

EX.NO:05(B)

Date :

Configuring VoIP Phones using Cisco Packet Tracer (IP Telephony)

Aim:

To configure IP Telephony in Cisco Packet Tracer using VoIP phones and a Call Manager router. The objective is to enable voice communication between IP phones connected in a LAN.

Theory:

Voice over Internet Protocol (VoIP) allows transmission of voice data over IP networks. In Cisco Packet Tracer, VoIP can be simulated using IP phones connected to a switch and configured through a router with Call Manager Express (CME) features enabled.

- **Call Manager Express (CME):** Runs on a Cisco router and provides call processing to register and manage IP phones.
- **DHCP Service:** The router can act as a DHCP server to dynamically assign IP addresses to the IP phones.
- **Telephony-service:** A special service that assigns extension numbers to phones.
- **Dialing:** Once IP phones are registered, users can dial extension numbers to communicate.

Required Equipment:

1. Cisco Router (2811/2911 with Telephony support)
2. Cisco Switch (2960/2950)
3. IP Phones (e.g., 7960/7970 series)
4. PCs (optional for management)
5. Ethernet Cables (Copper Straight-Through)
6. Cisco Packet Tracer Software

Procedure:

Step 1: Build the Topology

1. Drag and drop one **Router (2811)**, one **Switch (2960)**, and two **IP Phones (7960)**.
2. Connect the devices using Copper Straight-Through cables.

Step 2: Configure the Router for Telephony Service

1. Go to Router → CLI.

2. Enable the telephony service:
3. Router> enable
4. Router# configure terminal
5. Router(config)# telephony-service
6. Router(config-telephony)# max-dn 5
7. Router(config-telephony)# max-ephones 5
8. Router(config-telephony)# ip source-address 192.168.1.1 port 2000
9. Router(config-telephony)# auto assign 1 to 5
10. Router(config-telephony)# exit

Step 3: Configure Ephone-dn (Extension Numbers)

```
Router(config)# ephone-dn 1
Router(config-ephone-dn)# number 101
Router(config-ephone-dn)# exit
```

```
Router(config)# ephone-dn 2
Router(config-ephone-dn)# number 102
Router(config-ephone-dn)# exit
```

Step 4: Configure IP Addresses and DHCP on Router

```
Router(config)# interface fastEthernet 0/0
Router(config-if)# ip address 192.168.1.1 255.255.255.0
Router(config-if)# no shutdown
Router(config-if)# exit
```

```
Router(config)# ip dhcp pool VOIP
Router(dhcp-config)# network 192.168.1.0 255.255.255.0
Router(dhcp-config)# default-router 192.168.1.1
Router(dhcp-config)# option 150 ip 192.168.1.1
Router(dhcp-config)# exit
```

Step 5: Configure IP Phones

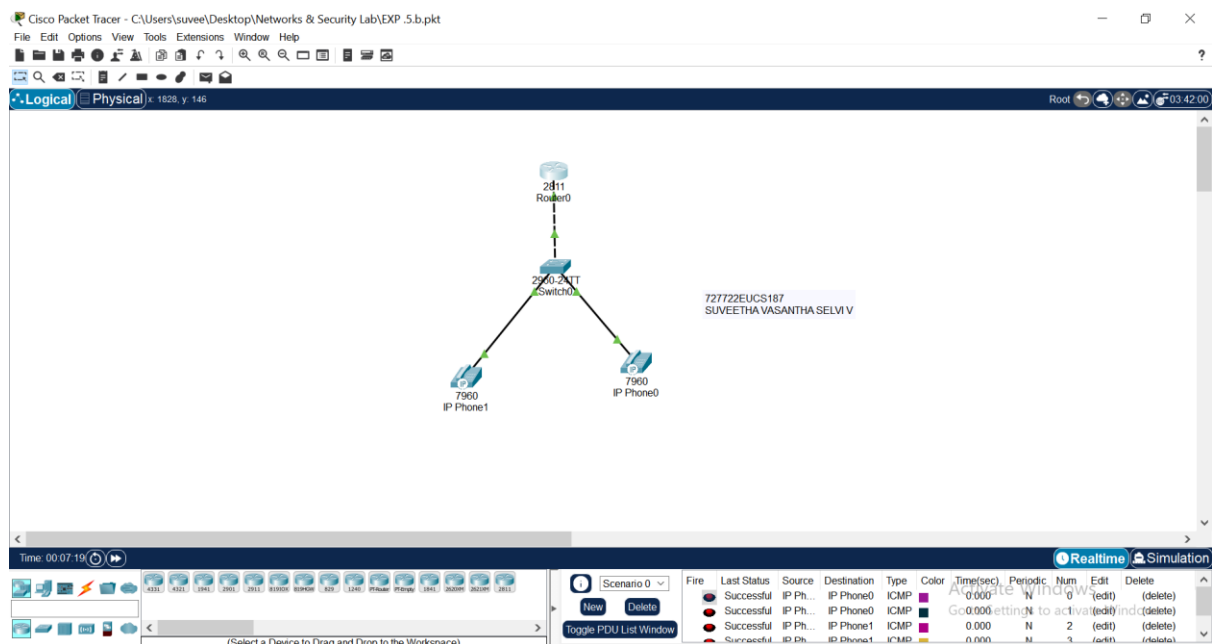
1. Connect IP Phones to Switch ports.
2. By default, they will request an IP address via DHCP.
3. Phones should automatically register with the router and display assigned extensions (101, 102).

Step 6: Test Calling Between Phones

1. Pick up **IP Phone0** and dial 102.
2. **IP Phone1** should ring.
3. Similarly, dial 101 from IP Phone1 to call IP Phone0.

Model Output:

Configuring VoIP Phones



Result:

VoIP Phones were successfully configured using Cisco Packet Tracer. The router acted as a Call Manager Express, and the IP phones registered with assigned extensions, enabling voice communication between them.