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 5 departments – admin, HR, support, construction, sales.

2) Each department have 20 users (add at least 5 devices in each network)

3) The networking device available in the organization is 5 servers, 3 routers and 5 switches.

4) All the devices should get the IP address dynamically.

5) The organization has their own inbuilt name server which will have the details of the website that the user can access.

6) The users of the company are allowed to access only five mentioned websites in the office premises. The list of the website is mentioned below:

Admin – google, yahoo, amazon, cisco and Microsoft

HR – naukri.com, linkedin, twitter, google and Microsoft

Support – Cisco, amazon, google, icann, internet society

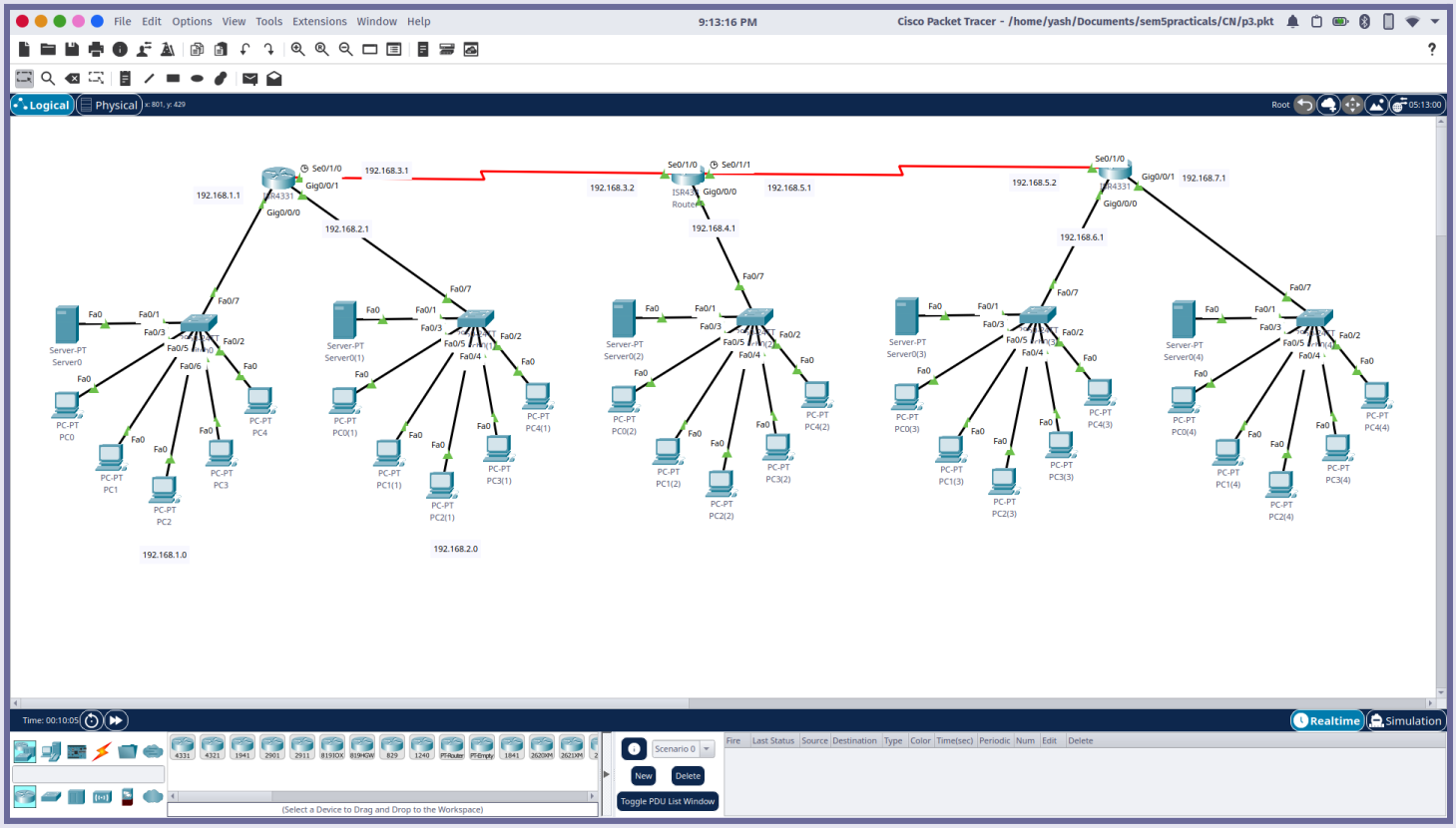
Construction – ubuntu, google, linux, amazon and sophos

Sales – any five websites related to sales that are not mentioned in the above department.

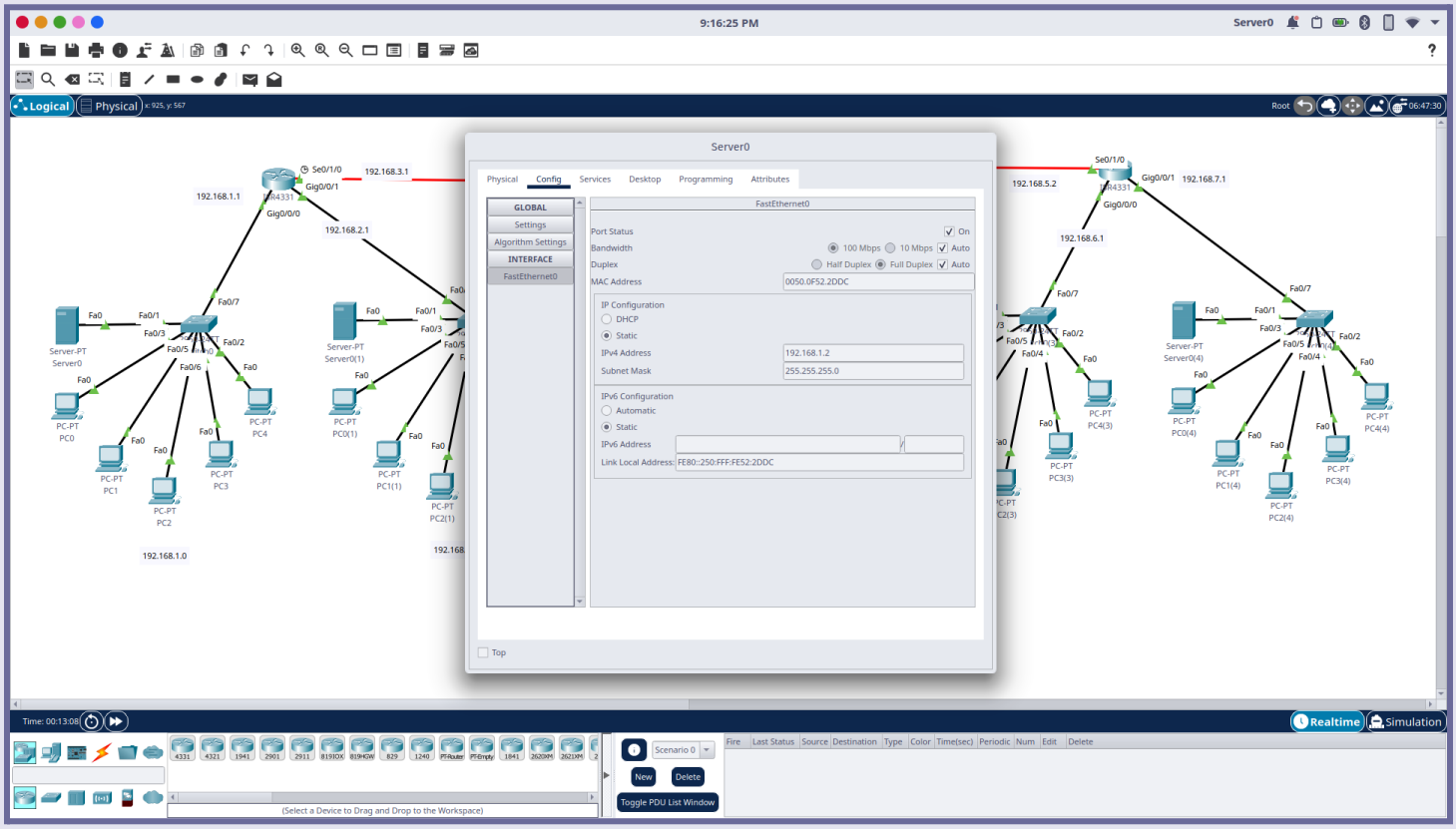
Help the admin to create the network and establish the connection between the devices.

Procedure :

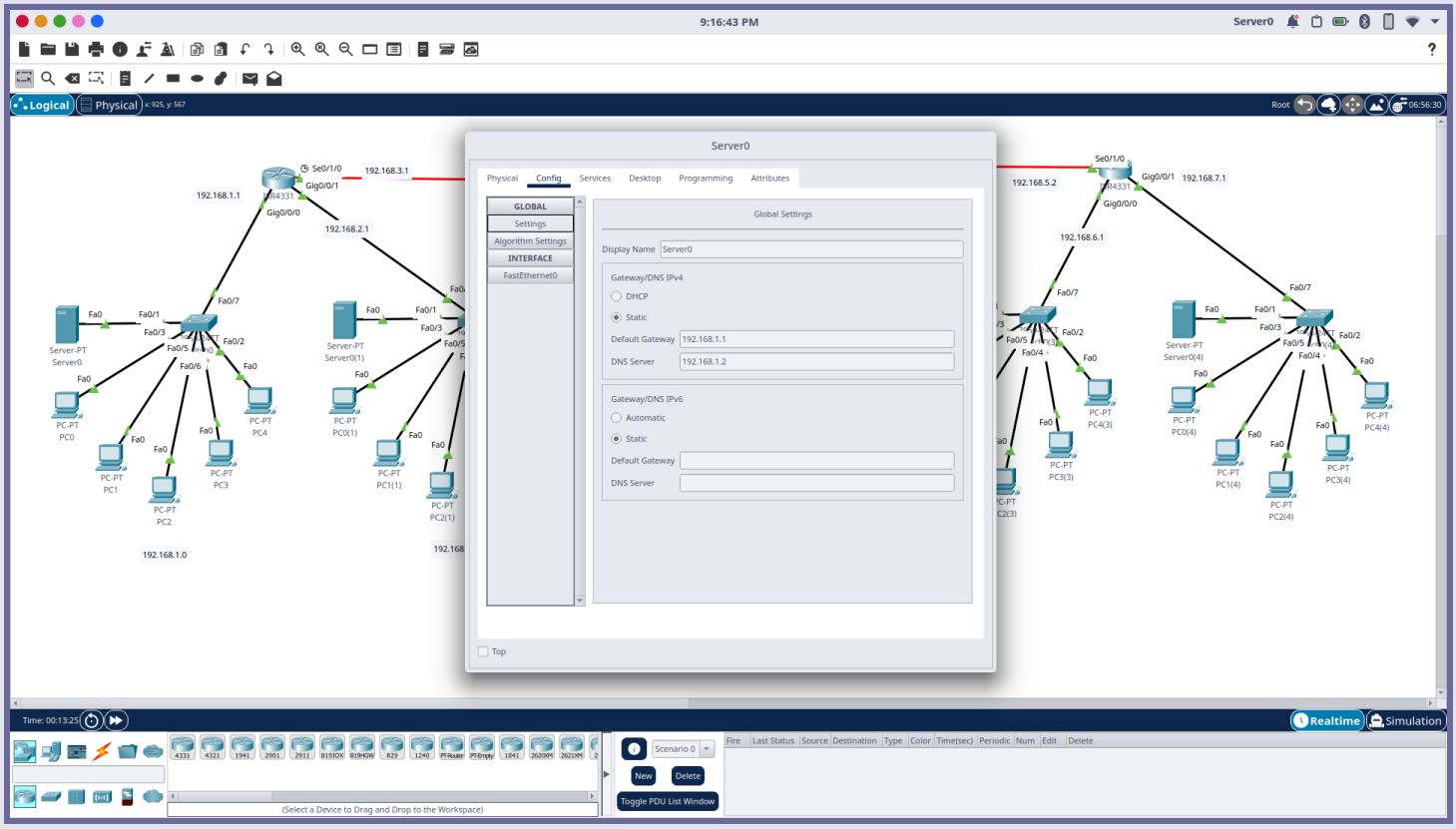
1. Design the network as given in the scenario with networks 192.168.1.0, 192.168.2.0, … 192.168.7.0 as shown in the figure



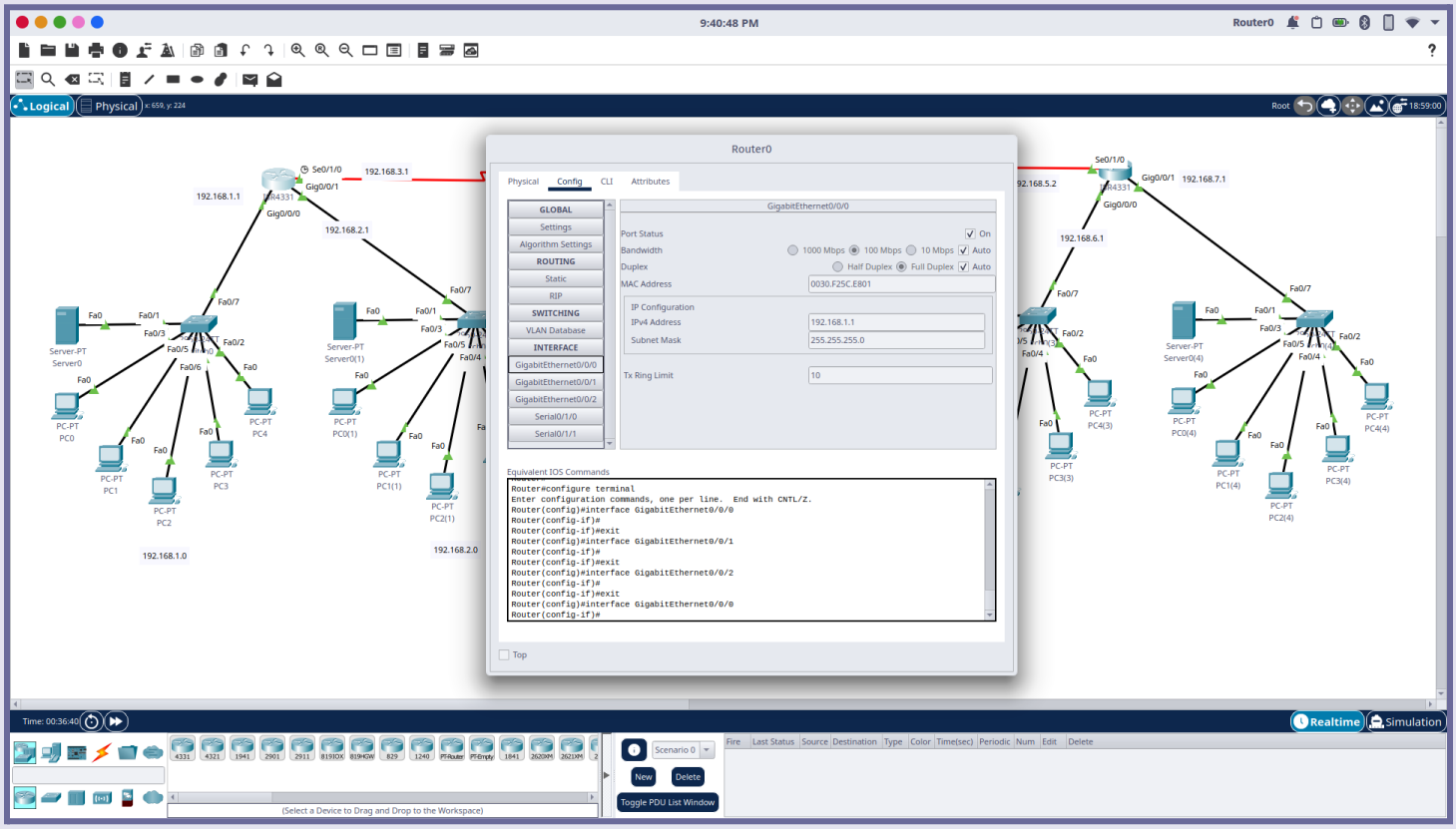
2. Assign an IP address 192.168.1.2 to the Server0 of the Admin department of the network 192.168.1.0



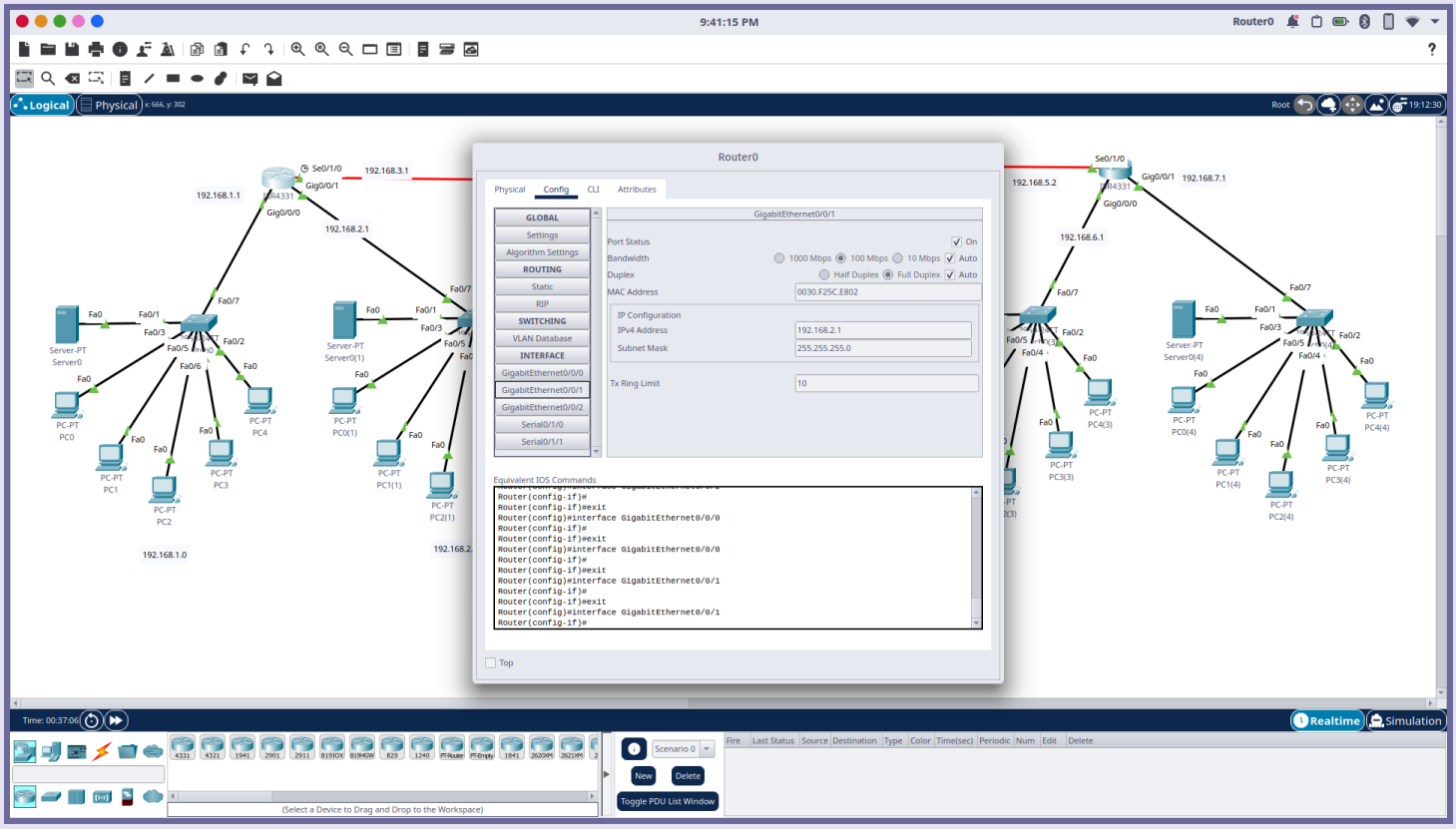
3. Assign gateway IP of the router connected to it and its own IP as DNS server

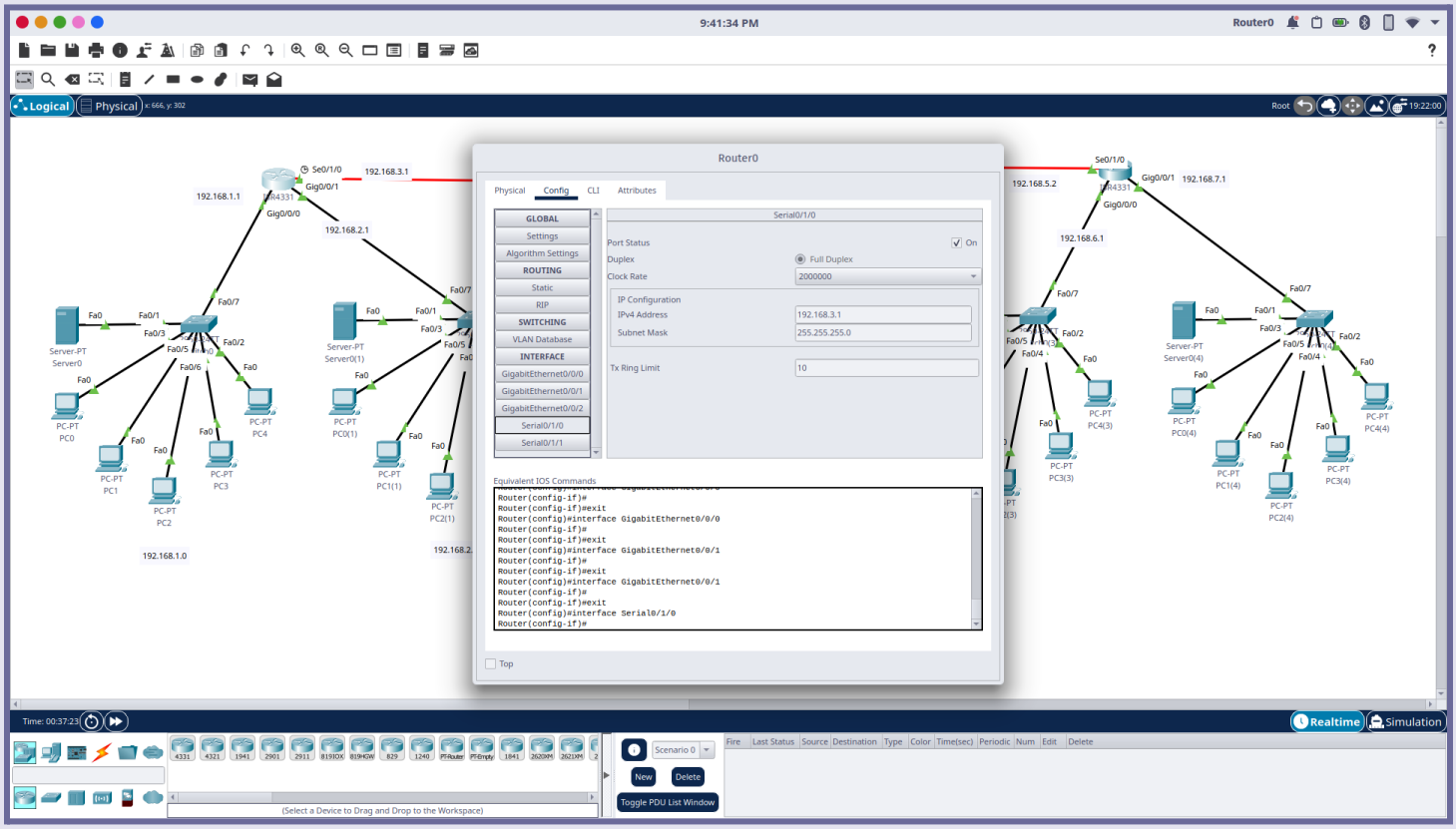


4. Assign IP to Router0’s gigabit ethernet port connected to the router, which was given as gateway in Server0

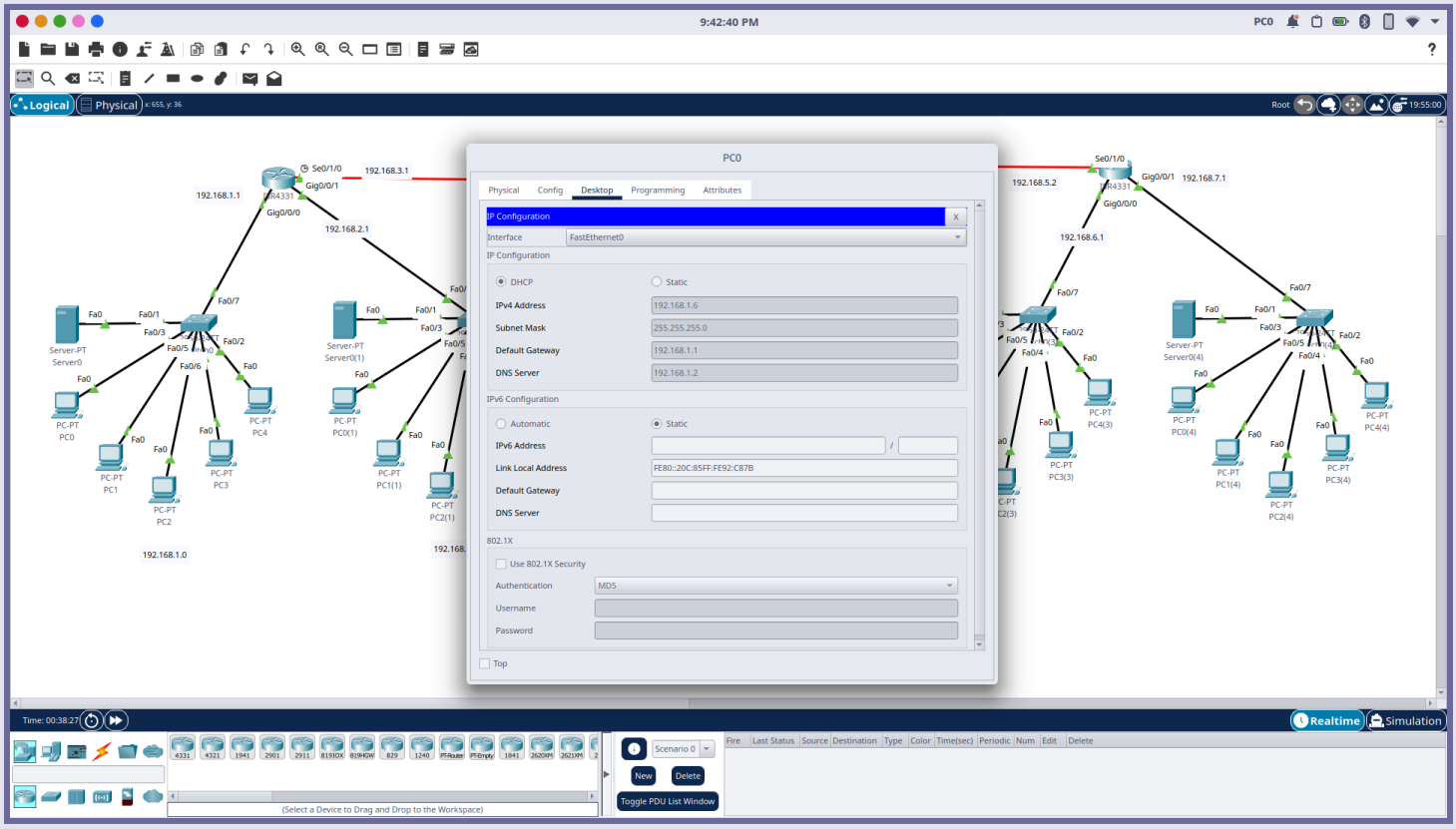


5. Assign IP to other ports of Router0 accordingly.

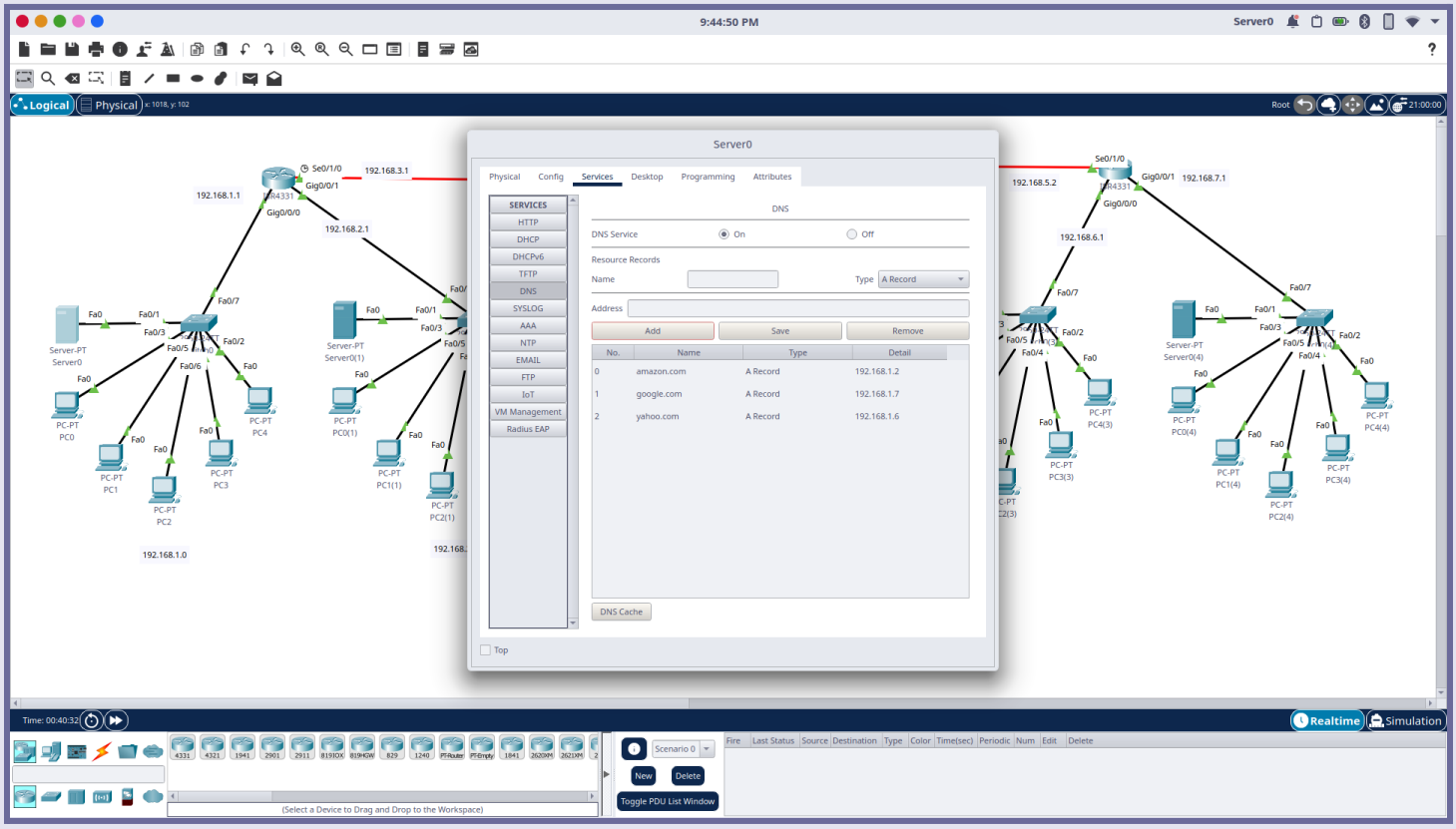




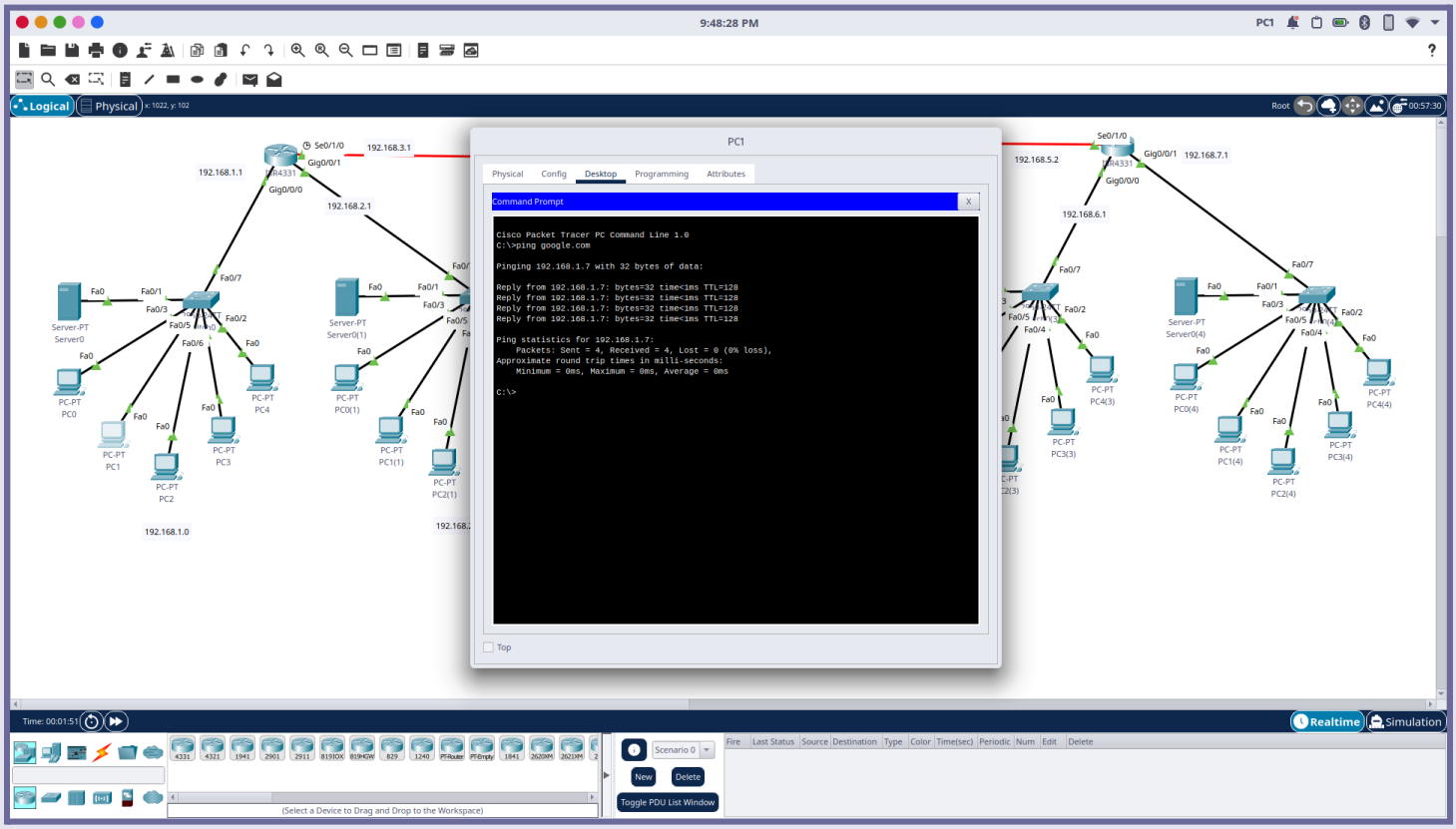
6. Configure all end devices connected to Server0 to use DHCP for IP addresses.



7. Add DNS domains and respective addresses in DNS service of Server0.



8. Similarly, follow the same steps for all other networks with IP and network range given in the figure 1 of first step. And then ping and test the URL or domain set in the DNS server of the network.



Conclusion : By the analysis of this experiment, it was observed how DHCP protocol works and dynamically assigns the IP addresses to the end devices whenever powered ON, and also DNS servers can be used locally for accessing the domains within a department of an organization.