UNIVERSITY OF CHAKWAL
DEPARTMENT OF COMPUTER SCIENCE
(Computer Communication Networks CS-324)(LAB)

LAB 04

Introduction to client server model

1. Introduction:

1.1. Client:
A client is a piece of computer hardware or software that accesses a service made available by a server. The server is often (but not always) on another computer system, in which case the client accesses the service by way of a network.

1.2. Server:
In a technical sense, a server is an instance of a computer program that accepts and responds to requests made by another program, known as a client. Less formally, any device that runs server software could be considered a server as well. Servers are used to manage network resources.

1.3. Client server model:
The client–server model is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients.
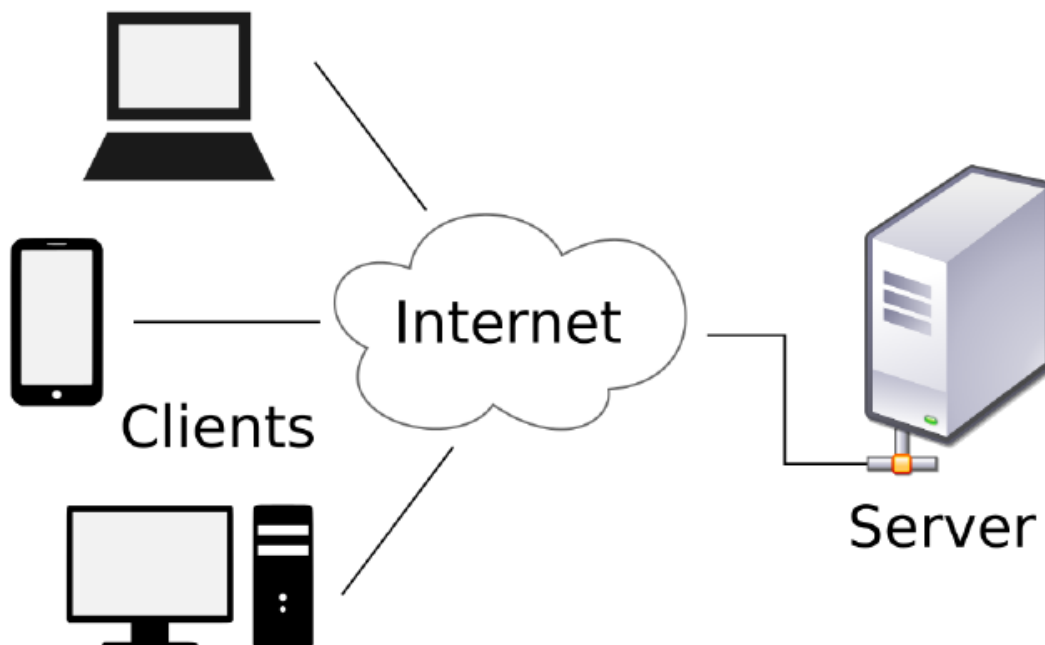

Figure 1: Showing client server model

1.4. Access point:
In computer networking, a wireless access point (WAP), or more generally just access point (AP), is a networking hardware device that allows a Wi-Fi device to connect to a wired network. An AP is differentiated from a hotspot, which is the physical location where Wi-Fi access to a WLAN is available.
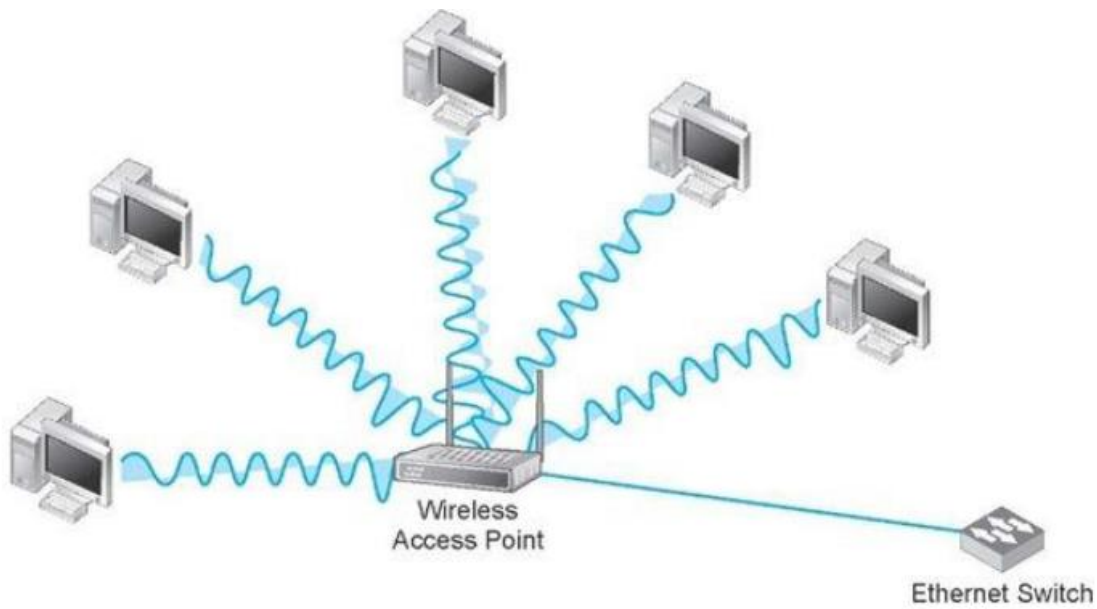
Figure 2: Access point

1.5. DHCP server:

DHCP is used for managing and configuring IP addresses automatically within a network so you don't have to spend the time manually assigning these to individual devices. But that isn't the extent of its uses. It can also take care of how default gateways, domain name server (DNS) and subnet masks for devices are set up for devices in the network. Figure 44: DHCP server connects with two computers
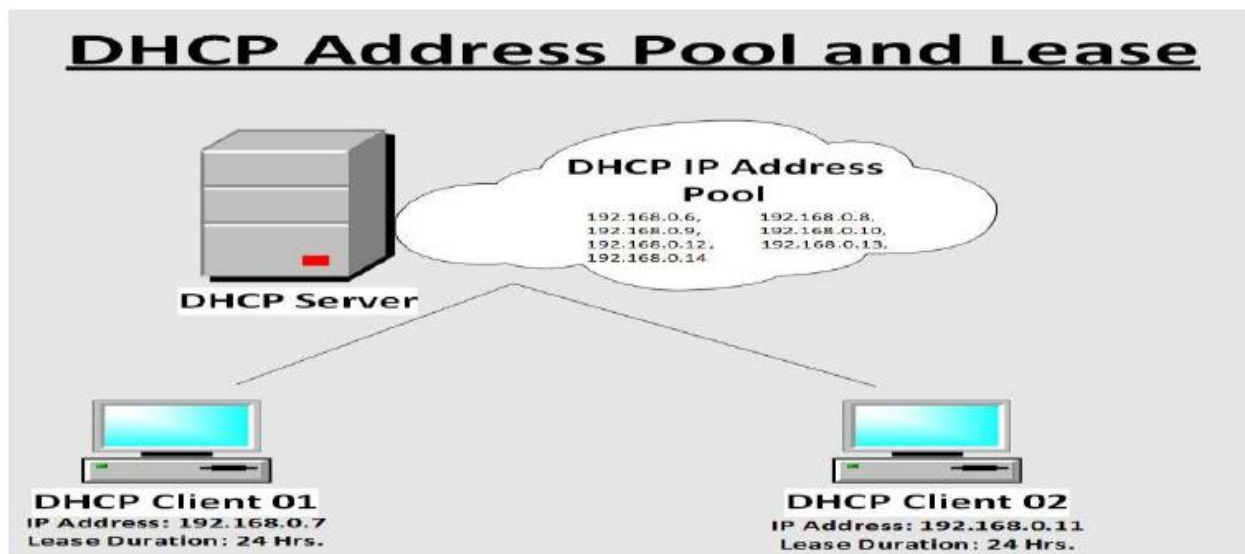

Figure 3: DHCP server connects with two computers

2. Tools required:
•   • CISCO Packet tracer

3. Objective of the Experiment:

After completing this Lab student should be able to:
- Understand client server model practically.
- Construct client server model.
- Configure DHCP server.
- Configure http server.
- Construct wireless topologies using switches and access points.

4. Walk-through Tasks:

4.1. Create a client server model
Create a client server model by using one switch and three computers assign IP addresses, subnet masks to server and also to PC's of the network. Enable server to provide HTTP services, access HTTP server from any one of the clients.
For achieving this you have to follow following steps:
1. Open Cisco packet tracer.
2. Add one switch and three computers in work space of cisco packet tracer.
3. Add a server in cisco packet tracer workspace, now you will see, your workspace in this form:
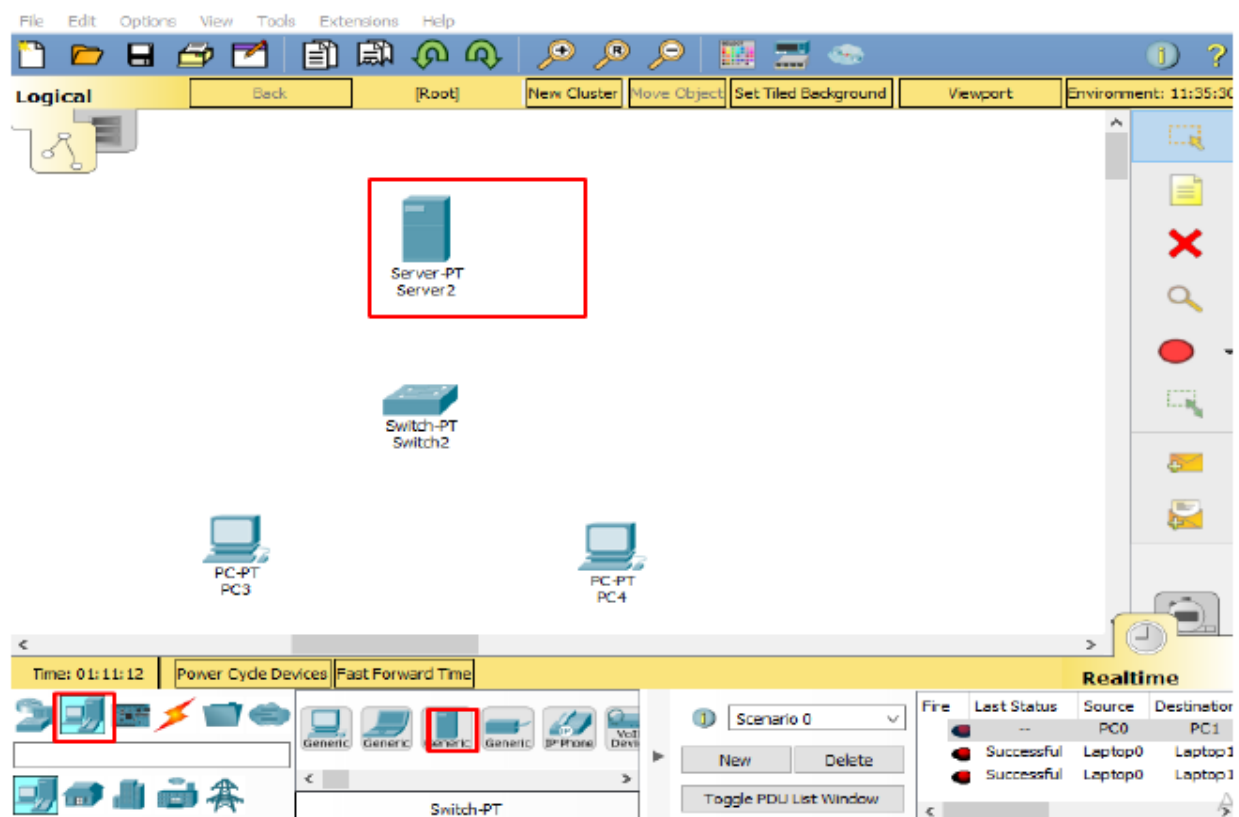

Figure 4: how to add server in workspace

4. Connect server with switch by selecting copper wire and in the same way, connect computers with switch by selecting copper wire:
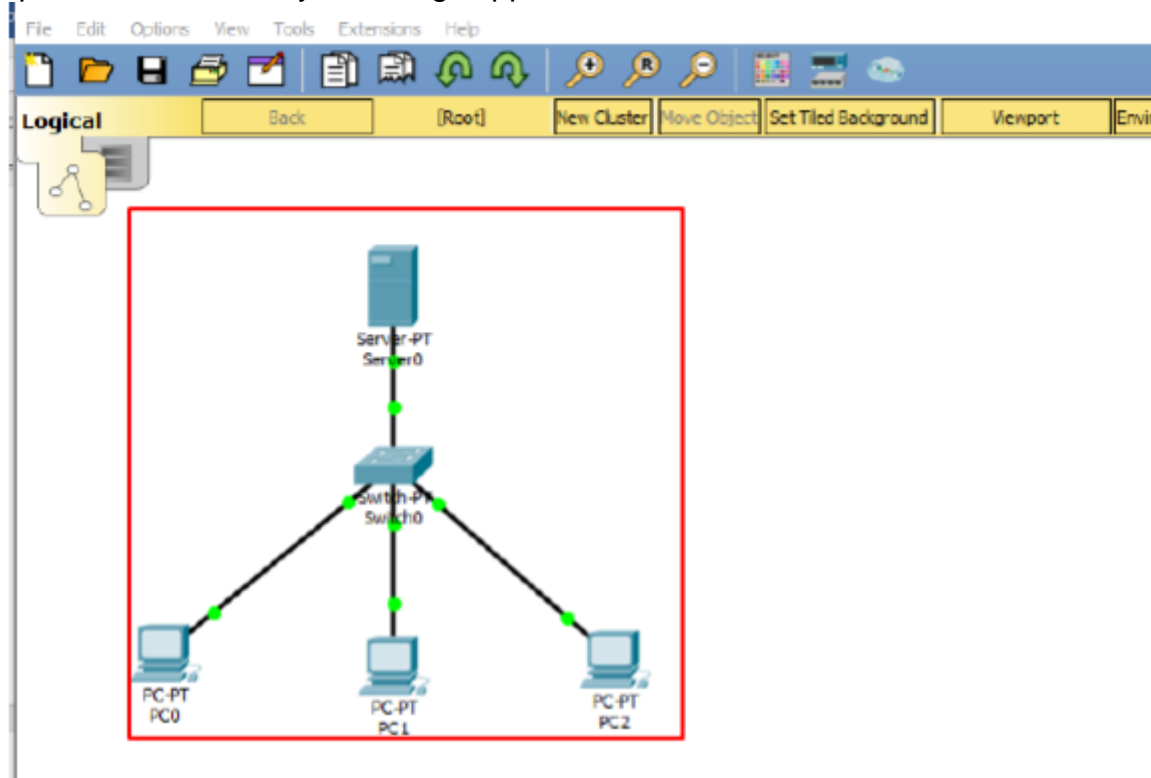

Figure 5: complete topology after connecting through copper wires.

5. Assign IP address and subnet mask to server, just like we do in PC's, click on the server, go in Desktop tab and in IP configuration application, give IP addresses and subnet masks as follow
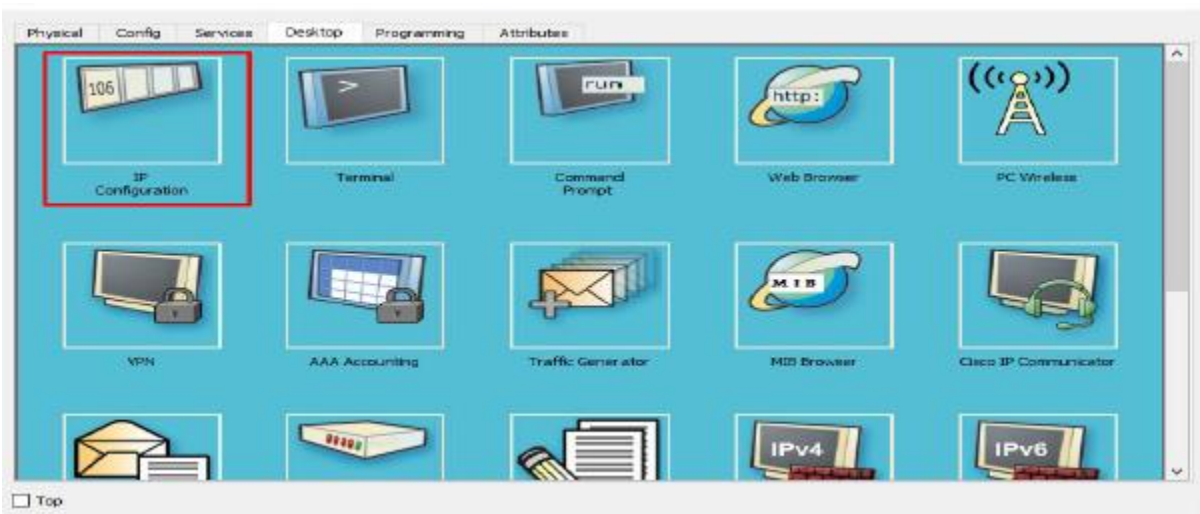

Figure 6 server Desktop

6. Give IP address in IP configuration.

Figure 7: IP configuration of server

7. In the same way assign, IP addresses and subnet masks in all PC's.
8. For accessing the HTTP services of the server, first go in the server and see that is, the HTTP service is on or off. For checking this click on the server and go in the services tab and make sure HTTP service is on:

Figure 8: HTTP service 35

9. Here in this window above, you can see that we can add new file in it, it will act like as of Apache server do, when we access that, so from new file we can add any new file in it (rather an image or text file).

10. Now to access this server go in the workspace and click on any one of the clients, and go in the application of web browser, where you have to give IP address of the server and with slash (/give file name), give file name you want to access as shown in the figure:

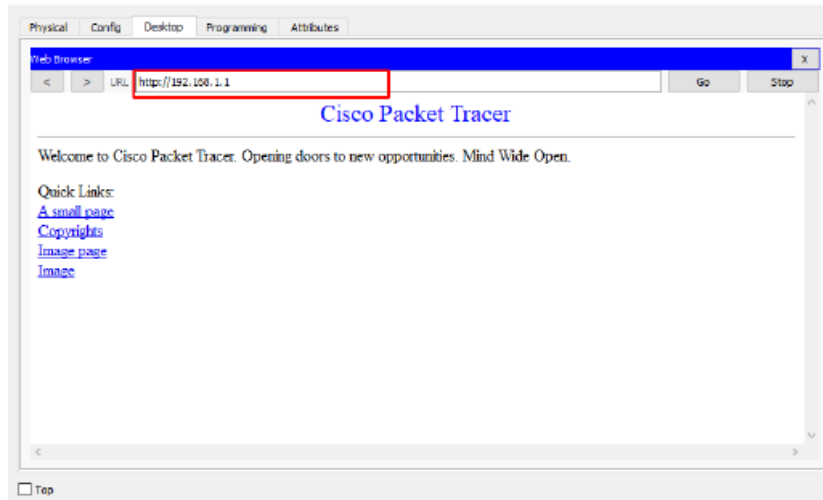Figure 9: shows the Desktop of the computer.
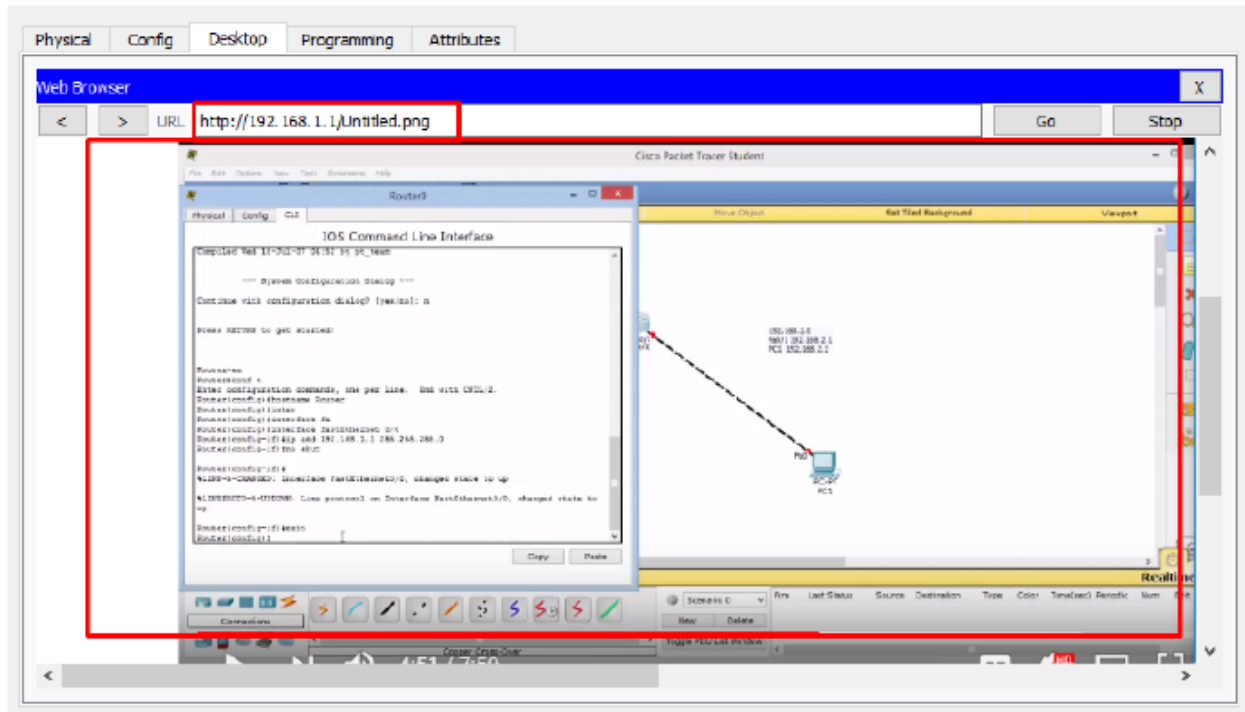

Figure 10: Shows the default page of the server 36

Figure 11: Access any image or file from server

4.2. Configuring DHCP server:

For configuring DHCP server, do these steps:

1. Click on the server.
2. Go in the services tab.
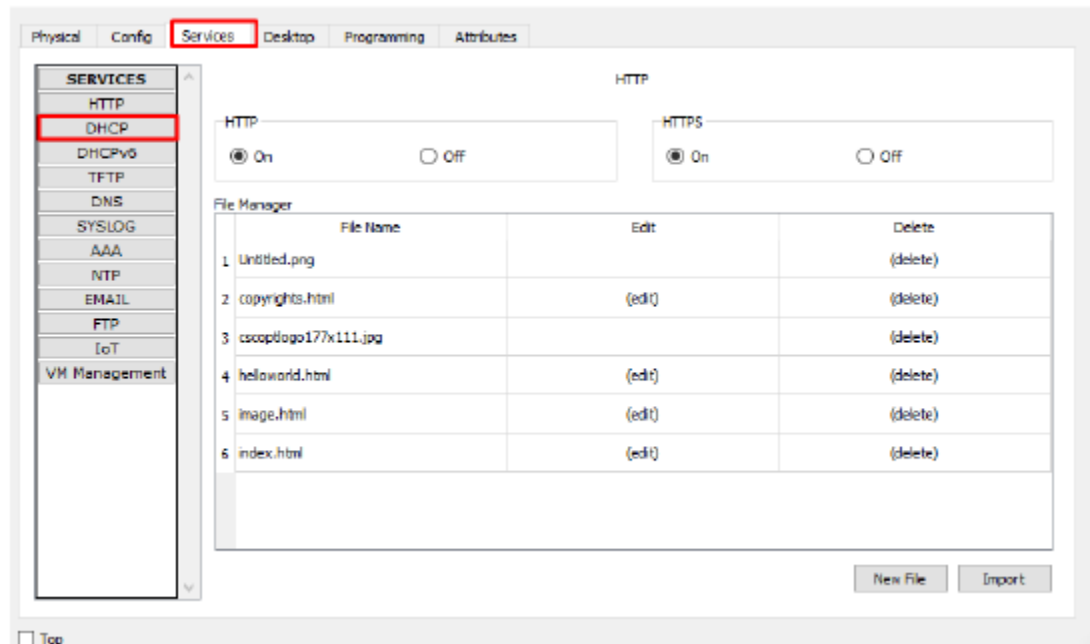3. Select DHCP service in the server terminal

Figure 12: services of server

4. Click on the DHCP service and when new windows appear, click the check box to on the DHCP services of the server, and click on the save button to save the settings:

Figure 13: configuring DHCP server.

5. Now open any one of the clients and go in its IP setting and instead of static IP addresses, click on the DHCP, which will automatically allocate IP addresses to the client.

Figure 14: client side DHCP settings.

4.3. Connecting access points to switch and laptops

For making this topology, follow these steps:
1. Open cisco packet tracer.
2. Add a switch in the workspace and two computers.
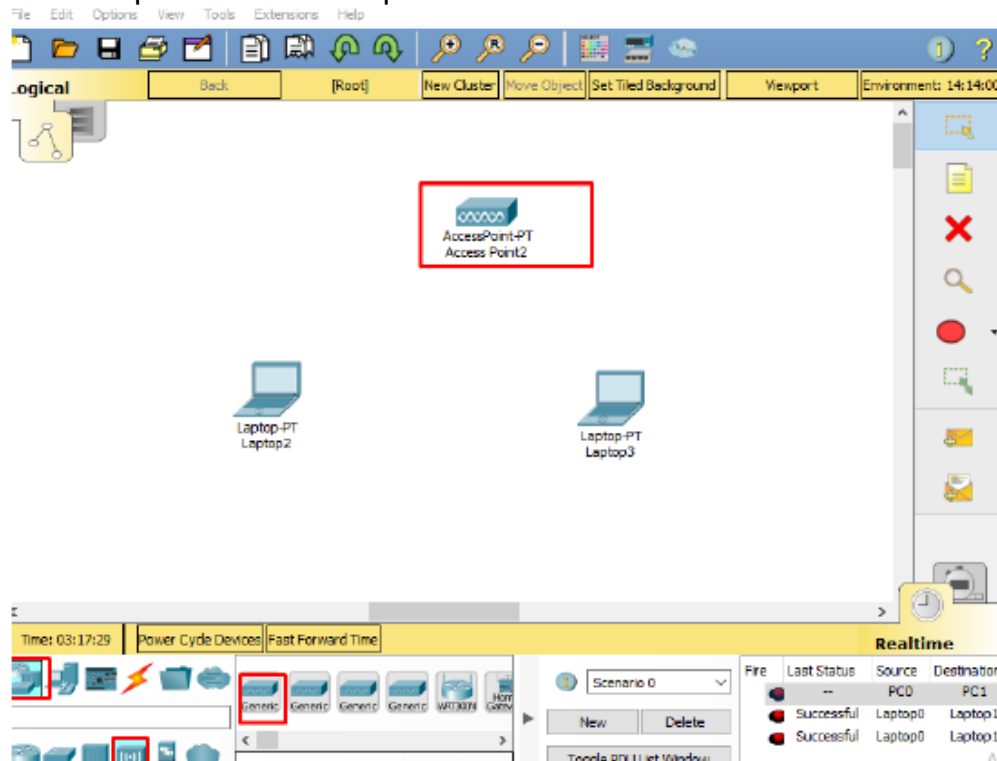3. Add an access point in the workspace:

Figure 15: Adding access point

4. Connect access point with switch with copper straight-through cable:
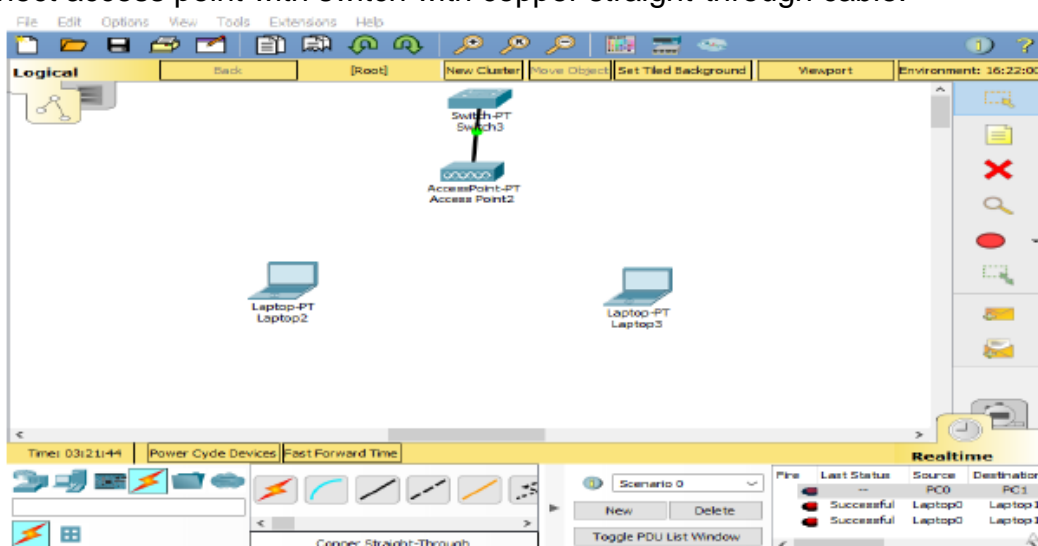

Figure 16: connecting access point

5. Now to connect laptops with access points, click on the laptop and turn it off and then remove the LAN port from it and add Wireless port in it.
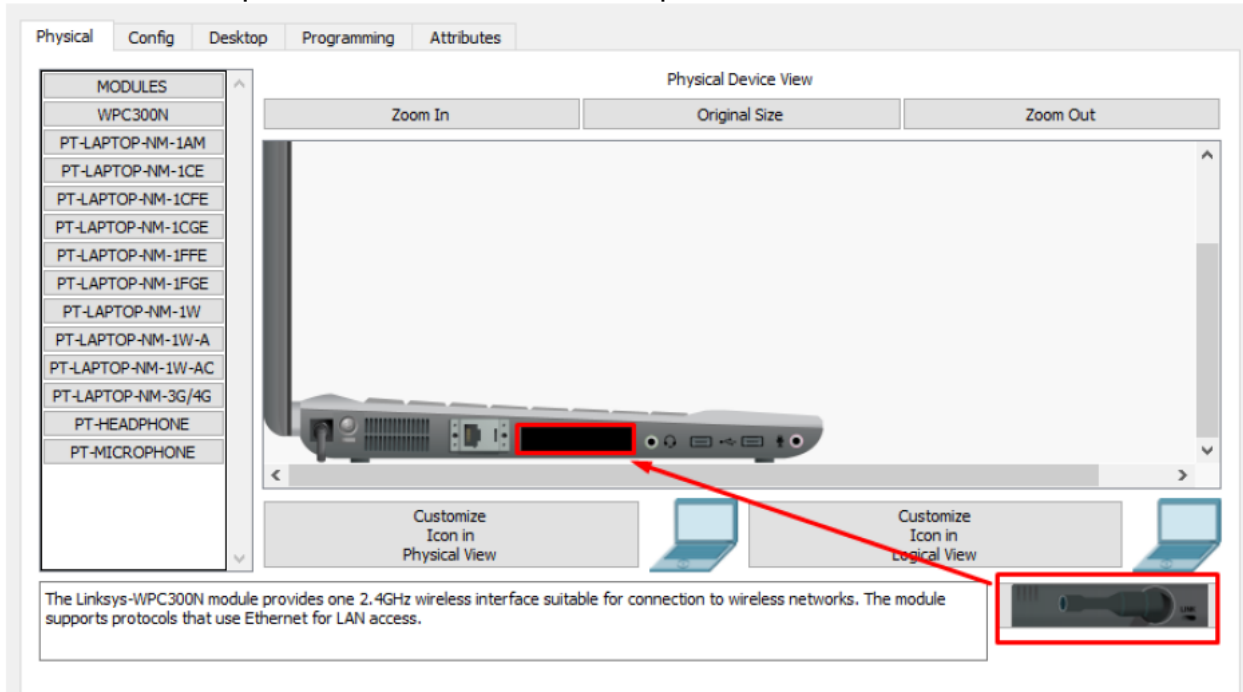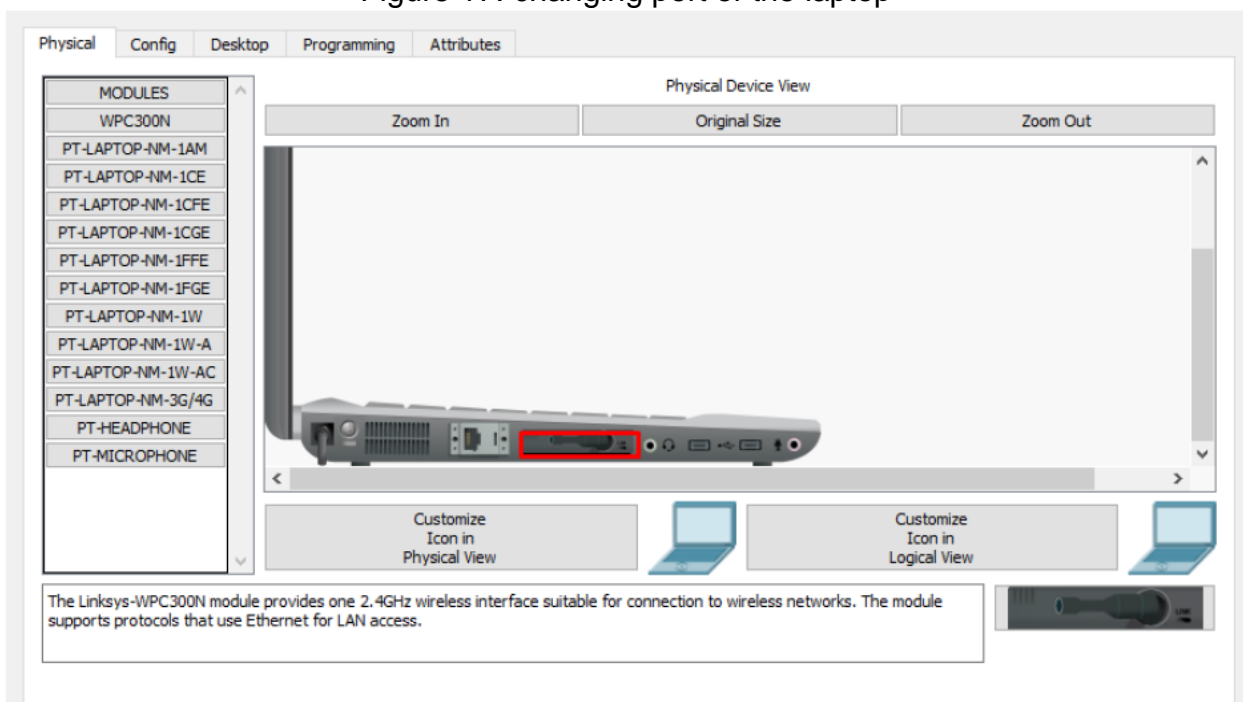

Figure 17: changing port of the laptop

Figure 18: Inserting a wireless port in it.

6. Again, power on the lap top you will that, the wireless connection will be established between your laptop and that access point:
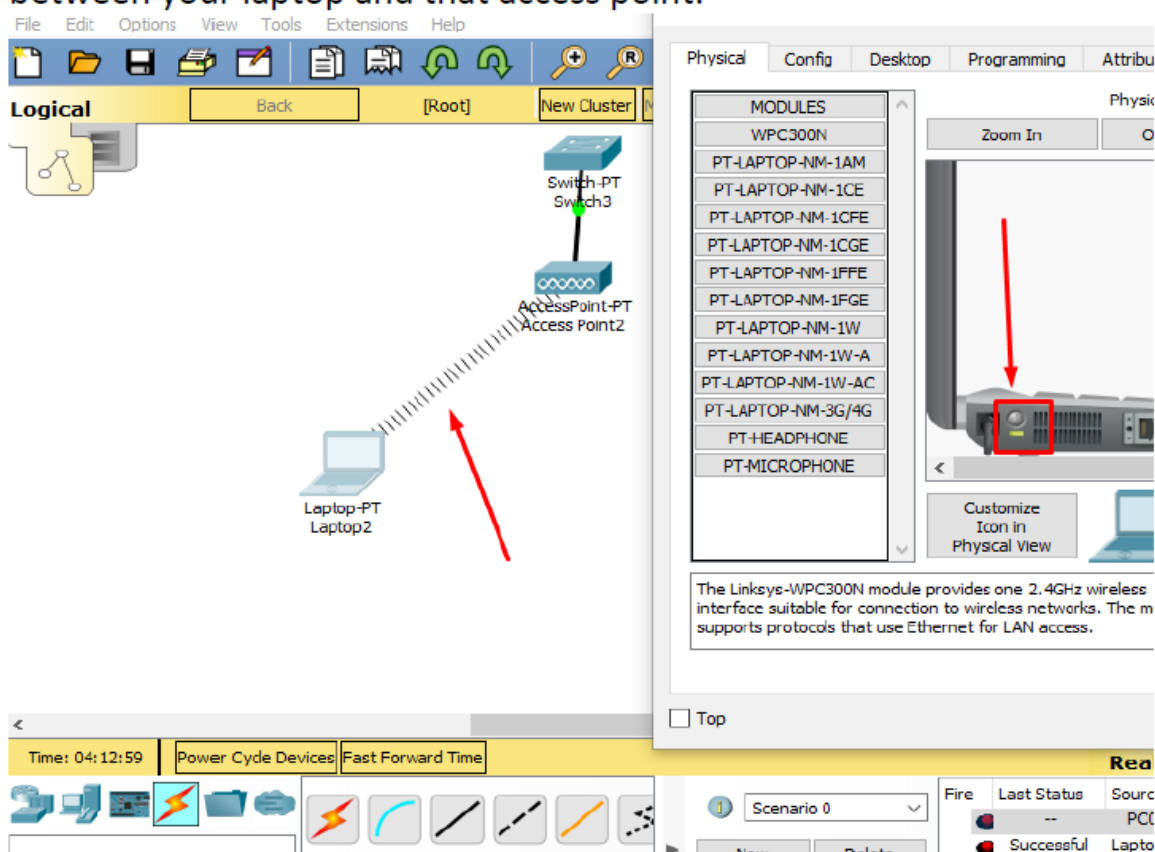

Figure 19: establishing a wireless channel between laptop and access point.

7. Do same for second laptop and establish and wireless connection with it also. Moreover, assign proper IP address and subnet mask in the laptop.

5. Practice tasks:

5.1. Task 1
Construct a client server model that have 6 hosts, assign them IP address and subnet masks dynamically from the server. Moreover, access the HTTP server from the client and show the results.

5.2. Task 2
Construct a client server model that have 9 hosts, three of them are computers, and other six host will be laptops, in which further connected to 2 access points through wireless channel, as three of them will be connected to access poin1 and other through access point 2, assign them IP address and subnet masks dynamically from the server. Moreover, access the HTTP server from the client and show the results.