

VxLEARN Networks

Networking & Cybersecurity Track
Simulated Employment Program

Lab Report: **Configure DHCP on a Wireless Router**

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1. Objective

The purpose of this lab is to configure DHCP services on a wireless router and ensure that multiple PCs can automatically receive IP addressing information from the DHCP server. This includes modifying the DHCP scope and verifying communication between devices on the network.

2. Background / Scenario

A home user wishes to connect three PCs to their wireless router. Instead of assigning IP addresses manually, the router is configured to automatically assign IP addresses using DHCP (Dynamic Host Configuration Protocol). The DHCP pool will be customized to a new IP network.

3. Part 1 – Set Up the Network Topology

- Three generic PCs were added to the workspace.
- Each PC was connected to an Ethernet port on the wireless router using straight-through cables.

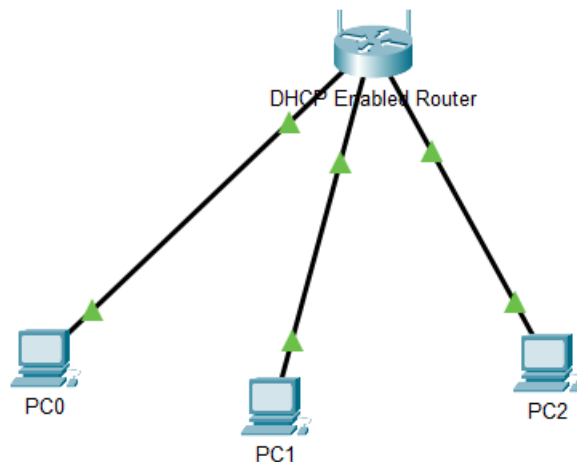


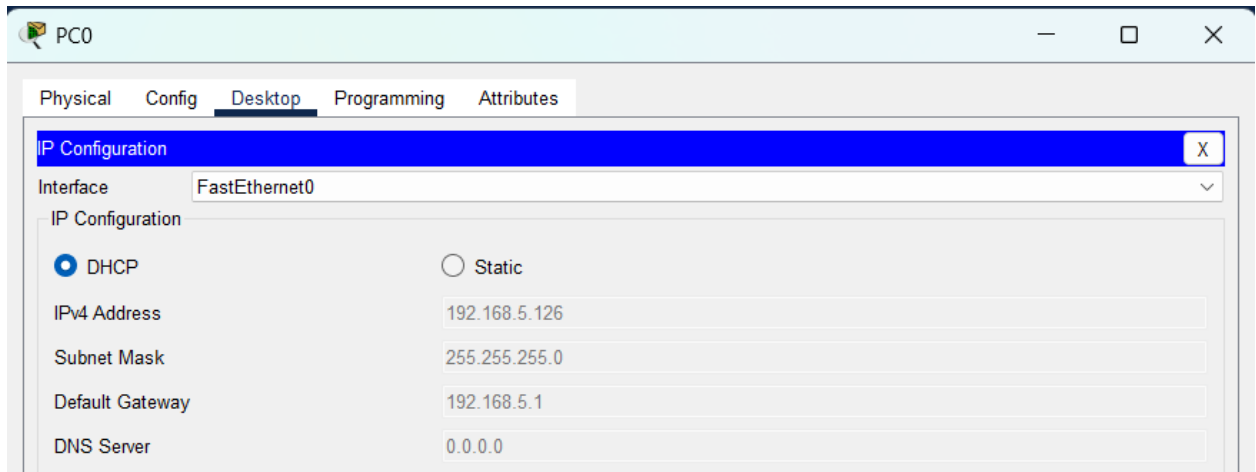
Figure 1: Network Topology

4. Part 2 – Observe Default DHCP Settings

1. On PC0, open Desktop → IP Configuration.



2. Select DHCP to automatically obtain addressing.



3. Record the Default Gateway Address (Router's IP).

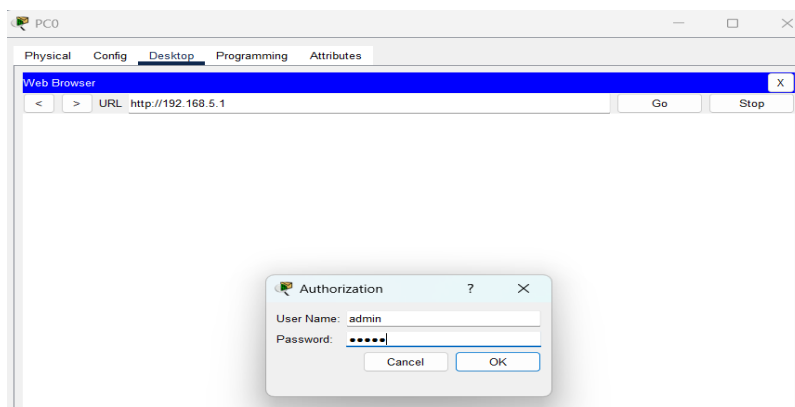
192.168.0.1

4. Open Desktop → Web Browser, and enter the gateway IP.

5. Login using:

Username: admin

Password: admin



You should now see the router's default settings page, including:

- Default LAN IP Address
- DHCP Enabled
- Default Address Pool Range

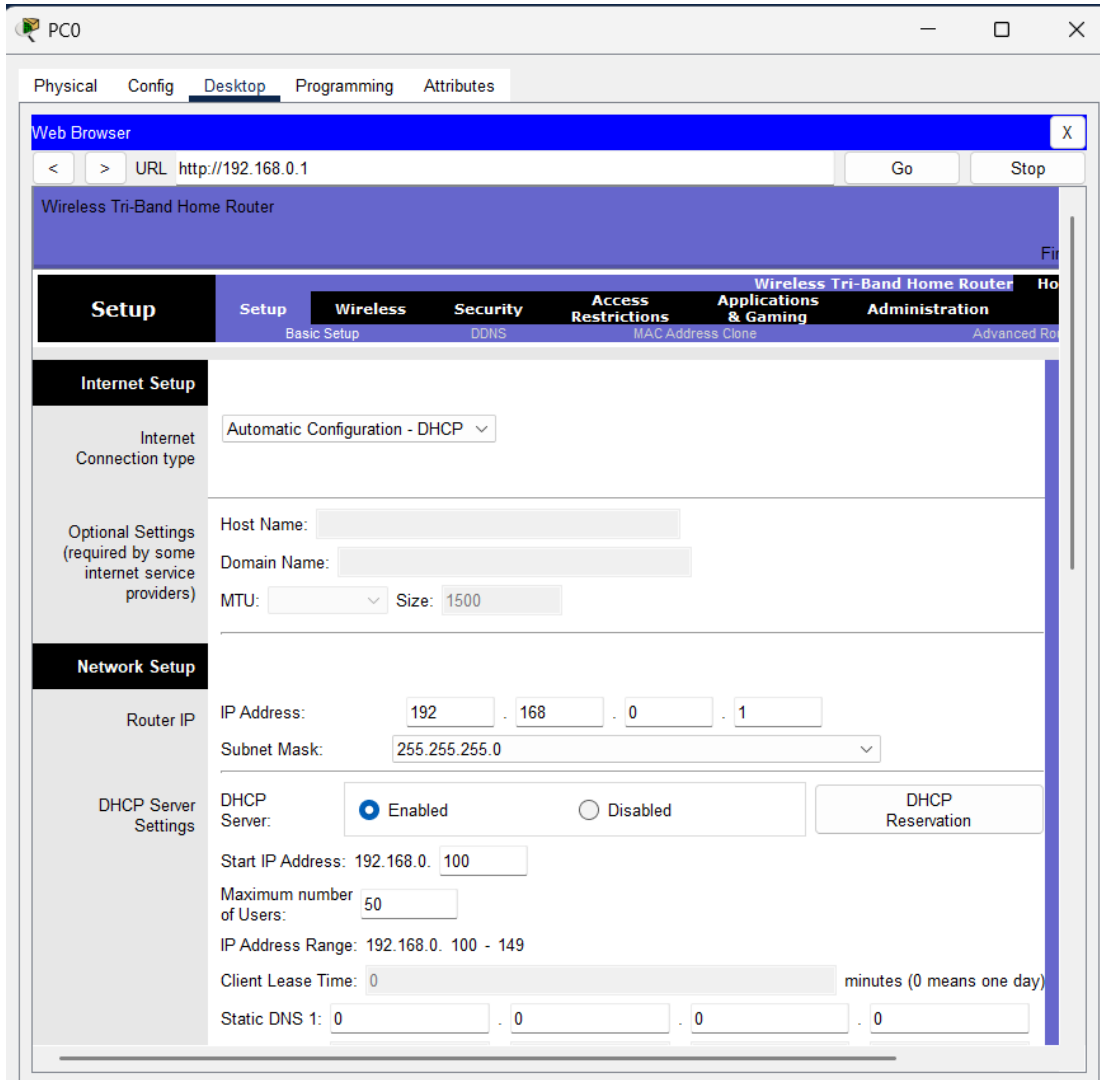
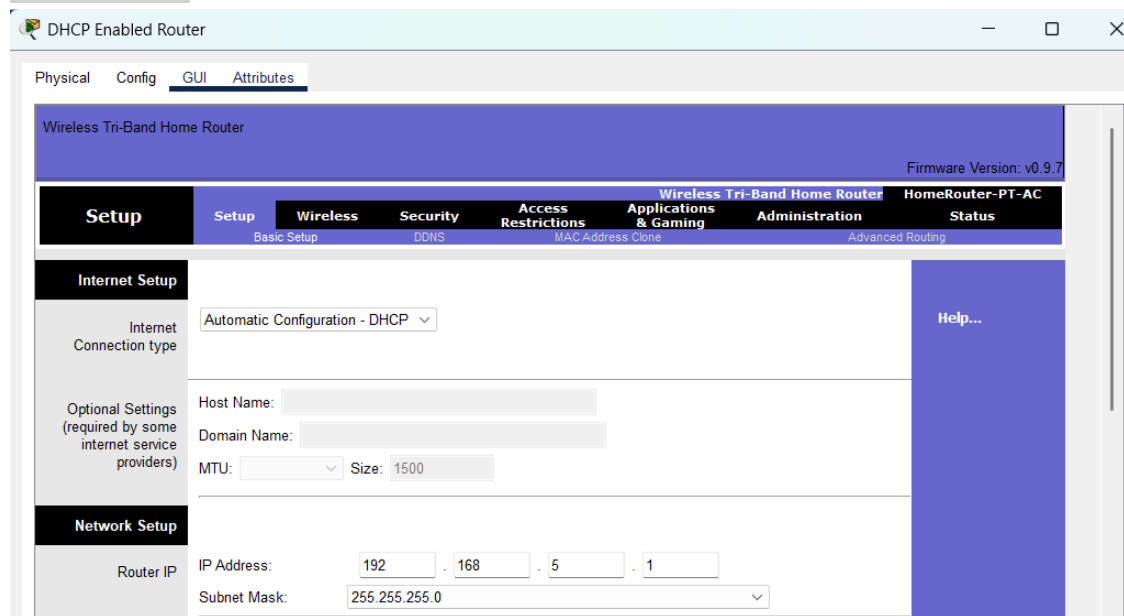


Figure 2: Default Router GUI

5. Part 3 – Change the Wireless Router's IP Address

1. Change the Router IP to:

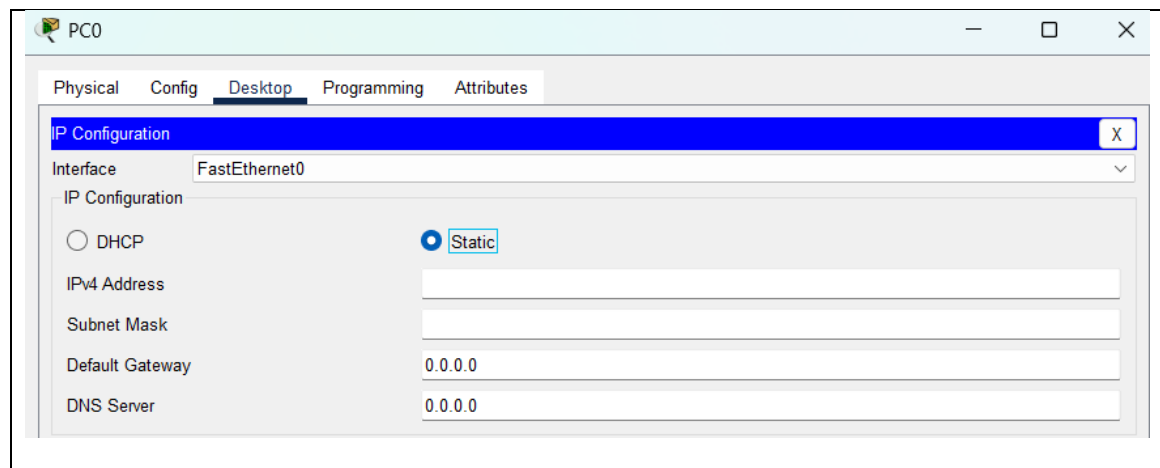
192.168.5.1

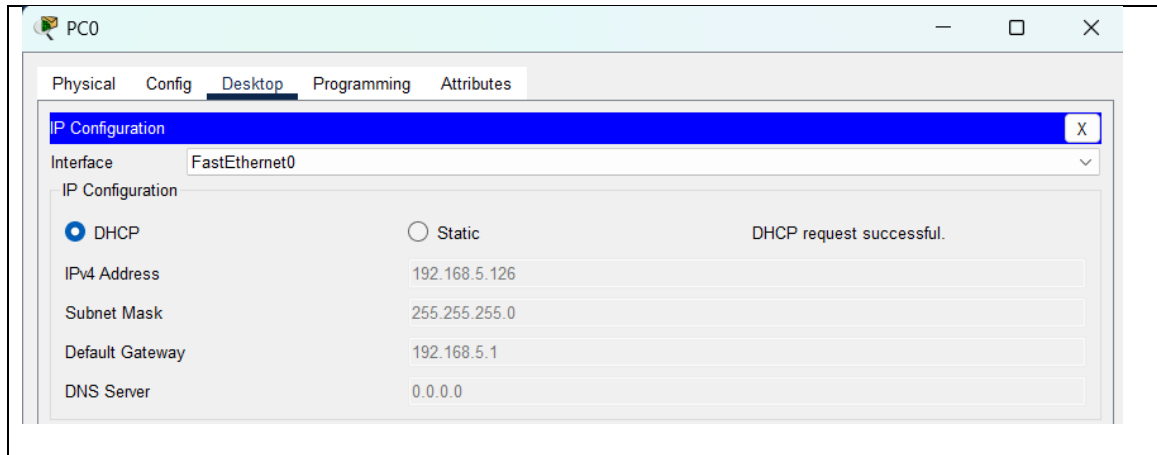


2. Save Settings — the GUI may disconnect (expected).

3. On PC0, reset IP by switching:

- Static → DHCP





4. Reopen the browser and log in using the new IP:

192.168.5.1

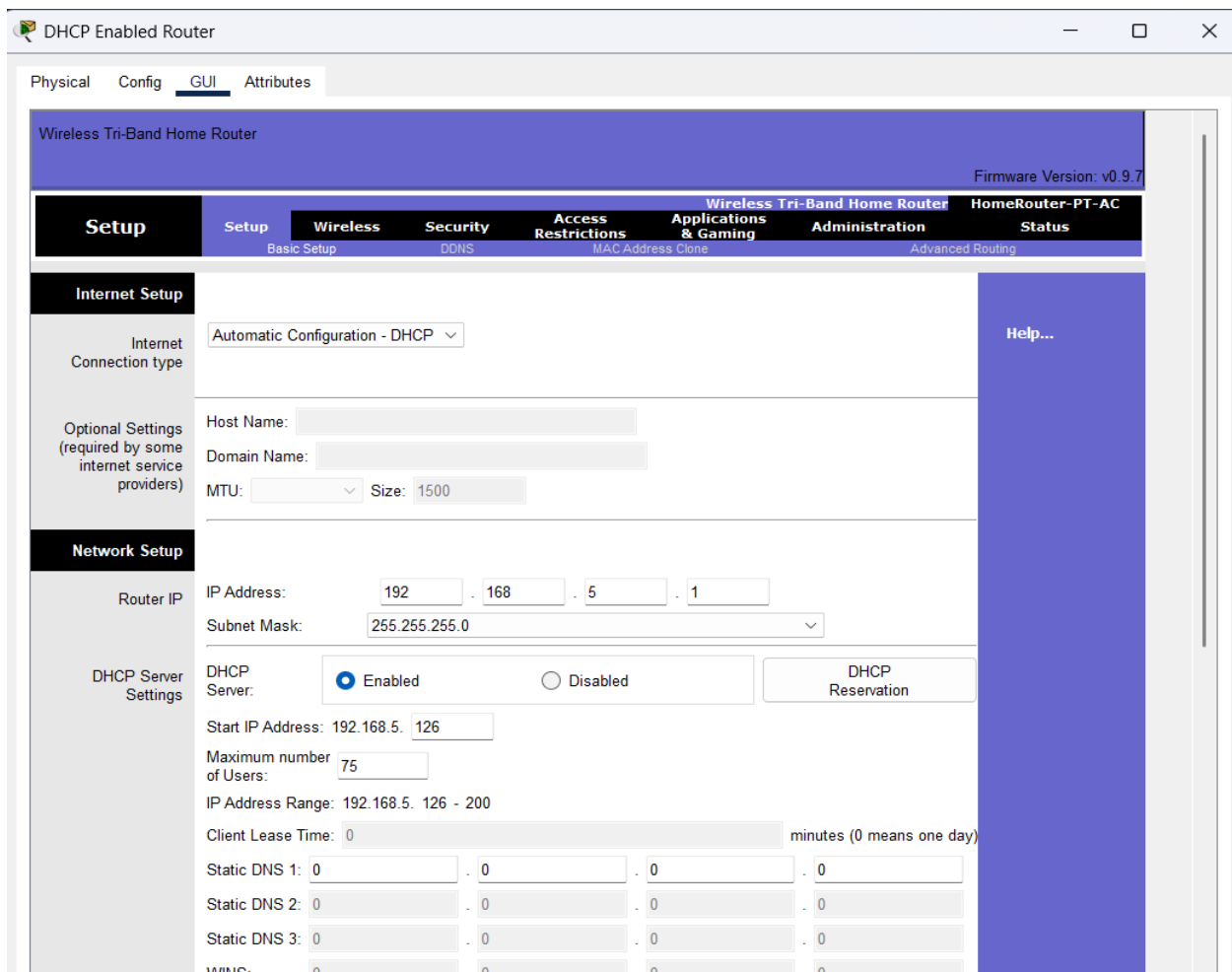
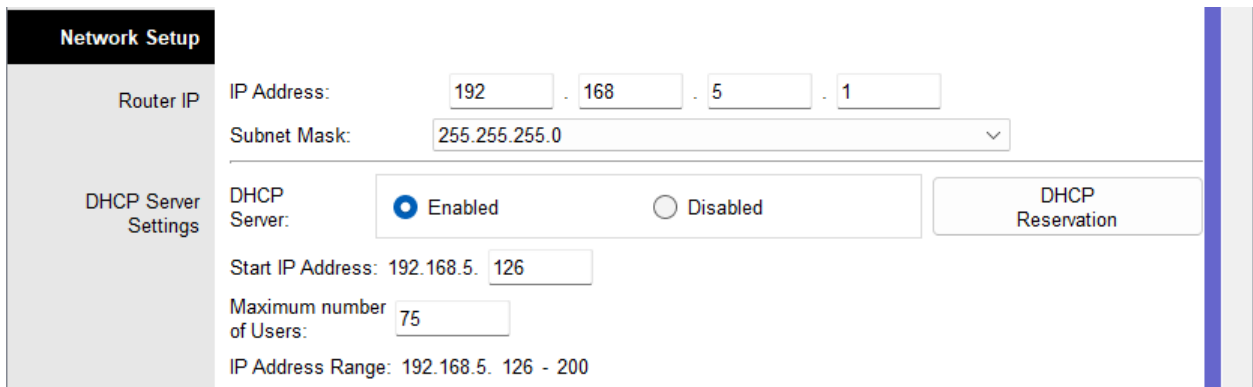


Figure 3: Updated Router IP

6. Part 4 – Modify the DHCP Address Range

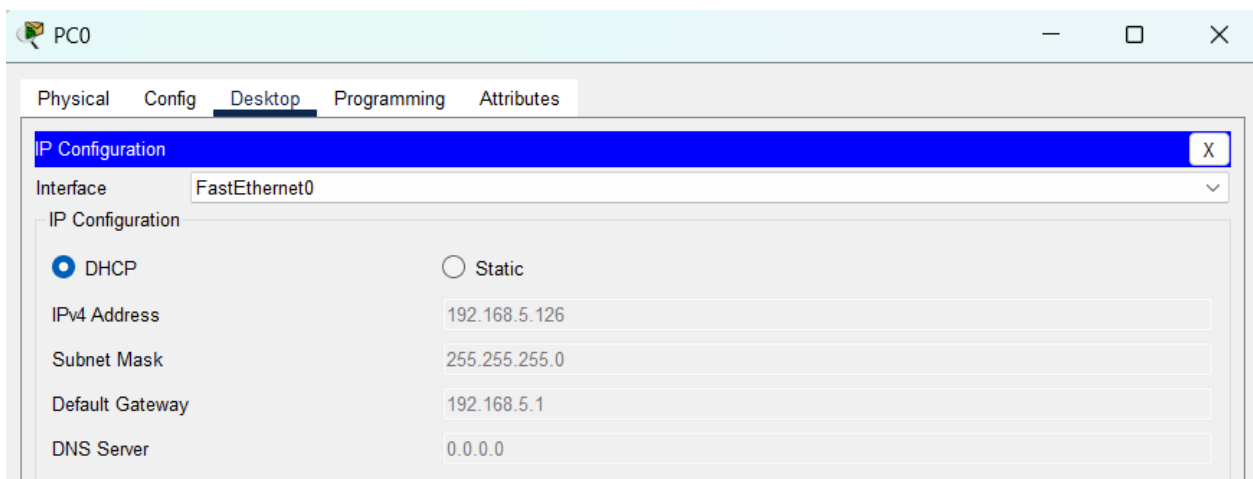
1. Ensure DHCP Server Network matches new router subnet.
2. Change:
 - Starting IP Address: 192.168.5.126
 - Maximum Number of Users: 75



The image shows a 'Network Setup' window with a sidebar on the left containing 'Router IP' and 'DHCP Server Settings'. The 'Router IP' section shows an IP Address of 192.168.5.1 and a Subnet Mask of 255.255.255.0. The 'DHCP Server Settings' section shows the DHCP Server is 'Enabled', the Start IP Address is 192.168.5.126, the Maximum number of Users is 75, and the IP Address Range is 192.168.5.126 - 200. There is a 'DHCP Reservation' button on the right.

Section	Field	Value
Router IP	IP Address:	192 . 168 . 5 . 1
	Subnet Mask:	255.255.255.0
DHCP Server Settings	DHCP Server:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
	Start IP Address:	192.168.5.126
	Maximum number of Users:	75
	IP Address Range:	192.168.5.126 - 200

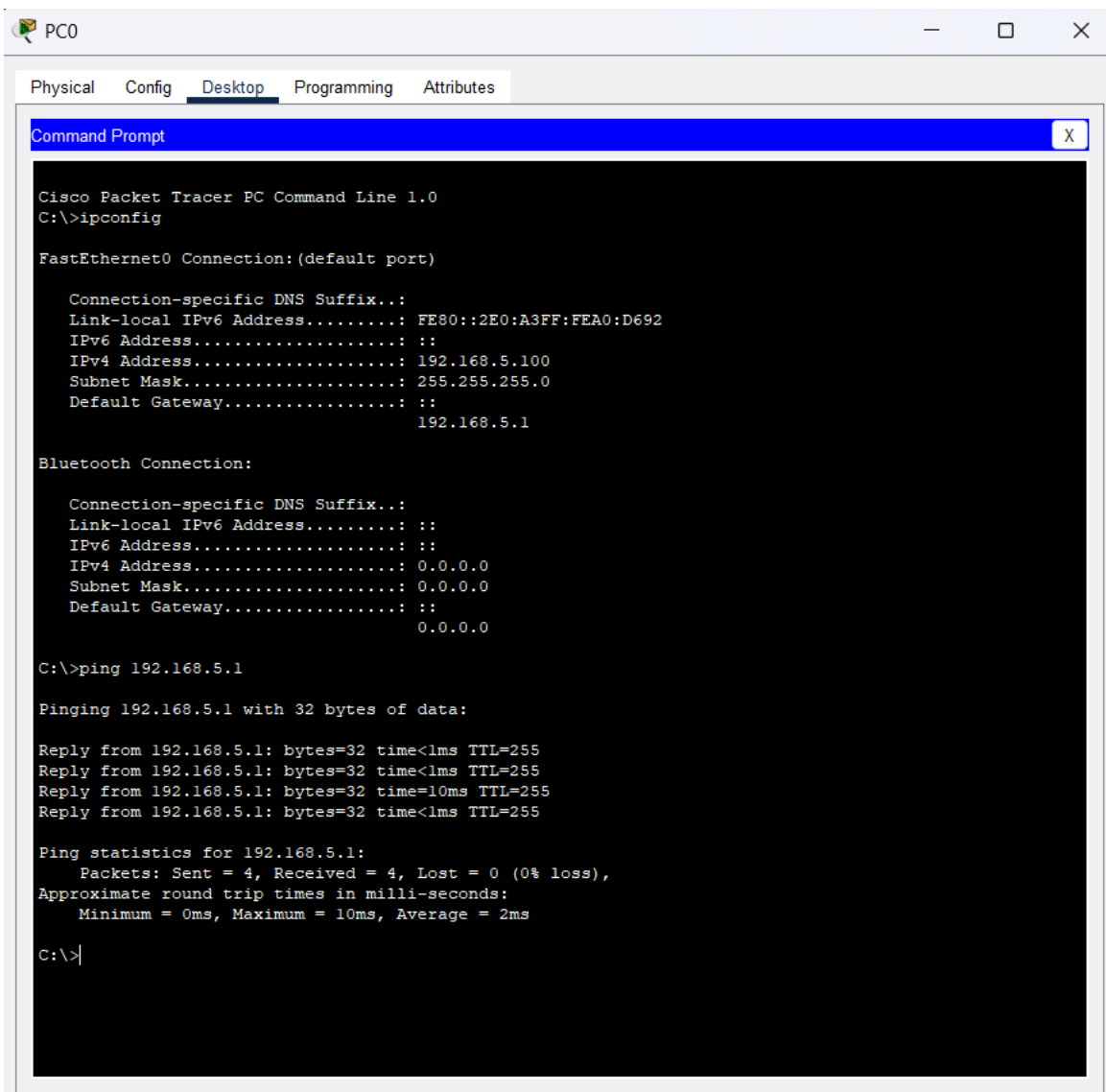
3. Save Settings.
4. Renew PC0 IP by toggling Static → DHCP.



The image shows a 'PC0' window with tabs for 'Physical', 'Config', 'Desktop', 'Programming', and 'Attributes'. The 'Desktop' tab is active, showing an 'IP Configuration' window for the 'FastEthernet0' interface. The 'IP Configuration' window has a title bar with an 'X' button. It shows the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The fields for IPv4 Address, Subnet Mask, Default Gateway, and DNS Server are filled with the values 192.168.5.126, 255.255.255.0, 192.168.5.1, and 0.0.0.0 respectively.

Interface	Value
FastEthernet0	
IP Configuration	
<input checked="" type="radio"/> DHCP <input type="radio"/> Static	
IPv4 Address	192.168.5.126
Subnet Mask	255.255.255.0
Default Gateway	192.168.5.1
DNS Server	0.0.0.0

5. Open Command Prompt → ipconfig.



The screenshot shows a Cisco Packet Tracer window with the 'Desktop' tab selected. A 'Command Prompt' window is open, displaying the output of the 'ipconfig' and 'ping' commands. The 'ipconfig' command shows the configuration for 'FastEthernet0', including IPv4 and IPv6 addresses, subnet masks, and default gateways. The 'ping' command is used to test connectivity to the default gateway (192.168.5.1), showing successful results with 0% loss.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: FE80::2E0:A3FF:FEA0:D692
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 192.168.5.100
    Subnet Mask . . . . .: 255.255.255.0
    Default Gateway . . . . .: ::
                                   192.168.5.1

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: ::
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 0.0.0.0
    Subnet Mask . . . . .: 0.0.0.0
    Default Gateway . . . . .: ::
                                   0.0.0.0

C:\>ping 192.168.5.1

Pinging 192.168.5.1 with 32 bytes of data:

Reply from 192.168.5.1: bytes=32 time<1ms TTL=255
Reply from 192.168.5.1: bytes=32 time<1ms TTL=255
Reply from 192.168.5.1: bytes=32 time=10ms TTL=255
Reply from 192.168.5.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.5.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>
```

Figure 4: PC0 ipconfig

7. Part 5 – Enable DHCP on Remaining PCs

Repeat on PC1 and PC2:

PC1 IP: 192.168.5.127

PC2 IP: 192.168.5.128

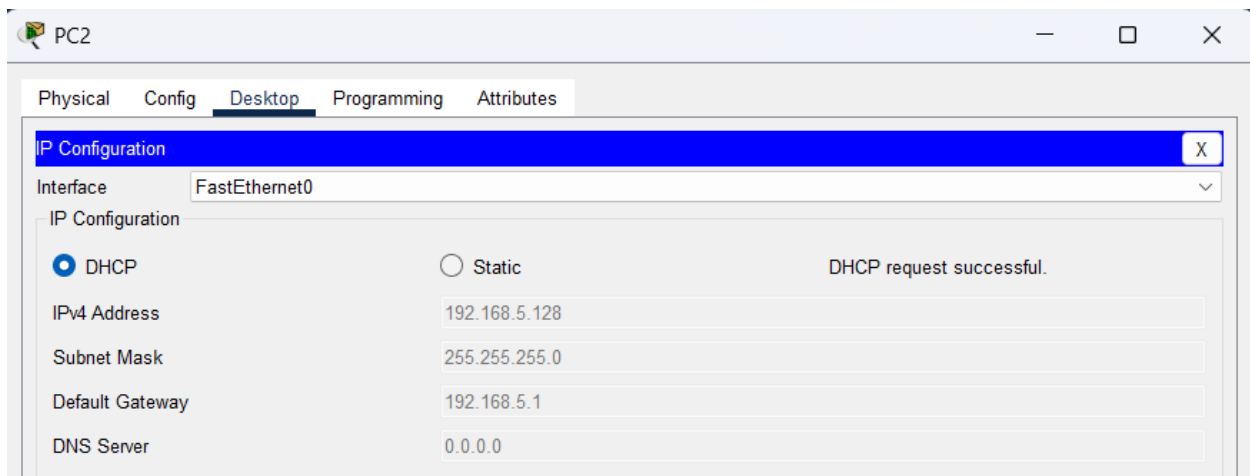
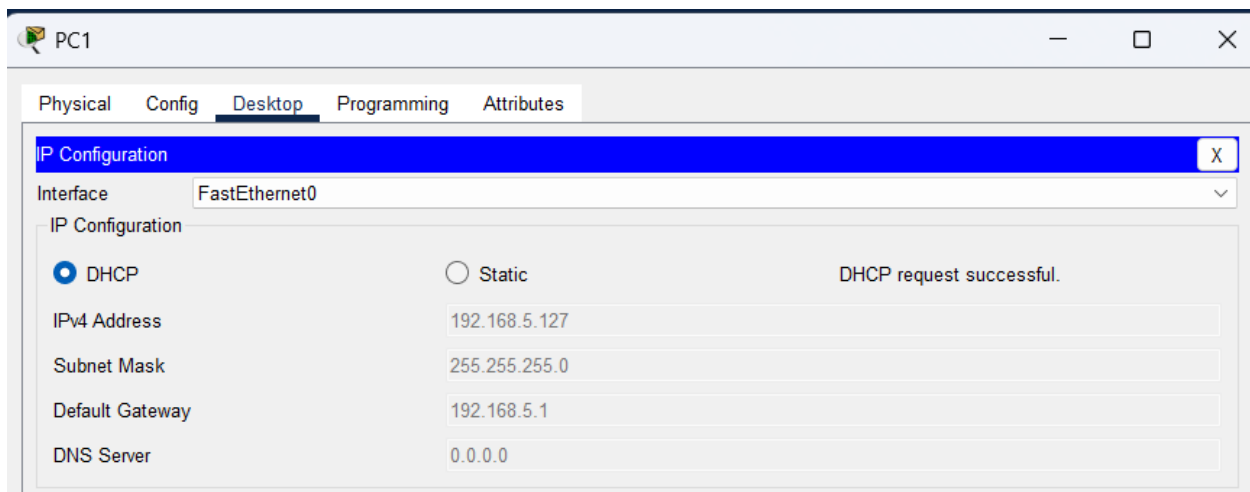


Figure 5: PC1 or PC2 ipconfig

8. Part 6 – Verify Connectivity

In PC2 → Command Prompt, run:

ping 192.168.5.1 (Router)

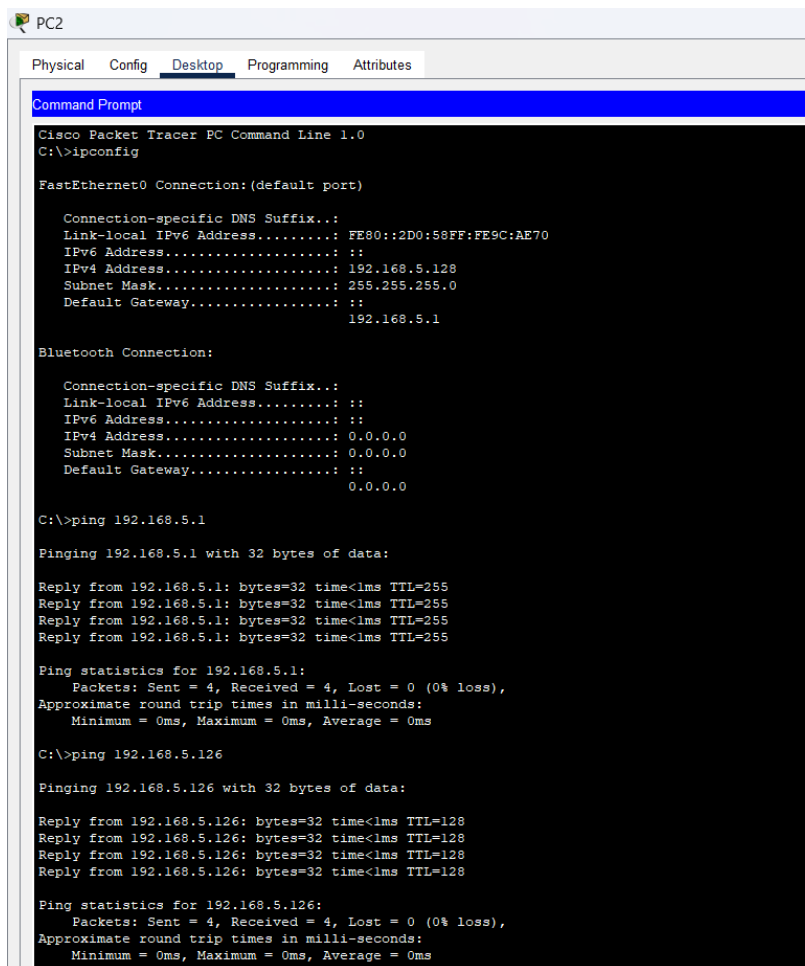
ping 192.168.5.126 (PC0)

ping 192.168.5.127 (PC1)

Expected Result

All pings should return successful replies, confirming:

- DHCP configured correctly
- All devices are on the same network
- Layer 3 connectivity is functioning



```
PC2
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: FE80::2D0:50FF:FE9C:AE70
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 192.168.5.128
    Subnet Mask . . . . .: 255.255.255.0
    Default Gateway . . . . .: ::
                                192.168.5.1

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: ::
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 0.0.0.0
    Subnet Mask . . . . .: 0.0.0.0
    Default Gateway . . . . .: ::
                                0.0.0.0

C:\>ping 192.168.5.1

Pinging 192.168.5.1 with 32 bytes of data:

Reply from 192.168.5.1: bytes=32 time<1ms TTL=255
Reply from 192.168.5.1: bytes=32 time<1ms TTL=255
Reply from 192.168.5.1: bytes=32 time<1ms TTL=255
Reply from 192.168.5.1: bytes=32 time<1ms TTL=255

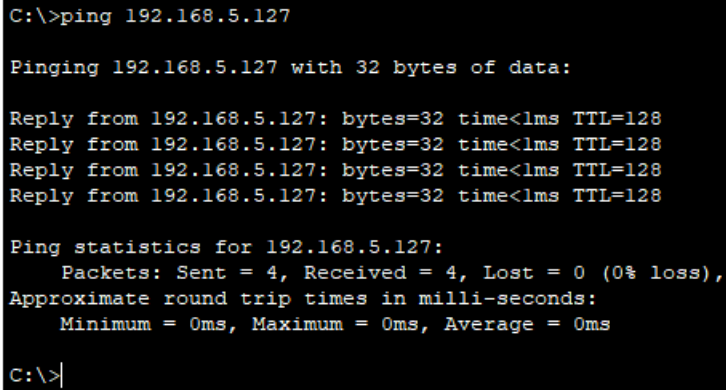
Ping statistics for 192.168.5.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.5.126

Pinging 192.168.5.126 with 32 bytes of data:

Reply from 192.168.5.126: bytes=32 time<1ms TTL=128
Reply from 192.168.5.126: bytes=32 time<1ms TTL=128
Reply from 192.168.5.126: bytes=32 time<1ms TTL=128
Reply from 192.168.5.126: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.5.126:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```



```
C:\>ping 192.168.5.127

Pinging 192.168.5.127 with 32 bytes of data:

Reply from 192.168.5.127: bytes=32 time<1ms TTL=128
Reply from 192.168.5.127: bytes=32 time<1ms TTL=128
Reply from 192.168.5.127: bytes=32 time<1ms TTL=128
Reply from 192.168.5.127: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.5.127:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Figure 6: Successful Ping Tests

9. Reflection and Conclusion

This lab demonstrated how DHCP automates IP assignment to devices on a network. I learned how to change router LAN addressing, adjust DHCP pools, and verify addressing using `ipconfig`. The connectivity tests confirmed that all devices were configured within the same subnet and able to communicate successfully.

This exercise improved my understanding of home network configuration, DHCP leasing, and router interface settings.

Sign-Off

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