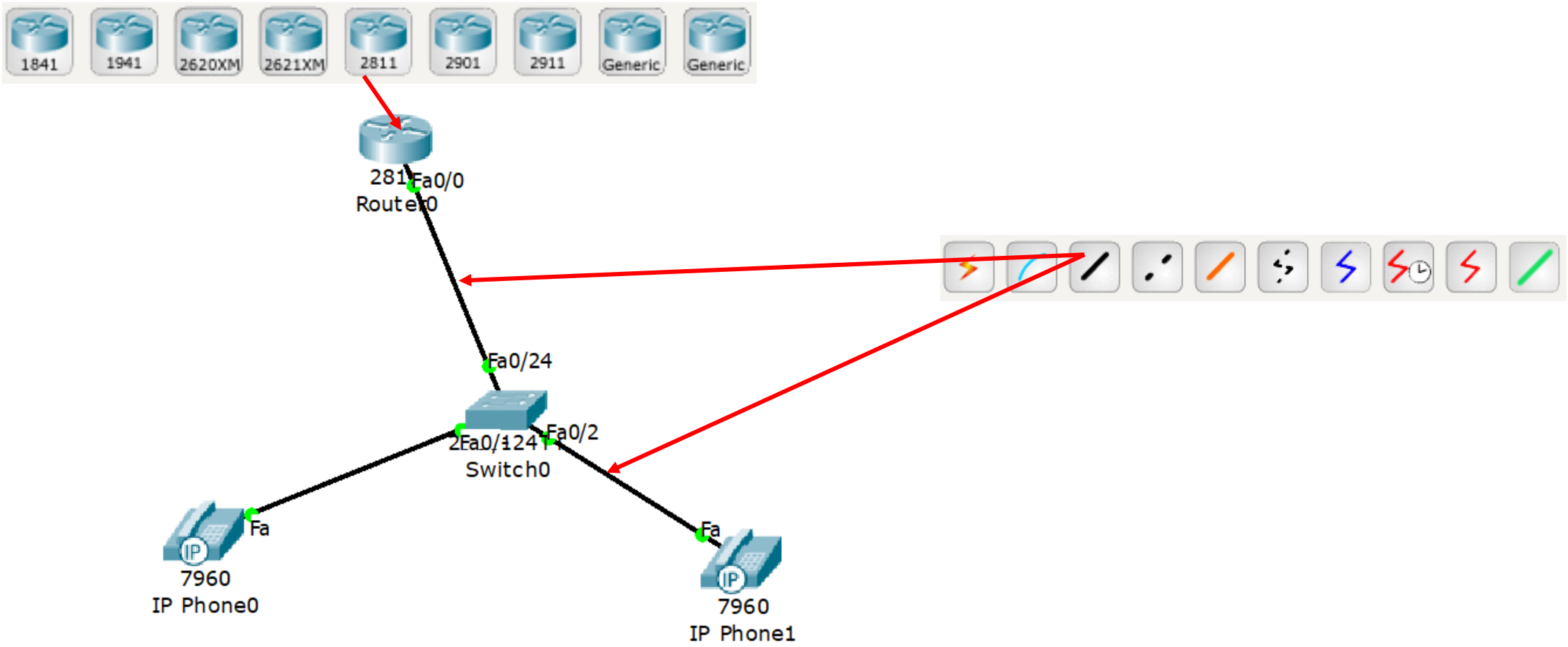
IP Telephony

Objective of this experiment is to implement a small network of IP telephony. Each telephone will be verified with its content of IP address and corresponding telephone number. Finally, the network will be tested by dialing to each other IP phone.

Step-1

Take 2811 router and 2960 switch to implement the IP telephony circuit likes below. During connection to the IP phone the option **SWITCH** should be selected.



When a Cisco IP Phone starts, if it does not have both the IP address and TFTP (Trivial File Transfer Protocol) server, it sends a request with option 150 to the DHCP server to obtain this information.

Step-2

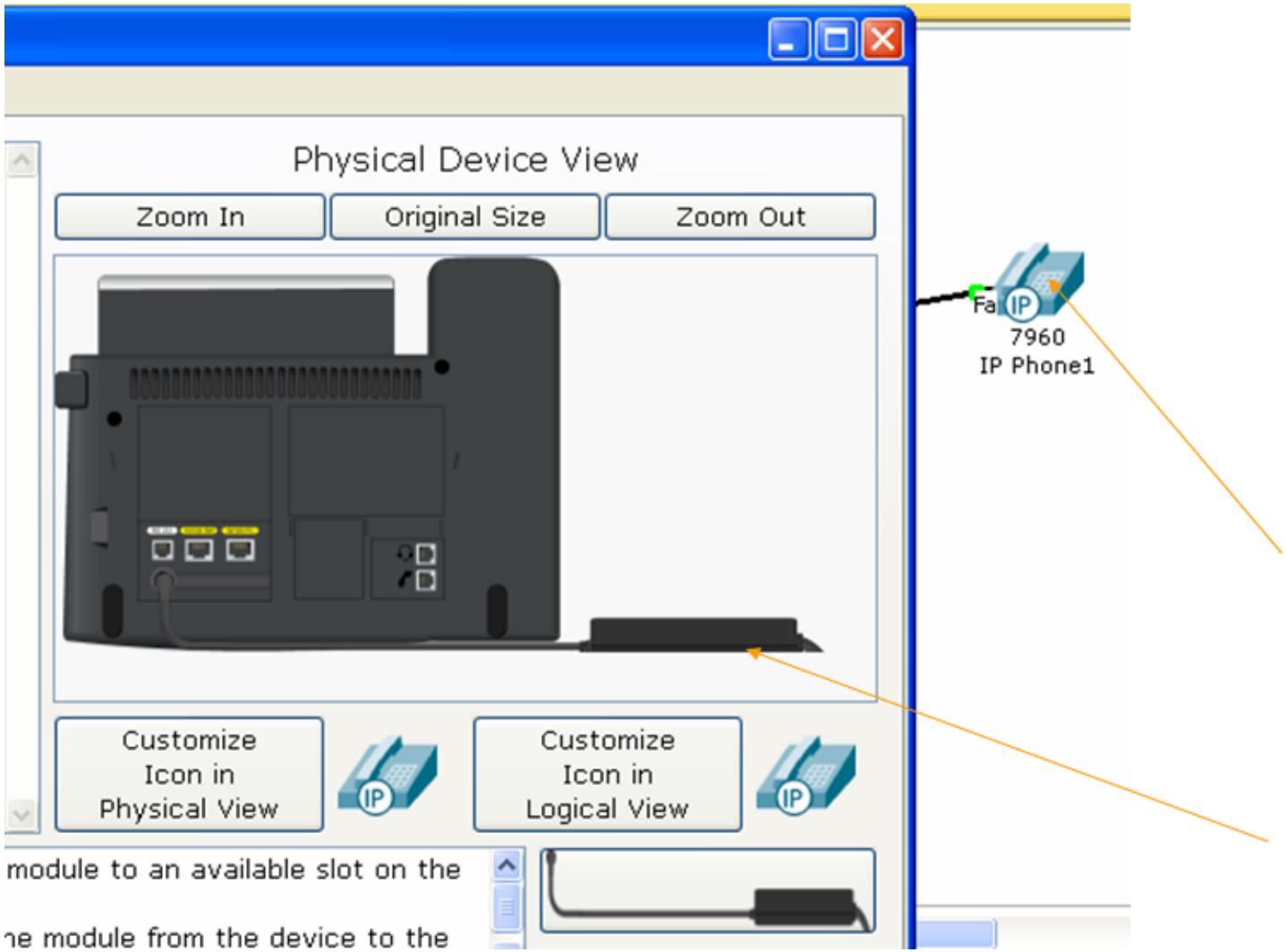
```
Router>en
Router#conf t
Router(config)#int fa0/0
Router(config-if)#ip add 192.168.10.1 255.255.255.0
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#ip dhcp pool VOICE
Router(dhcp-config)#network 192.168.10.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.10.1
Router(dhcp-config)#option 150 ip 192.168.10.1
Router(dhcp-config)#exit
```

```
Router(config)#telephony-service
% The router is configured for telephony services
Router(config-telephony)#max-dn 5
%The maximum number telephone line with phone number
Router(config-telephony)#max-ephone 20
%To set the maximum number of Cisco IP phones to get IP under DHCP
Router(config-telephony)#ip source-address 192.168.10.1 port 2000
%TCP port 2000
Router(config-telephony)#auto assign 1 to 5
% Five telephone and five  numbers
```

Directory Number is a phone number assigned to a specific phone or voice endpoint.

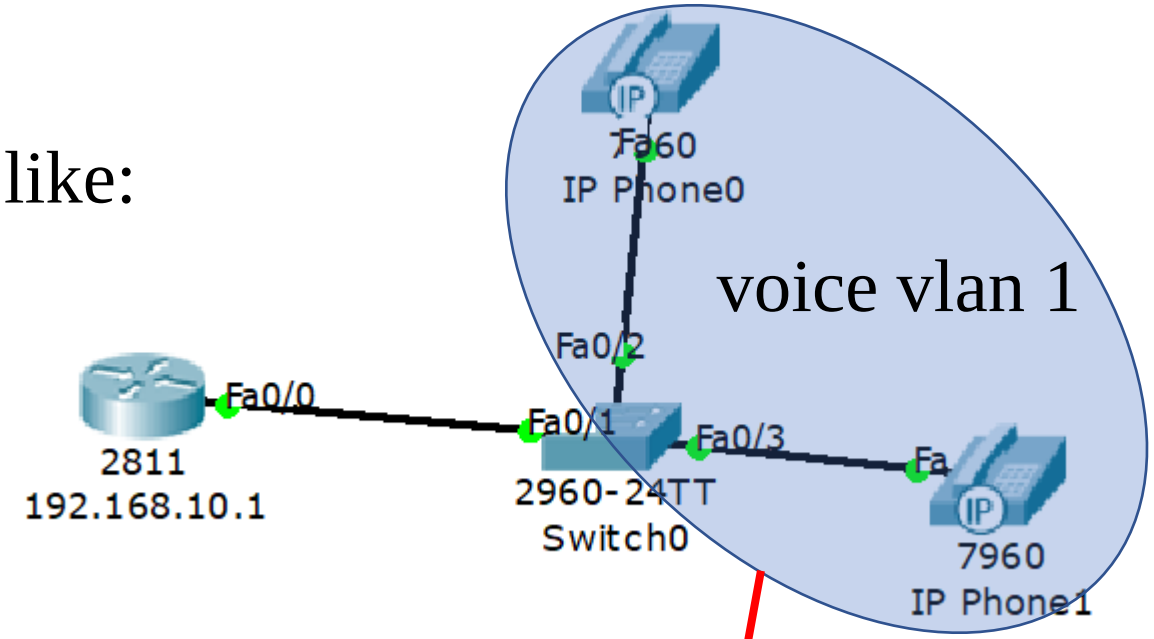
Step-3

Plug in both the telephones.



Step-4

Configure the switch using CLI like:




```
Switch>en
Switch#conf t
Switch(config)#int range fa0/1-23
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport VOICE vlan 1
Switch(config-if-range)#exit
Switch(config)#int fa0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#do wr
```

Ports fa0/1 to fa0/23 are under vlan 1 access port and port fa0/24 is trunk port.

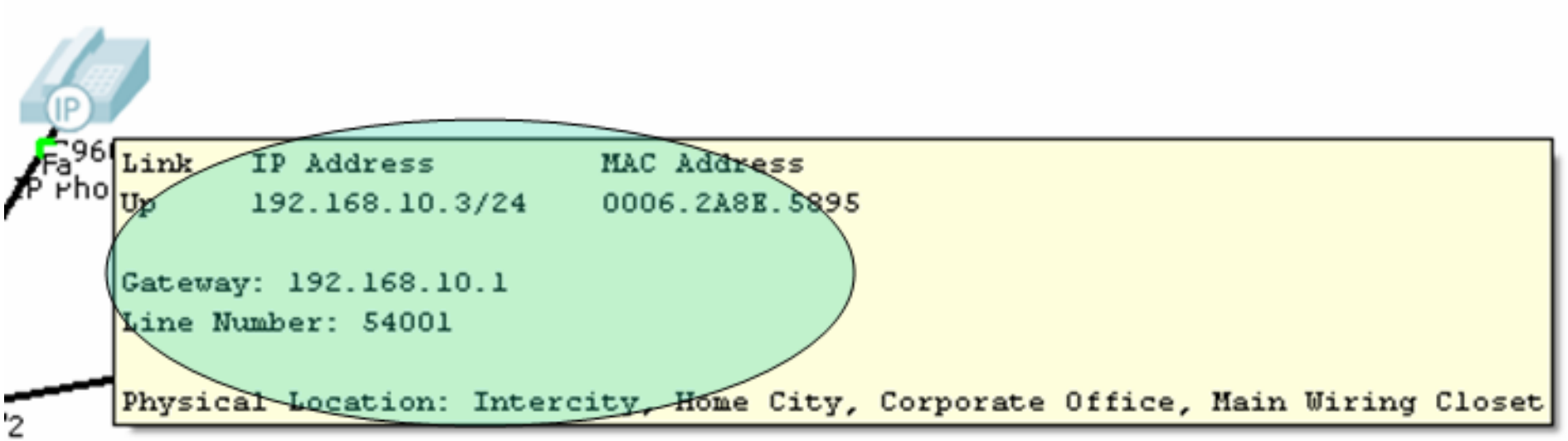
Step-5

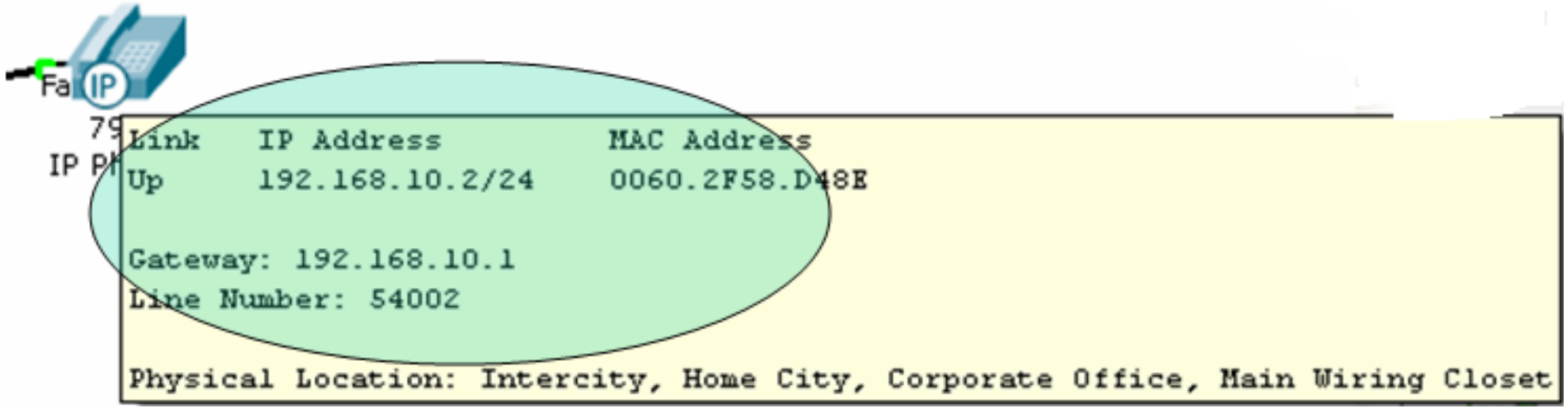
Configure the router again like:

```
Router(config-telephony)#exit
Router(config)#ephone-dn 1
Router(config-ephone-dn)#number 54001
% phone calling number
Router(config-ephone-dn)#exit
Router(config)#ephone-dn 2
Router(config-ephone-dn)#number 54002
Router(config-ephone-dn)#
```

Step-6

Verify the configuration of both IP telephone.



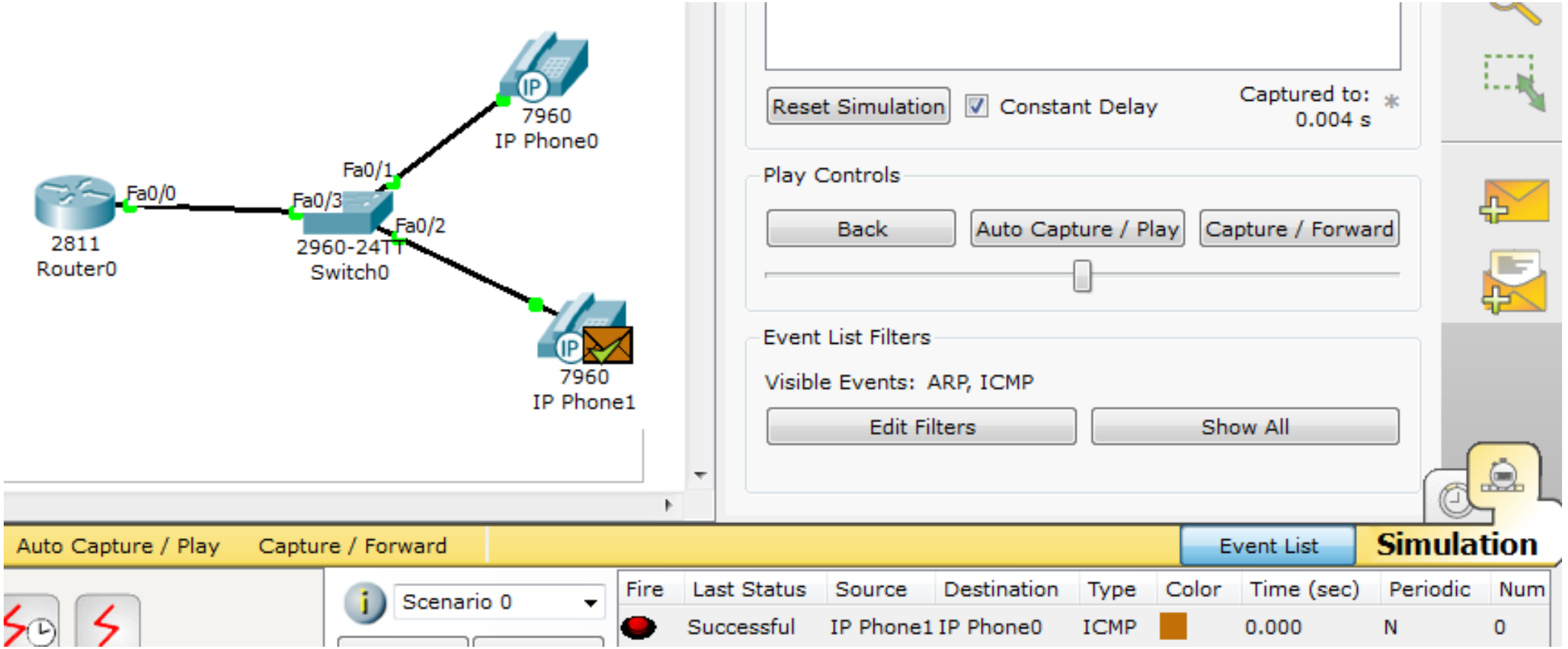


Step-7

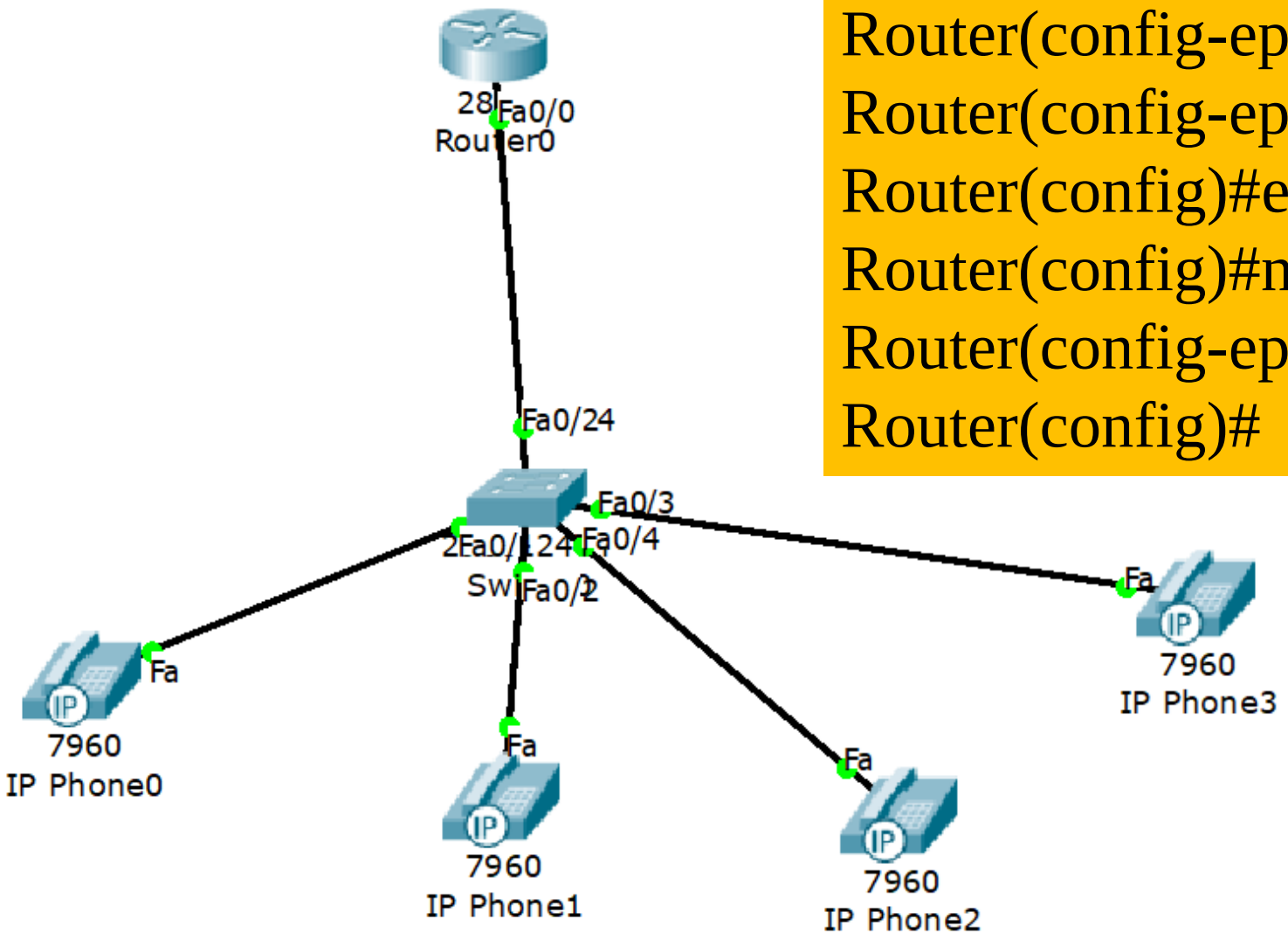
Verify the circuit with dialing.

Step-8

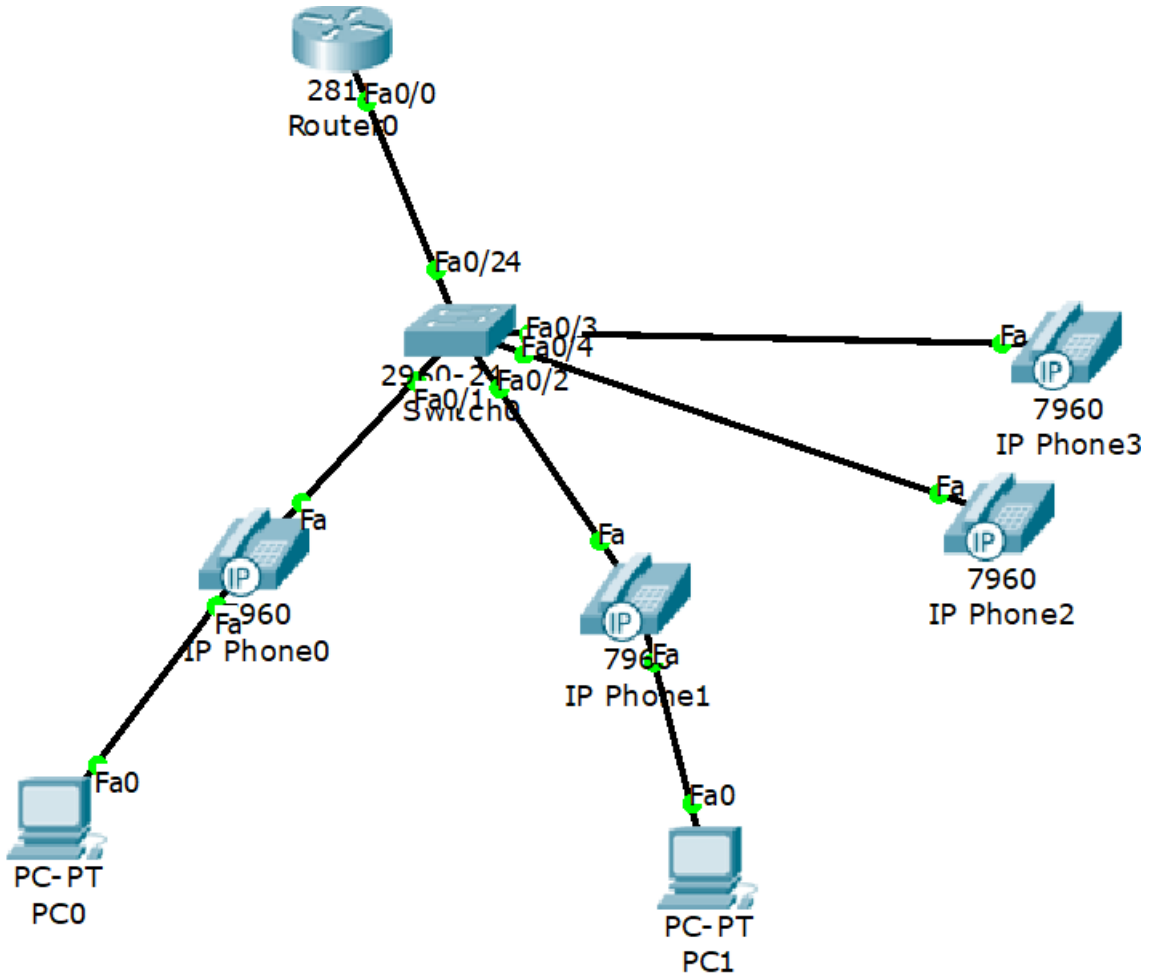
You may verify the routing of packet under simulation mode.

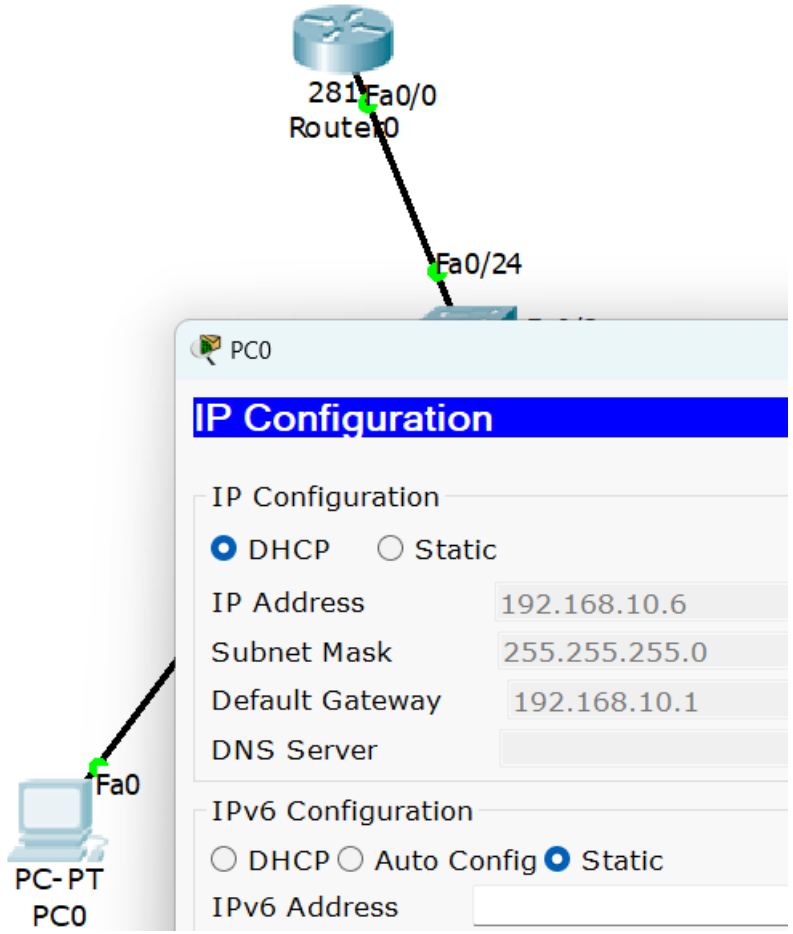


Add another two IP phone and add them with router with the following commands:




```
Router(config)#ephone-dn 3
Router(config-ephone-dn)#number 54003
Router(config-ephone-dn)#exit
Router(config)#ephone-dn 4
Router(config)#number 54004
Router(config-ephone-dn)#exit
Router(config)#
```





Connect **PC** port of IP telephone to Ethernet port of PC. Get the IP of PC selection DHCP.