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Batch: B1 T.Y. B.Tech

CNL_1

DHCP CONFIGURATION

Title: Configure network using Dynamic Host Configuration Protocol.

Aim: Configure network using Dynamic Host Configuration Protocol (DHCP).

Use Ping utility to test connectivity.

Objectives:

- 1.To learn the DHCP installation and understand the practical use of DHCP.
- 2.To learn the mechanism to access the remote machine by using ping utility to test connectivity.

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AIM: Configure network using Dynamic Host configuration Protocol (DHCP). Use ping utility to test connectivity.

OBJECTIVES.

THEORY:

- Draw and explain DHCP state diagram.
- DHCP is Dynamic Host Configuration Protocol for assigning IP addresses to devices on a network. A device can have a different IP address everytime it connects to a network. The DHCP has been designed to provide state & dynamic address allocation.
- To provide dynamic address allocations, the DHCP client acts as a state machine that performs transitions from one state to another depending on the message it receives or sends.

1. Initialization state:

When the DHCP client first starts, it is INIT stage. The client broadcasts a DHCPDISCOVER message.

2. Selecting state:

After sending the request message, the client goes to selecting stage.

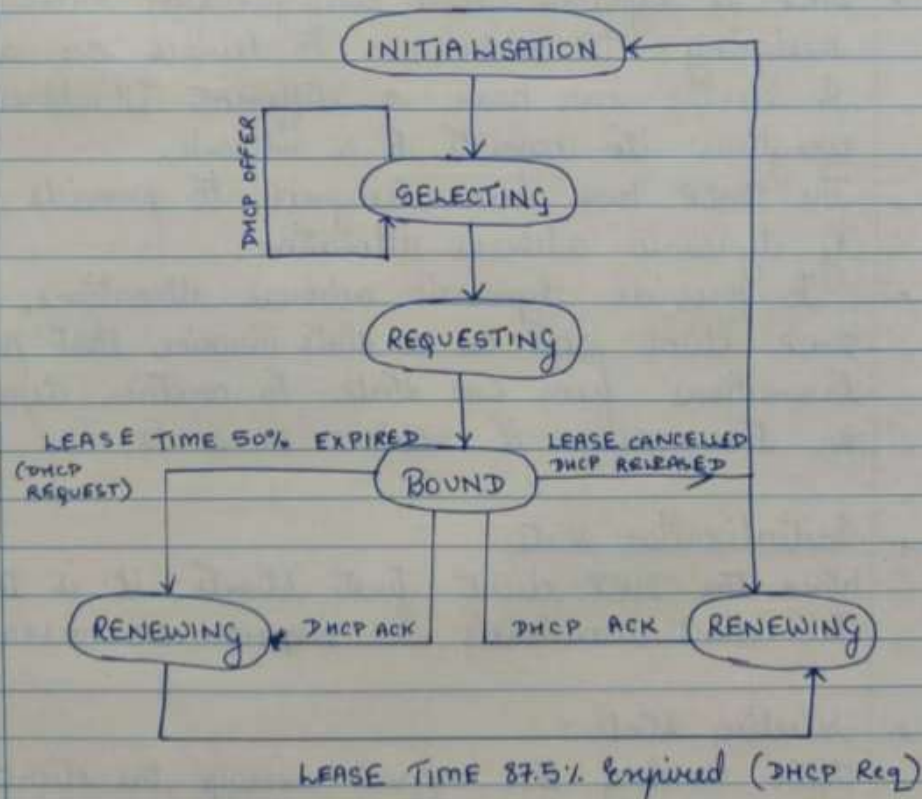
3. Requesting state:

Client stays in this state till it receives DHCP ACK

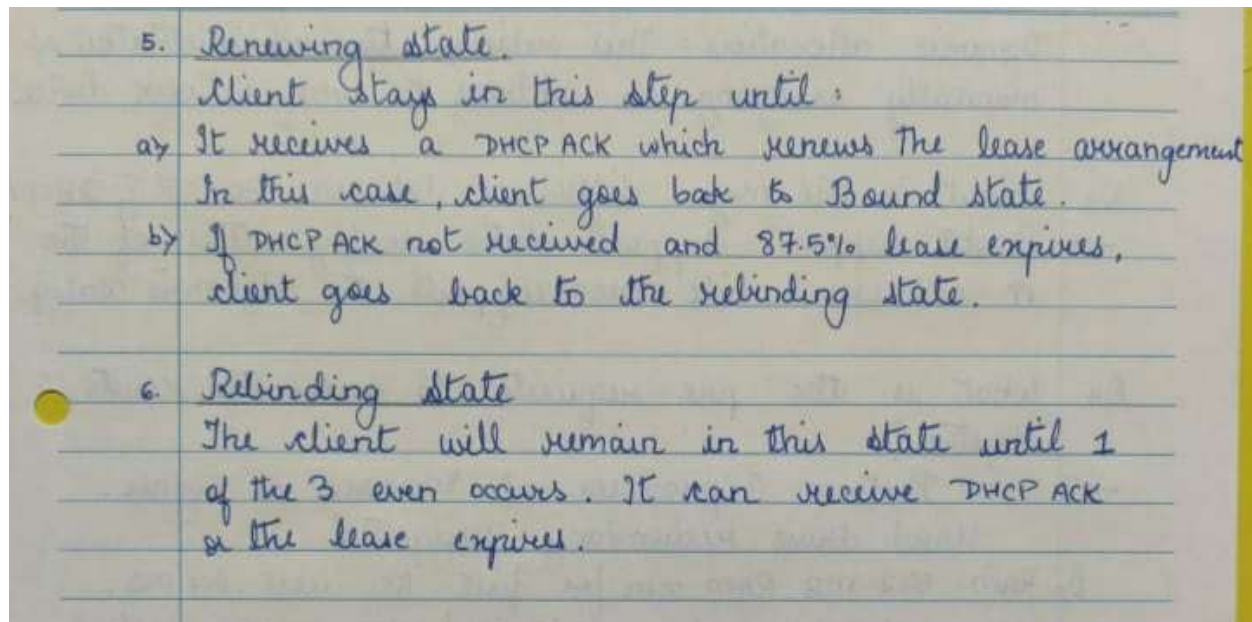
message from the server that creates the binding b/w client physical address and its IP address.

4. Bound State:

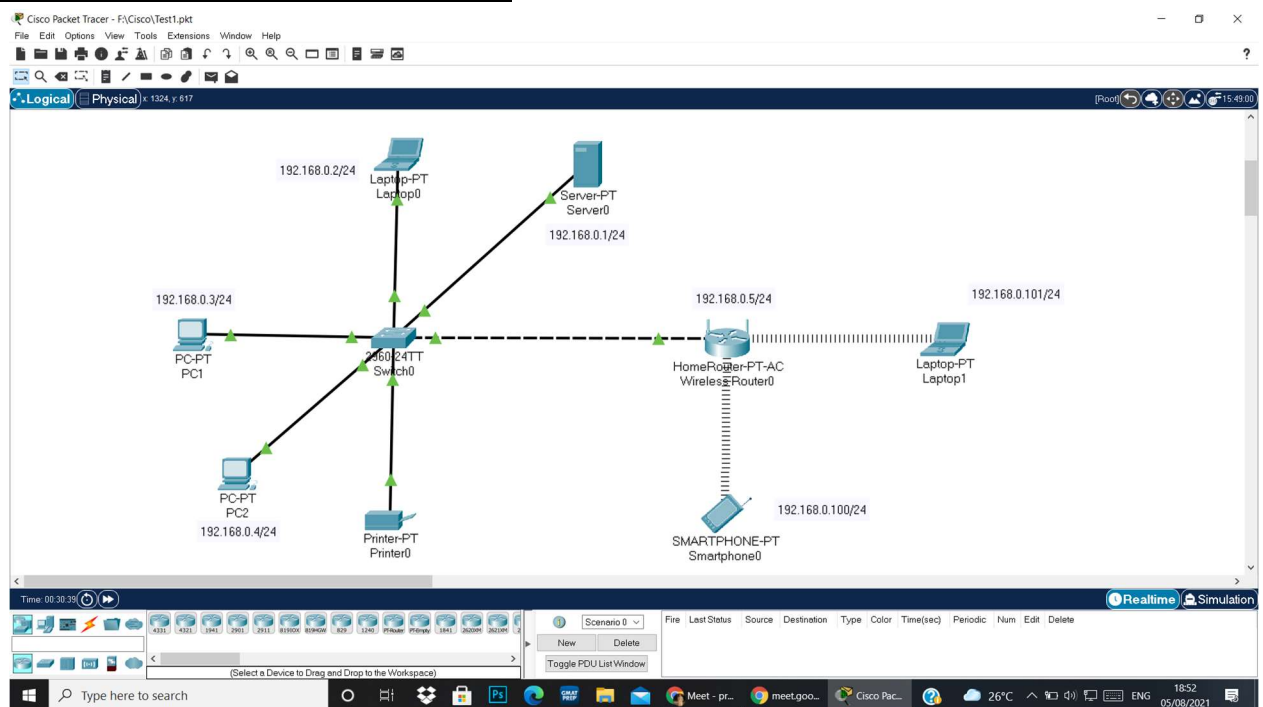
In this state the client can use the IP address until the lease expires.



Transition State of DHCP.



DHCP CONFIGURATION DESIGN:



Steps followed for the configuration after making connections are:

1. Server-->Enter services-->Click on DHCP.
2. Enable services-->Enter Details such as
 - a. Pool Name

- b. Default Gateway
- c. DNS Server
- d. Start IP Address
- e. Subnet Mask
- f. Maximum no. of Users

The screenshot shows the 'Server0' configuration window with the 'Services' tab selected. The 'DHCP' service is highlighted in the left sidebar. The main configuration area for DHCP is displayed, showing the following settings:

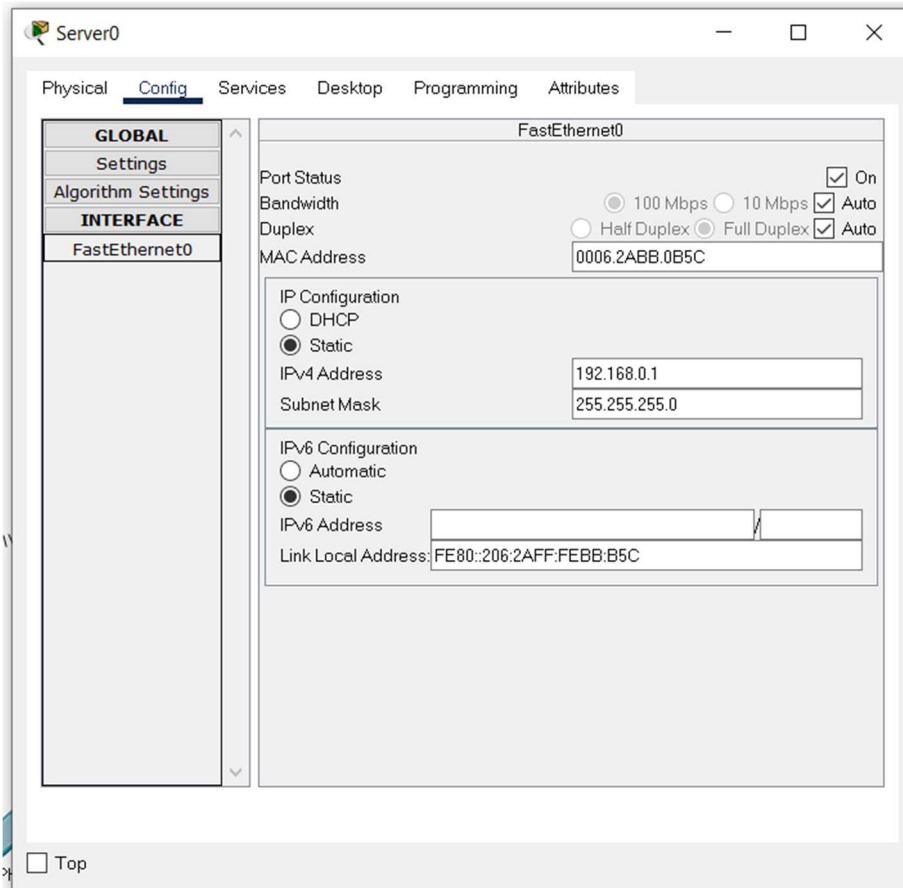
- Interface: FastEthernet0
- Service: ☒ On ☐ Off
- Pool Name: serverPool
- Default Gateway: 192.168.0.1
- DNS Server: 8.8.8.8
- Start IP Address: 192.168.0.0
- Subnet Mask: 255.255.255.0
- Maximum Number of Users: 10
- TFTP Server: 0.0.0.0
- WLC Address: 0.0.0.0

Below the configuration fields are three buttons: 'Add', 'Save', and 'Remove'. At the bottom, there is a table showing the configured DHCP pool:

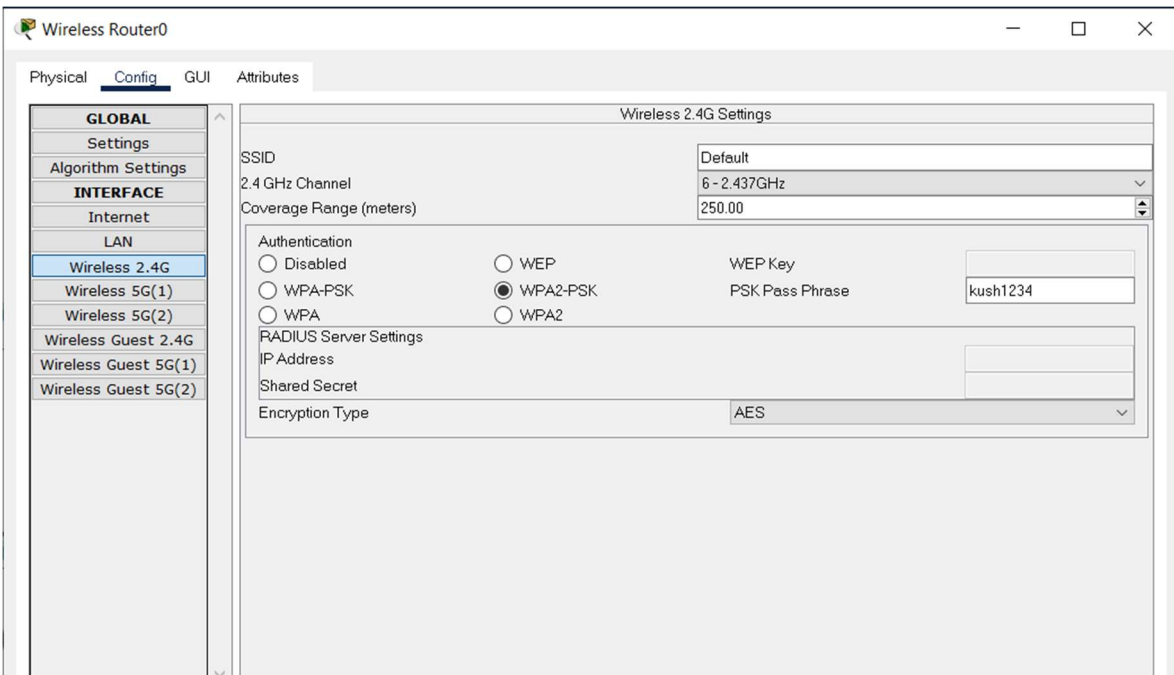
Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	VLAN	TFTP Server	WLC Address
serverPool	192.168.0.1	8.8.8.8	192.168.0.0	255.255.255.0	10	0.0.0.0	0.0.0.0

At the bottom left of the window, there is a 'Top' button.

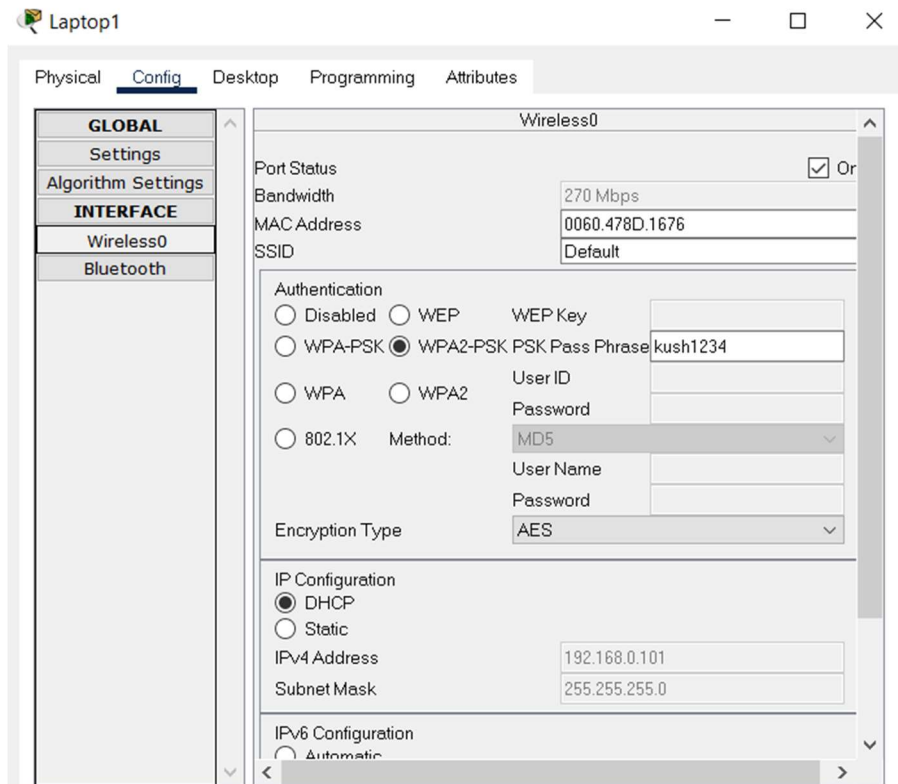
3. Save and go to Config→ Enter same IPv4 and Subnet Mask in IP configurations, under Fastethernet0.



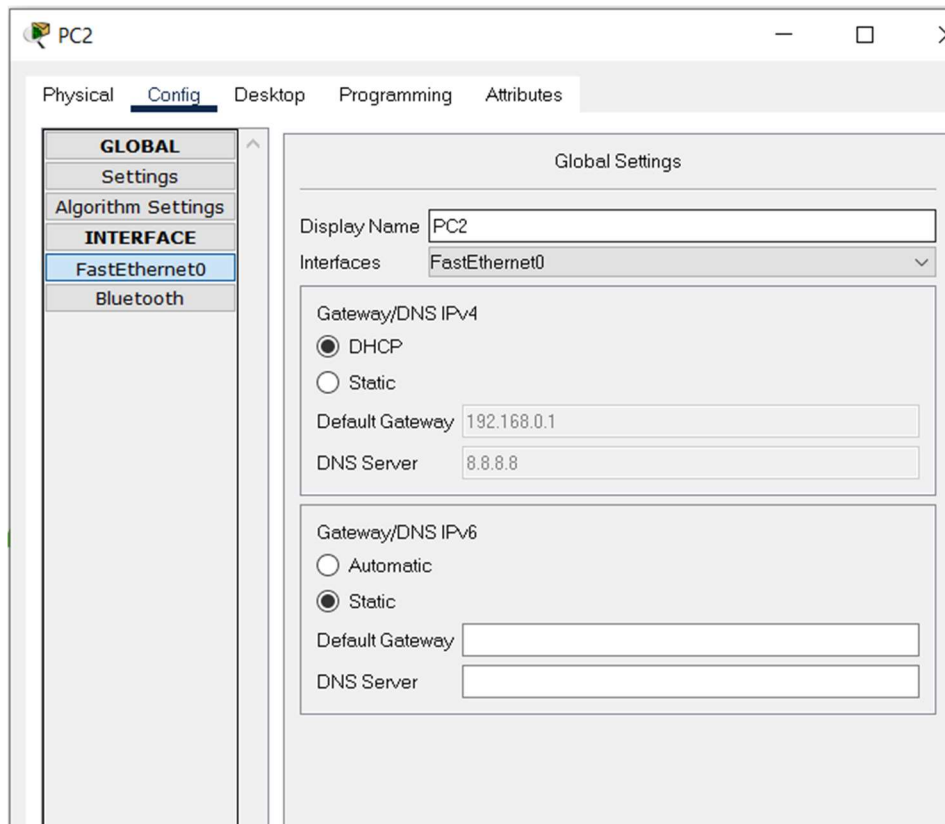
4. For wireless connection: Go to Config for a wireless router and select DHCP under Internet.
5. Then Set WPA2-PSK under Wireless 2.4G and set a Pass Phrase. (optional)



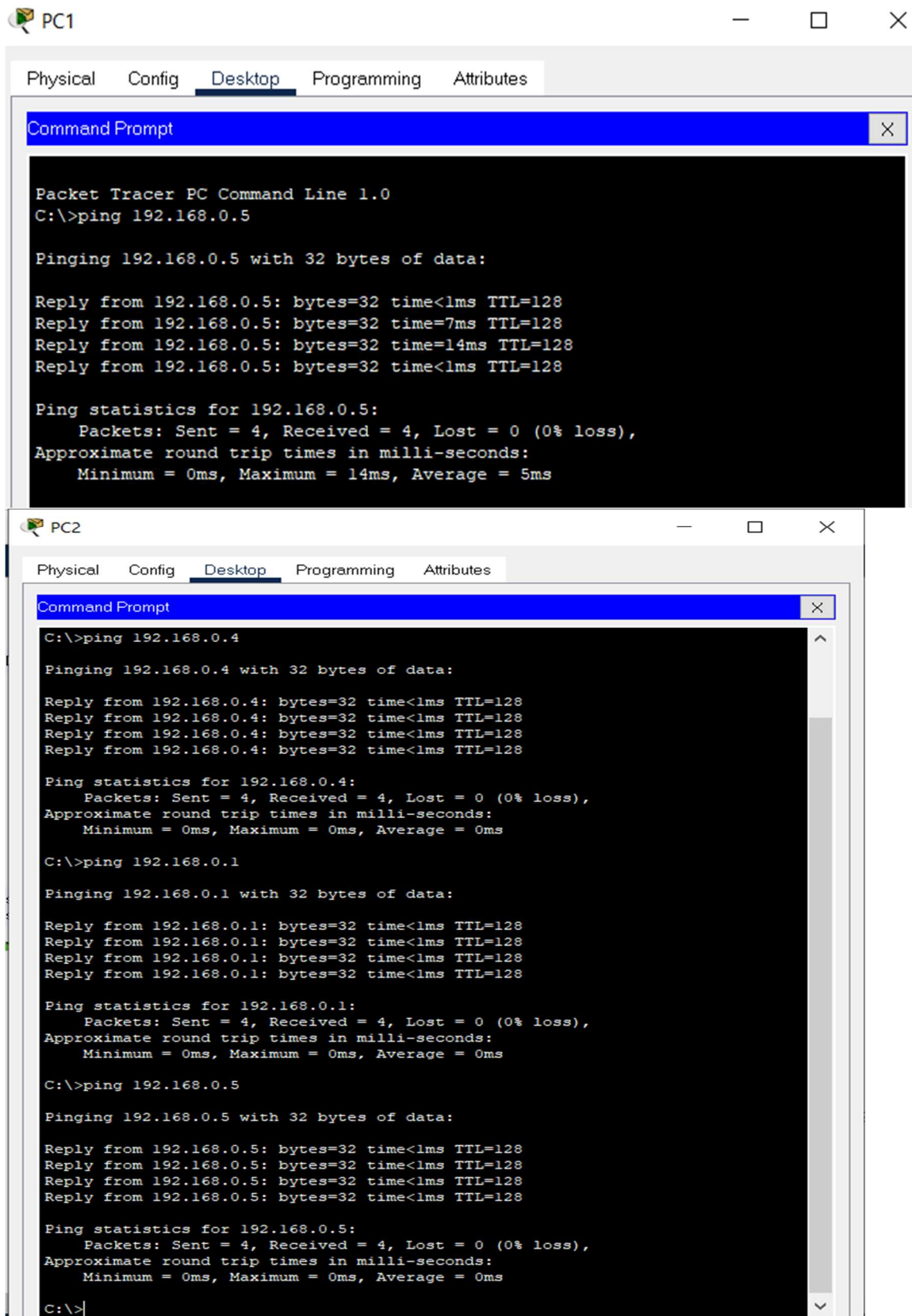
6. For connecting devices enter the Pass Phrase under Config.



7. For wired connections select DHCP under FastEtherne0.



Using ping utility to check connections in the network:



The image displays two windows from the Packet Tracer application, each representing a PC's command-line interface. The top window, labeled 'PC1', shows a successful ping to 192.168.0.5 with a 5ms average round-trip time. The bottom window, labeled 'PC2', shows successful pings to 192.168.0.4, 192.168.0.1, and 192.168.0.5, all with 0ms average round-trip times. Both windows have tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes', with 'Desktop' being the active tab. The command prompt in each window shows the execution of the 'ping' command and the resulting statistics.

```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.5

Pinging 192.168.0.5 with 32 bytes of data:

Reply from 192.168.0.5: bytes=32 time<1ms TTL=128
Reply from 192.168.0.5: bytes=32 time=7ms TTL=128
Reply from 192.168.0.5: bytes=32 time=14ms TTL=128
Reply from 192.168.0.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 14ms, Average = 5ms

PC2
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 192.168.0.4

Pinging 192.168.0.4 with 32 bytes of data:

Reply from 192.168.0.4: bytes=32 time<1ms TTL=128
Reply from 192.168.0.4: bytes=32 time<1ms TTL=128
Reply from 192.168.0.4: bytes=32 time<1ms TTL=128
Reply from 192.168.0.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.0.1

Pinging 192.168.0.1 with 32 bytes of data:

Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128
Reply from 192.168.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.0.5

Pinging 192.168.0.5 with 32 bytes of data:

Reply from 192.168.0.5: bytes=32 time<1ms TTL=128
Reply from 192.168.0.5: bytes=32 time<1ms TTL=128
Reply from 192.168.0.5: bytes=32 time<1ms TTL=128
Reply from 192.168.0.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```


MY OBSERVATIONS:

- Different type of networks and their connections were seen.
- We can see the flow of packets between the multiple devices, switch and router.
- While configuring the server IP address range is decided based on the maximum number of connections.
- The devices take more time to connect to the wireless router on start up.

FAQS

FAQs.

→ What are the four different ways to check IP address of a machine?

→

- Using command prompt → use command 'ipconfig'
- Checking the network settings of the machine. Finding local IP address in the Control Panel.
- Finding your Public IP address through a web browser.
- Finding your IP address on your router.

Q. What are the different ways to assign IP address?

→ Static allocation: In network administrator configure the IP address, default gateway and name servers manually by entertaining them into a specified file on end system.

www.mitwpu.edu.in

Dynamic allocation: This relieves the administrator of manually assigning an address to every network device.

Q3. What is the major difference between BOOTP & DHCP?
→ BOOTP supports static configuration of the IP addresses while DHCP supports the dynamic config.

Q4. What is the pre-requisite to access the remote system?

→ i) CPU: Pentium 3 processor at 800MHz or higher.
Hard drive redundancy suggested.

ii) RAM: 512 MB RAM min for first 100 users, 64 MB.

iii) OS: of communicate optimised linux OS supplied during install.

iv) Storage: Minimum 9GB SCSI for 100 users.

v) Network: static TCP/IP LAN connection.

Q5. Which utility is used to copy a file into remote sys?

→ SCP (secure copy) is a command-line utility that allows you to securely copy files and directories between two locations.

With SCP, you can copy a file or a directory: from your local system to a remote system.