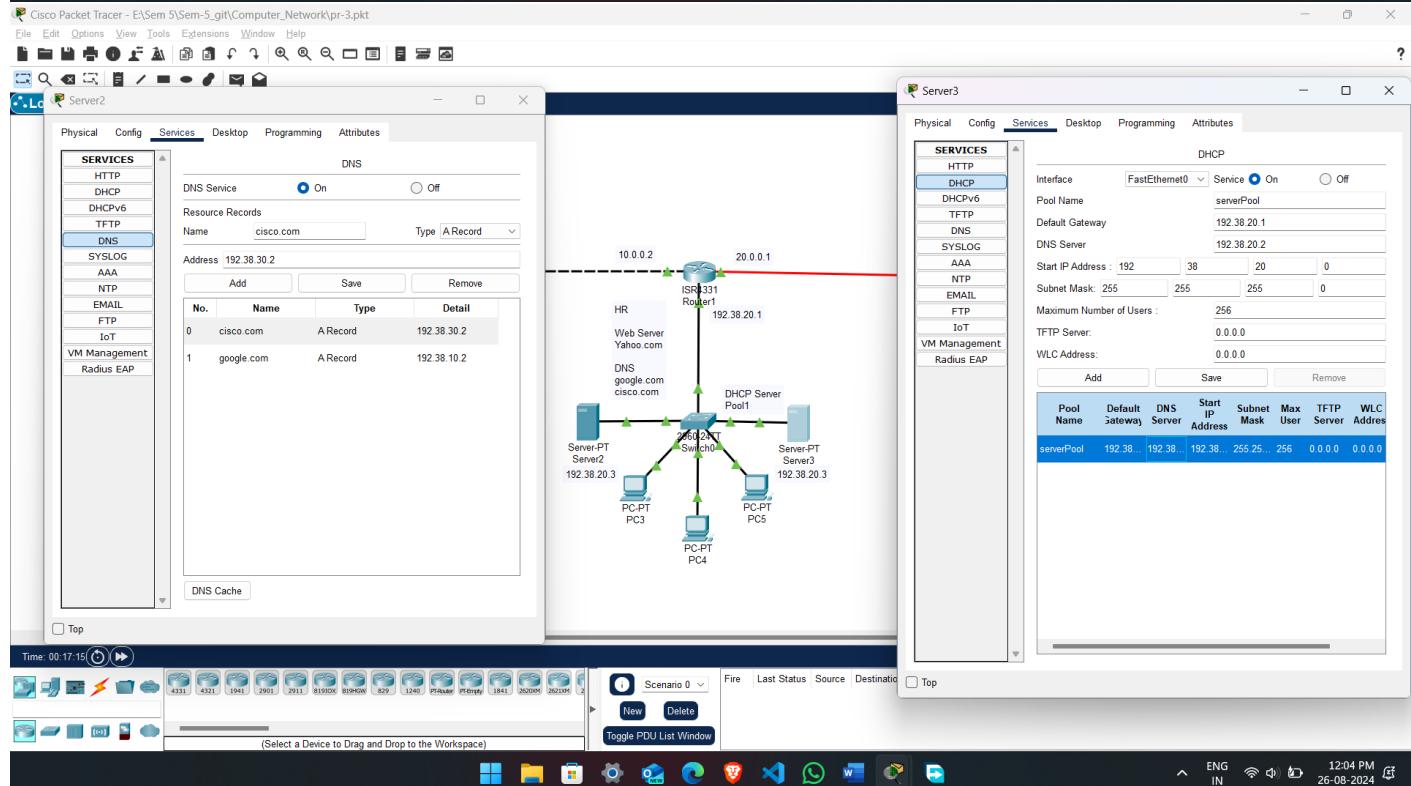
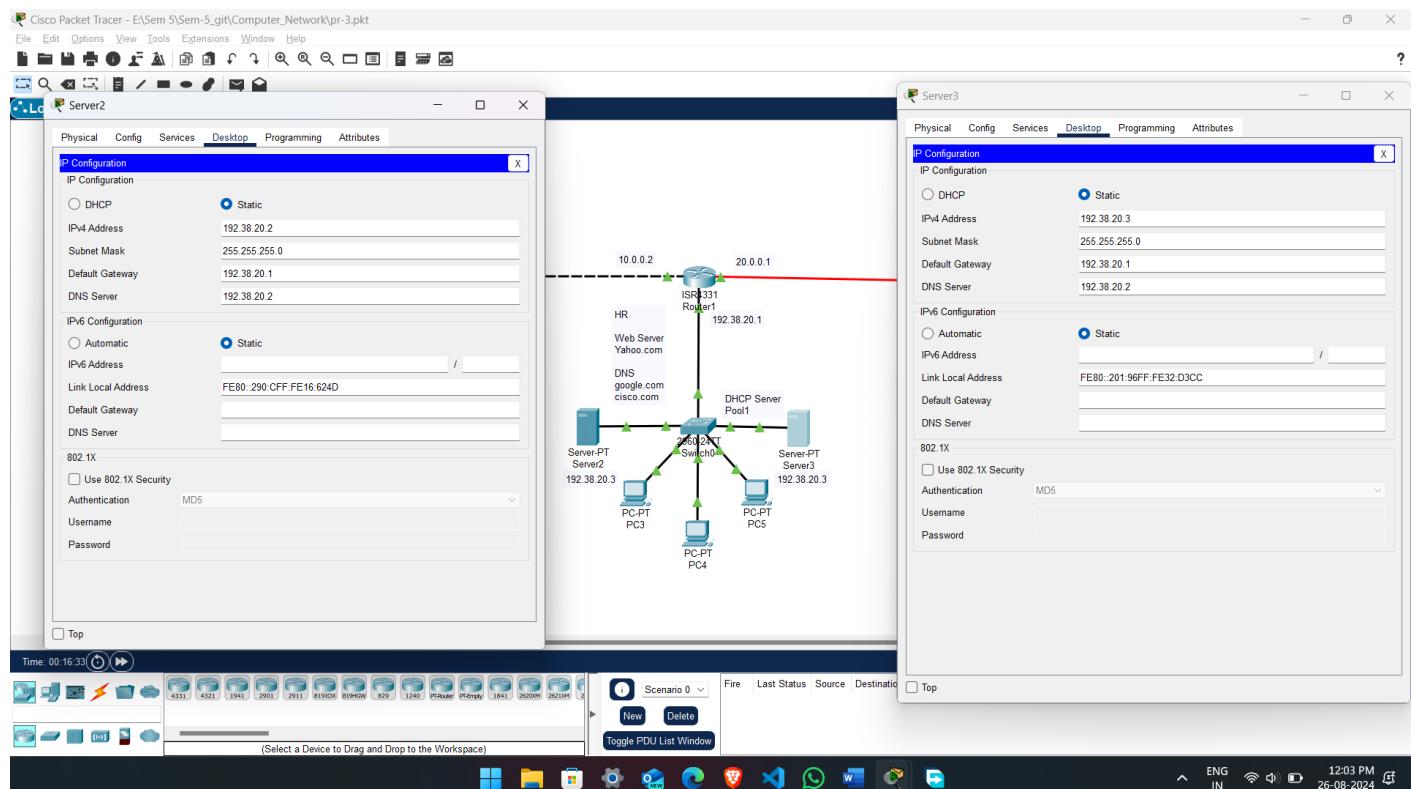
ADMIN Department:

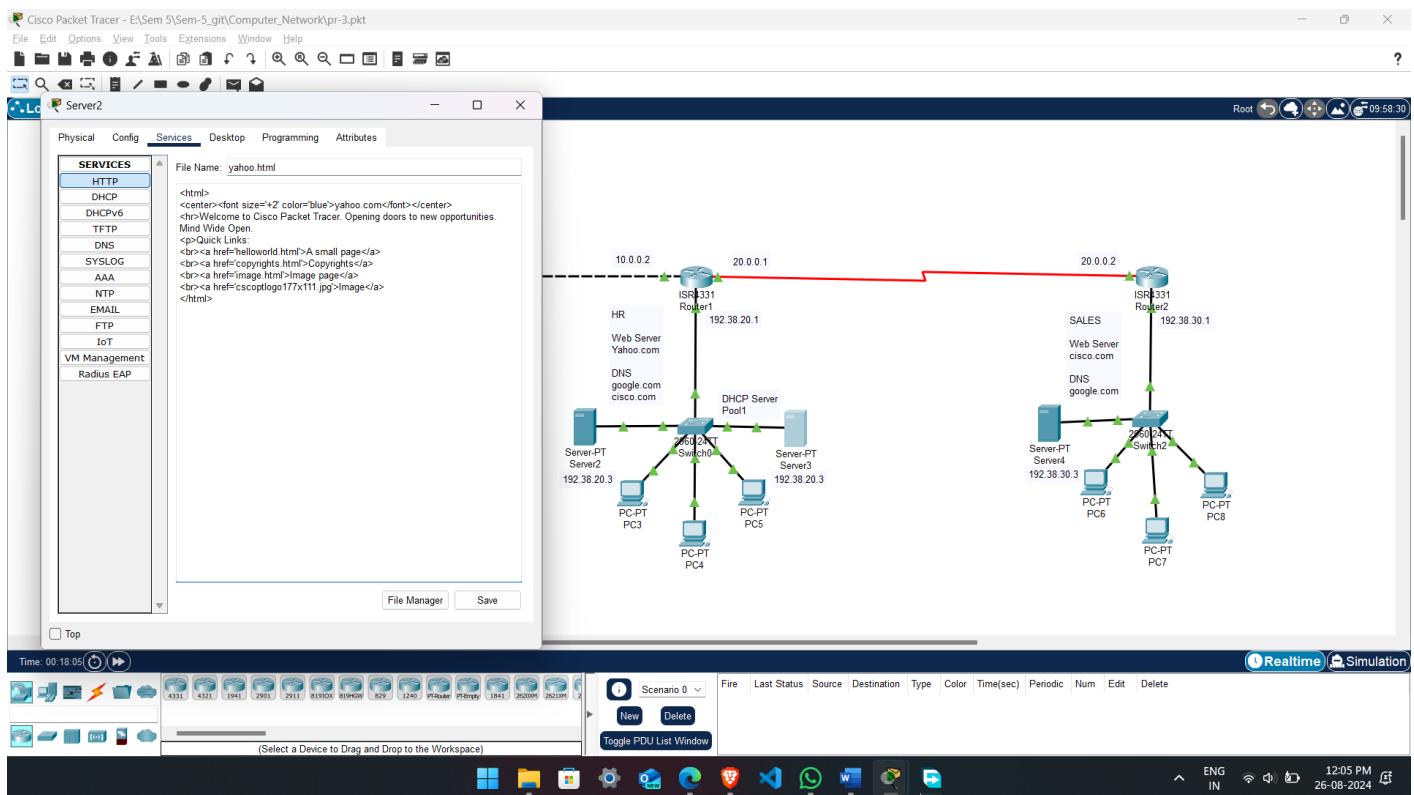
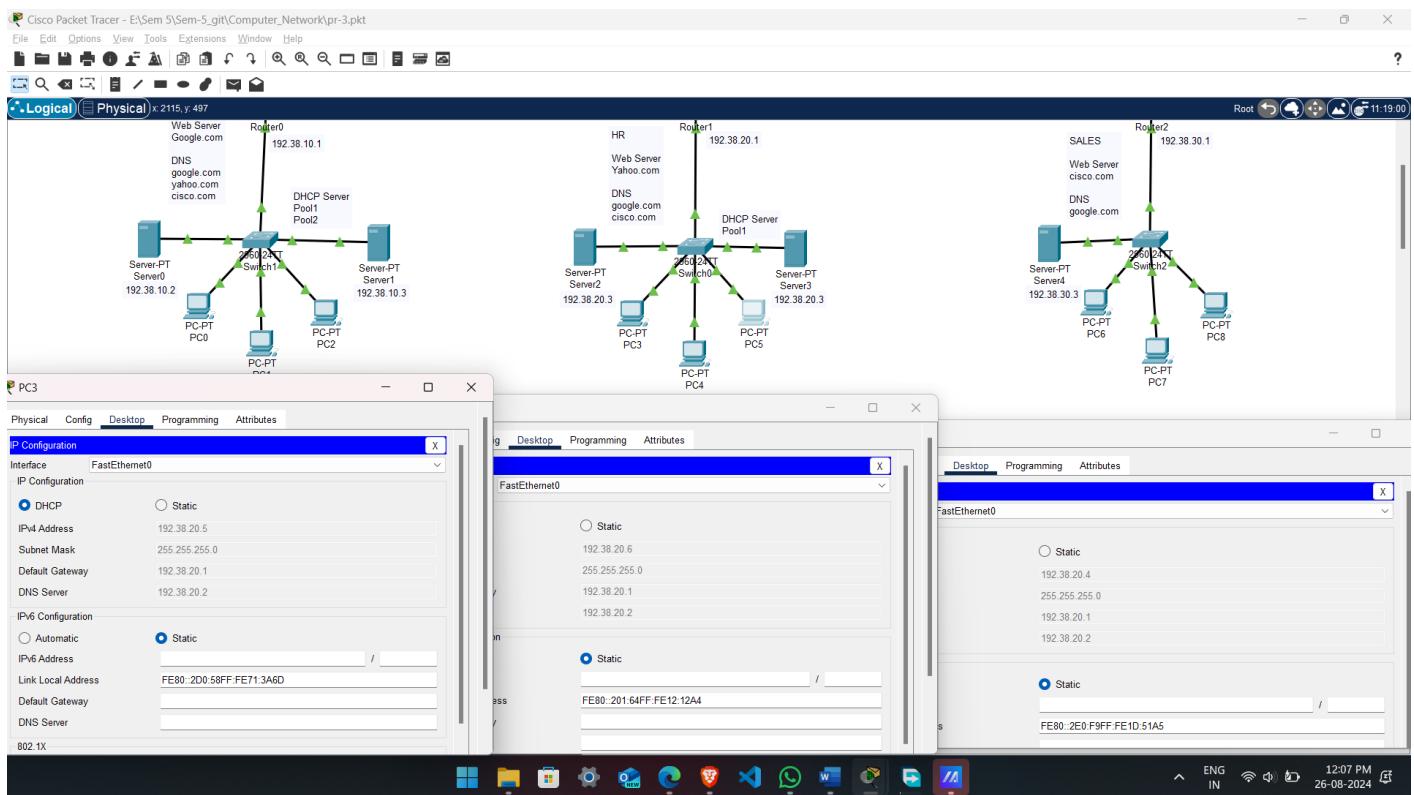
DHCP and DNS server:

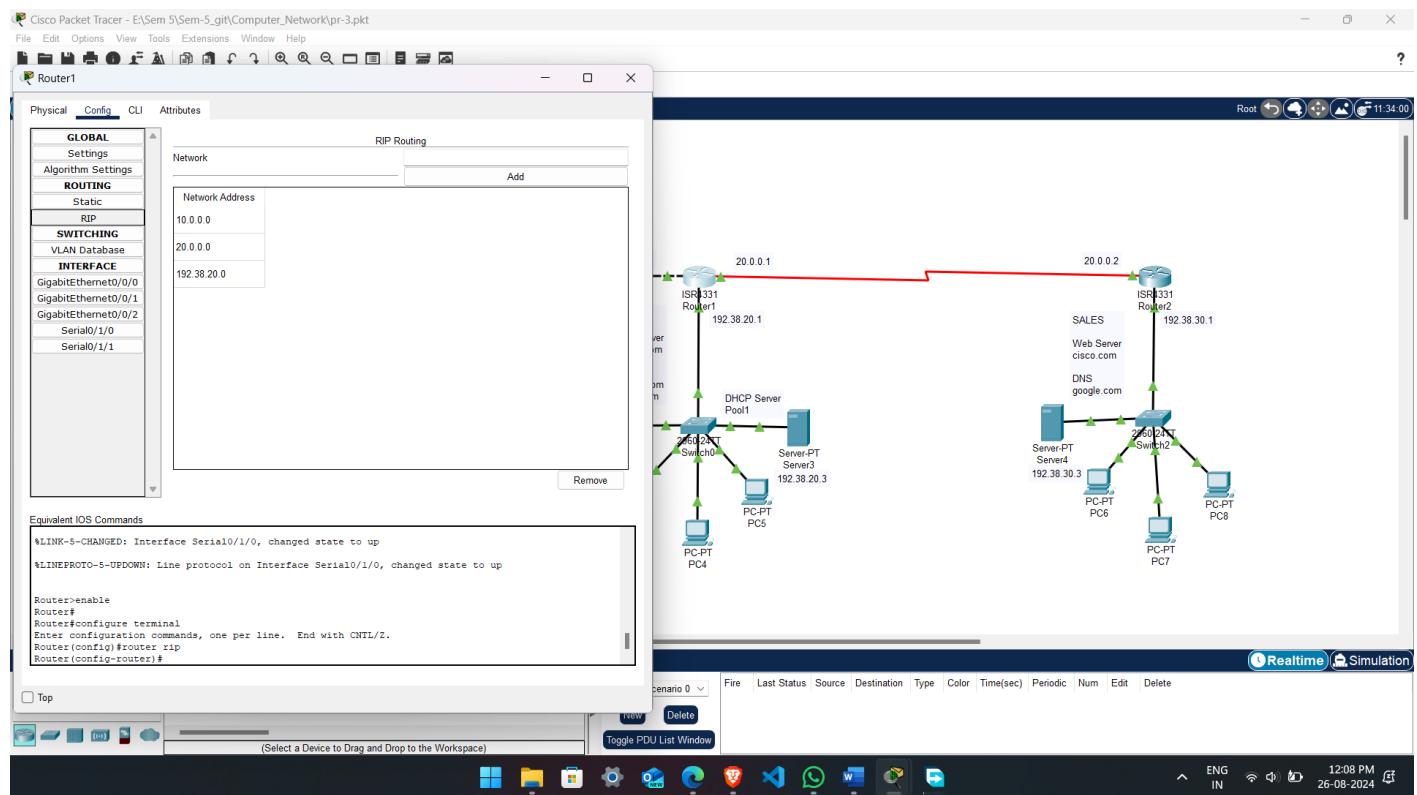
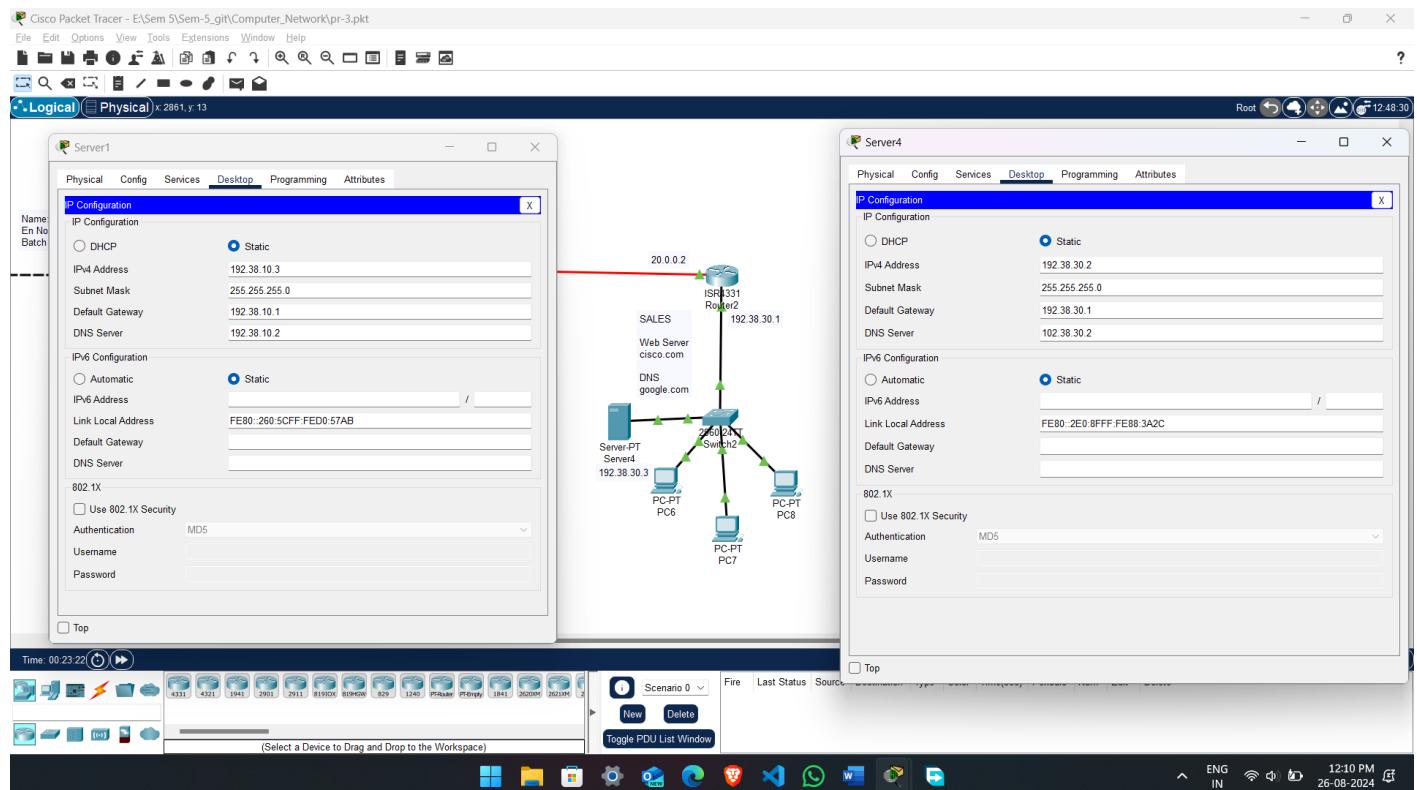


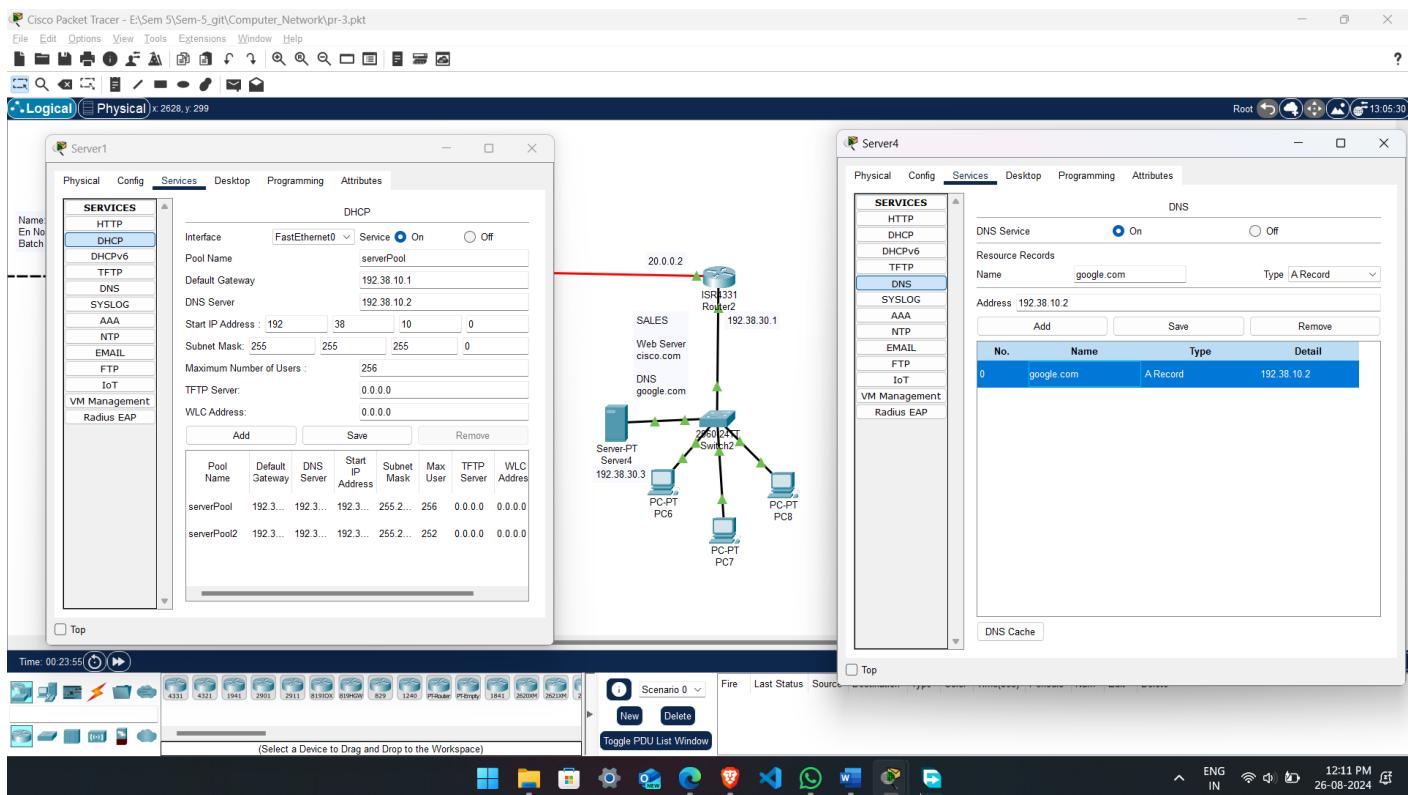


Devices:**Router:**

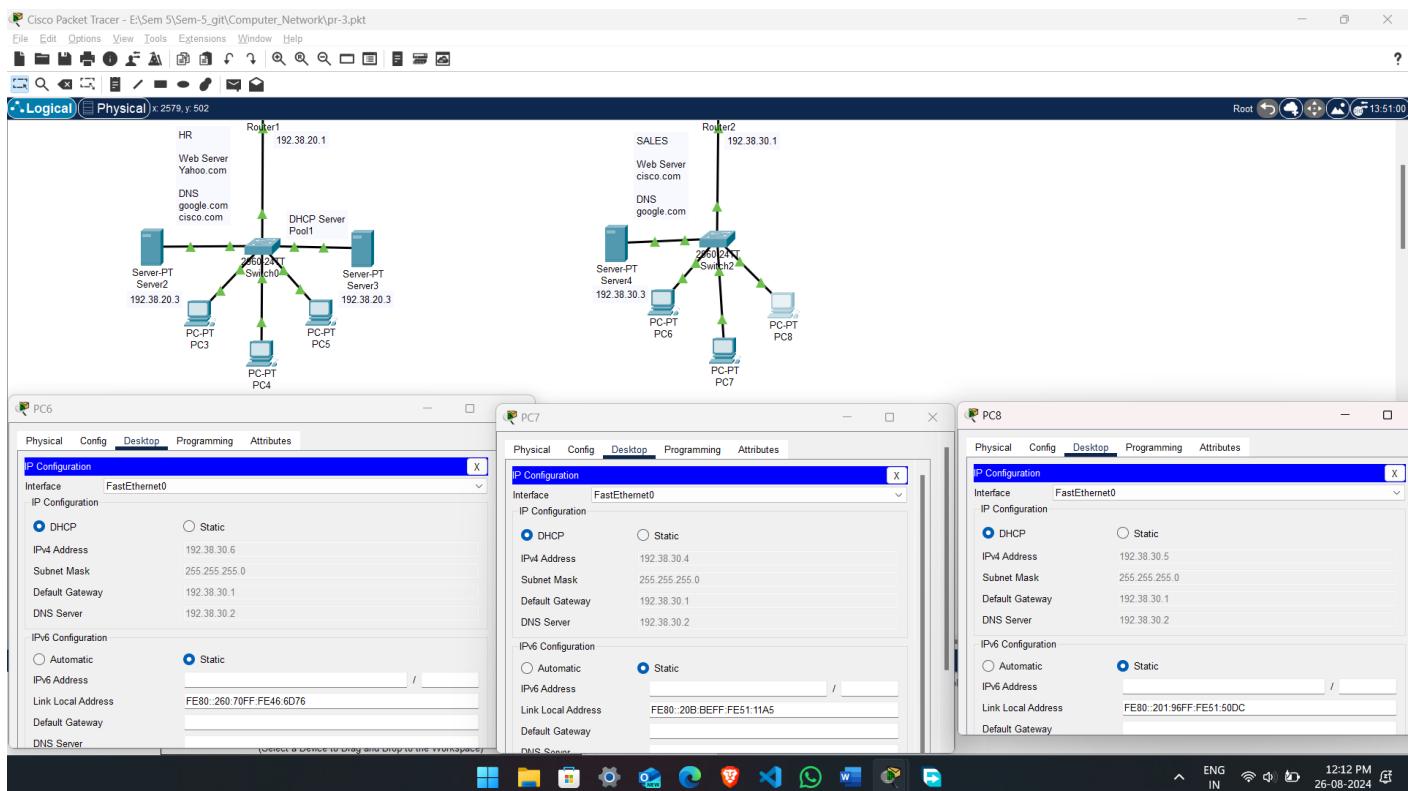
HR Department:**DHCP and DNS Server:**

**Device:**

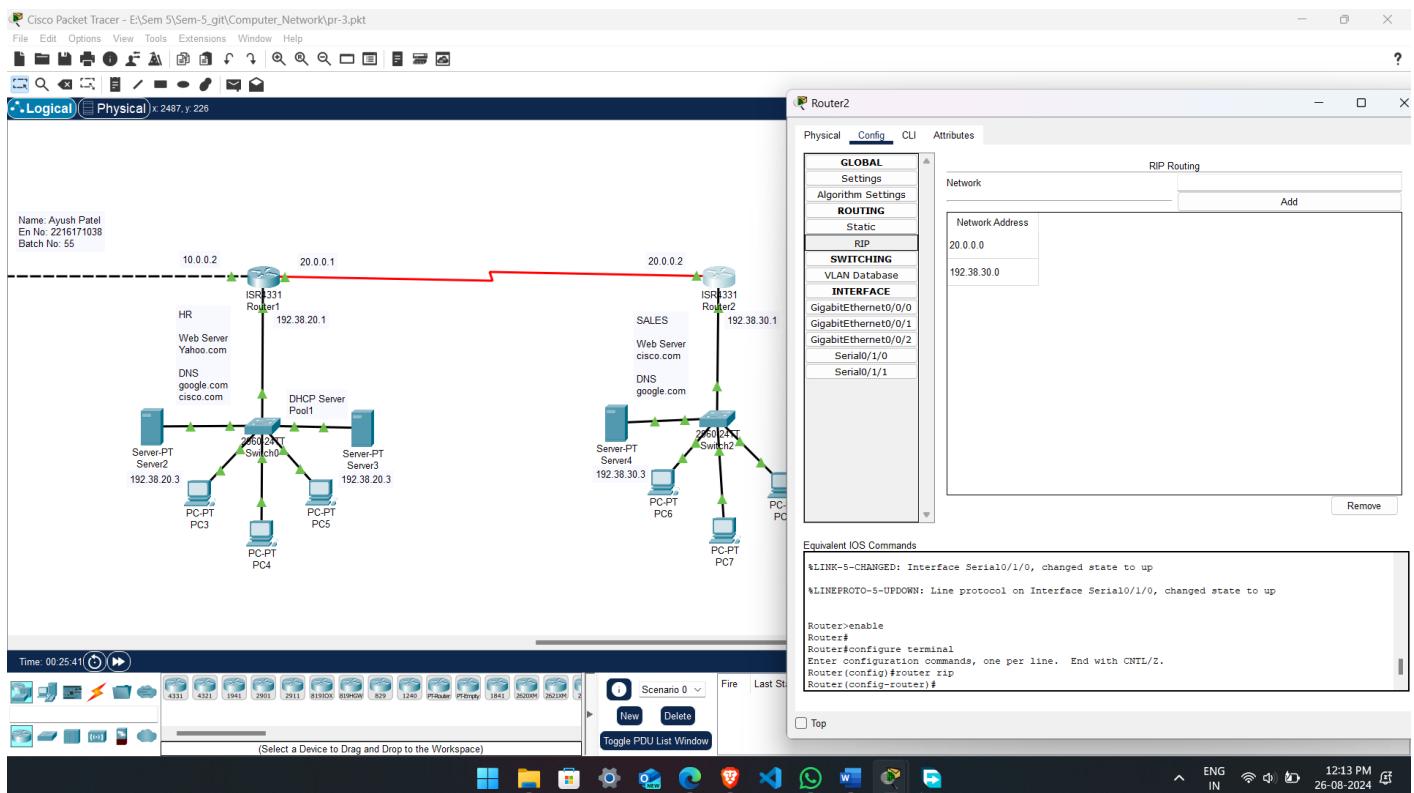
Router:**Sales Department:****DHCP and DNS server:**



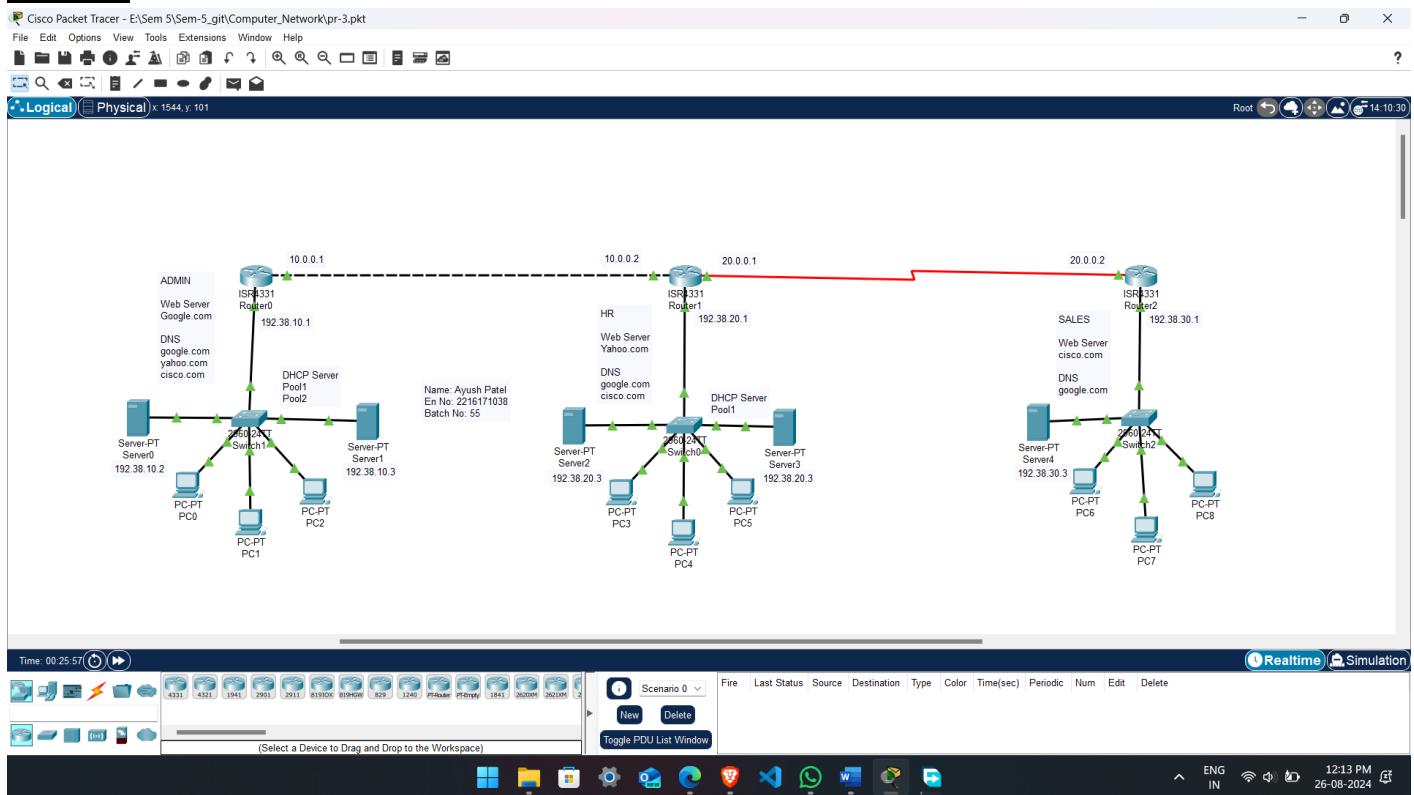
Devices:

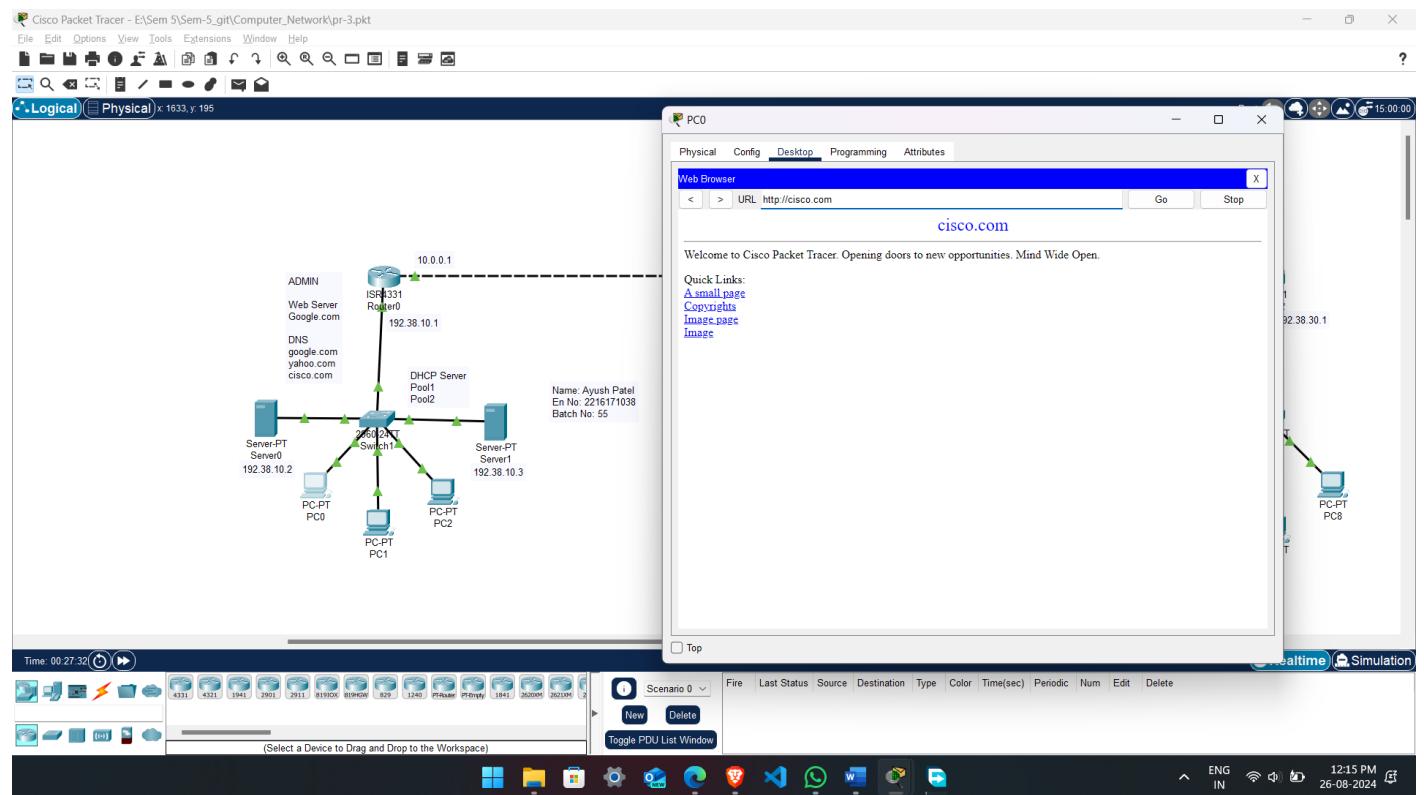
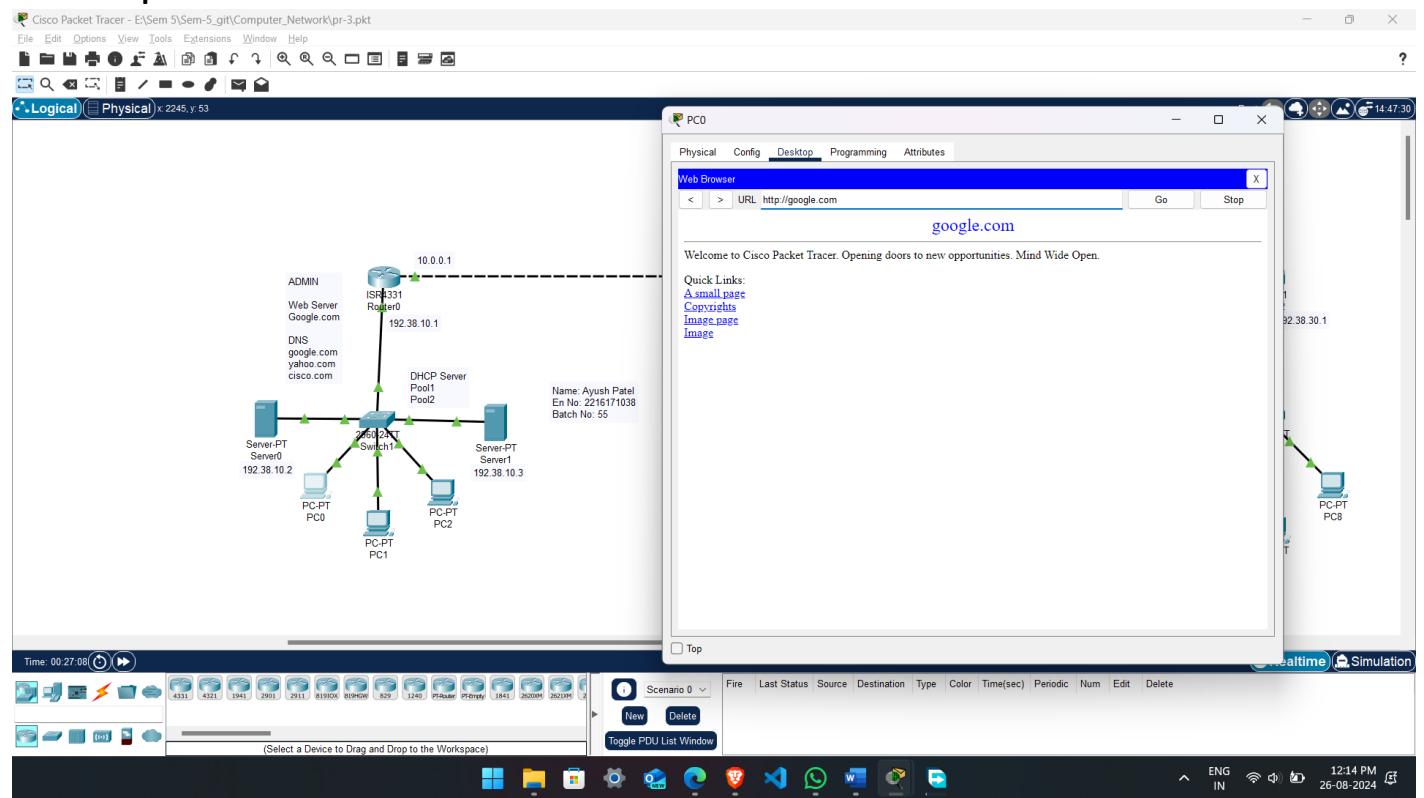


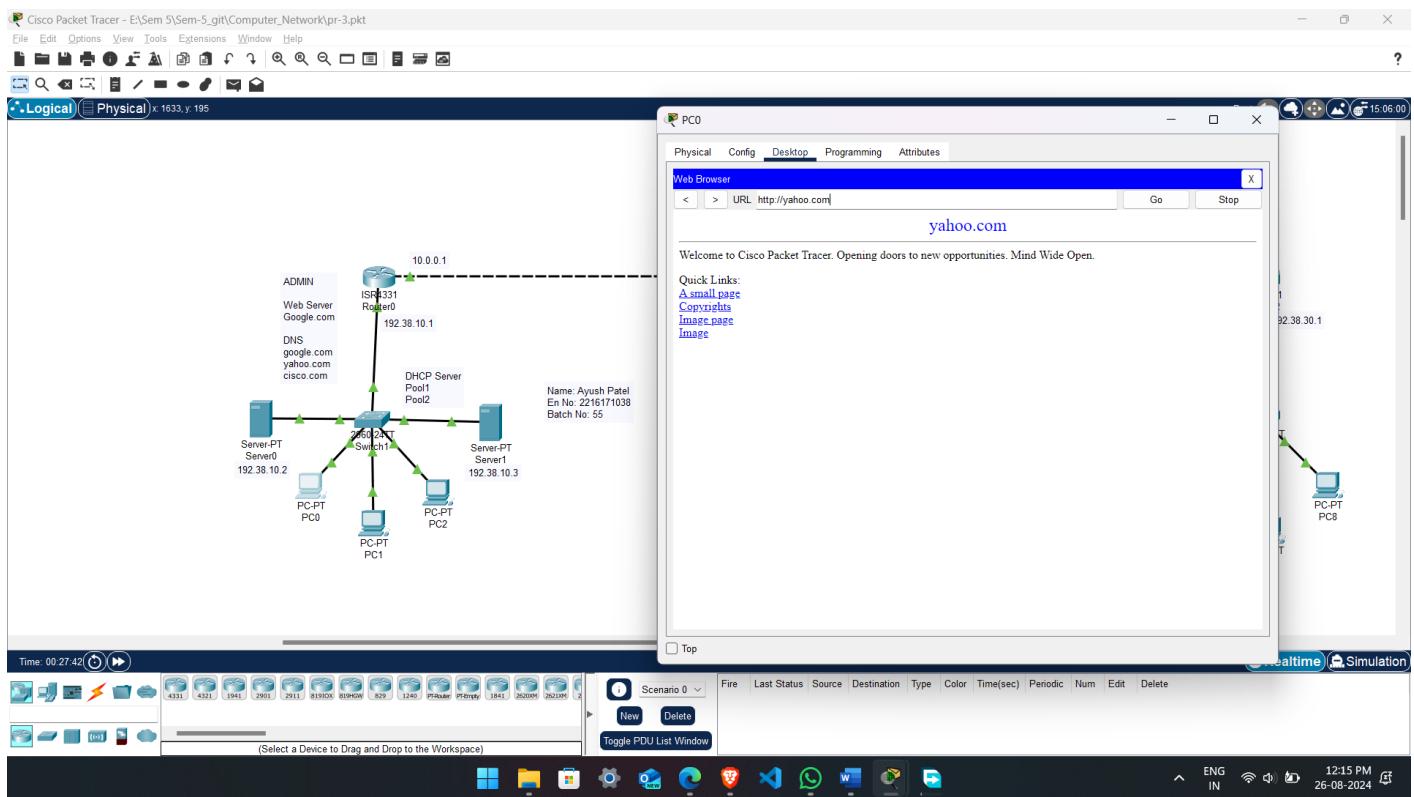
Router:



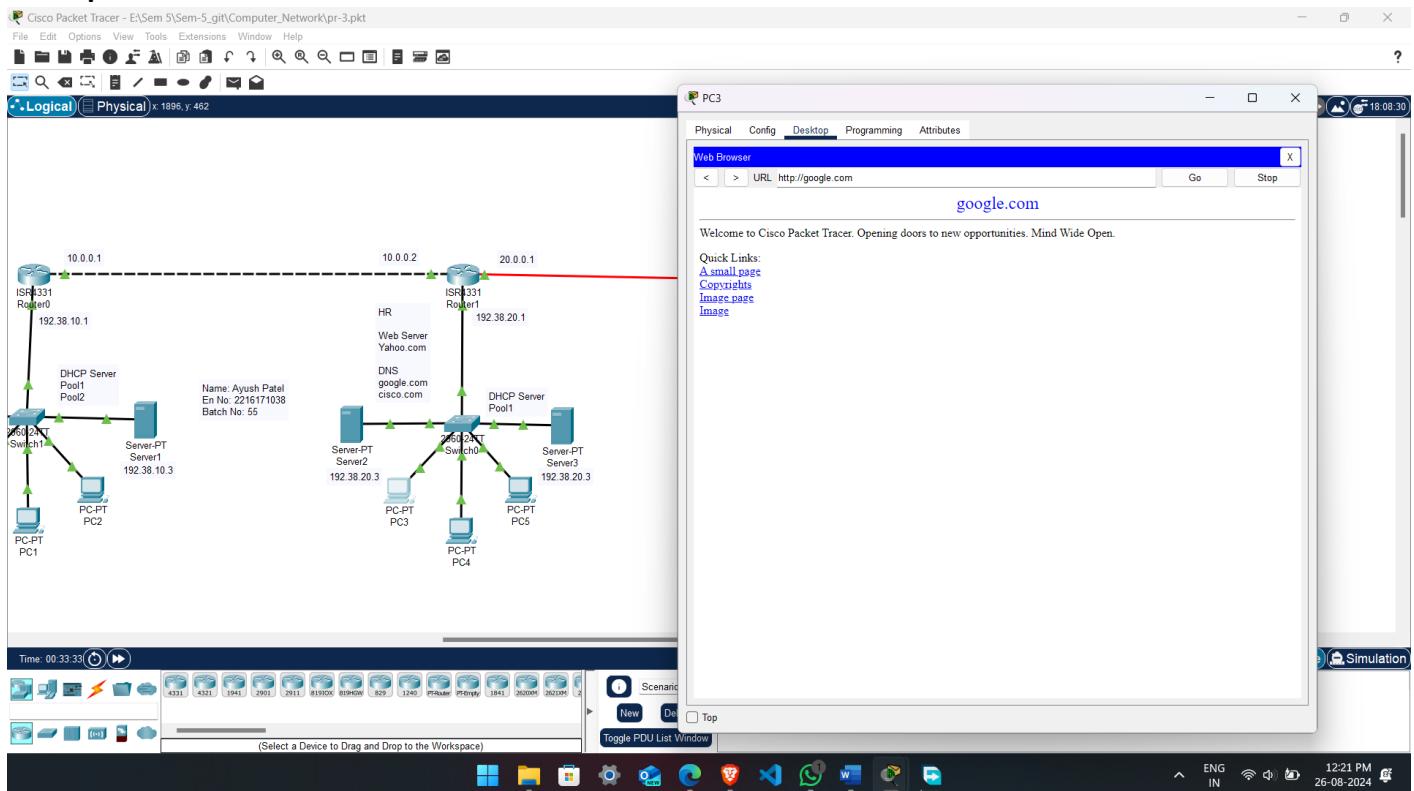
Output:

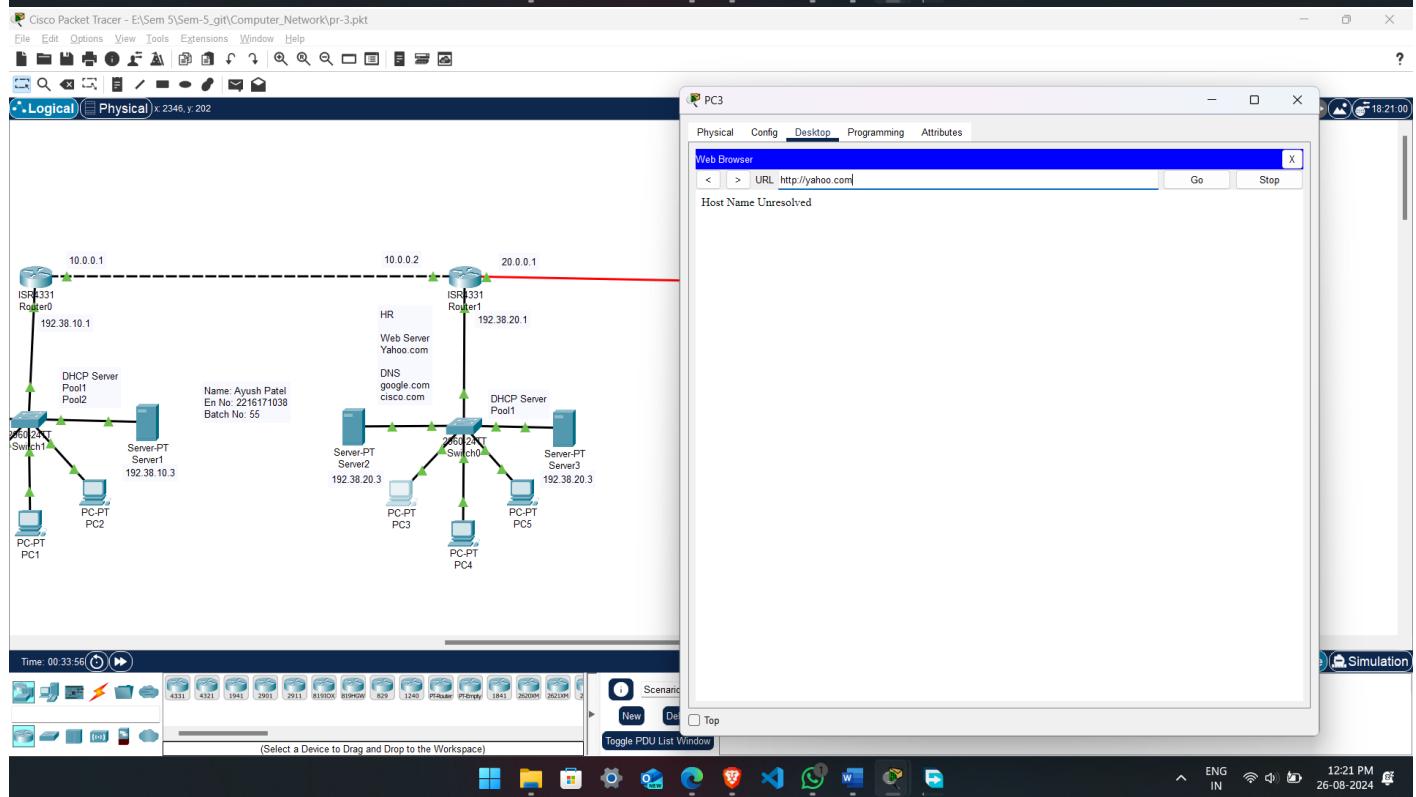
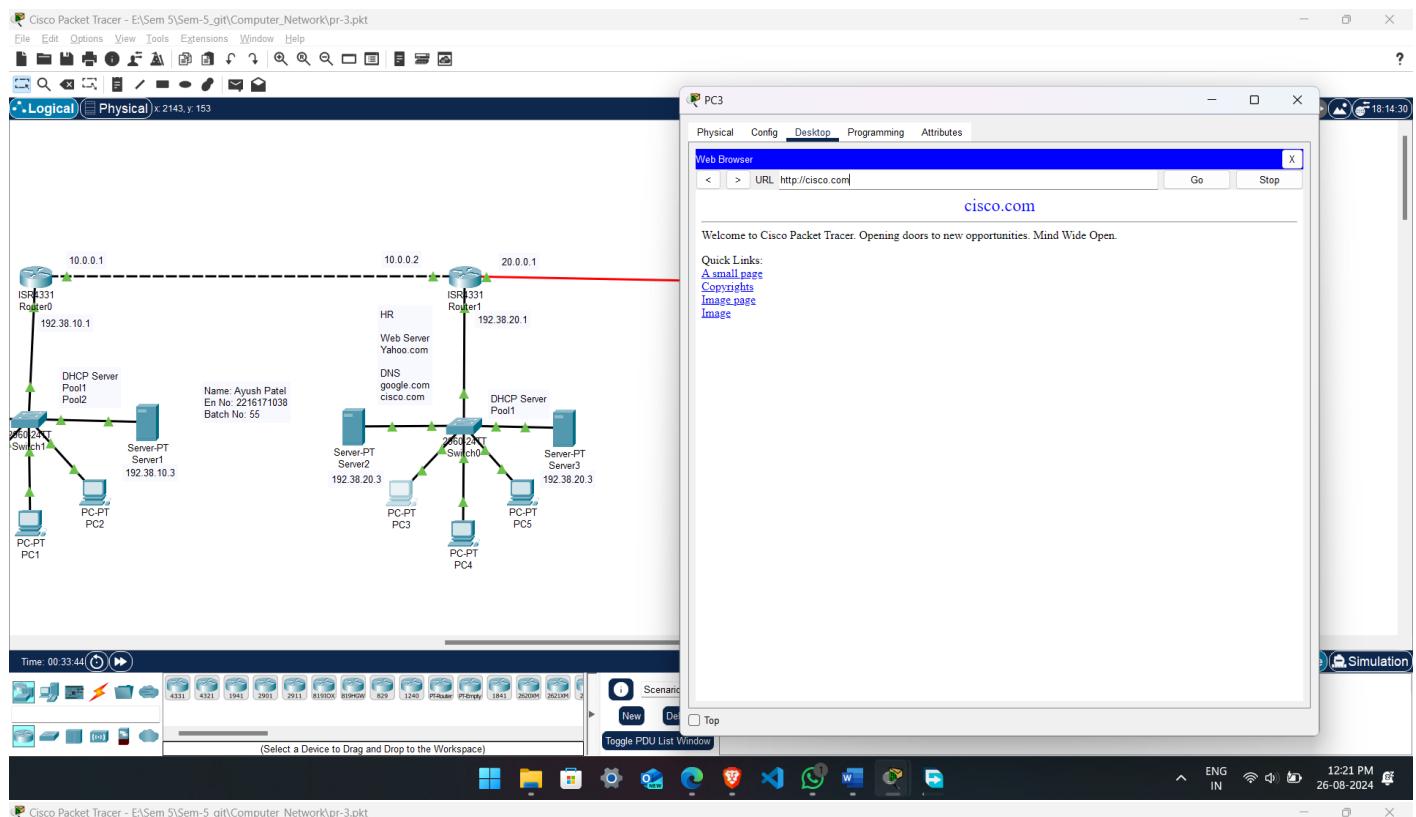


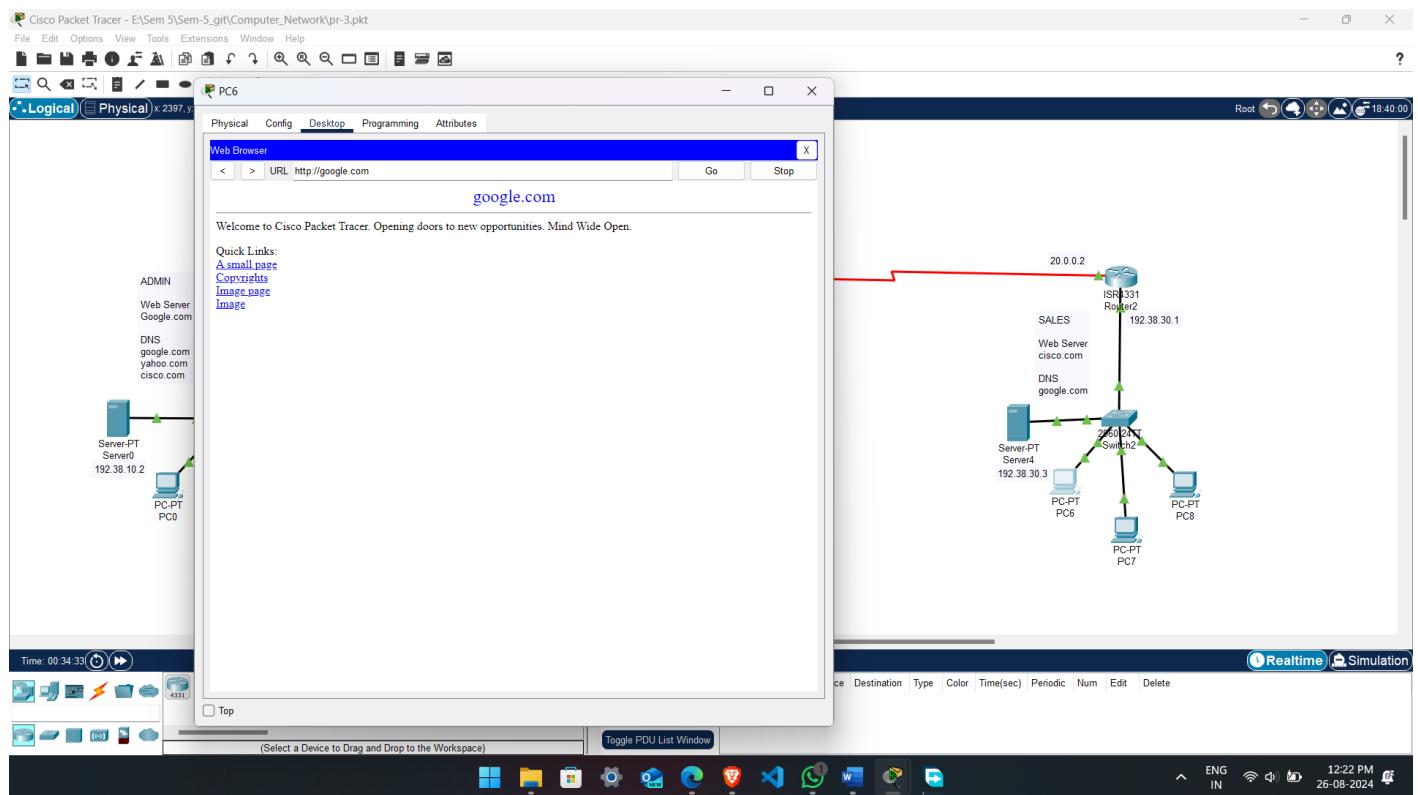
Admin Department:

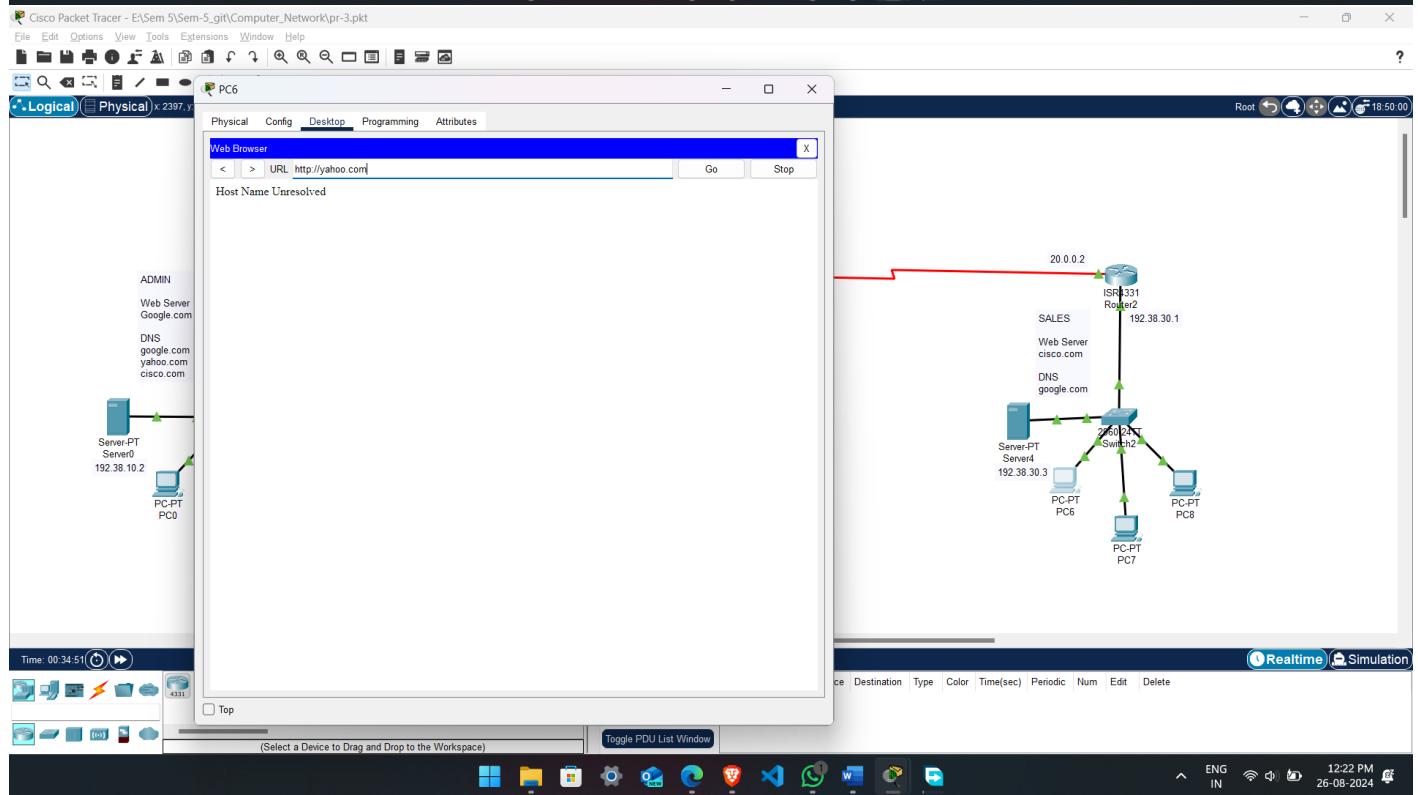
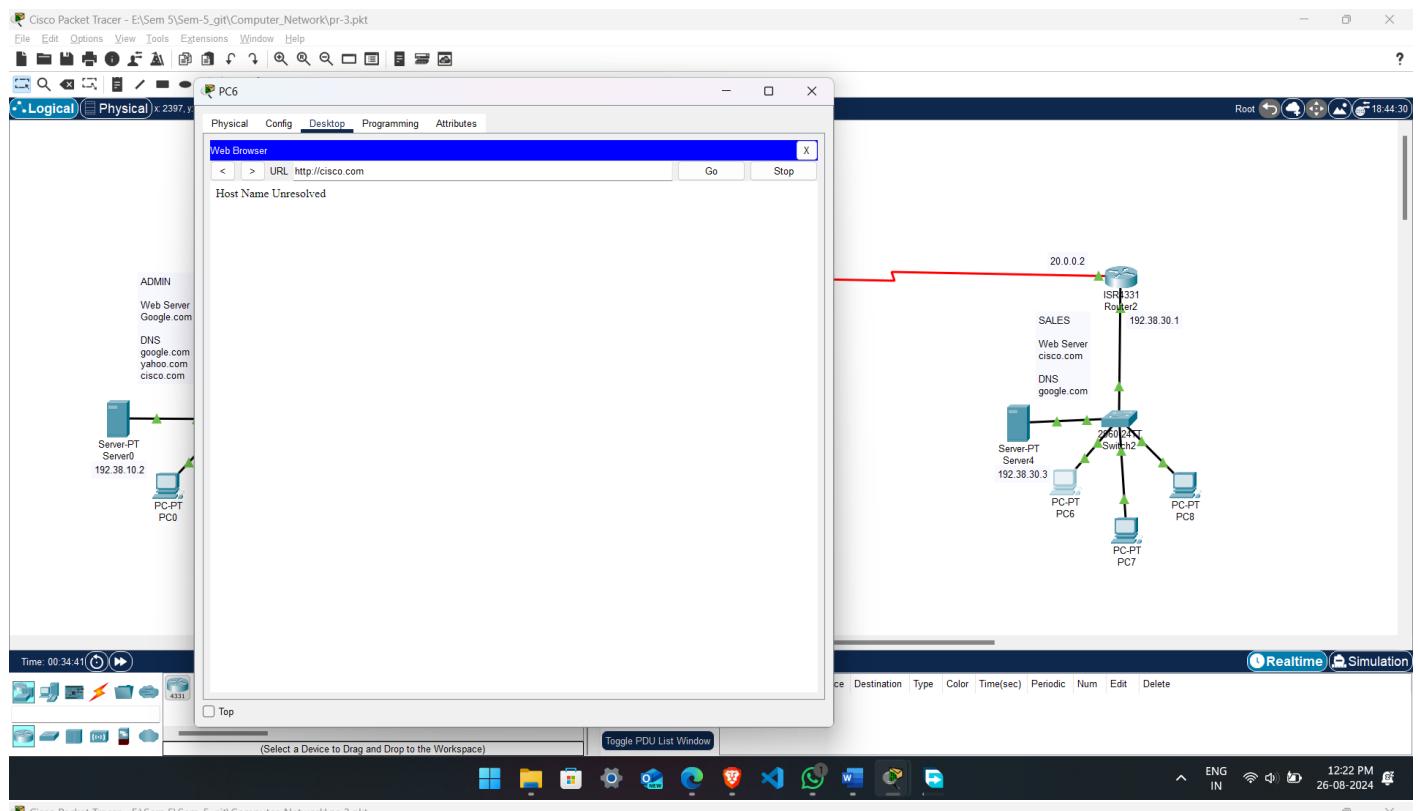


HR Department:





Sales Department:



Conclusion:

We have explored the basic concepts of web servers and DHCP IP configuration in this practical. The routers connected all the Local Area Networks (LAN) by using Routing Information Protocol (RIP) routing and default gateways. The DNS server was configured with specific websites' addresses while the DHCP server was assigned a range of IP addresses. This was essential for managing the user capacity within the network efficiently, and also assigning initial IP addresses to devices.