

Practical No 3

Aim: Using Packet Tracer, create a basic network of one server and two computers using appropriate network wire. Use Dynamic IP address allocation and show connectivity

Theory:

For assigning ip addresses dynamically we use the DHCP protocol

Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.

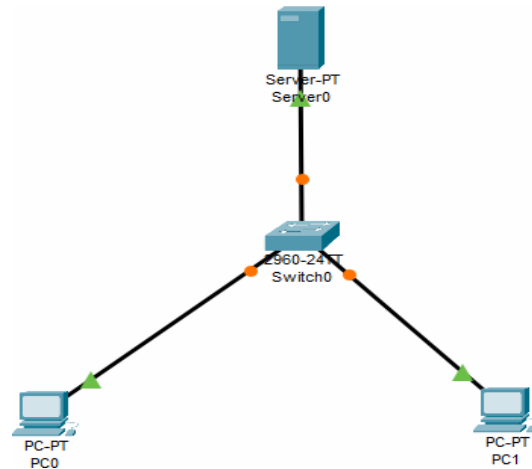
The DHCP server maintains a pool of IP addresses and leases an address to any DHCP-enabled client when it starts up on the network. Because the IP addresses are dynamic (leased) rather than static (permanently assigned), addresses no longer in use are automatically returned to the pool for reallocation.

DHCP provides the following benefits.

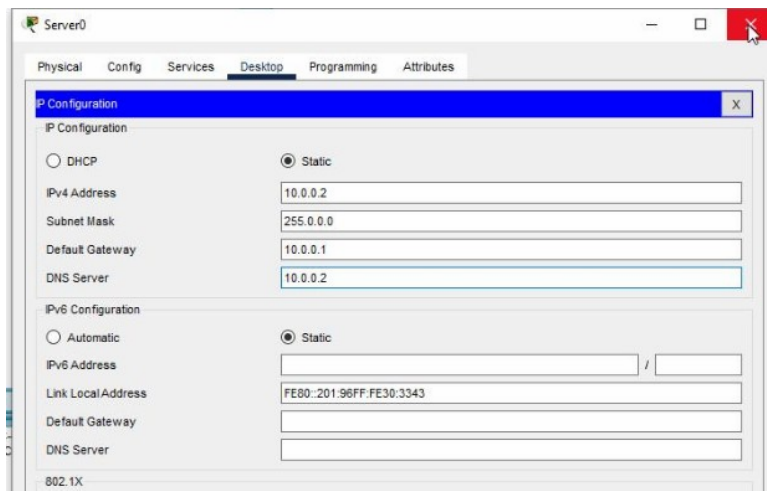
- 1) Reliable IP address configuration. DHCP minimizes configuration errors caused by manual IP address configuration, such as typographical errors, or address conflicts caused by the assignment of an IP address to more than one computer at the same time.
- 2) Reduced network administration. DHCP includes the following features to reduce network administration

DHCP runs at the application layer of the Transmission Control Protocol/IP (TCP/IP) stack to dynamically assign IP addresses to DHCP clients and to allocate TCP/IP configuration information to DHCP clients. This includes subnet mask information, default gateway IP addresses and domain name system (DNS) addresses.

We use the following topology for the present case



Configuring the Server:



Enabling and setting the DHCP Service on the Server:

The screenshot shows the configuration for the DHCP service on Server0. The 'Services' tab is selected, and the 'DHCP' service is enabled. The configuration includes the following fields:

- Interface: FastEthernet0
- Service: On
- Pool Name: serverPool
- Default Gateway: 10.0.0.1
- DNS Server: 10.0.0.2
- Start IP Address: 10.0.0.3
- Subnet Mask: 255.0.0.0
- Maximum Number of Users: 512
- TFTP Server: 0.0.0.0
- WLC Address: 0.0.0.0

Buttons: Add, Save, Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	10.0.0.1	10.0.0.2	10.0.0.3	255.0.0.0	512	0.0.0.0	0.0.0.0

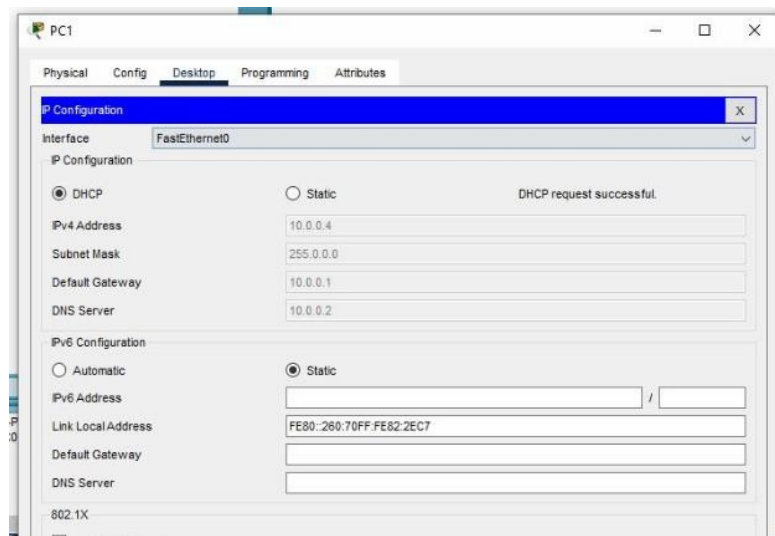
Verifying the Dynamic Addressing on both the PCs:

The screenshot shows the configuration for PC0. The 'Desktop' tab is selected, and the 'IP Configuration' section is expanded. The configuration includes the following fields:

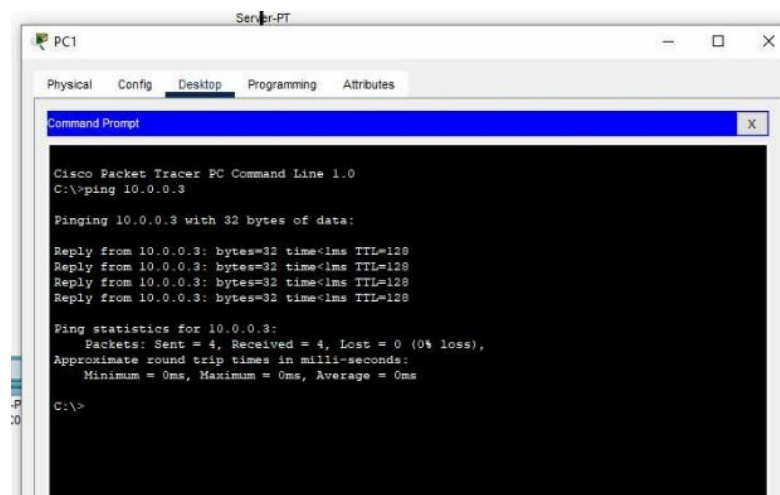
- Interface: FastEthernet0
- IP Configuration: DHCP (selected)
- Static: (unselected)
- DHCP request successful: (checked)
- IPv4 Address: 10.0.0.3
- Subnet Mask: 255.0.0.0
- Default Gateway: 10.0.0.1
- DNS Server: 10.0.0.2

IPv6 Configuration:

- Automatic: (unselected)
- Static: (selected)
- IPv6 Address: (empty)
- Link Local Address: FE80::260:5CFF:FE65:CD24
- Default Gateway: (empty)
- DNS Server: (empty)



Checking the connectivity:



Result:

Hence the Connectivity between the PCs has been verified.