

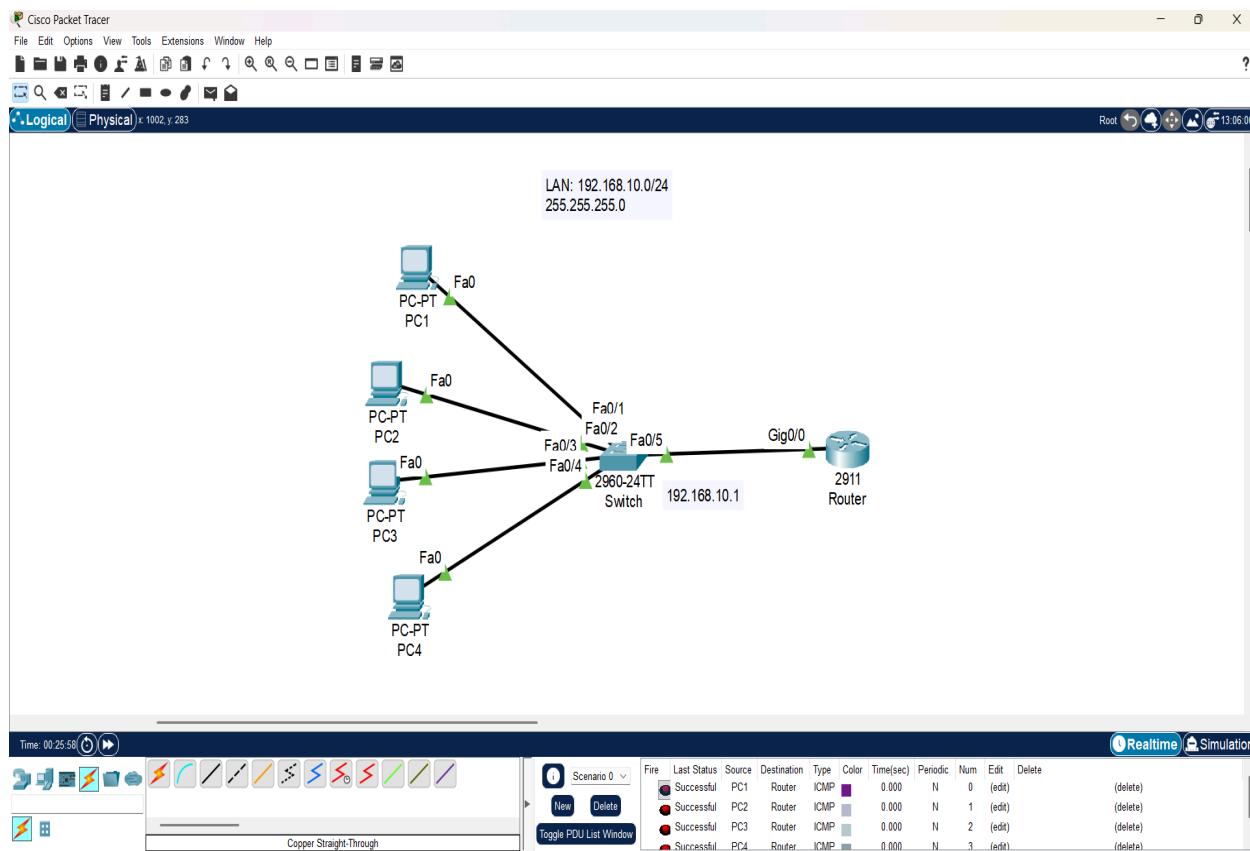
## Lab 05 – DHCP on a Router

### Objective:

To configure a router as a DHCP server that automatically assigns IP addresses to hosts in a LAN.

### Topology Description

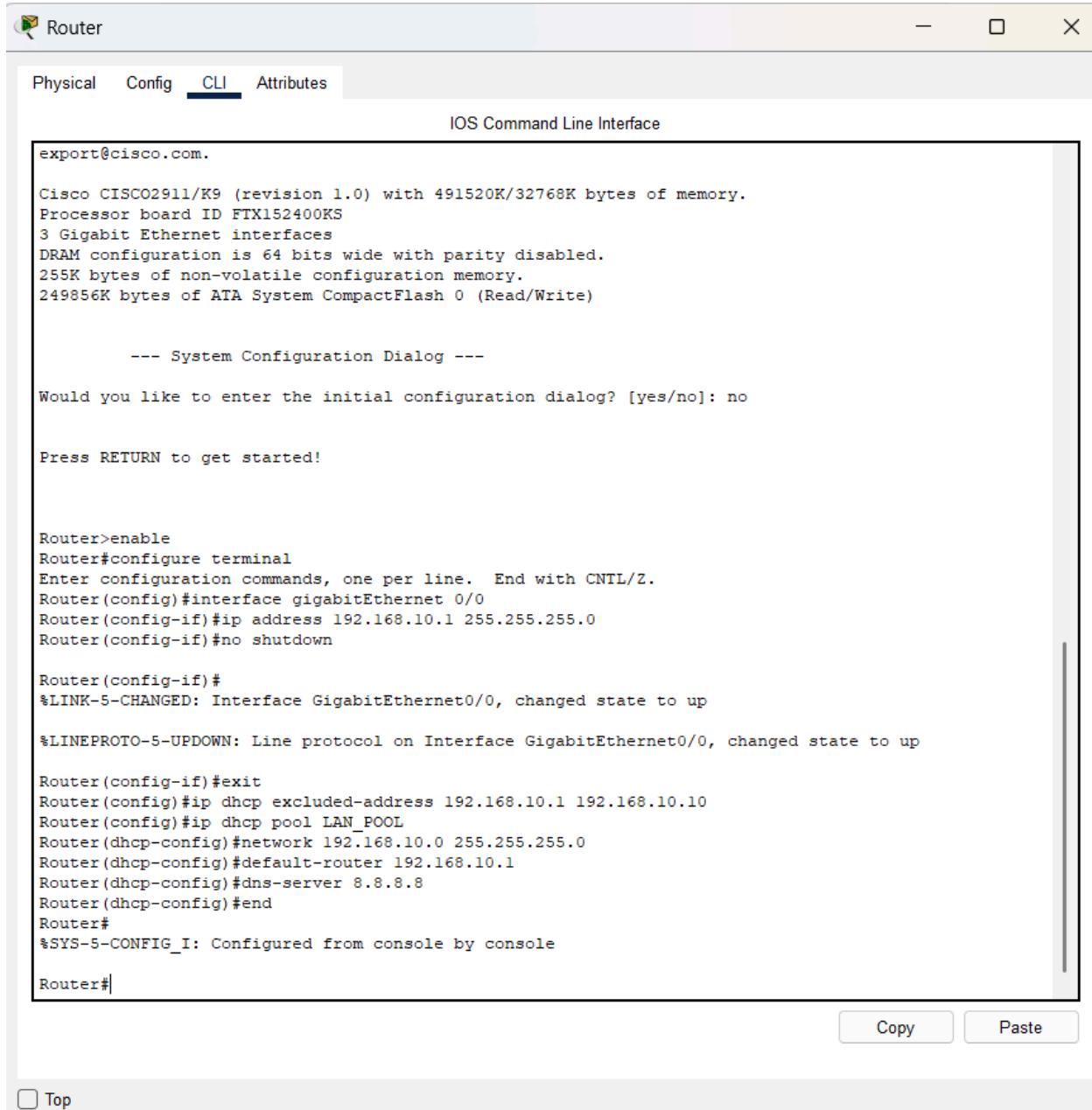
A single LAN consisting of one router, one switch, and multiple PCs. The router provides IP addressing information using DHCP.



### Network Information

- Network: 192.168.10.0/24
- Router (Default Gateway): 192.168.10.1

## Router Configuration Summary



The screenshot shows a window titled "Router" with a toolbar at the top featuring icons for Physical, Config, CLI (which is selected), and Attributes. Below the toolbar is a title bar "IOS Command Line Interface". The main area contains the following text:

```

export@cisco.com.

Cisco CISCO2911/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400KS
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!


Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#ip dhcp excluded-address 192.168.10.1 192.168.10.10
Router(config)#ip dhcp pool LAN_POOL
Router(dhcp-config)#network 192.168.10.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#dns-server 8.8.8.8
Router(dhcp-config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#

```

At the bottom right of the text area are "Copy" and "Paste" buttons. At the bottom left is a "Top" button.

## Interface Configuration

- G0/0: 192.168.10.1/24

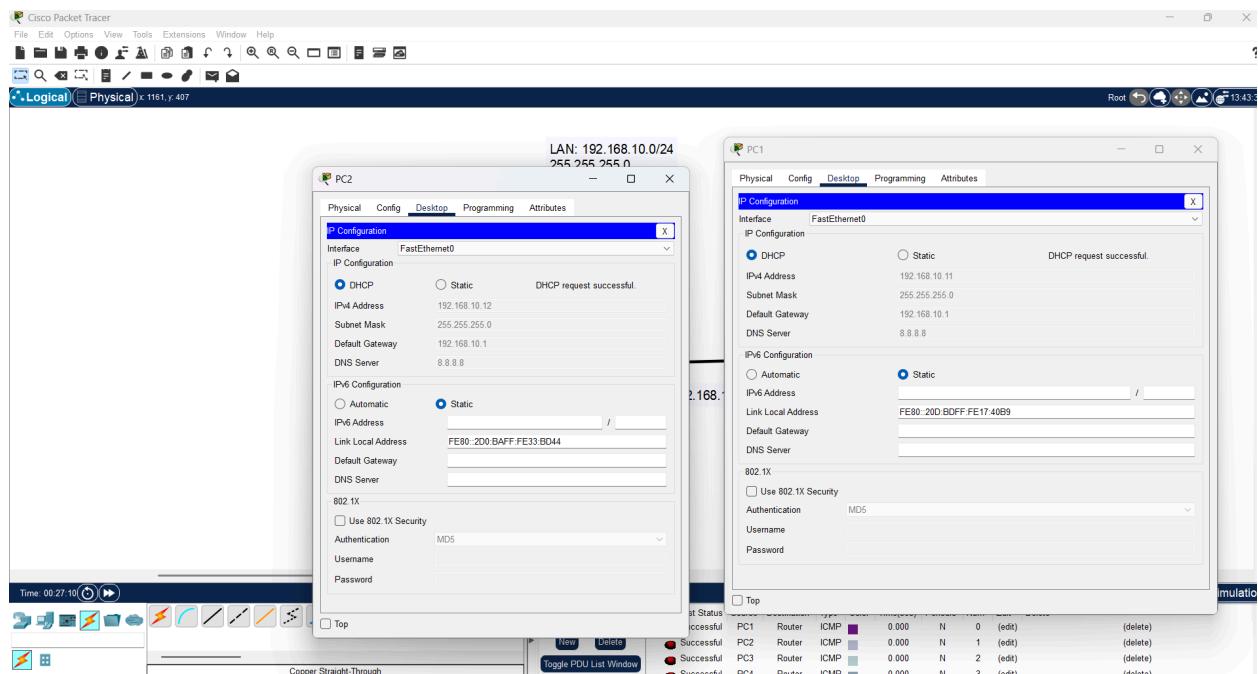
## DHCP Configuration

- Excluded Addresses: 192.168.10.1 – 192.168.10.10
- DHCP Pool Name: LAN\_POOL

```
ip dhcp pool LAN_POOL
network 192.168.10.0 255.255.255.0
default-router 192.168.10.1
dns-server 8.8.8.8
```

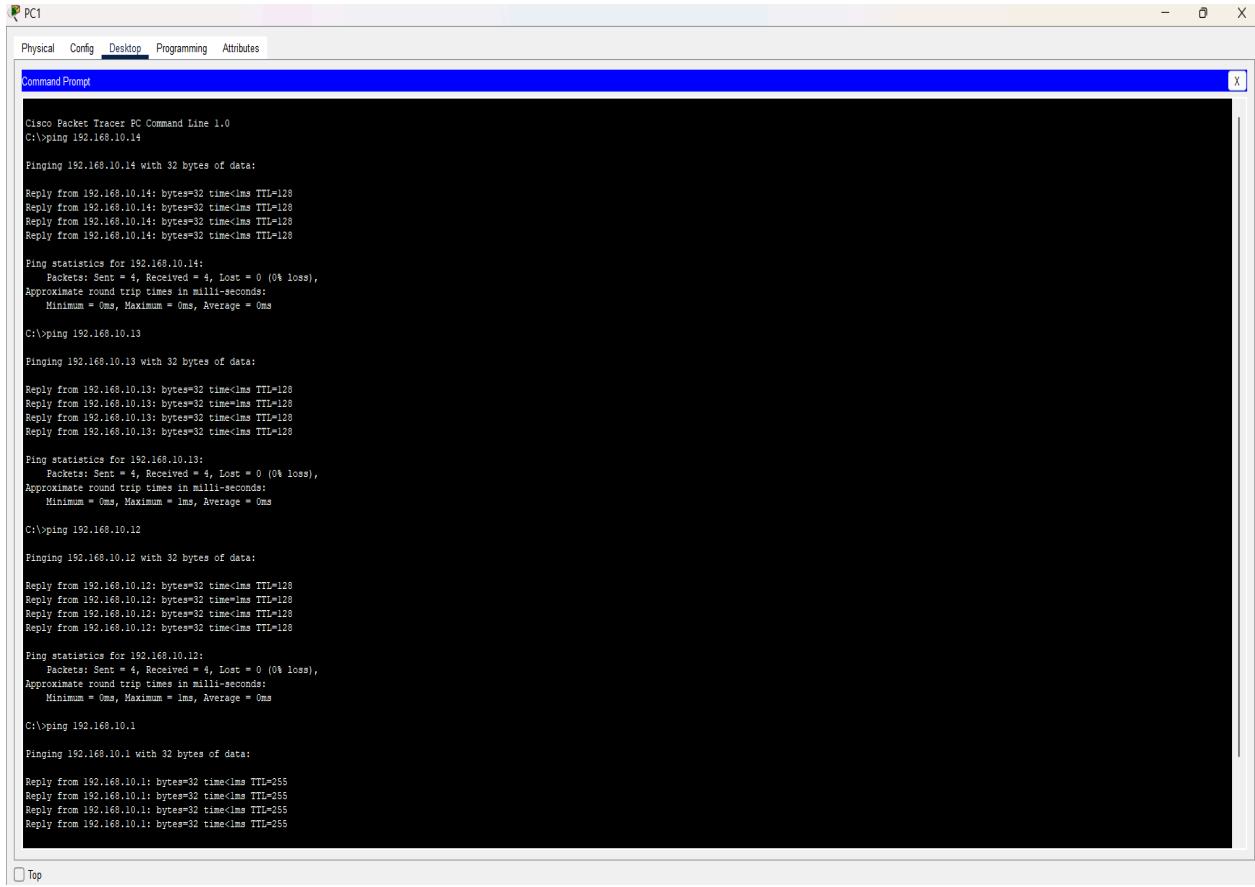
## PC Configuration

- All PCs set to obtain IP addresses automatically via DHCP



## Verification

- PCs received IP addresses dynamically
- Successful ping from PCs to the router
- Successful communication between PCs



The screenshot shows a Windows-style window titled "PC1" with a tab bar containing "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Config" tab is selected. Inside, a "Command Prompt" window is open, showing the output of several ping commands:

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.14

Pinging 192.168.10.14 with 32 bytes of data:
Reply from 192.168.10.14: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.14:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.10.13

Pinging 192.168.10.13 with 32 bytes of data:
Reply from 192.168.10.13: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.10.12

Pinging 192.168.10.12 with 32 bytes of data:
Reply from 192.168.10.12: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255

```

Top

## Lessons Learned

- DHCP automates IP address assignment
- Excluded addresses prevent IP conflicts
- Routers can function as DHCP servers