



2.1. Configure and verify VLANs spanning multiple switches

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2.2. Configure and verify interswitch connectivity (Troubleshooting)

Objective:

Identify and correct configuration issues preventing VLAN communication, inter-VLAN routing, and proper trunk operation between switches.

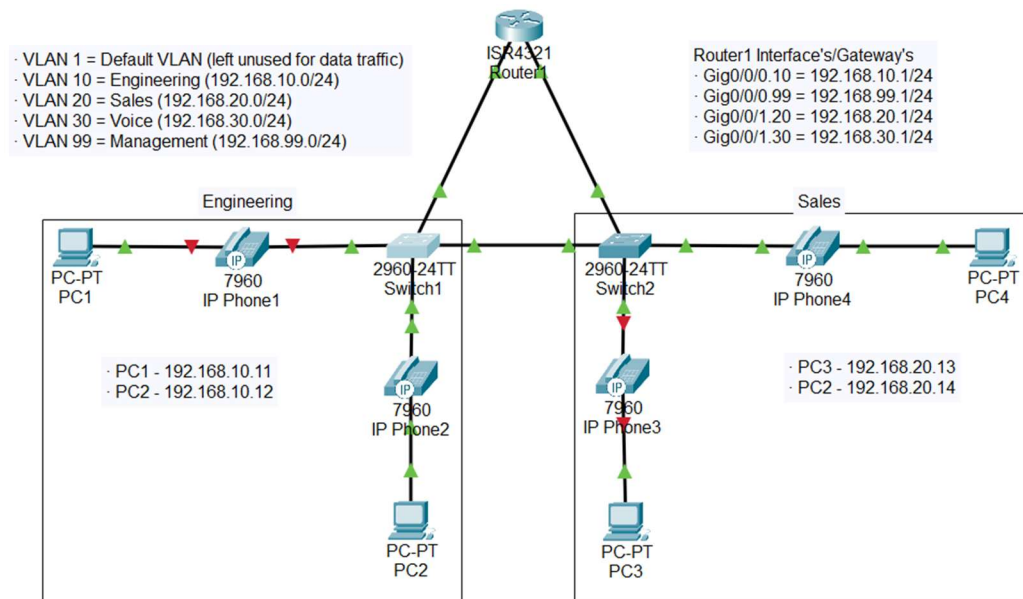
Topology

- **Switch1** and **Switch2** connected via trunk (Gig0/2 ↔ Gig0/2).
- **Router1** connected to **Switch1** via Trunk (Gig0/0/0 ↔ Gig0/1).
- **Router1** connected to **Switch2** via Trunk (Gig0/0/1 ↔ Gig0/1).
- **PC1 (Engineering – VLAN 10) ↔ IP Phone (VLAN 30)** on **Switch1** Fa0/1
- **PC2 (Engineering - VLAN 10) ↔ IP Phone (VLAN 30)** on **Switch1** Fa0/2
- **PC3 (Sales – VLAN 20) ↔ IP Phone (VLAN 30)** on **Switch2** Fa0/3
- **PC4 (Sales – VLAN 20) ↔ IP Phone (VLAN 30)** on **Switch2** Fa0/4

VLAN Assignment

- **VLAN 1** = Default VLAN (left unused for data traffic)
- **VLAN 10** = **Engineering** (192.168.10.0/24)
- **VLAN 20** = **Sales** (192.168.20.0/24)
- **VLAN 30** = **Voice** (192.168.30.0/24)
- **VLAN 99** = **Management** (192.168.99.0/24) (Native VLAN/Management)

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Lab Tasks

Identify connectivity issues problems and apply fixes.

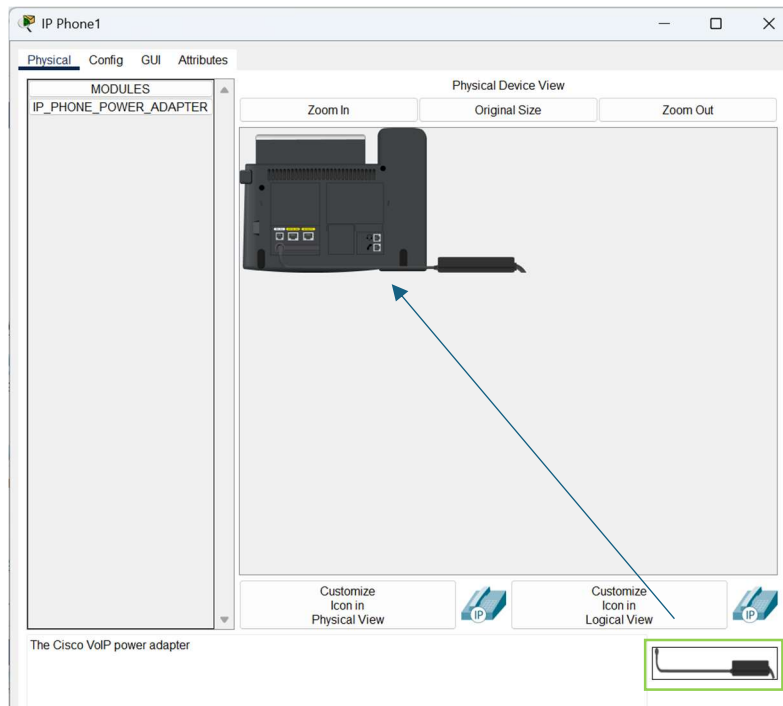
- Verify basic connectivity between all PCs and Phones. Record which tests succeed, and which fail.
- Check VLAN assignments and ensure devices are placed in the correct networks.
- Inspect router interfaces and confirm gateway availability for all VLANs.
- Review trunk configurations between switches and confirm they support the expected VLANs.
- Apply any necessary corrections to restore communication across the network.

The lab is considered “fixed”, when all PC’s can ping their default gateway, each VLANs gateway, AND each PC. Use IP and VLAN assignments provided on page 1.

ANSWERS BEYOND THIS POINT.
LET'S SEE HOW YOU DID!.....

Solution Key

1. Plug in IP Phone 1 and 3.



2. Create VLAN 20 on Switch 1.

```
Switch1> enable
```

```
Switch1# configure terminal
```

```
Switch1(config)# vlan 20
```

```
Switch1(config-vlan)# name Sales
```

3. Assign VLAN 99 as the native VLAN on Switch2's g0/2 interface.

```
Switch2> enable
```

```
Switch2# configure terminal
```

```
Switch2(config)# interface g0/2
```

```
Switch1(config-if)# switchport trunk native vlan 99
```

4. Correct default gateway of sub-interface g0/0/0.10 on Router1.

```
Router1> enable
```

```
Router1# configure terminal
```

```
Router1(config)# interface g0/0/0.10
```

```
Router1(config-subif)# no ip address 192.168.0.1 255.255.255.0
```

```
Router1(config-subif)# ip address 192.168.10.1 255.255.255.0
```

5. Test Connectivity.

- Ensure each PC can ping its gateway, all other gateways (Engineering, Sales, Voice, and Management), and each PC can ping each other.