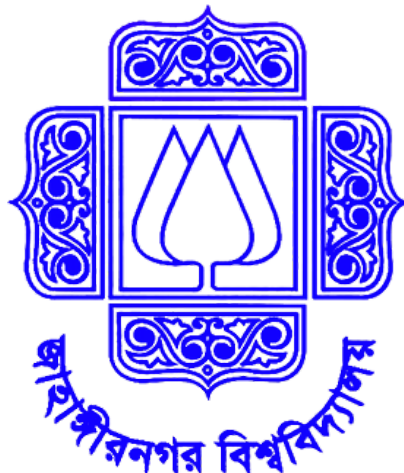


Department of Computer Science and Engineering  
Jahangirnagar University  
Savar, Dhaka



## **Laboratory Report**

CSE-402: Computer Networks Laboratory

### **Submitted by**

Md. Masum Bhuiyan

Exam roll: 160033

Class roll: 39

Session: 2015-16

4th year 1st Semester

### **Submitted to**

Dr. Imdadul Islam

Professor

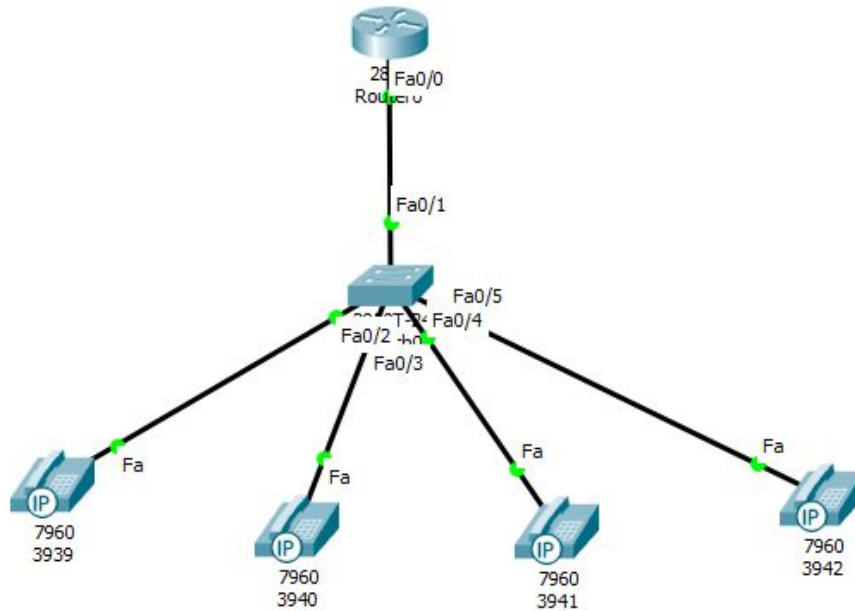
Department of Computer Science and Engineering  
Jahangirnagar University

**Experiment No: 06****Experiment Name: IP Telephony .****Objectives:**

The purpose of this experiment is to describe how IP-telephony works and discuss what are the advantages and disadvantages compared to the common telephone system widely used nowadays. I also aim to point how IP-telephony is being used and how it can be improved in certain aspects.

**Introduction:**

IP telephony provides a way for you to extend highly secure, reliable, and consistent communications services to all your employees whether they are in the main campus locations, at branch offices, working remotely, or are mobile. IP telephony transmits voice communications over the network using open-standards-based Internet Protocol. Cisco IP telephony solutions are an integral part of Cisco Unified Communications, which unify voice, video, data, and mobile applications on fixed and mobile networks enabling users to easily communicate in any workspace using any media, device, or operating system. Using the network as the platform, Cisco IP telephony solutions help organizations of all sizes realize greater security, resilience, and scalability in addition to the inherent benefits of using a converged network for transport and interconnection. It provides highly secure, reliable, scalable communications that take advantage of your LAN and WAN. It improves employee agility and productivity through integration with innovative Cisco Unified Communications and third-party applications.



**Figure 1 : One Router,One Switch and Four IP Phone**

### **Router Configuration through CLC :**

#### **--- System Configuration Dialog ---**

Would you like to enter the initial configuration dialog? [yes/no]: no  
Press RETURN to get started!

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int fa0/0

Router(config-if)#ip add 192.168.10.39 255.255.255.0

Router(config-if)#no shut

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit

Router(config)#ip dhcp pool VOICE

Router(dhcp-config)#network 192.168.10.0 255.255.255.0

```
Router(dhcp-config)#default-router 192.168.10.39
Router(dhcp-config)#option 150 ip 192.168.10.39
Router(dhcp-config)#exit
Router(config)#telephony-service
Router(config-telephony)#max-dn 4
Router(config-telephony)#max-ephone 10
Router(config-telephony)#ip source-address 192.168.10.39 port 2000
Router(config-telephony)#auto assign 1 to 5
Router(config-telephony)#exit
Router(config)#ephone-dn 1
Router(config-ephone-dn)##%LINK-3-UPDOWN: Interface ephone_dsp DN 1.1,
changed state to up
Router(config-ephone-dn)#number 3939
Router(config-ephone-dn)#exit
Router(config)#ephone-dn 2
Router(config-ephone-dn)##%LINK-3-UPDOWN: Interface ephone_dsp DN 2.1,
changed state to up
Router(config-ephone-dn)#number 3940
Router(config-ephone-dn)#exit
Router(config)#ephone-dn 3
Router(config-ephone-dn)##%LINK-3-UPDOWN: Interface ephone_dsp DN 3.1,
changed state to up
Router(config-ephone-dn)#number 3941
Router(config-ephone-dn)#exit
Router(config)#ephone-dn 4
Router(config-ephone-dn)##%LINK-3-UPDOWN: Interface ephone_dsp DN 4.1,
changed state to up
Router(config-ephone-dn)#number 3942
Router(config-ephone-dn)#exit
Router(config)#ephon
%IPPHONE-6-REGISTER: ephone-1 IP:192.168.10.1 Socket:2 DeviceType:Phone has
registered.
%IPPHONE-6-REGISTER: ephone-2 IP:192.168.10.2 Socket:2 DeviceType:Phone has
registered.
%IPPHONE-6-REGISTER: ephone-3 IP:192.168.10.3 Socket:2 DeviceType:Phone has
registered.
%IPPHONE-6-REGISTER: ephone-4 IP:192.168.10.4 Socket:2 DeviceType:Phone has
registered.
```

## Switch Configuration through CLC :

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

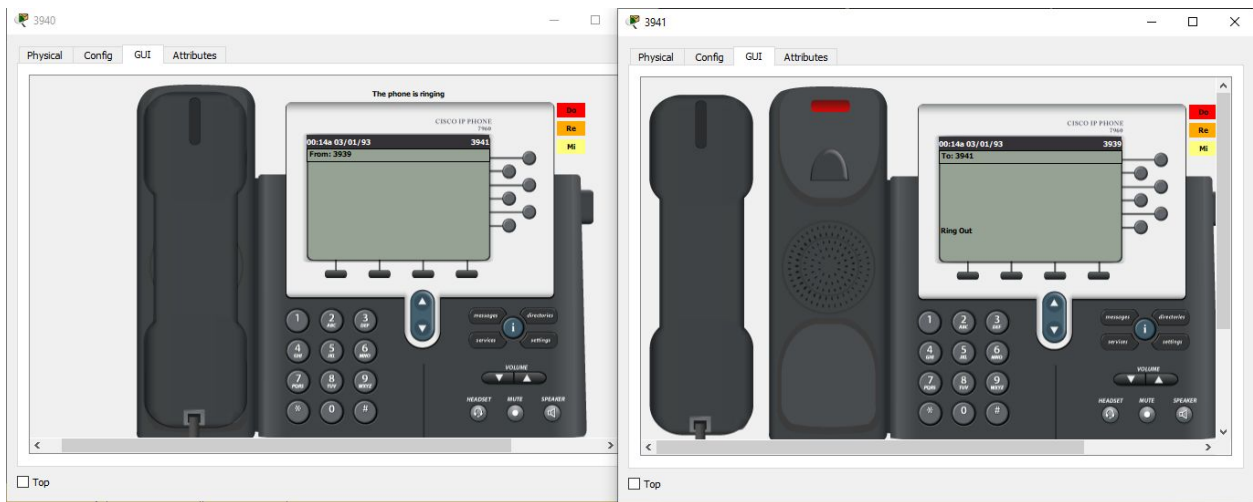
Switch(config)#int range fa0/1-10

Switch(config-if-range)#switchport mode access

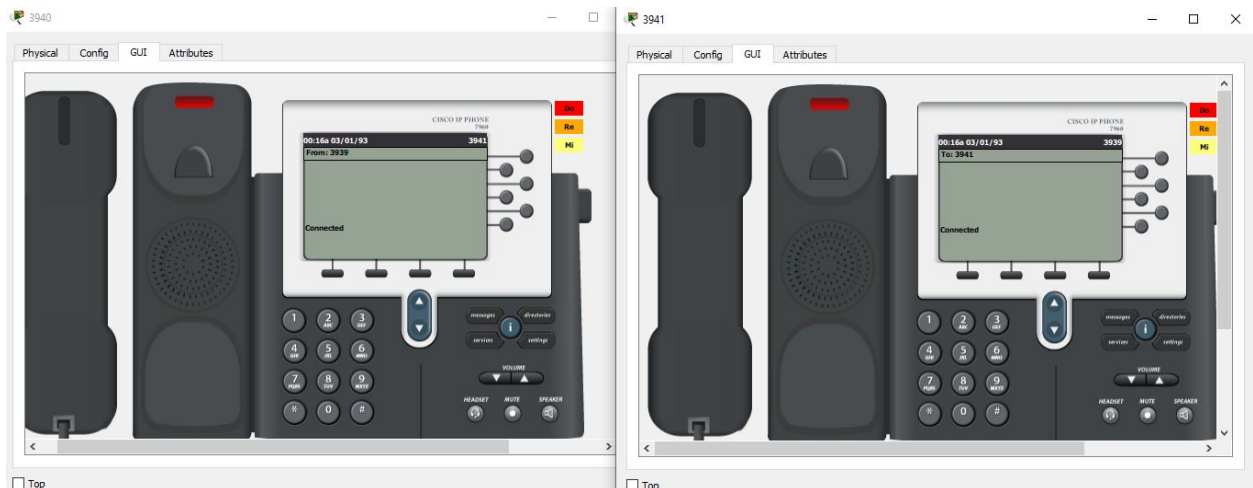
Switch(config-if-range)#switchport voice vlan 1

Switch(config-if-range)#

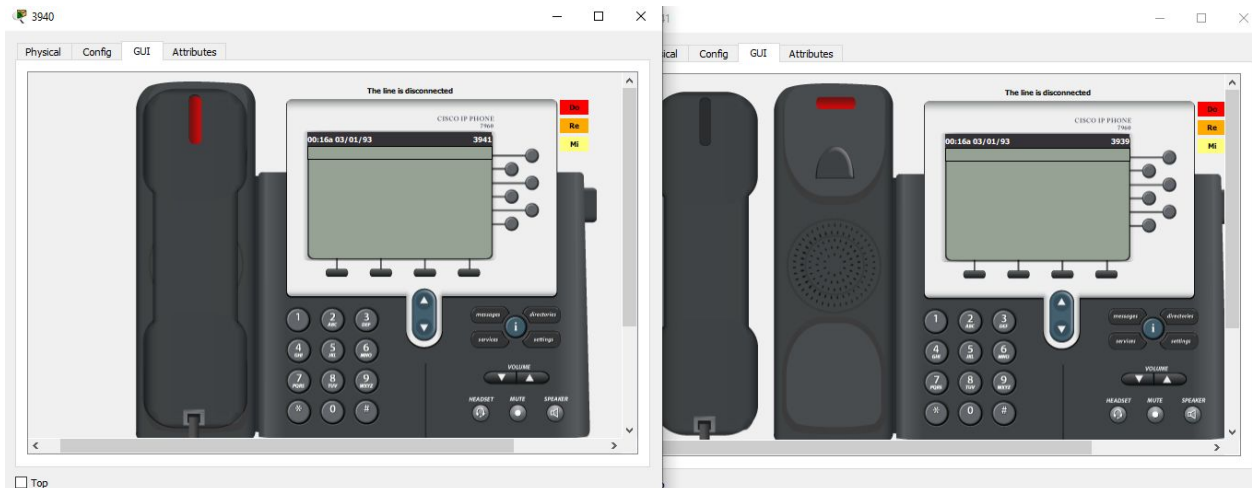
**Verify the circuit with dialing:**



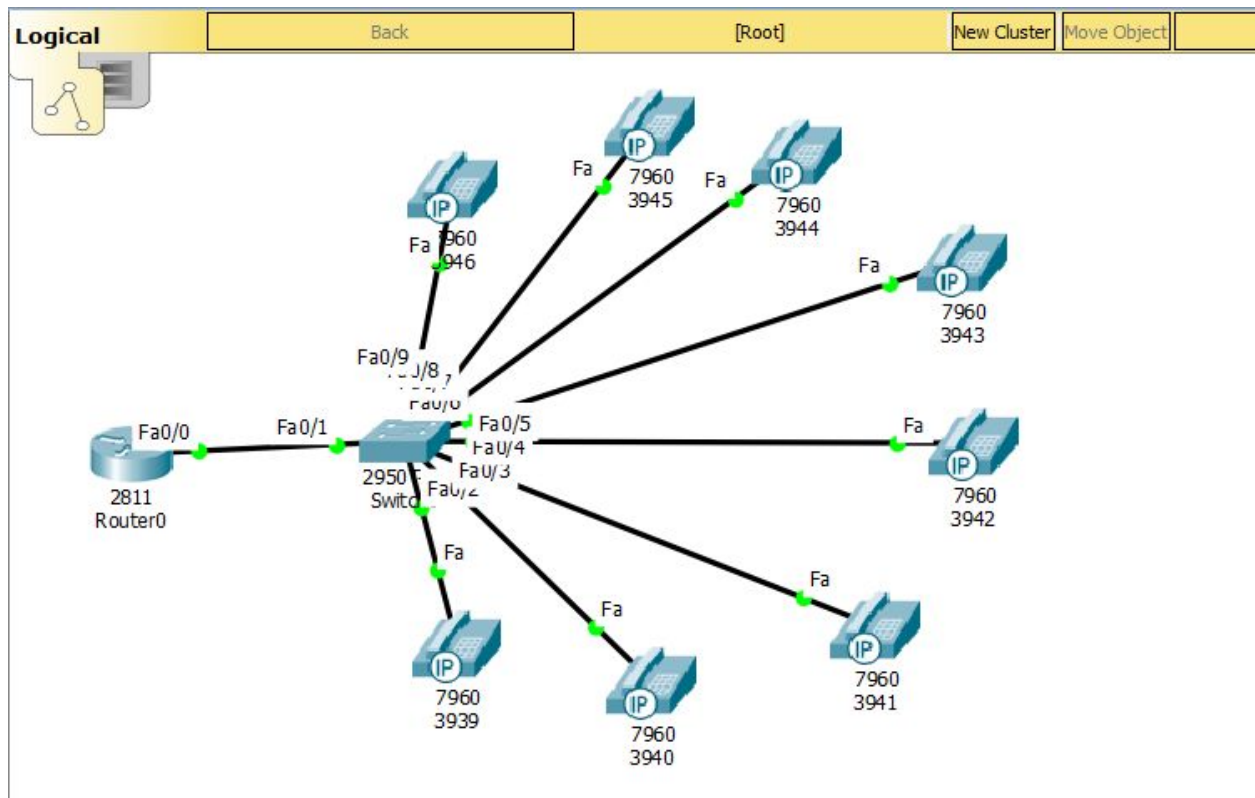
**Figure 2 :** The Phone is ringing



**Figure 3 :** The Phone is connected



**Figure 4 :** The Phone is disconnected



**Figure 5 :** One Router,One Switch and Eight IP Phone

## Router Configuration through CLC :

--- System Configuration Dialog ---

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

Press RETURN to get started!

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int fa0/0

Router(config-if)#ip add 192.168.10.39 255.255.255.0

Router(config-if)#no shut

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit

Router(config)#ip dhcp pool VOICE

Router(dhcp-config)#network 192.168.10.0 255.255.255.0

Router(dhcp-config)#default-router 192.168.10.39

Router(dhcp-config)#option 150 ip 192.168.10.39

Router(dhcp-config)#exit

Router(config)#telephony-service

Router(config-telephony)#max-dn 8

Router(config-telephony)#max-ephone 12

Router(config-telephony)#ip source-address 192.168.10.39 port 2000

Router(config-telephony)#auto assign 1 to 9

Router(config-telephony)#exit

Router(config)#ephone-dn 1

Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone\_dsp DN 1.1, changed state to up

Router(config-ephone-dn)#number 3939

Router(config-ephone-dn)#exit

Router(config)#

%IPPHONE-6-REGISTER: ephone-1 IP:192.168.10.2 Socket:2 DeviceType:Phone has registered.

Router(config)#ephone-dn 2

Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone\_dsp DN 2.1, changed state to up

Router(config-ephone-dn)#number 3940

Router(config-ephone-dn)#

%IPPHONE-6-REGISTER: ephone-4 IP:192.168.10.5 Socket:2 DeviceType:Phone has registered.  
Router(config-ephone-dn)#exit  
Router(config)#ephone-dn 3  
Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone\_dsp DN 3.1, changed state to up  
Router(config-ephone-dn)#number 3941  
Router(config-ephone-dn)#%DHCPD-4-PING\_CONFLICT: DHCP address conflict: server pinged 192.168.10.7.  
Router(config-ephone-dn)#  
%IPPHONE-6-REGISTER: ephone-8 IP:192.168.10.6 Socket:2 DeviceType:Phone has registered.  
Router(config)#exit  
Router(config)#ephone-dn 4  
Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone\_dsp DN 4.1, changed state to up  
Router(config-ephone-dn)#number 3942  
Router(config-ephone-dn)#exit  
Router(config)#  
%IPPHONE-6-REGISTER: ephone-3 IP:192.168.10.4 Socket:2 DeviceType:Phone has registered.  
Router(config)#ephone-dn 5  
Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone\_dsp DN 5.1, changed state to up  
Router(config-ephone-dn)#number 3943  
Router(config-ephone-dn)#  
%IPPHONE-6-REGISTER: ephone-2 IP:192.168.10.9 Socket:2 DeviceType:Phone has registered.  
Router(config-ephone-dn)#exit  
Router(config)#ephone-dn 6  
Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone\_dsp DN 6.1, changed state to up  
Router(config-ephone-dn)#number 3944  
Router(config-ephone-dn)#  
%IPPHONE-6-REGISTER: ephone-6 IP:192.168.10.3 Socket:2 DeviceType:Phone has registered.  
Router(config-ephone-dn)#exit  
Router(config)#ephone-dn 7



```

Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone_dsp DN 7.1,
changed state to up
Router(config-ephone-dn)#number 3945
Router(config-ephone-dn)#
%IPPHONE-6-REGISTER: ephone-5 IP:192.168.10.8 Socket:2 DeviceType:Phone has
registered.
Router(config-ephone-dn)#exit
Router(config)#ephone-dn 8
Router(config-ephone-dn)#%LINK-3-UPDOWN: Interface ephone_dsp DN 8.1,
changed state to up
Router(config-ephone-dn)#number 3946
Router(config-ephone-dn)#
%IPPHONE-6-REGISTER: ephone-7 IP:192.168.10.7 Socket:2 DeviceType:Phone has
registered.

```

### Switch Configuration through CLC :

```
Switch>en
```

```
Switch#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

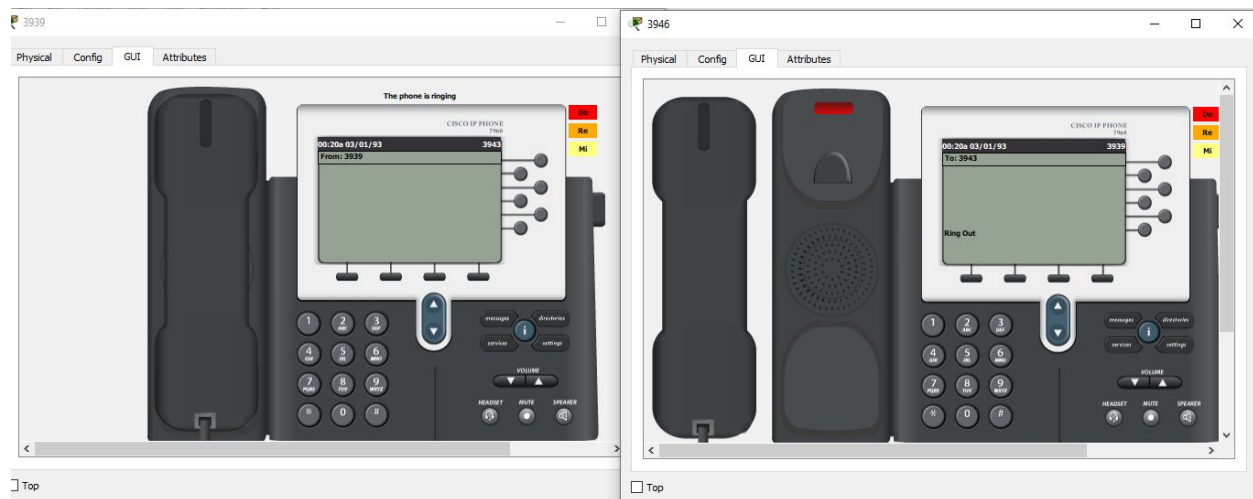
```
Switch(config)#int range fa0/1-12
```

```
Switch(config-if-range)#switchport mode access
```

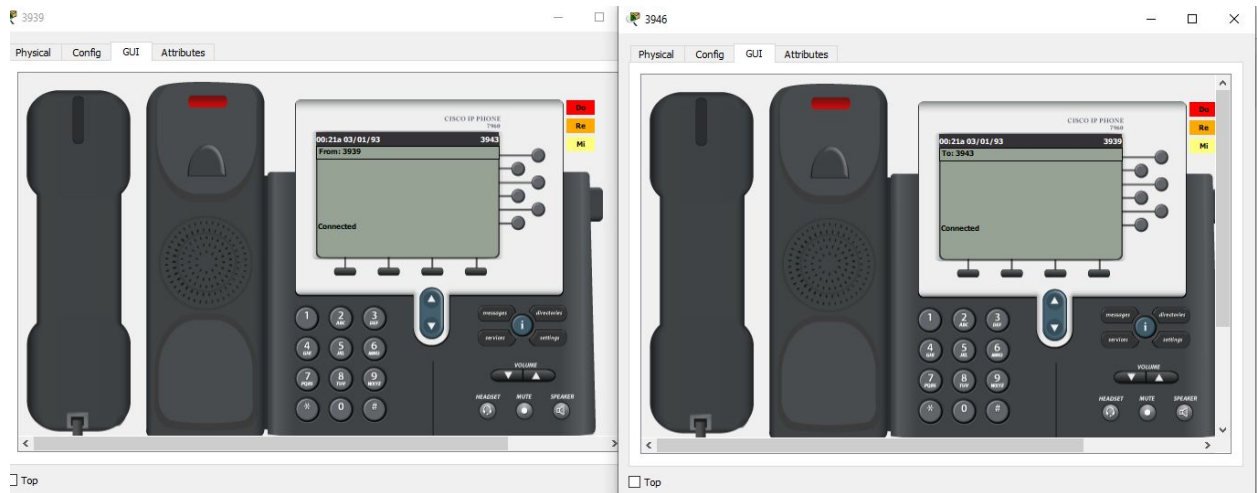
```
Switch(config-if-range)#switchport voice vlan 1
```

```
Switch(config-if-range)#
```

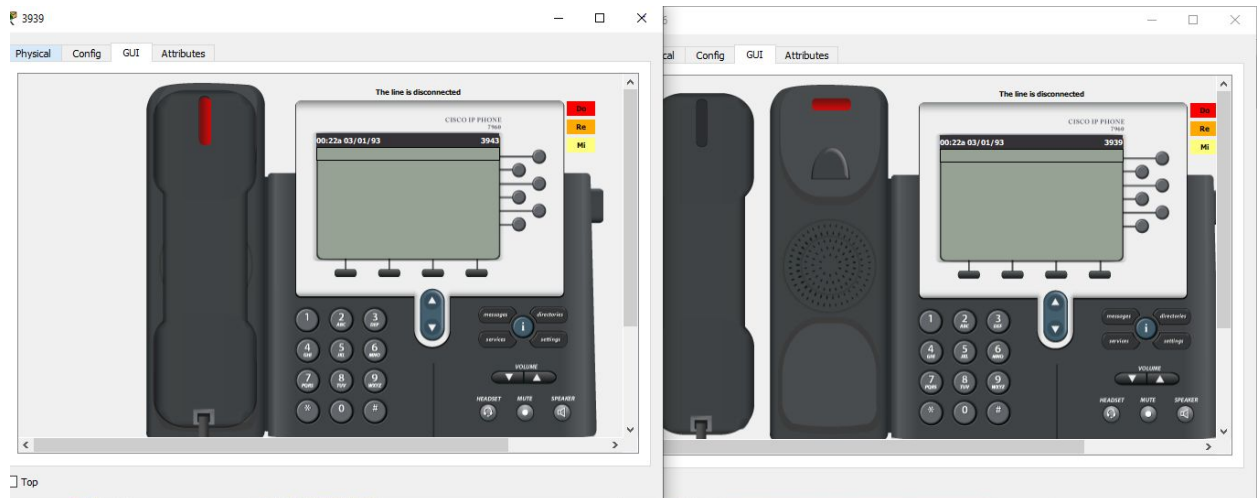
### Verify the circuit with dialing:



**Figure 6 :** The Phone is ringing



**Figure 7 : The Phone is Connected**



**Figure 8 : The Phone is Disconnected**

