

# VxLEARN Networks

Networking & Cybersecurity Track  
Simulated Employment Program

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

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Date: 05 November 2025

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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.

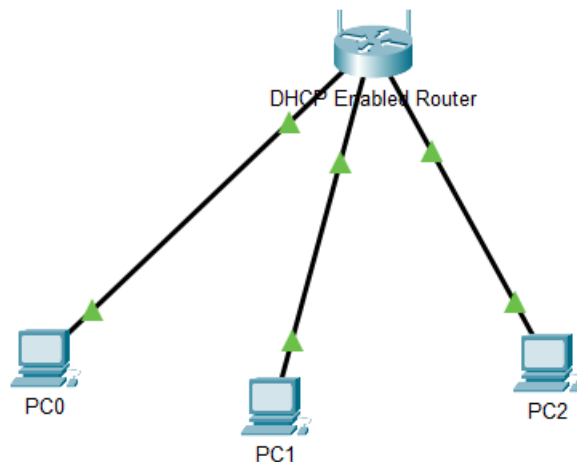


Figure 1: Network Topology

#### 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

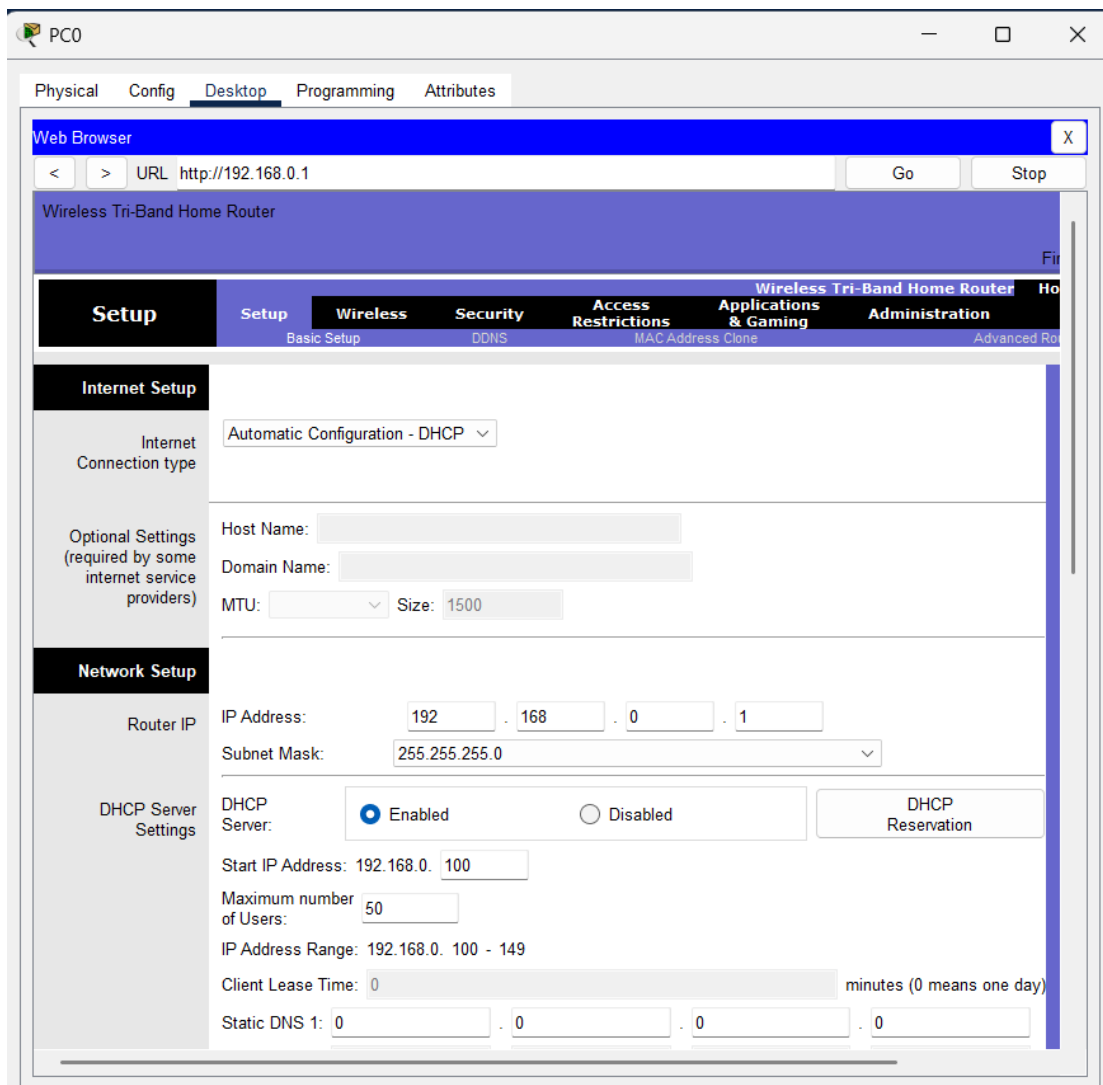


Figure 2: Default Router GUI

## 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:

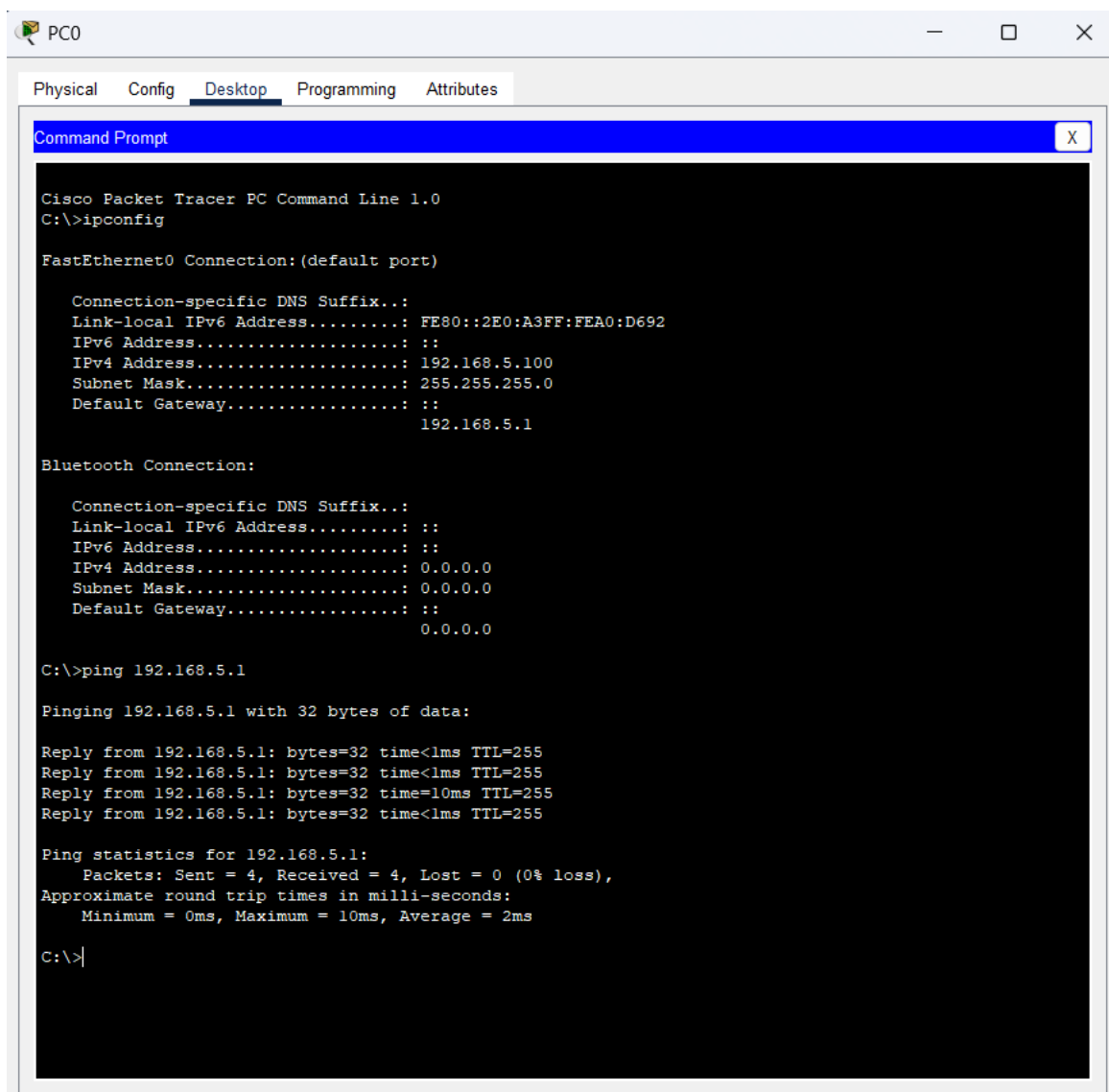
**192.168.5.1**

The screenshot shows the web interface of a 'Wireless Tri-Band Home Router' (Firmware Version: v0.9.7). The 'Setup' tab is active, and the 'Internet Setup' section is expanded. Under 'Internet Setup', the 'Internet Connection type' is set to 'Automatic Configuration - DHCP'. The 'Optional Settings' section shows 'Host Name' and 'Domain Name' fields, and 'MTU' set to 1500. The 'Network Setup' section is also expanded, showing 'Router IP' settings. The 'IP Address' is set to 192.168.5.1, and the 'Subnet Mask' is 255.255.255.0. The 'DHCP Server' is enabled, and 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. The 'Client Lease Time' is 0 minutes. The 'Static DNS' fields are all set to 0.0.0.0.

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 window for PC0. The 'Desktop' tab is selected, and a 'Command Prompt' window is open. The command prompt displays the output of the 'ipconfig' command, showing network configuration for 'FastEthernet0' and 'Bluetooth' connections. It also shows the output of a 'ping 192.168.5.1' command, indicating successful connectivity 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

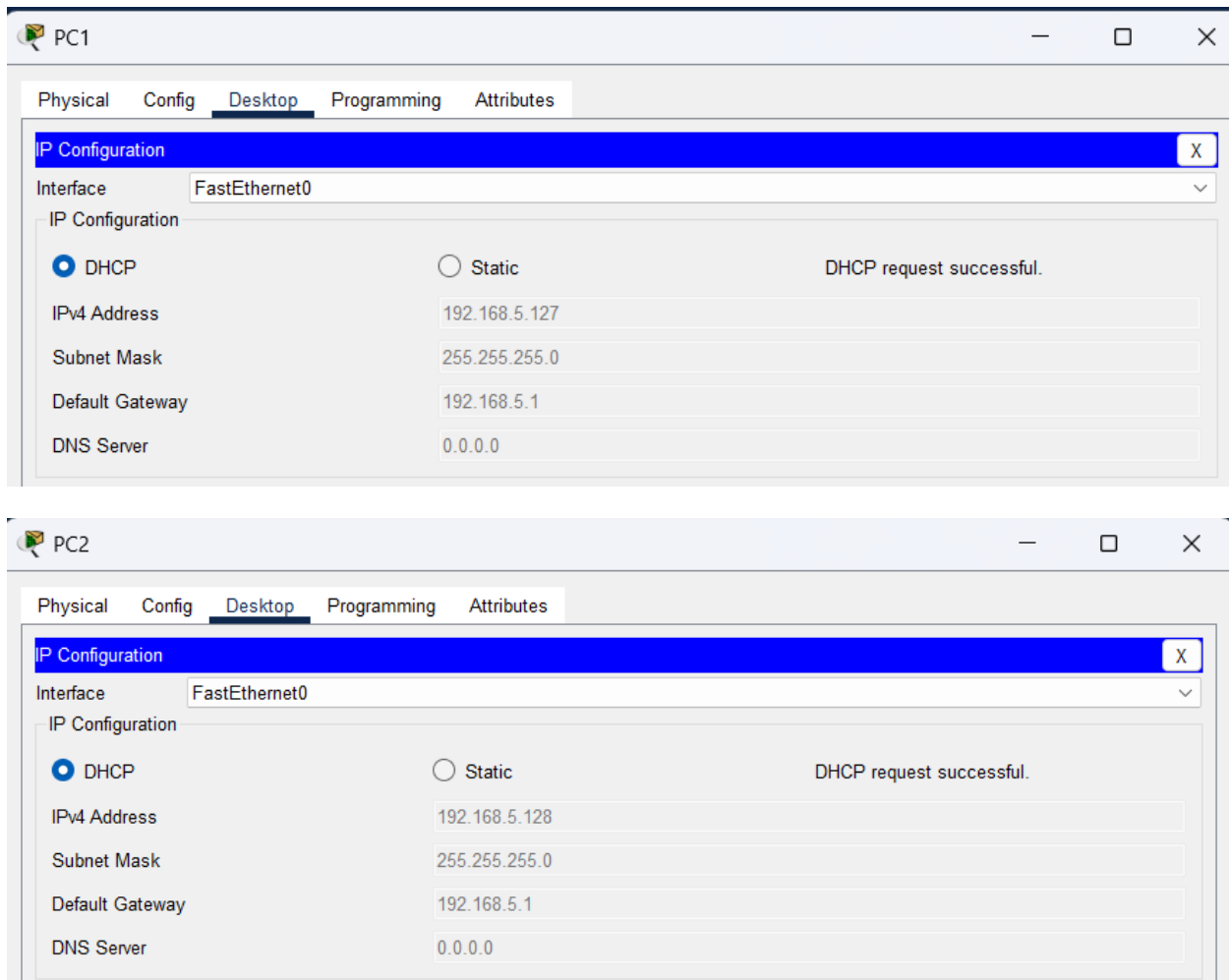


Figure 5: PC1 or PC2 ipconfig



## 8. Part 6 – Verify Connectivity

In PC2 → Command Prompt, run:

ping 192.168.5.1 (Router)

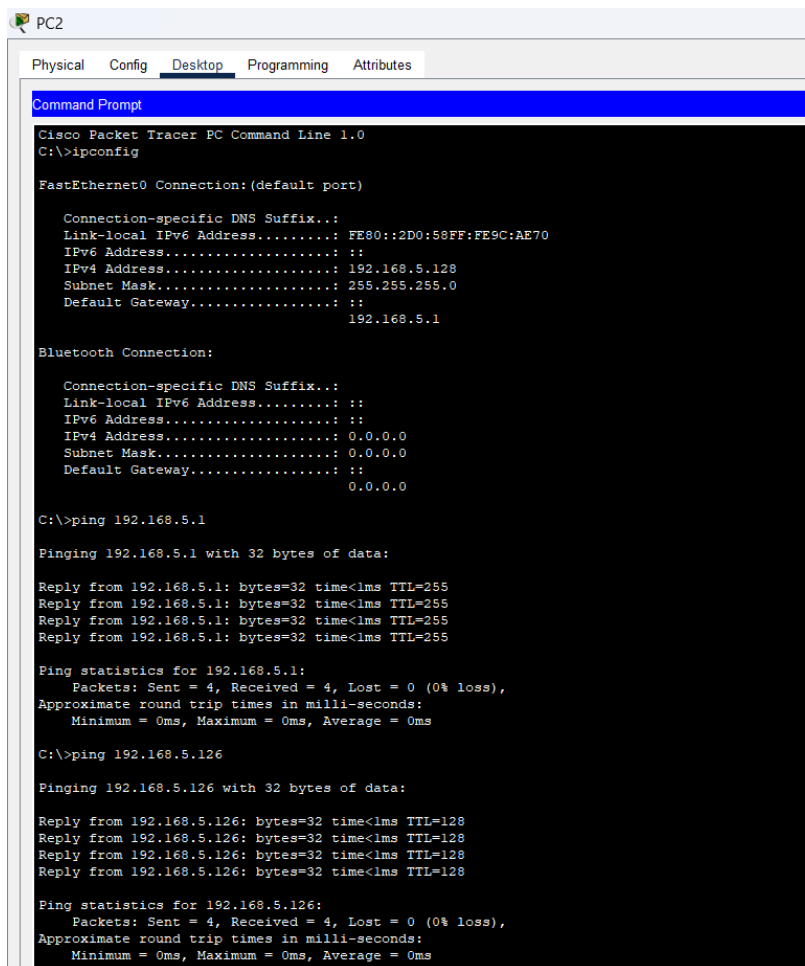
ping 192.168.5.126 (PC0)

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

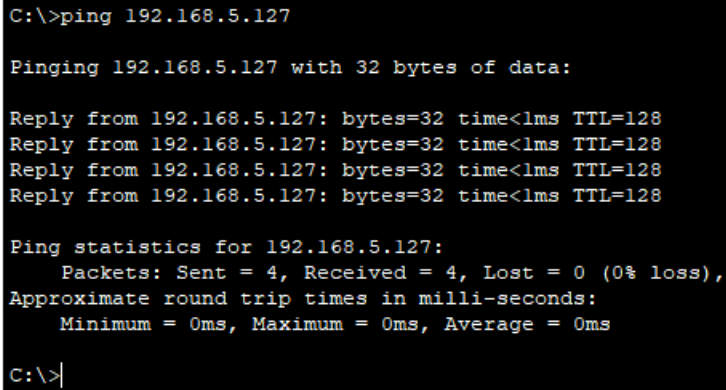
Ping statistics for 192.168.5.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

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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