Basic IP Phone Configuration Guide for Cisco Packet Tracer Lab

Lab Overview

This lab demonstrates a basic IP Phone setup using a router and a switch to support VoIP functionality with Cisco IP Phones. The topology includes:

- One router (Router0)
- One switch (Switch0)
- Two IP Phones (IP Phone0, IP Phone3)
- IP addressing as per the diagram

Network Details

- **Network:** 192.168.10.0/24
  - Router Interface (Fa0/0): 192.168.10.1
  - IP Phones: Assigned via DHCP
- **DHCP Pool:** 192.168.10.0/24 with default gateway 192.168.10.1
- **TFTP Server (Option 150):** 192.168.10.1

Step-by-Step Configuration

Step 1: Configure the Router

1. Enter global configuration mode:

```
enable
configure terminal
```

2. Configure the FastEthernet interface:

```
interface FastEthernet0/0
ip address 192.168.10.1 255.255.255.0
no shutdown
exit
```

3. Set up DHCP exclusions and pool:

```
ip dhcp excluded-address 192.168.10.1
ip dhcp pool ephone
network 192.168.10.0 255.255.255.0
default-router 192.168.10.1
option 150 ip 192.168.10.1
exit
```

4. Configure telephony service:

```
telephony-service
max-ephones 2
max-dn 2
ip source-address 192.168.10.1 port 2000
auto assign 1 to 5
exit
```

5. Configure ephones:

```
ephone 1
type 7960
exit
ephone 2
type 7960
exit
```

6. Configure ephone-dns:

```
ephone-dn 1
number 0001
exit
ephone-dn 2
number 0002
exit
```

7. Verify DHCP bindings:

```
show ip dhcp binding
```

Step 2: Configure the Switch

1. Enter global configuration mode:

```
enable
configure terminal
```

2. Configure all FastEthernet ports for IP Phones:

```
interface range FastEthernet0/1-24
switchport mode access
switchport voice vlan 1
exit
```

3. Save the configuration:

```
write memory
```

Step 3: Configure IP Phones

1. Ensure IP Phones (IP Phone0 and IP Phone3) are connected to the switch ports (e.g., Fa0/1 and Fa0/2).
2. The phones will automatically obtain IP addresses and configuration from the DHCP server on the router.
3. Verify phone registration by checking the router's telephony service status (optional):

```
show ephone
```

Step 4: Verify Configuration

1. Test phone functionality:
   - Dial 0001 from IP Phone0 to reach IP Phone3.
   - Dial 0002 from IP Phone3 to reach IP Phone0.
2. Check DHCP assignments on the router:

```
show ip dhcp binding
```

3. If calls fail, troubleshoot:

- Verify IP Phone connections to switch ports.
- Ensure DHCP and telephony service are correctly configured.
- Check for network connectivity with `ping 192.168.10.1` from a phone's web interface (if accessible).

Troubleshooting Tips

- Use `ping` to test network connectivity.
- Verify IP assignments with `show ip dhcp binding`.
- Ensure switch ports are in access mode with voice VLAN support.
- Check telephony service status with `show telephony-service`.

Conclusion

This configuration sets up a basic IP Phone system with DHCP and telephony services on the router, enabling VoIP communication between two Cisco IP Phones. Test the setup by making calls between the phones to confirm functionality.