

Project Title: Small Office Network with 3 VLANs and Inter-VLAN Routing

VLAN Departments:

1. **Admin** – VLAN 10
2. **Accounts** – VLAN 20
3. **HR** – VLAN 30

Step 1: Add Device

- **1 Router** (e.g., 2811)
- **1 Switch** (e.g., 2960 – Layer 2)
- **6 PCs**
 - PC0 & PC1 – Admin
 - PC2 & PC3 – Accounts
 - PC4 & PC5 – HR

Step 2: Connections

Use "Copper Straight-through":

- All PCs → Switch (each port for each PC)
- Switch → Router (FastEthernet 0/0 on router)

Step 3: Assign IP Addresses

Each VLAN will have a different subnet:

VLAN	Network	PCs	Gateway
Admin	192.168.10.0/24	PC0 – 192.168.10.2 PC1 – 192.168.10.3	192.168.10.1
Accounts	192.168.20.0/24	PC2 – 192.168.20.2 PC3 – 192.168.20.3	192.168.20.1
HR	192.168.30.0/24	PC4 – 192.168.30.2 PC5 – 192.168.30.3	192.168.30.1

Set default gateway for each PC according to their VLAN.

Step 4: Switch Configuration

Click on **Switch** → **CLI** → Paste this:

enable

configure terminal

vlan 10

name Admin

exit

vlan 20

name Accounts

exit

vlan 30

name HR

exit

interface range fastethernet 0/2 - 3

switchport mode access

switchport access vlan 10

exit

interface range fastethernet 0/4 - 5

switchport mode access

switchport access vlan 20

exit

interface range fastethernet 0/6 - 7

switchport mode access

switchport access vlan 30

exit

interface fastethernet 0/1

switchport mode trunk

exit

Port fa0/1 is used to connect to the router as trunk.

Step 5: Router Configuration (Router-on-a-Stick)

Click **Router** → **CLI**, then:

enable

configure terminal

interface fastethernet 0/0

no shutdown

interface fastethernet 0/0.10

encapsulation dot1Q 10

ip address 192.168.10.1 255.255.255.0

exit

interface fastethernet 0/0.20

encapsulation dot1Q 20

ip address 192.168.20.1 255.255.255.0

exit

interface fastethernet 0/0.30

encapsulation dot1Q 30

ip address 192.168.30.1 255.255.255.0

exit

Step 6: PC Gateway Setup

Go to **each PC** → **Desktop** → **IP Configuration:**

- “Set the IP address and default gateway on each PC according to its VLAN.”

Step 7: Test (Ping)

- PC0 (Admin) → ping PC1 – Should work
- PC0 → ping PC2 (Accounts) – Should work (inter-VLAN routing)
- PC4 (HR) → ping PC0 (Admin) – Should work

Summary of Concepts Covered:

- VLAN creation and assignment
- Trunk port configuration
- Inter-VLAN routing using "Router-on-a-Stick"
- IP addressing and gateway setup
- Network testing via ping