

# Assignment

## Network Systems Assignment 3

### Objective:

Design and configure a network in Cisco Packet Tracer with two separate LANs, each containing six PCs connected to a switch. Connect these two LANs using a router and ensure successful communication between devices in different networks. Configure IP addresses, and default gateways using DHCP.

Following are the network details;

#### 1. Network 1 :

Starting IP Address: 192.168.20.10

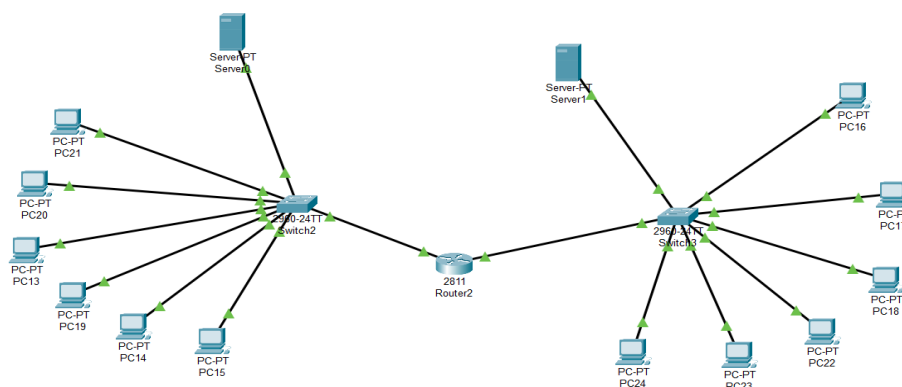
#### 2. Network 2 :

Starting IP Address: 192.168.21.10

Establish success connection and send messages between devices in the same network, as well as devices in different networks. Attach all screenshots (including DHCP configuration, router configuration, IP configuration, and Network Structure) and description in a pdf file and submit.

**DHCP (Dynamic Host Configuration Protocol)** is a network protocol used to automatically assign IP addresses and other network configuration settings to devices on a network.

### Network Structure



## Configuring Router → FastEthernet0/0

The Router2 configuration window shows the 'Config' tab selected. The left sidebar lists various configuration categories: GLOBAL, Settings, Algorithm Settings, ROUTING, Static, RIP, SWITCHING, VLAN Database, INTERFACE, FastEthernet0/0 (selected), and FastEthernet0/1. The main area displays the configuration for FastEthernet0/0. The Port Status is 'On'. Bandwidth is set to '100 Mbps'. Duplex is set to 'Full Duplex'. The MAC Address is '0006.2A09.7401'. The IP Configuration section shows the IPv4 Address as '192.168.20.1' and the Subnet Mask as '255.255.255.0'. The Tx Ring Limit is set to '10'.

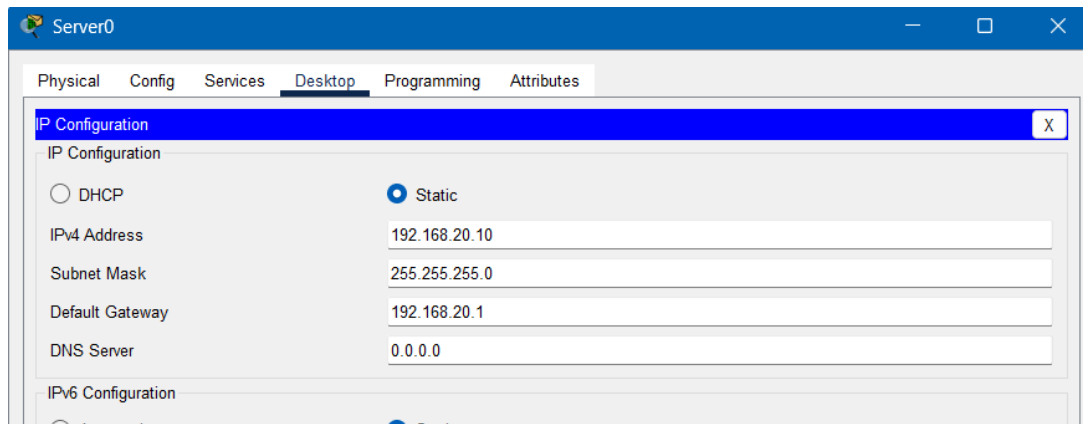
FastEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex
MAC Address	0006.2A09.7401
IP Configuration	
IPv4 Address	192.168.20.1
Subnet Mask	255.255.255.0
Tx Ring Limit	10

## Server 1 DHCP Services

The Server0 configuration window shows the 'Services' tab selected. The left sidebar lists various services: SERVICES, HTTP, DHCP (selected), DHCPv6, TFTP, DNS, SYSLOG, AAA, NTP, EMAIL, FTP, IoT, VM Management, and Radius EAP. The main area displays the configuration for DHCP. The Interface is 'FastEthernet0'. The Service is 'On'. The Pool Name is 'serverPool'. The Default Gateway is '192.168.20.1'. The DNS Server is '0.0.0.0'. The Start IP Address is '192.168.20.10' and the Subnet Mask is '255.255.255.0'. The Maximum Number of Users is '246'. The TFTP Server is '0.0.0.0' and the WLC Address is '0.0.0.0'. There are buttons for 'Add', 'Save', and 'Remove'. A table below shows the configuration for the 'serverPool'.

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.20.1	0.0.0.0	192.168.20.10	255.255.255.0	246	0.0.0.0	0.0.0.0

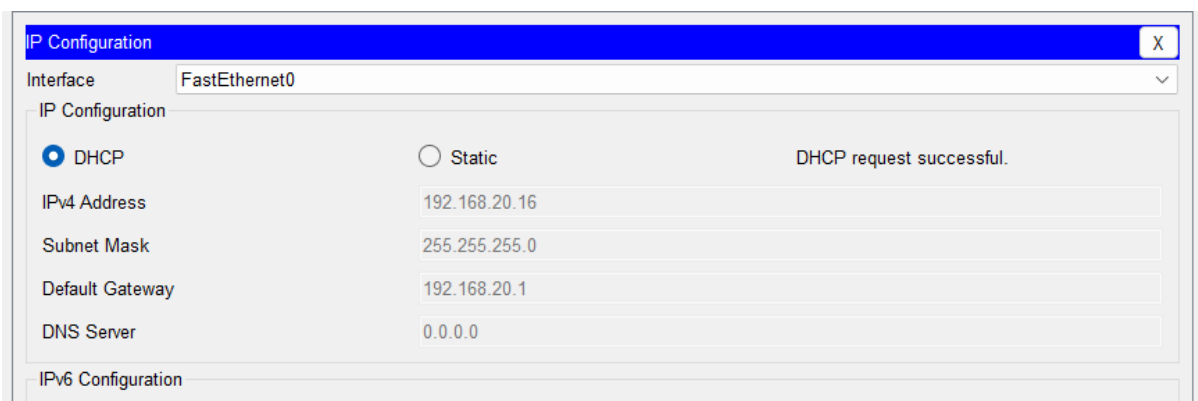
## Server 1 IP configuration



The screenshot shows the 'Server0' window with the 'Desktop' tab selected. The 'IP Configuration' window is open, showing the 'Static' radio button selected. The fields are filled with the following values:

Field	Value
IPv4 Address	192.168.20.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.20.1
DNS Server	0.0.0.0

## DHCP setting in PC 1

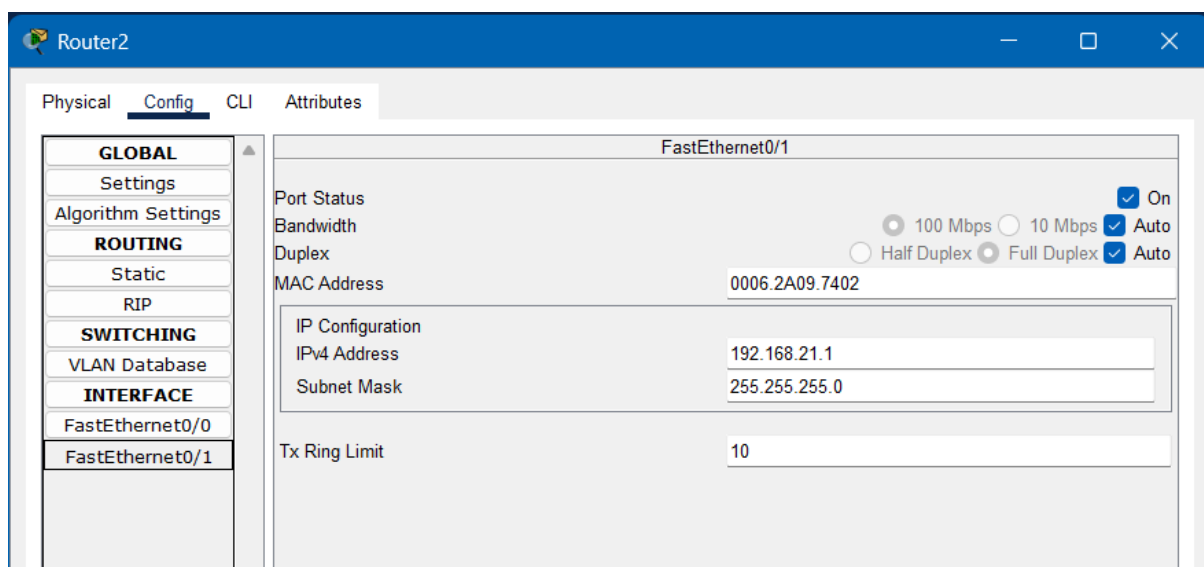


The screenshot shows the 'IP Configuration' window for 'FastEthernet0'. The 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The fields are filled with the following values:

Field	Value
IPv4 Address	192.168.20.16
Subnet Mask	255.255.255.0
Default Gateway	192.168.20.1
DNS Server	0.0.0.0

A message 'DHCP request successful.' is displayed on the right side of the window.

## Configuring Router → FastEthernet0/1



The screenshot shows the 'Router2' window with the 'Config' tab selected. The 'FastEthernet0/1' interface is selected in the left sidebar. The configuration for 'FastEthernet0/1' is shown on the right:

Field	Value
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="checkbox"/> 100 Mbps <input type="checkbox"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="checkbox"/> Half Duplex <input checked="" type="checkbox"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0006.2A09.7402
IP Configuration	
IPv4 Address	192.168.21.1
Subnet Mask	255.255.255.0
Tx Ring Limit	10

## Server 2 DHCP Services

The screenshot shows the 'Server1' configuration window with the 'Services' tab selected. On the left, a 'SERVICES' list has 'DHCP' highlighted. The main area is titled 'DHCP' and contains the following settings:

- Interface: FastEthernet0
- Service: ☒ On, ☐ Off
- Pool Name: serverPool
- Default Gateway: 192.168.21.1
- DNS Server: 0.0.0.0
- Start IP Address: 192.168.21.10
- Subnet Mask: 255.255.255.0
- Maximum Number of Users: 246
- TFTP Server: 0.0.0.0
- WLC Address: 0.0.0.0

Below these settings are 'Add', 'Save', and 'Remove' buttons. A table at the bottom lists the configured DHCP pool:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.21.1	0.0.0.0	192.168.21.10	255.255.255.0	246	0.0.0.0	0.0.0.0

A 'Top' button is located at the bottom left of the window.

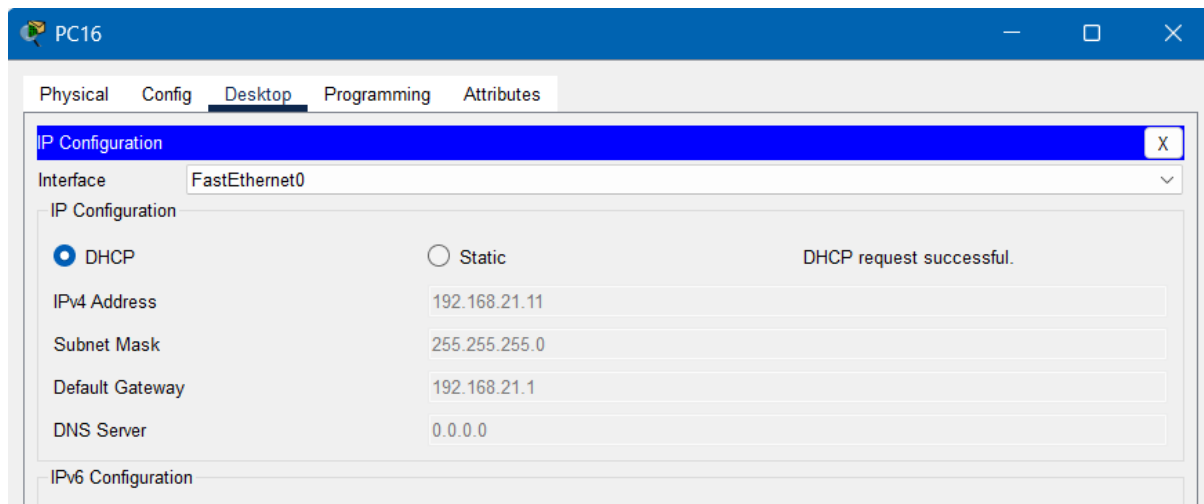
## Server 2 IP configuration

The screenshot shows the 'Server1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' window is open, showing the following settings:

- IP Configuration: ☐ DHCP, ☒ Static
- IPv4 Address: 192.168.21.10
- Subnet Mask: 255.255.255.0
- Default Gateway: 192.168.21.1
- DNS Server: 0.0.0.0

The 'IPv6 Configuration' section is partially visible at the bottom.

## DHCP Setting in PC 7



## Pinging Network 1 to Network 2

Realtime Simulation										
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC21	PC22	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC13	PC17	ICMP		0.000	N	1	(edit)	(delete)

Event List		
Vis.	Time(sec)	Last Device
	0.000	--
	0.000	--
	0.001	PC21
	0.002	Switch2
	0.003	PC13
	0.003	Router2
	0.004	Switch2
	0.004	Switch3
	0.005	Router2
	0.005	PC22
Visible	0.006	Switch3
Visible	0.006	Switch3

### Description:

- We are first asked to connect the whole structure without connecting the Servers to the network.
- None of the PC were IP configured.

- Router was configured to the provided IP addresses.
- Server was connected and DHCP was configured to the provided gateway and later the start point of the IP was assigned.
- DHCP allowed us to automatically configure the IP of PCs in the provided networks.
- After configuring the Starting point the server IP was set a start points of the IP address to which to be provided to the rest of the PCs.
- Later the PCs IP should be set to DHCP from static.
- IP's Get automatically added to each device after switching to DHCP.

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