Department of Computer Science and Engineering

Course Title: Computer Networks Lab

Course Code: CSE 320

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Network Components:

- End Device: PC = 5, Server = 5
- Network Device: Router = 5, Switch = 5
- Wire: Copper Straight Through, Fiber

Network Design:

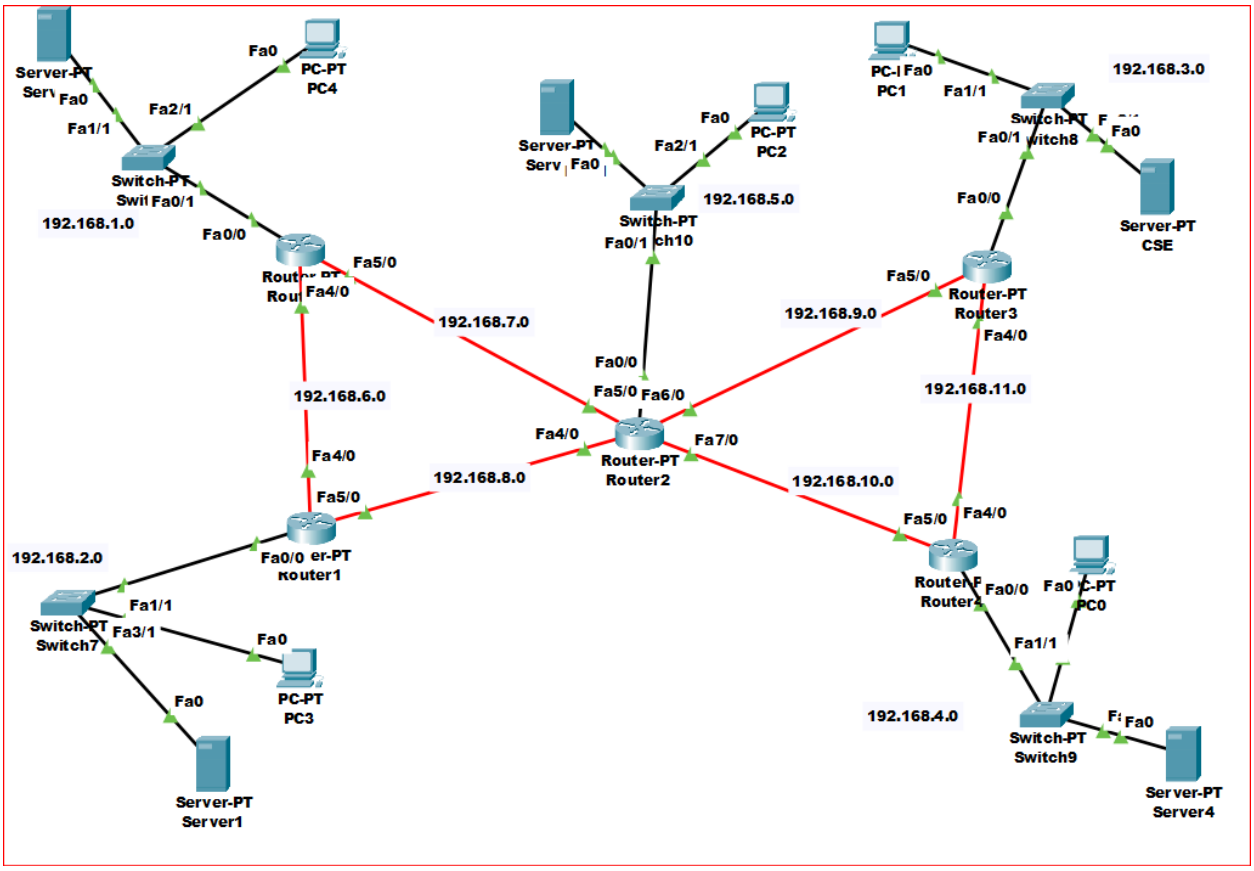

Figure: 01

Connecting all the Routers with **Fiber cables** and End devices will be connected with **Copper Straight Through cables**.

Network Addressing Table

S.N.#	Network Name	Host Requirements	Network Address	Subnet Mask	First Host	Last Host	Broadcast Address
1	Zone - 1	254	192.168.1.0	255.255.255.0	192.168.1.1	192.168.1.254	192.168.1.255
2	Zone -2	254	192.168.2.0	255.255.255.0	192.168.2.1	192.168.2.254	192.168.2.255
3	Zone - 3	254	192.168.3.0	255.255.255.0	192.168.3.1	192.168.3.254	192.168.3.255
4	Zone -4	254	192.168.4.0	255.255.255.0	192.168.4.1	192.168.4.254	192.168.4.255
5	M Zone	254	192.168.5.0	255.255.255.0	192.168.5.1	192.168.5.254	192.168.5.255
6	R0-R1	2	192.168.6.0	255.255.255.0	192.168.6.1	192.168.6.254	192.168.6.255
7	R0-R2	2	192.168.7.0	255.255.255.0	192.168.7.1	192.168.7.254	192.168.7.255
8	R1-R2	2	192.168.8.0	255.255.255.0	192.168.8.1	192.168.8.254	192.168.8.255
9	R2-R3	2	192.168.9.0	255.255.255.0	192.168.9.1	192.168.9.254	192.168.9.255
10	R2-R4	2	192.168.10.0	255.255.255.0	192.168.10.1	192.168.10.254	192.168.10.255
11	R3-R4	2	192.168.11.0	255.255.255.0	192.168.11.1	192.168.11.254	192.168.11.255

Table: 01

Router Configuration:

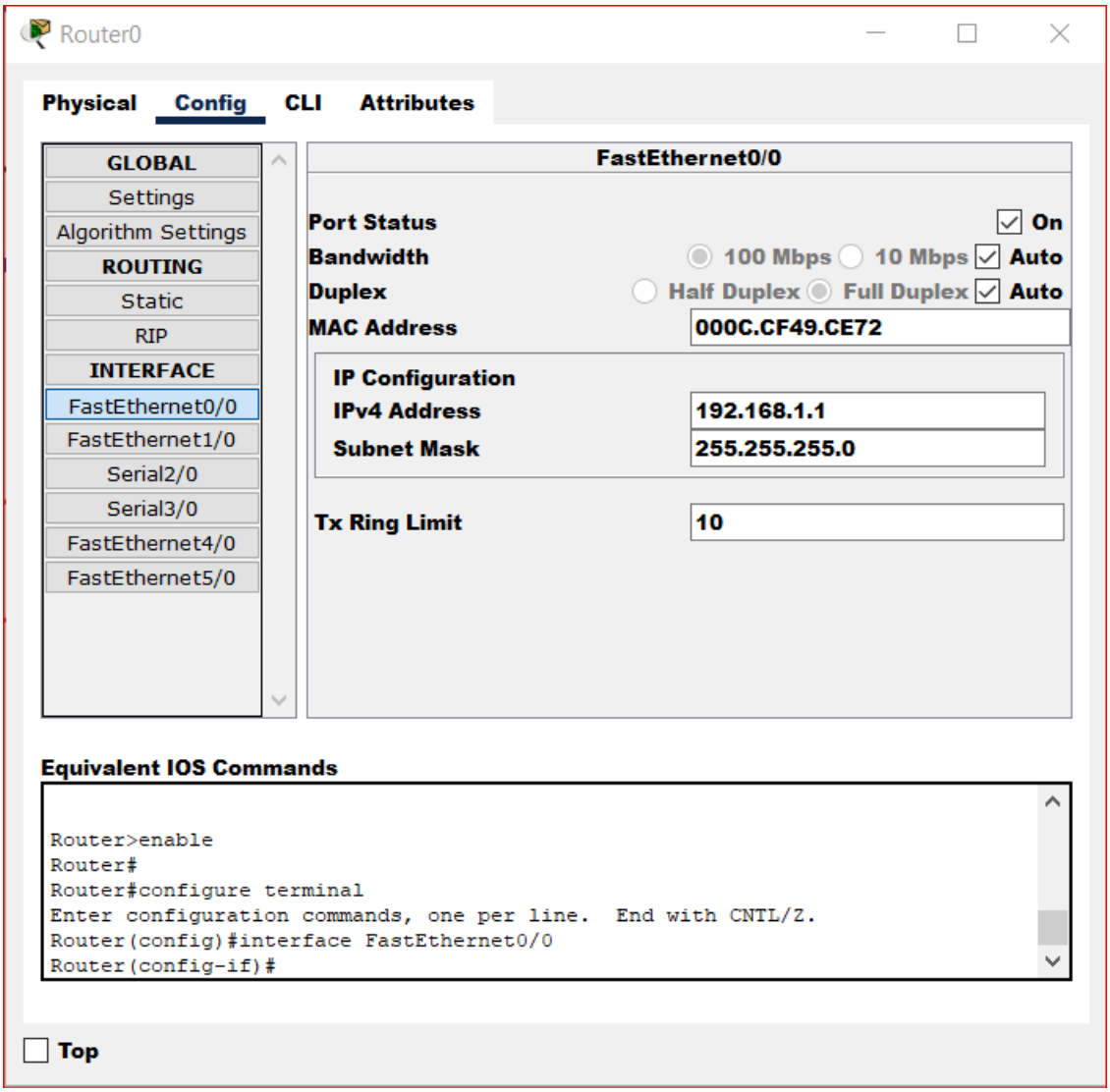

Figure: 02

Here, press the router and go to the **config** mode then for each FastEthernet port **Turn ON** the port status and set the IP address for IPv4, also set the Subnet Mask for each port and each router. The IP address for each port will be the **First Host ID** or **Second Host ID** depends on need of each network connected to the dedicated port.

Adding Extra Port in Router 02:

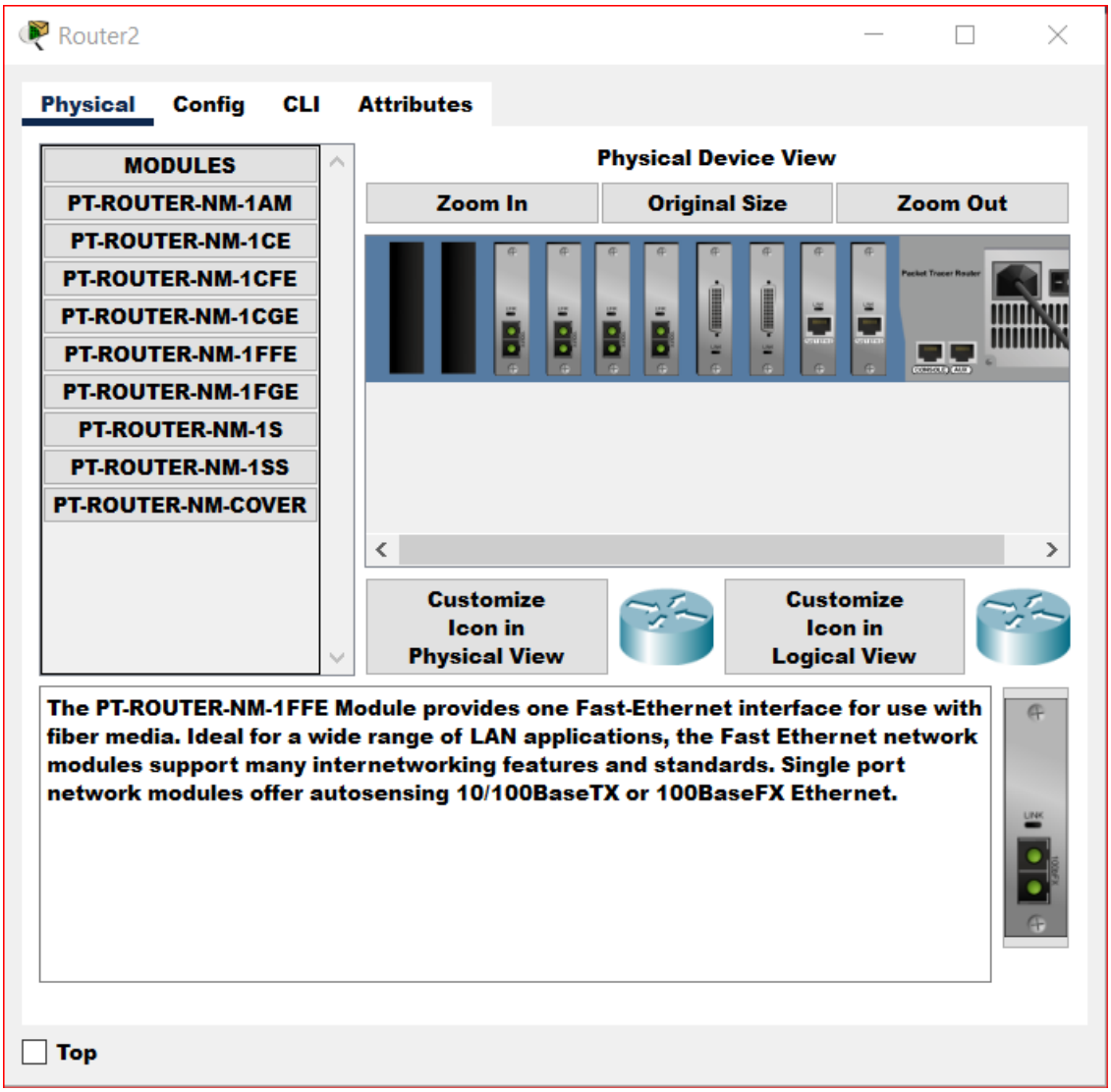

Figure: 03

In router 02 for giving more connection we have to add two extra **NM-1FFE** port to it. So first we should **Turn OFF** the switch and then select the NM-1FFE port and add it to the router. After adding those ports, we must turn the switch of the router **ON**.

Connection Router to another networks:

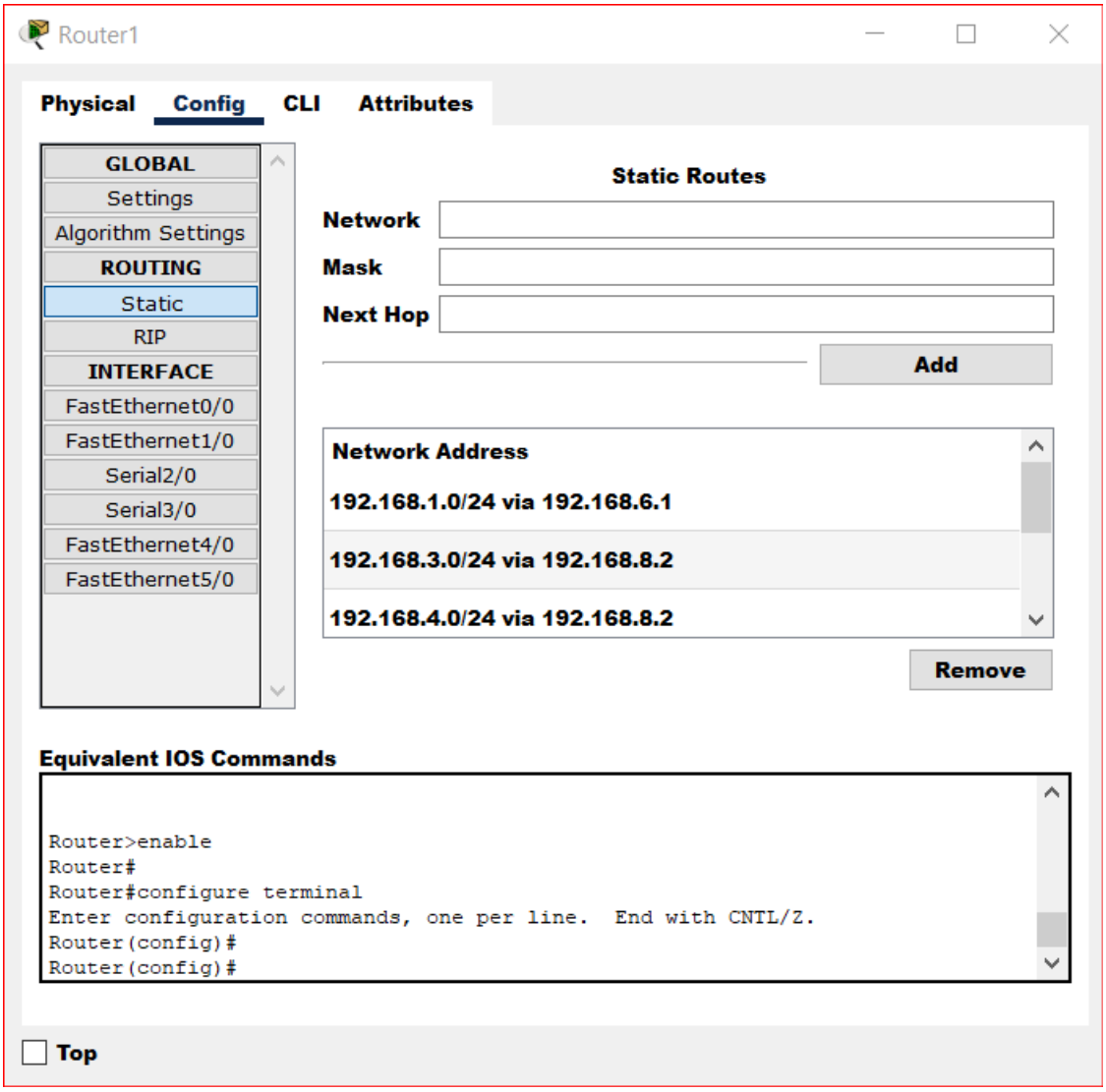

Figure: 04

Select the router and go to the config tab, then select the **Static** section. Here we have to provide the IP address of other possible networks, add their subnet mask and also give the IP address of the next hope towards the network from the router.

Configuring the DHCP & DNS Servers:

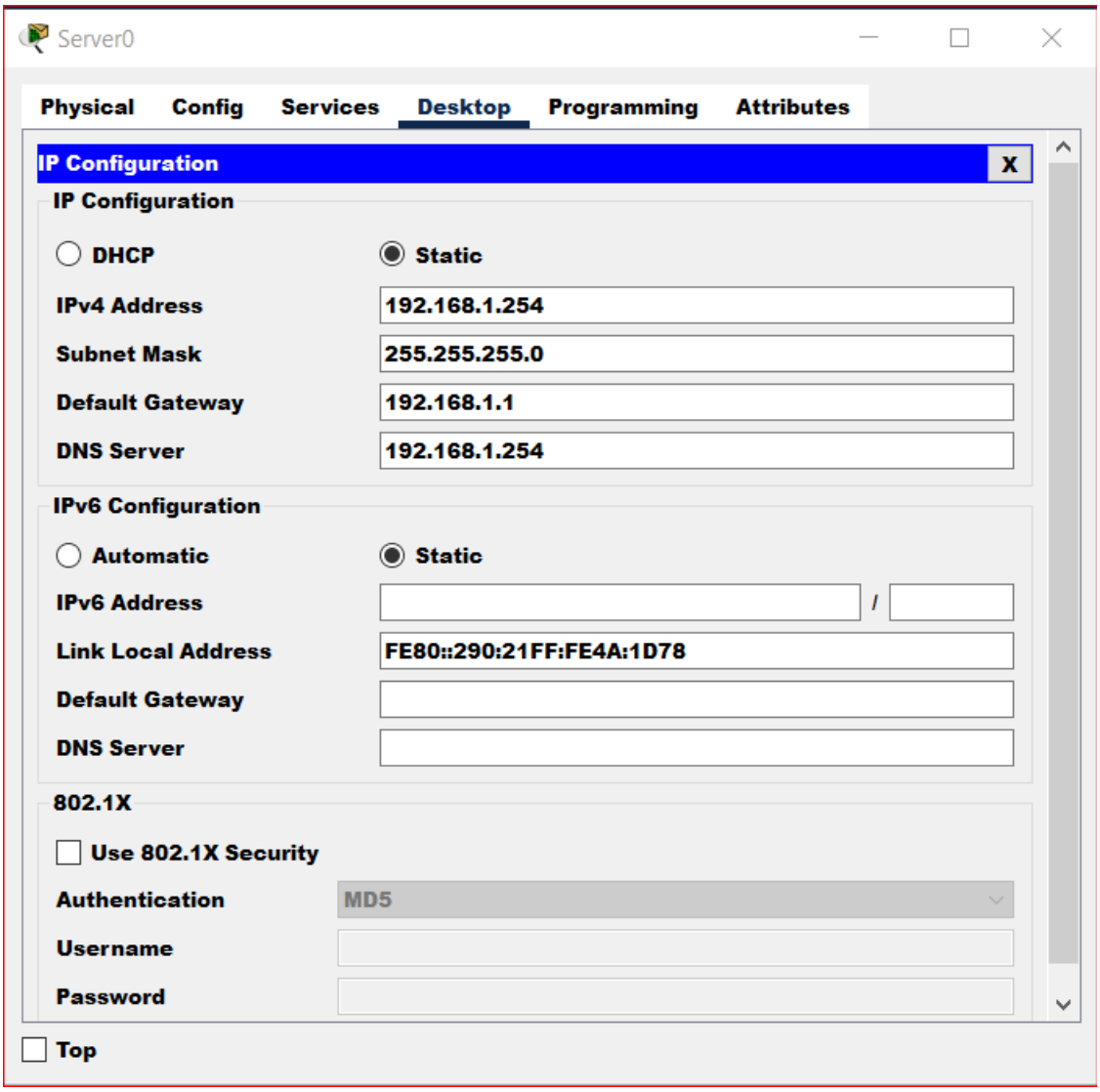

Figure: 05

In server 0 select the Desktop and open IP configuration. Here we have to select the **static** mode. Then give IPv4 address which will be the **Last Host ID** of that network. Provide subnet mask default gateway and give its own IP address as **DNS Server** to convert this server to DNS server alongside DHCP server.

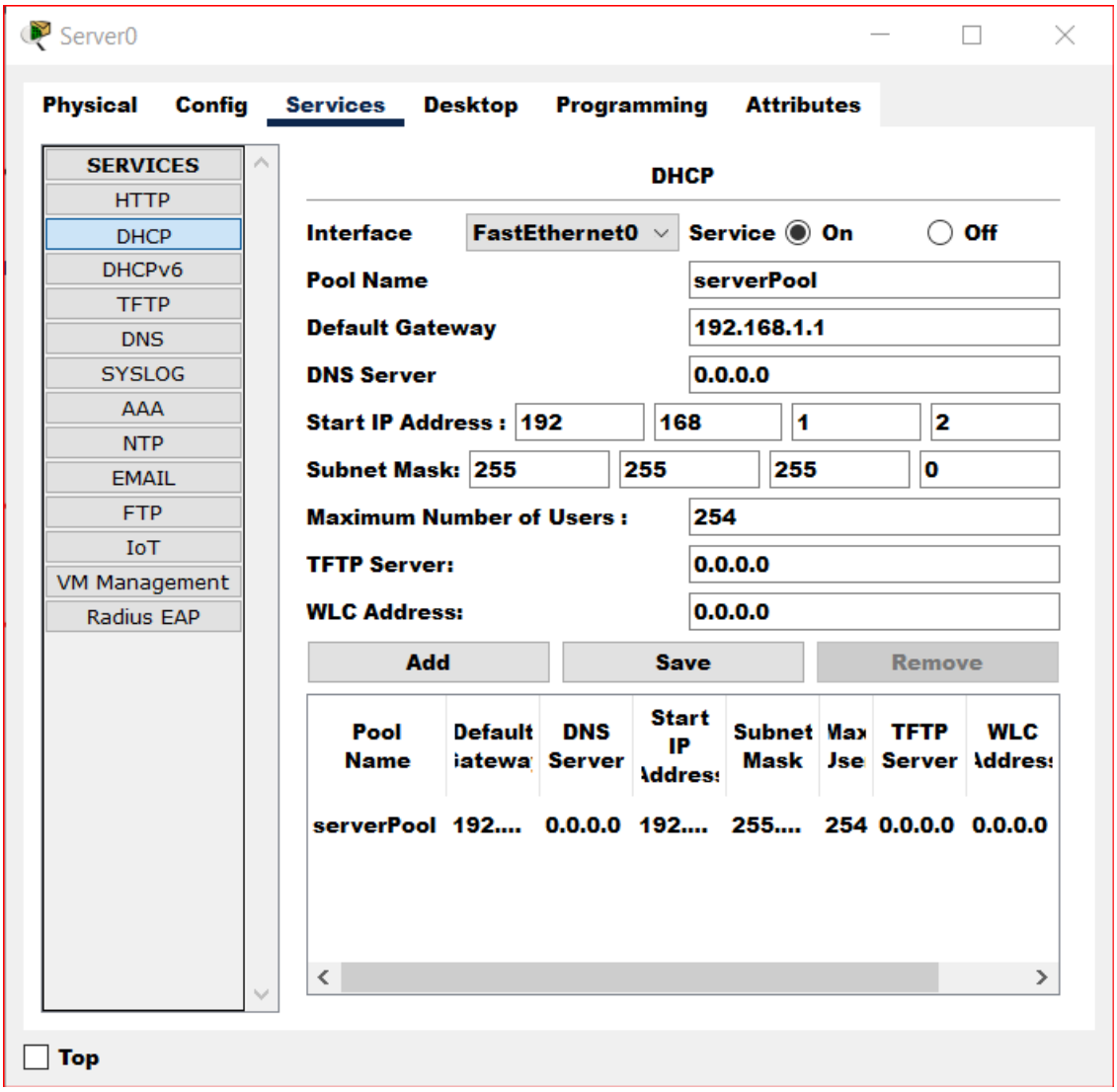

Figure: 06

Then in the Services tab select the **DHCP** section **Turn ON** the service. After that give the default gateway of the network. Reserve the first two IP address and start the host Ip address from **192.168.1.2**
Then press the save button.

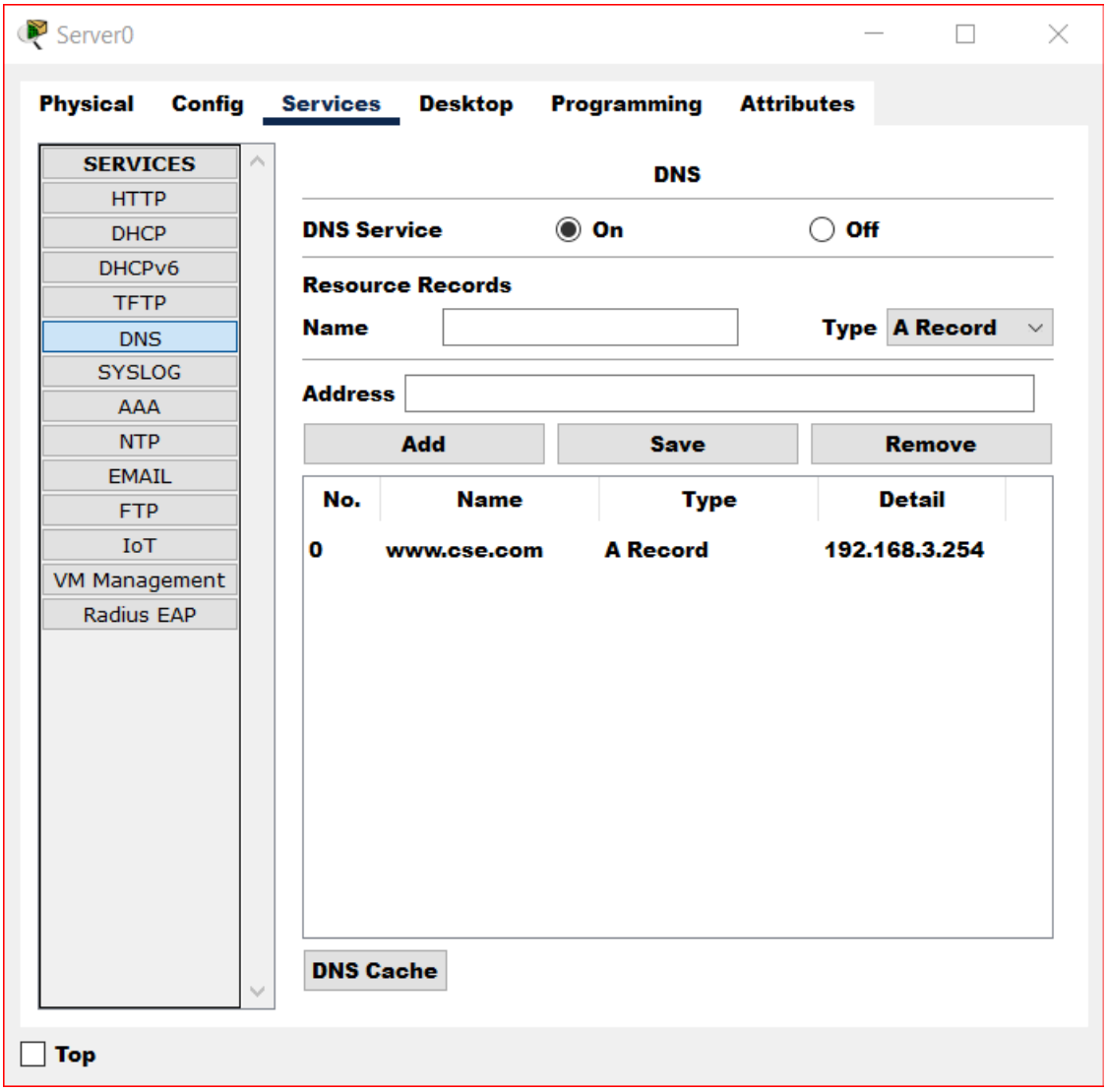

Figure: 07

In the DNS section Turn ON the DNS Service, give the **URL name** and the **IP address** for the specific network and press the save button for saving the information in the DNS server.

Here URL: www.cse.com
IP address: 192.168.3.254

Configure the PC:

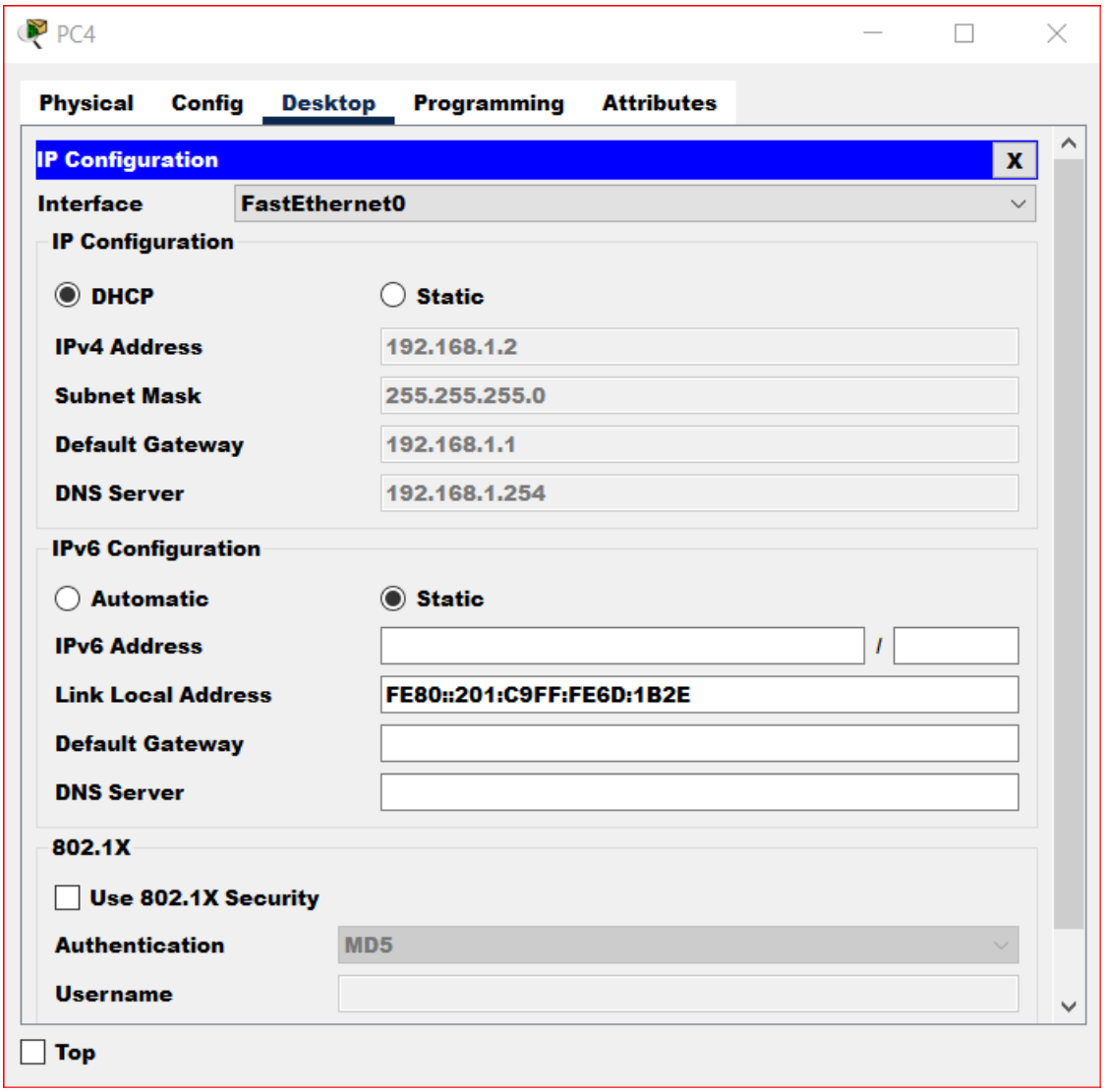

Figure: 08

Select the PC and go to the Desktop tab, then select the IP Configuration. Here, we have to select the DHCP mode. So that the device will get all its information needed from the DHCP server which is connected with it.

Testing of Networks:

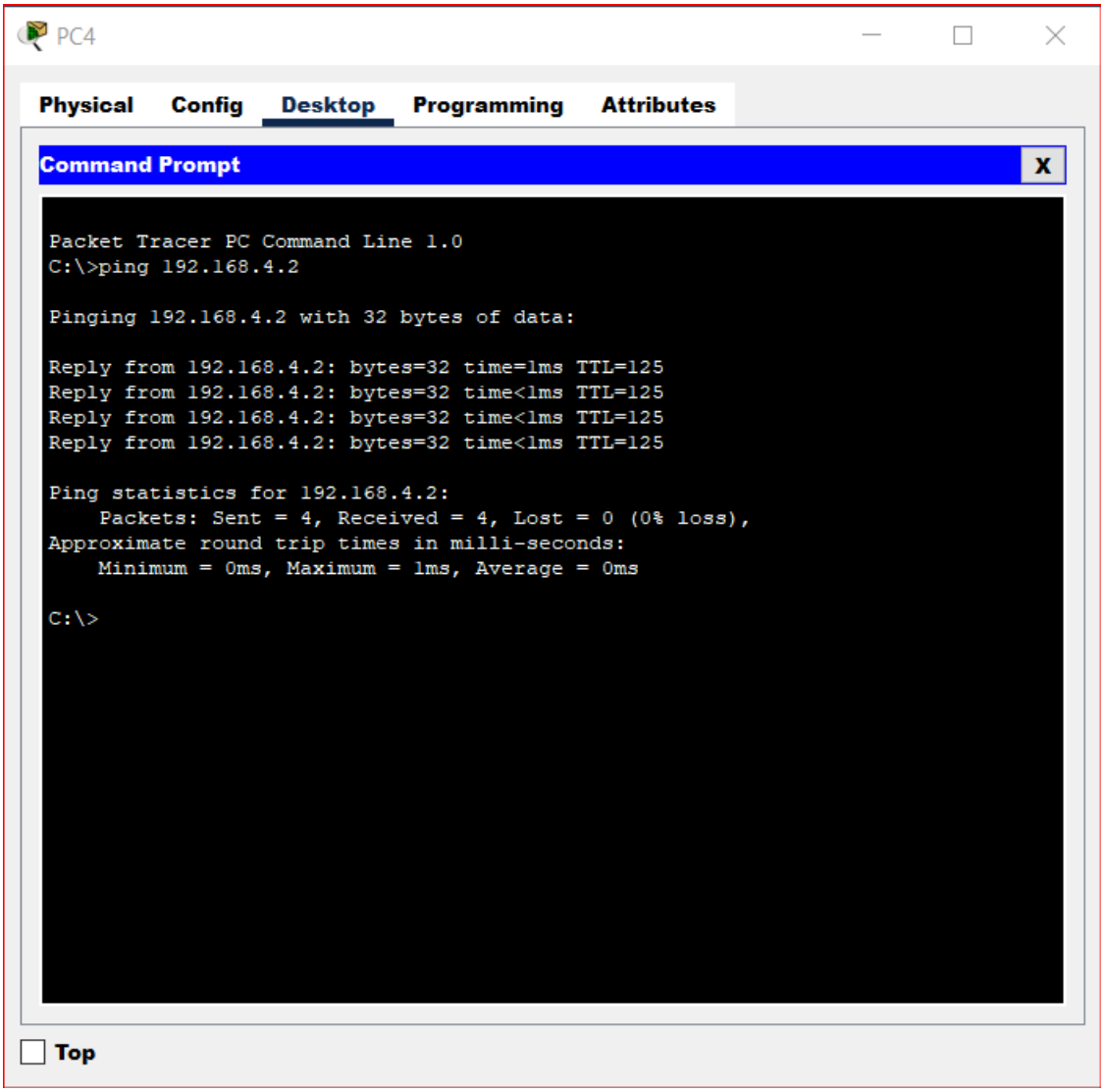

Figure: 09

For testing the network, first we have to select a PC and open the Command Prompt from the desktop tab. Then **ping** to a particular **IP address** here, 192.168.4.2
We can see that-

Sent = 4 packets

Received = 4 packets

Lost = 0 packets

Browsing from the PC:

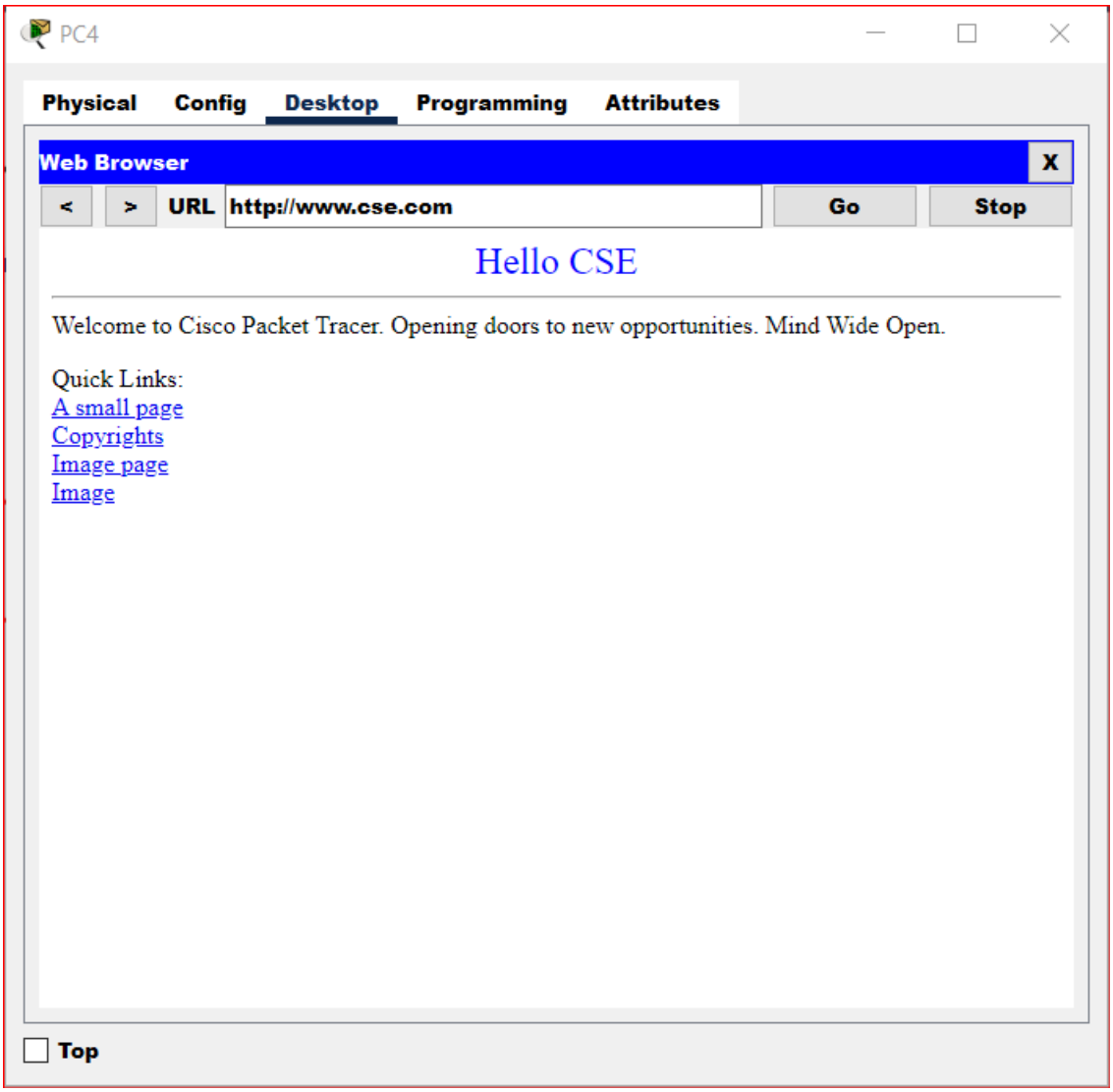

Figure: 10

From a particular we can also browse. First select desktop then open Web Browser press the **URL** which was set in the **DNS server**. Then we can see the interface of that website.
Here,

Web URL: http://www.cse.com