

Experiment -3.2

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Branch: CSE

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Subject Name: Computer Networks

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Section/Group: 808/B

Date :

Subject Code: 21CSH-256

1. AIM: Configure DHCP server using Packet Tracer.

2. Requirements :

S/W Requirement :- Packet Tracer or NS2

H/W Requirement :-

- **Processor** – Any suitable Processor e.g. Celeron
- **Main Memory** - 128 MB RAM
- **Hard Disk** – minimum 20 GB IDE Hard Disk
- **Removable Drives**–1.44 MB Floppy Disk Drive
–52X IDE CD-ROM Drive
- **PS/2 HCL Keyboard and Mouse**

3. Theory:

DHCP, or Dynamic Host Configuration Protocol, is a networking protocol that enables automatic configuration of IP addresses and other network parameters for devices on a network.

Characteristics of DHCP:

- **Dynamic Allocation:** DHCP assigns IP addresses dynamically to devices on the network, which means that the IP addresses are leased for a certain period and can be reused by other devices once the lease expires.
- **Automatic Configuration:** DHCP enables devices to automatically obtain their IP address, subnet mask, default gateway, and DNS server information without manual configuration.
- **Centralized Management:** DHCP enables network administrators to centrally manage and control IP address allocation and network configuration, which simplifies network management and reduces errors.
- **Scalability:** DHCP can support large-scale networks with thousands of devices, making it ideal for enterprise networks.

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Advantages of DHCP:

- Efficient IP address management: DHCP enables efficient management of IP addresses, reducing the likelihood of address conflicts and simplifying network administration.
- Reduced configuration errors: DHCP eliminates the need for manual configuration of network settings, reducing the likelihood of configuration errors and improving network reliability.
- Centralized administration: DHCP enables centralized administration of network configuration, making it easier to manage large networks with many devices.

Disadvantages of DHCP:

- Single point of failure: DHCP servers can become a single point of failure, as all devices on the network rely on the server to obtain their IP addresses and network configuration.
- Security risks: DHCP can be a security risk if not properly configured, as rogue DHCP servers can be used to distribute incorrect network configuration information or launch attacks on devices on the network.
- Limited control: DHCP provides limited control over network configuration settings, as devices on the network are configured automatically and may not be configured to meet specific requirements.

4. Procedure:

Step 1. Open Cisco packet tracer desktop and set up a network topology as shown in the image, using a server, a switch and two PCs.

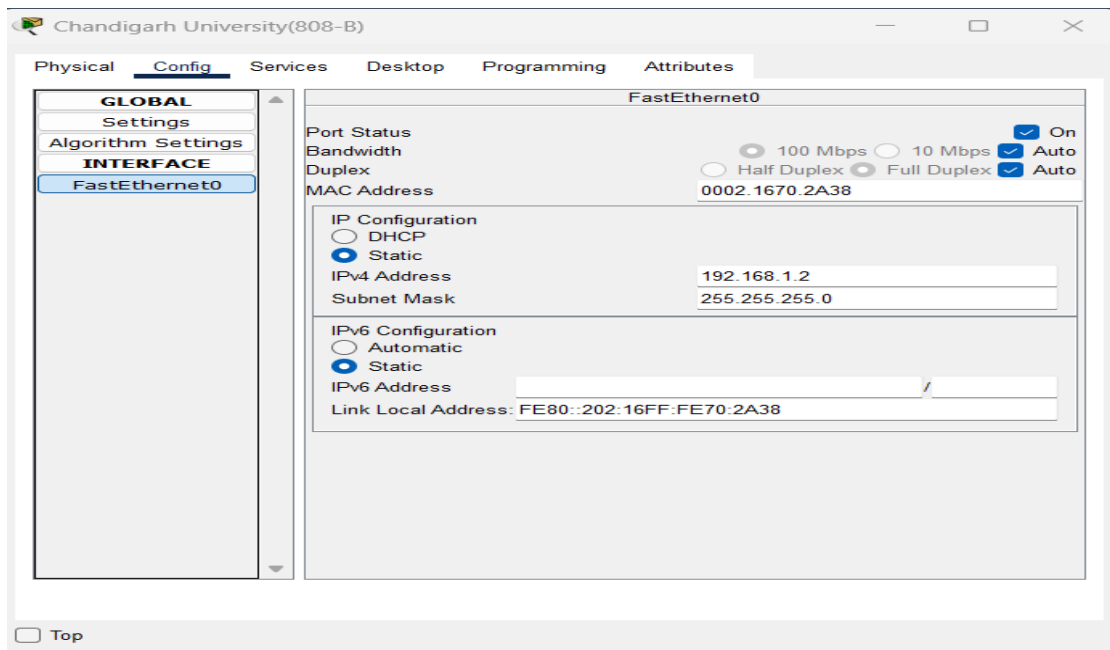
Step 2. Configure the IP addresses of the server.

Step 3. Go To services of server > DHCP > enter pool name , default gateway(192.168.1.1), DNS server(192.168.1.2)

Step 4. Goto PC0 > IP config > select DHCP and do the same with other PCs.

Step 5. Run simulation.

5. Screenshots :



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Physical **Config** Services Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Port Status ☐ 100 Mbps ☐ 10 Mbps ☒ On

Bandwidth ☐ Half Duplex ☒ Full Duplex ☒ Auto

Duplex

MAC Address 0002.1670.2A38

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

IPv6 Configuration

☐ Automatic

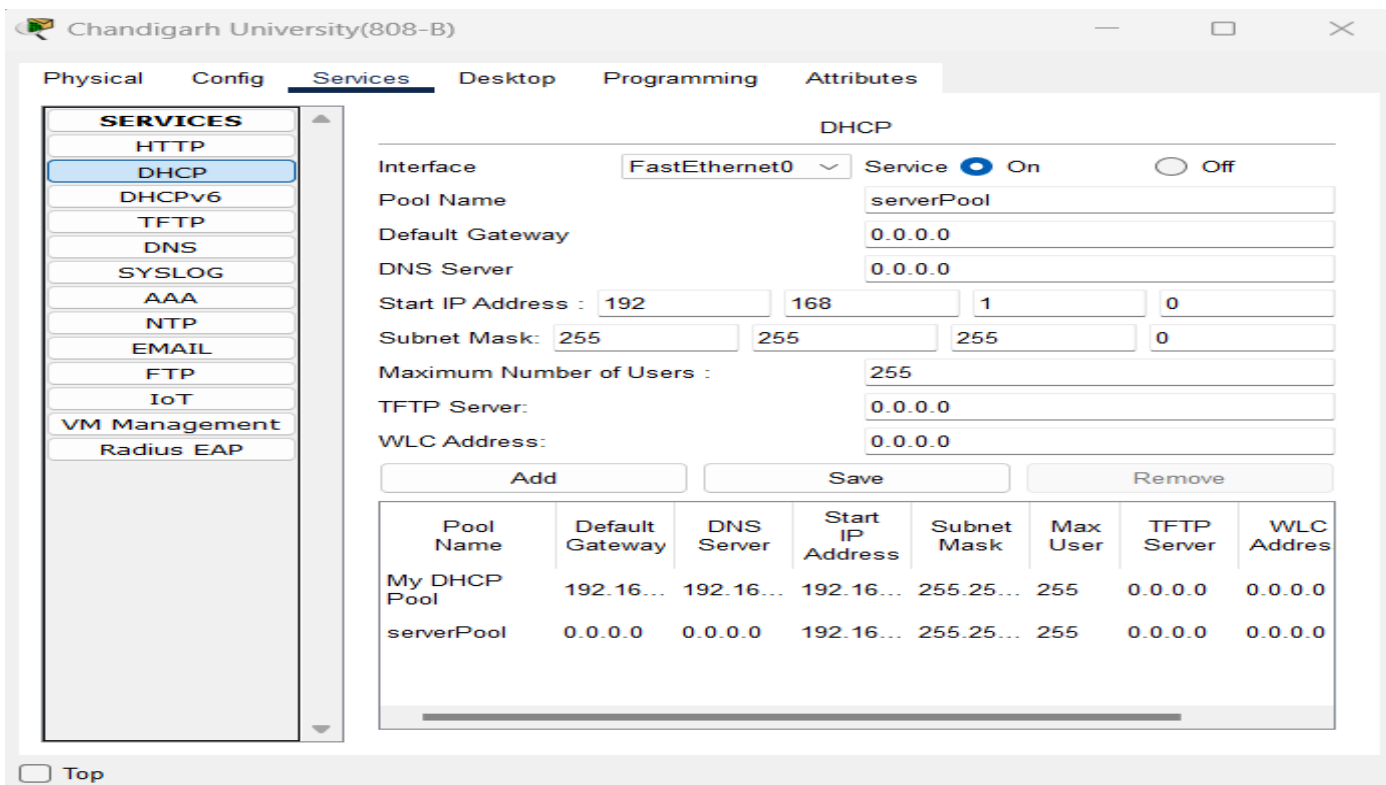
☒ Static

IPv6 Address

Link Local Address: FE80::202:16FF:FE70:2A38

☐ Top

IP configuration of Server



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Physical Config **Services** Desktop Programming Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DHCP

Interface FastEthernet0 Service ☒ On ☐ Off

Pool Name serverPool

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

Start IP Address : 192 168 1 0

Subnet Mask: 255 255 255 0

Maximum Number of Users : 255

TFTP Server: 0.0.0.0

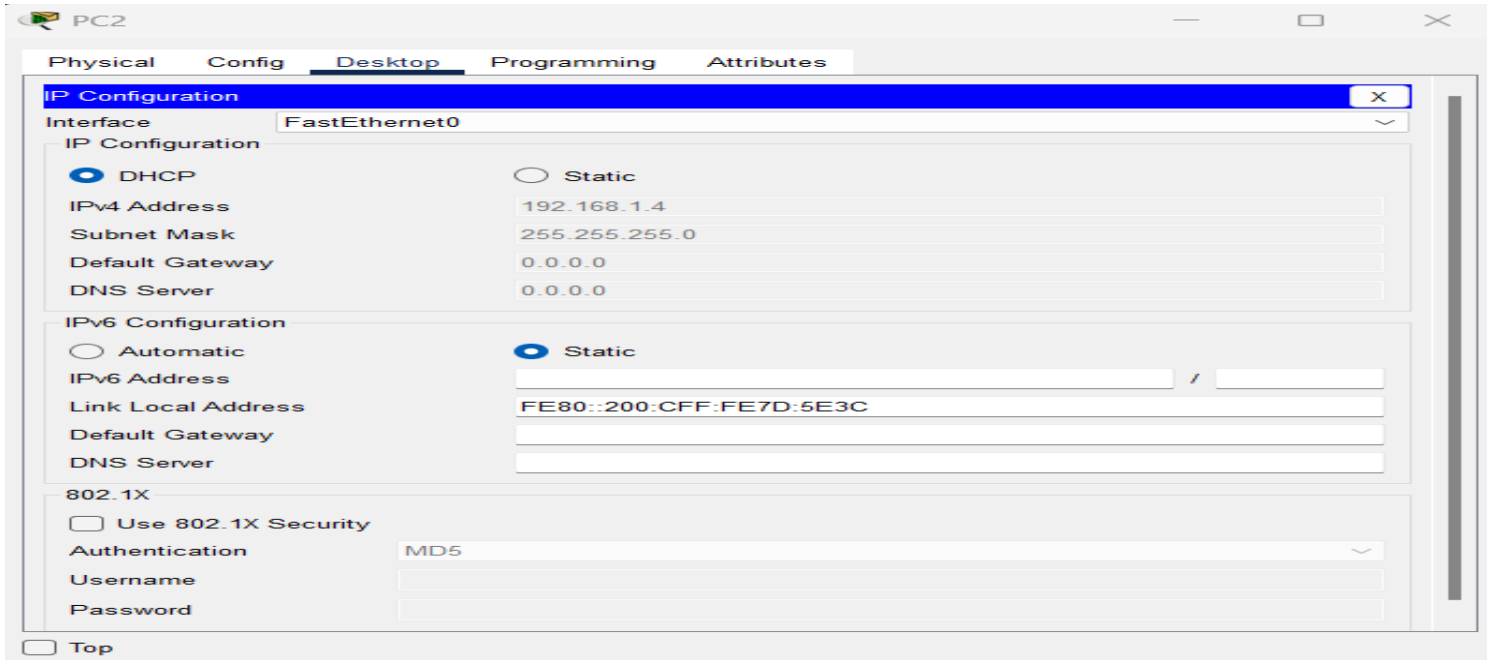
WLC Address: 0.0.0.0

Add Save Remove

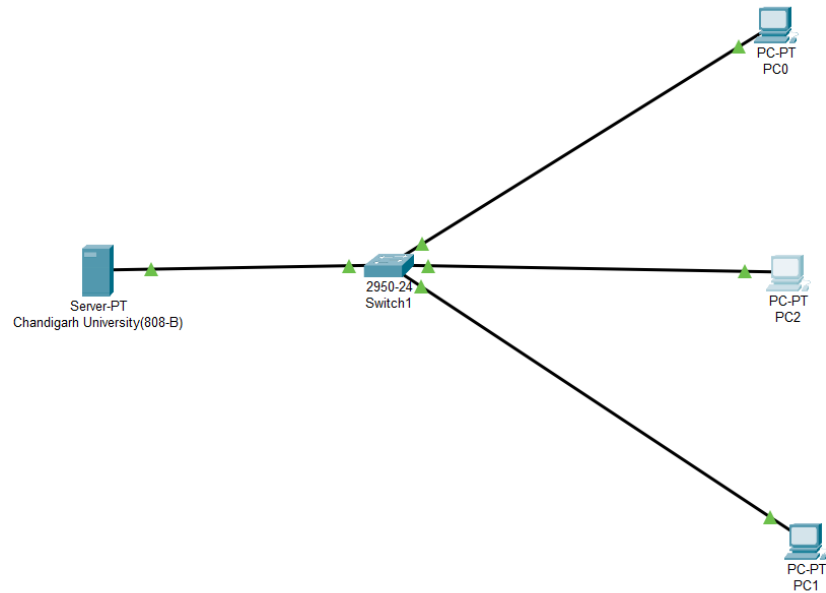
Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
My DHCP Pool	192.16...	192.16...	192.16...	255.25...	255	0.0.0.0	0.0.0.0
serverPool	0.0.0.0	0.0.0.0	192.16...	255.25...	255	0.0.0.0	0.0.0.0

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Configuration of DHCP



IP address automatically assigned by DHCP



Topology

6. Result: The concept of DHCP is understood.