

# VxLEARN Networks

Networking & Cybersecurity Track  
Simulated Employment Program

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

Prepared by:  
Kudzaishe Majeza  
Junior Network Engineer – VxLEARN Networks

Mentor:  
Titus Majeza  
Senior Network Engineer

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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.

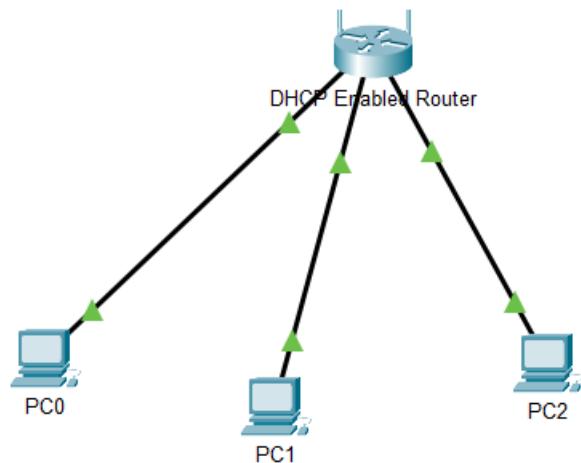


Figure 1: Network Topology

#### 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

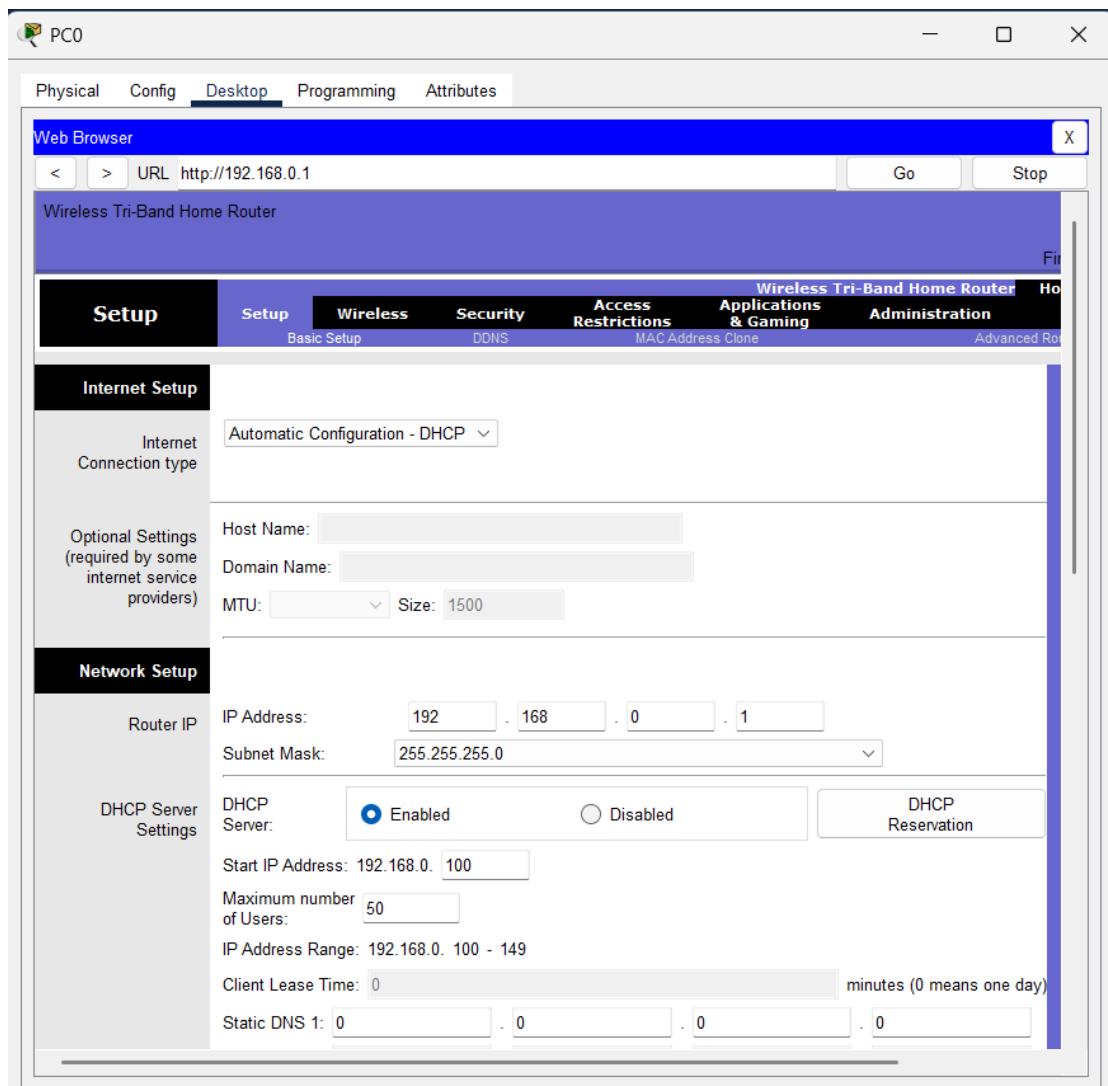


Figure 2: Default Router GUI

## 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

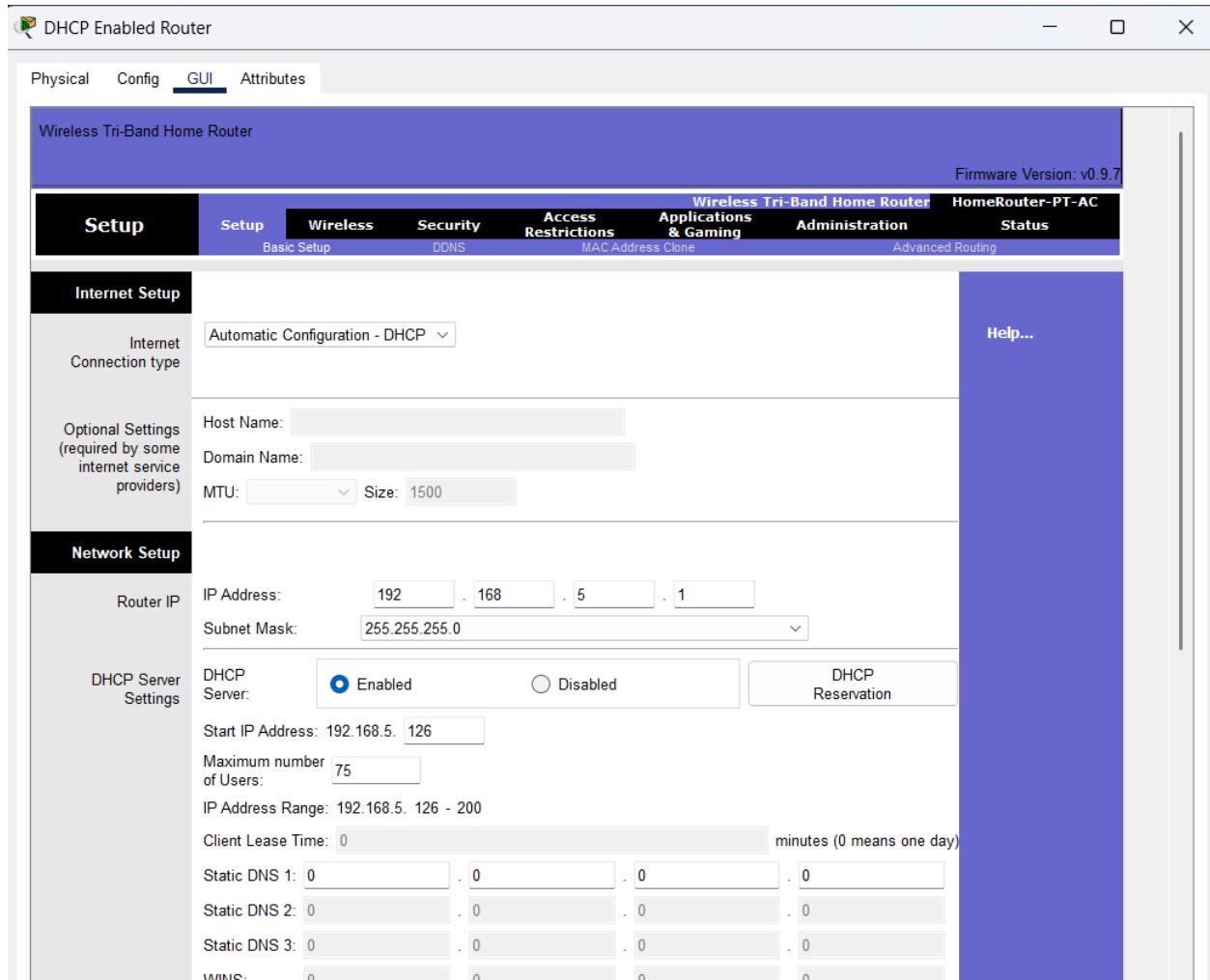
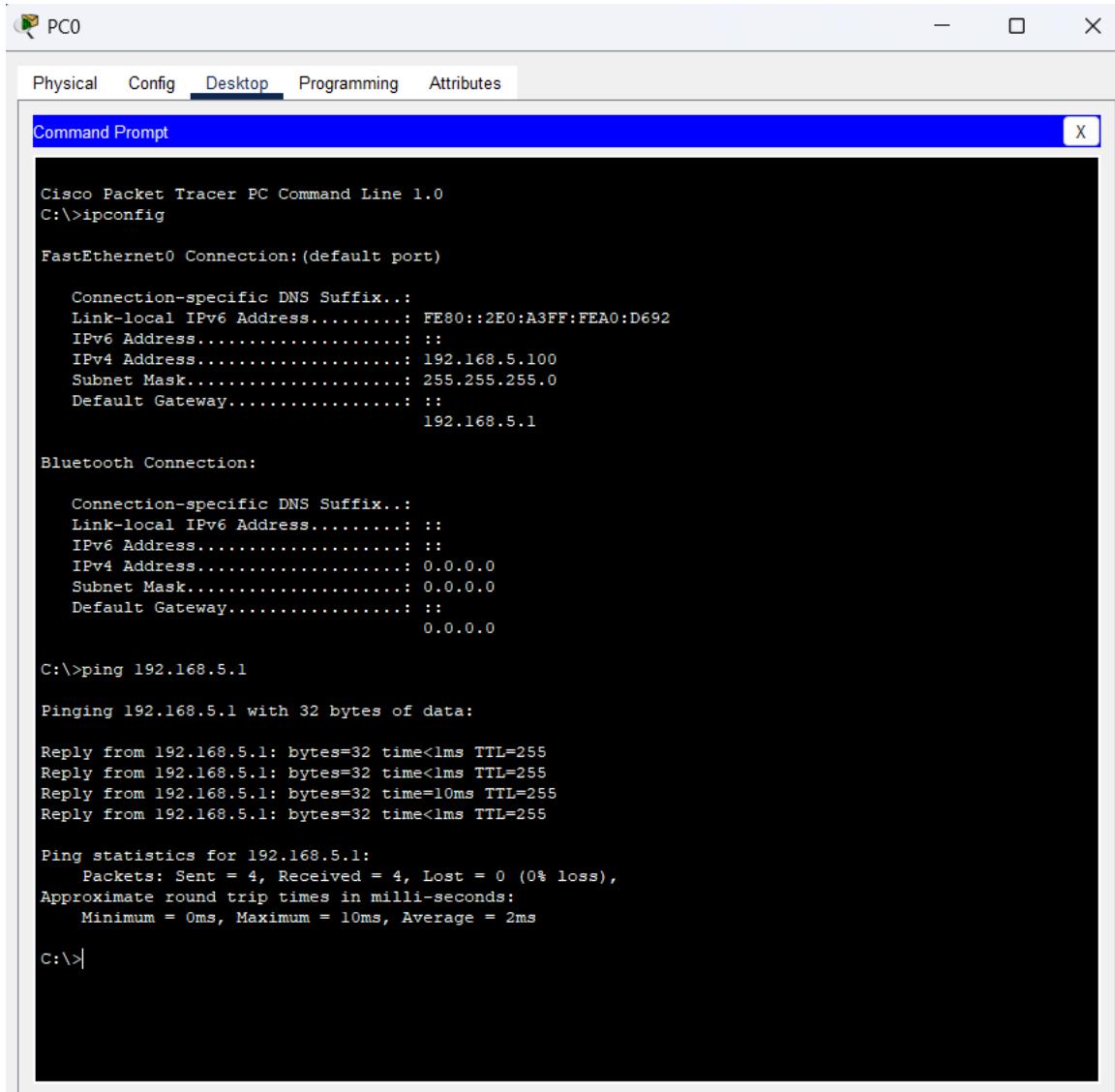


Figure 3: Updated Router IP

## 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
3. Save Settings.
4. Renew PC0 IP by toggling Static → DHCP.
5. Open Command Prompt → ipconfig.



The screenshot shows a Cisco Packet Tracer interface titled "PC0". A "Command Prompt" window is open, showing the output of the "ipconfig" command. The output details network configurations for two connections: "FastEthernet0 Connection" and "Bluetooth Connection". It includes information like IPv4 Address, Subnet Mask, and Default Gateway. Below this, a "ping" command is run to 192.168.5.1, showing four successful replies. The command prompt ends with a cursor at "C:\>".

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

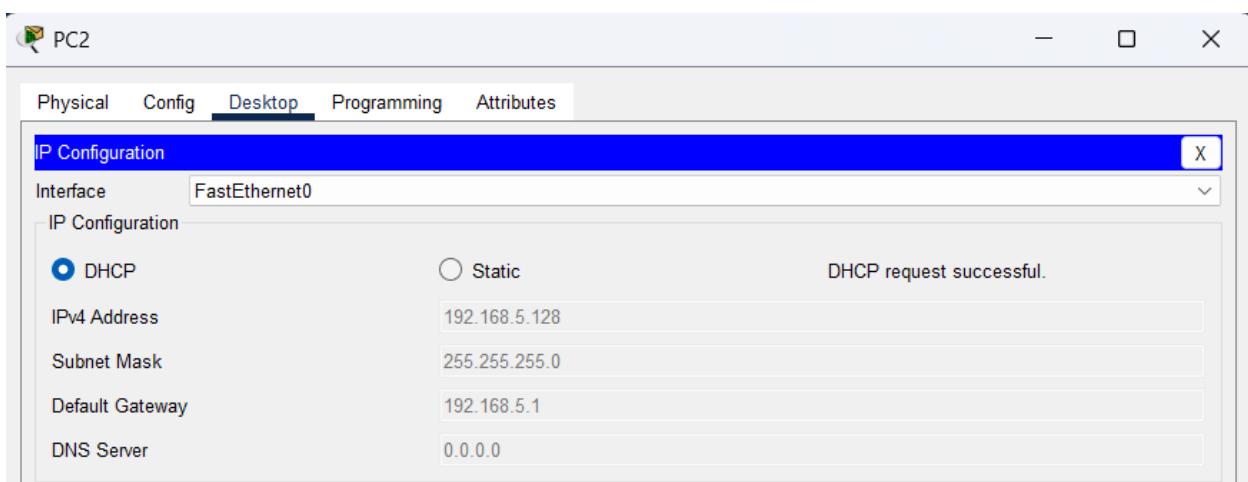
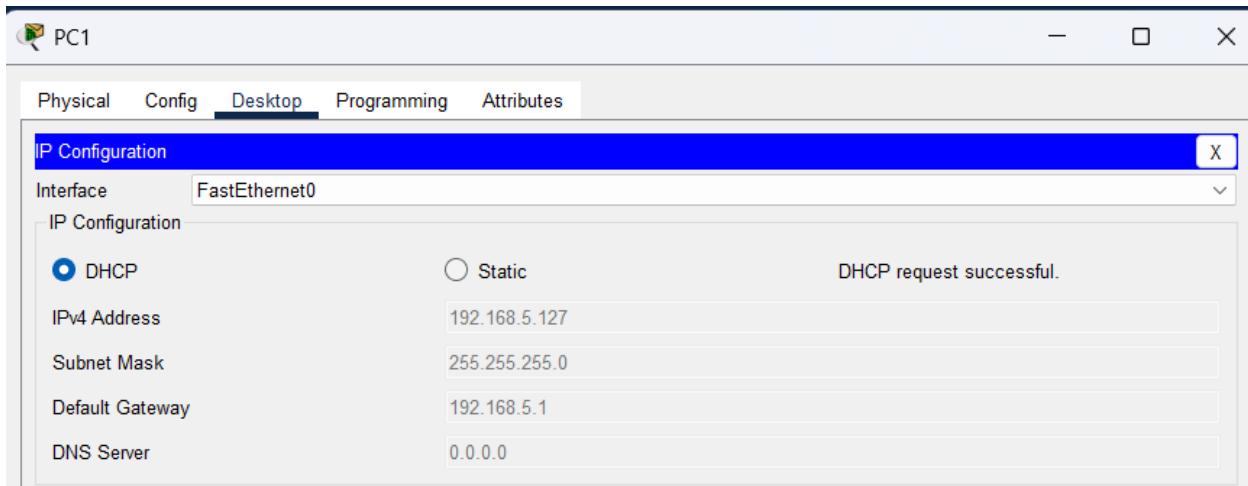


Figure 5: PC1 or PC2 ipconfig

## 8. Part 6 – Verify Connectivity

In PC2 → Command Prompt, run:

ping 192.168.5.1 (Router)

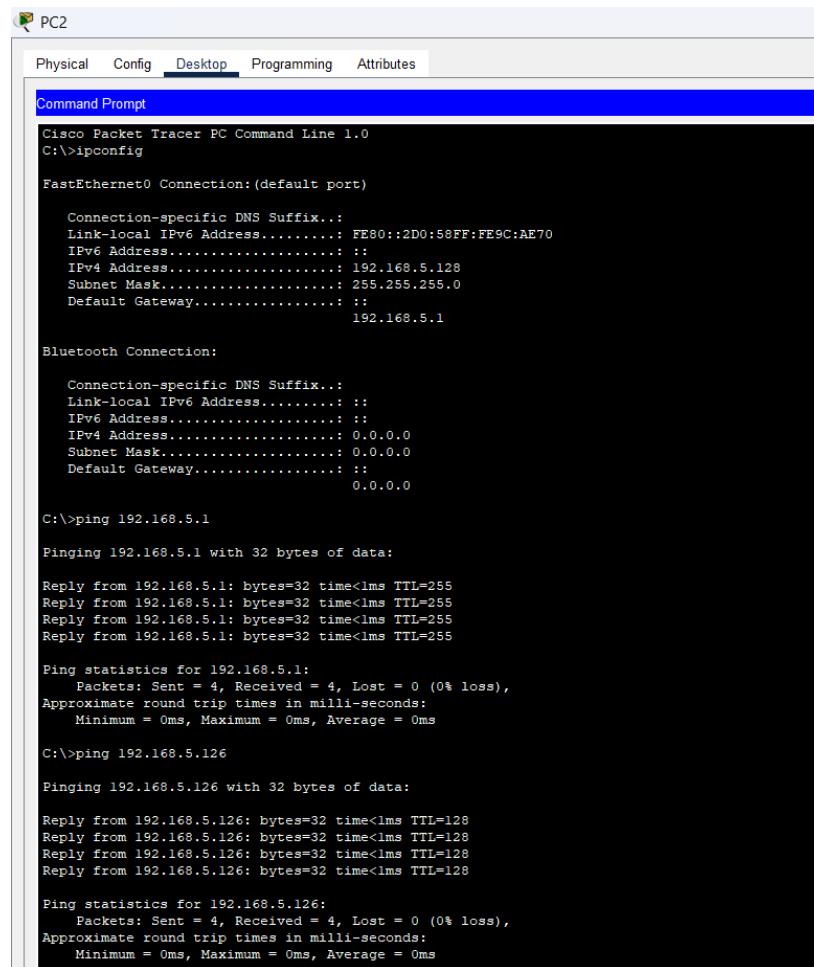
ping 192.168.5.126 (PC0)

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::2D0:58FF: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

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

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

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

Prepared by:

Kudzaishe Majeza

Junior Network Engineer – VxLEARN Networks

Reviewed by:

Titus Majeza

Senior Network Engineer