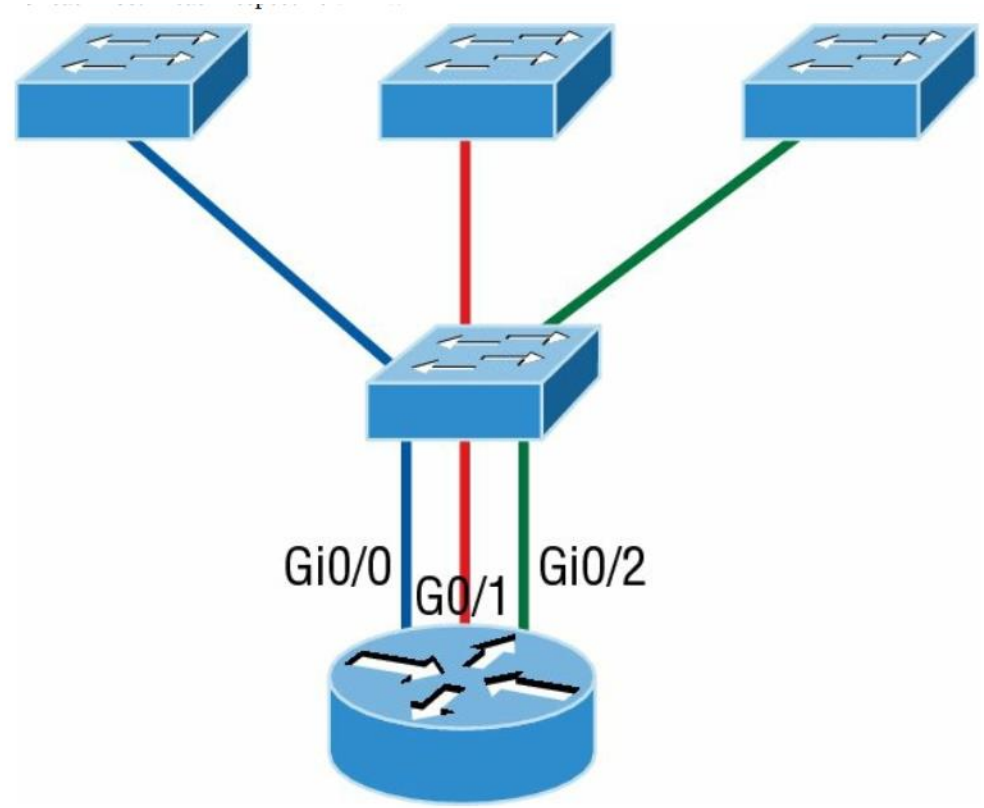
Inter-VLAN routing

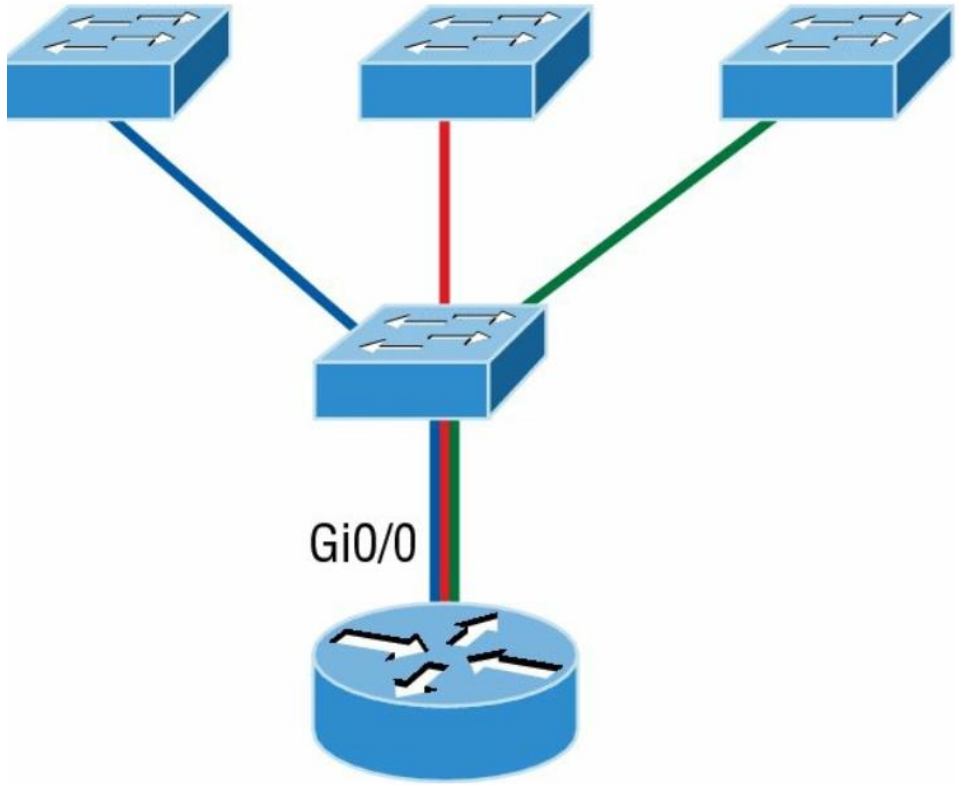
Inter VLAN Routing(IVR)

- Inter vlan routing can be done using three methods
  1. Use a router that has an interface for each VLAN
  2. Using Router on stick
  3. Using switched virtual interface (SVI)

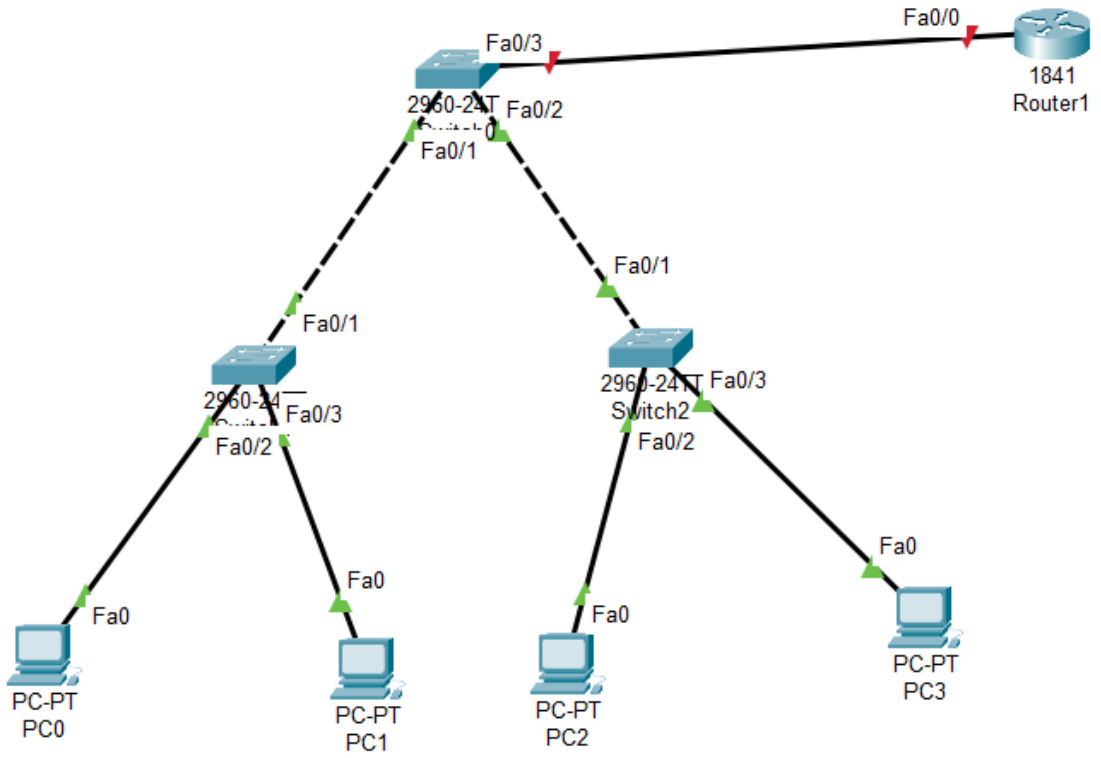
IVR Using a router that has an interface for each VLAN



IVR Using Router on stick

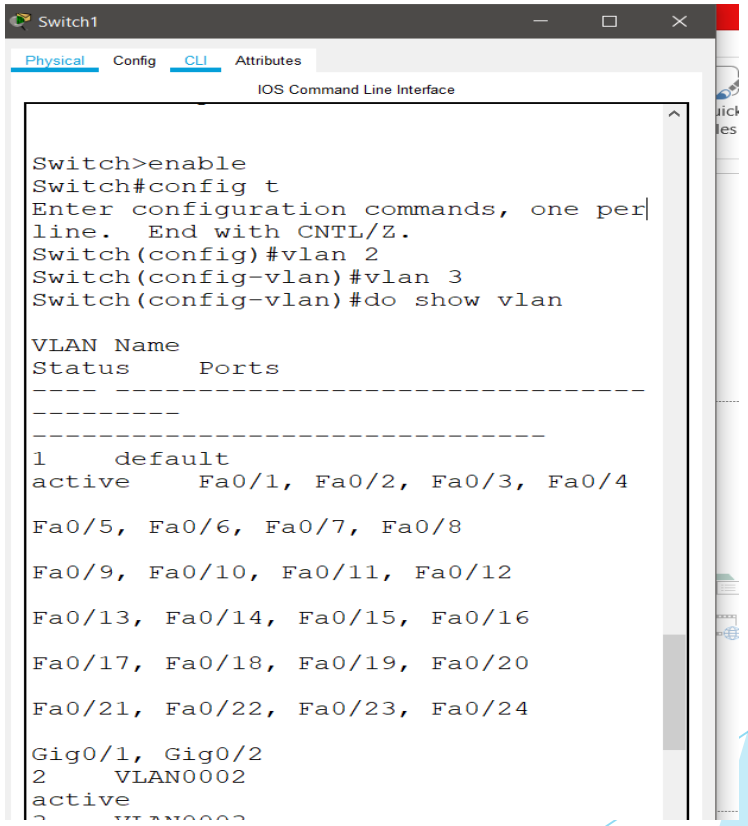


Implement network



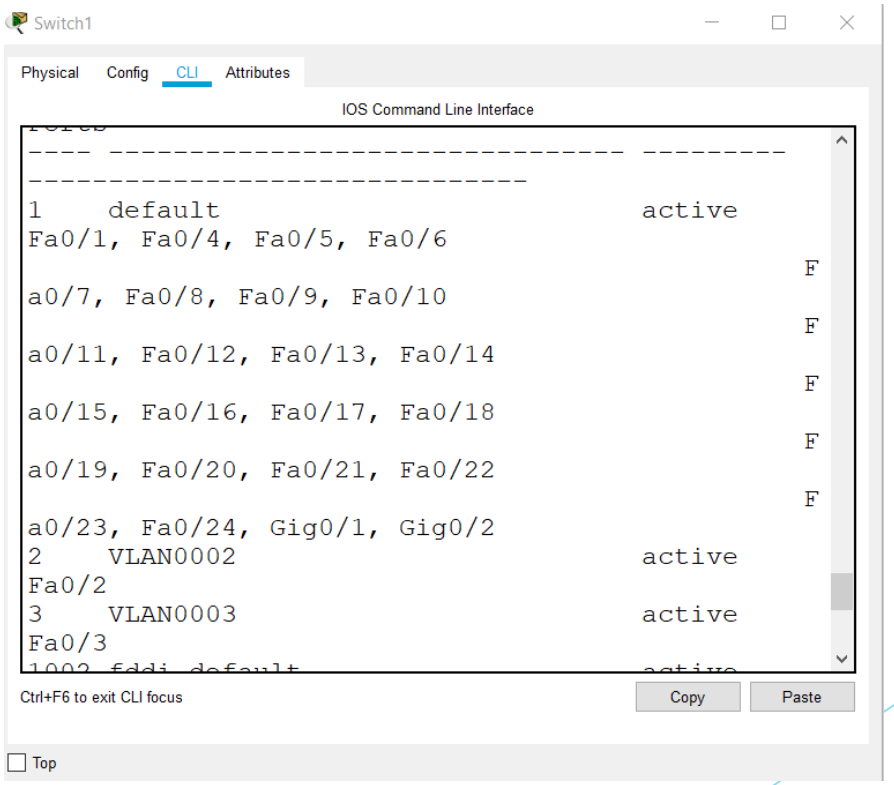
Create Valns for switch 1

- Switch>enable
- Switch#config t
- Enter configuration commands, one per line. End with CNTL/Z.
- Switch(config)#vlan 2
- Switch(config-vlan)#vlan 3
- Switch(config-vlan)#do show vlan



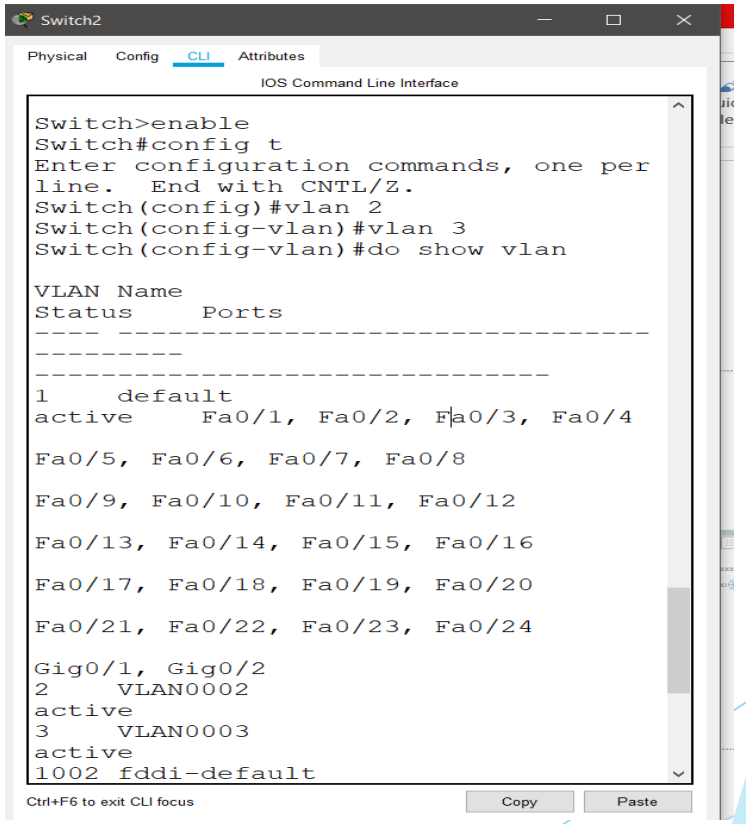
Assign switch ports to the VLANs for switch 1

- Switch(config)#interface f0/2
- Switch(config-if)#switchport mode access
- Switch(config-if)#switchport access vlan 2
- Switch(config-if)#exit
- Switch(config)#interface f0/3
- Switch(config-if)#switchport access vlan 3
- Switch(config-if)#do show vlan



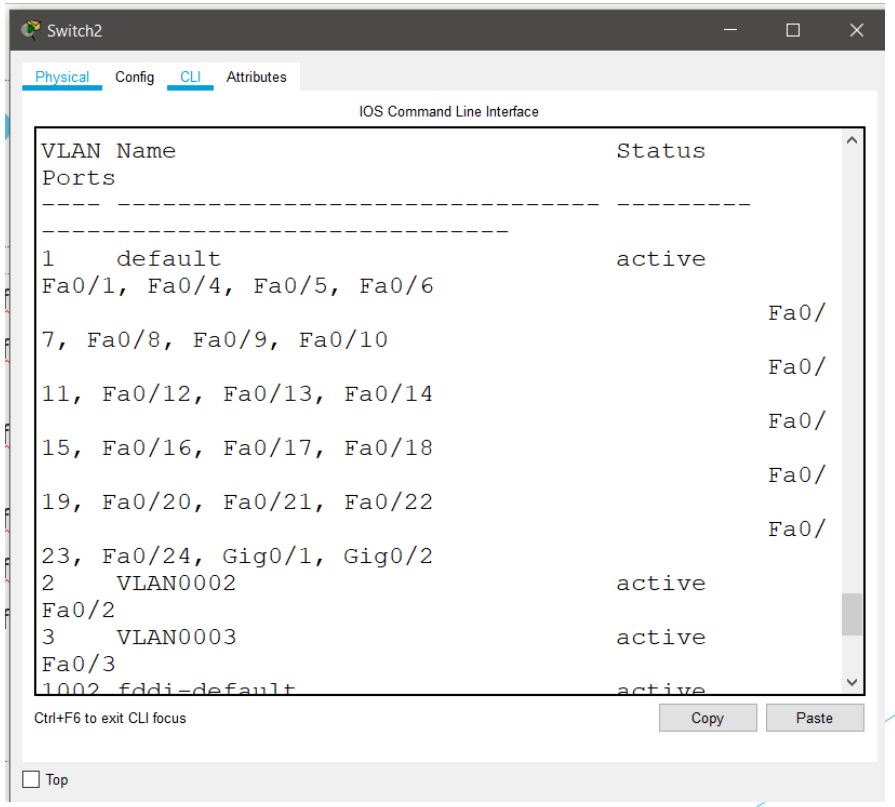
Create Valns for switch 2

- Switch>enable
- Switch#config t
- Enter configuration commands, one per line. End with CNTL/Z.
- Switch(config)#vlan 2
- Switch(config-vlan)#vlan 3
- Switch(config-vlan)#do show vlan



Assign switch ports to the VLANs for switch 2

- Switch(config)#int f0/2
- Switch(config-if)#switchport mode access
- Switch(config-if)#switchport access vlan 2
- Switch(config-if)#exit
- Switch(config)#interface f0/3
- Switch(config-if)#switchport access vlan 3



Creat vlan3 for switch 3 and change port mode

- Switch#configure t
- Switch(config)#vlan 2
- Switch(config-vlan)#vlan 3
- Switch(config-vlan)#exit
- Switch(config)#interface range f0/1-2
- Switch(config-if-range)#no shutdown
- Switch(config-if-range)#switchport mode trunk

Inter VLAN configuration

- Change the switch3 interface that connected to router to be trunc
  - interface range f0/3
  - Switch(config-if-range)#switchport mode trunk

Configure the router

1. Open the port of router that connected to switch
2. Generate sub interface for each VLAN
3. set the interface to trunk with the encapsulation command
4. Give the sub interface IP address and this address would then become the default gateway address for each host in each respective VLAN.
5. Assign static IP addresses to PCs

Configure the router

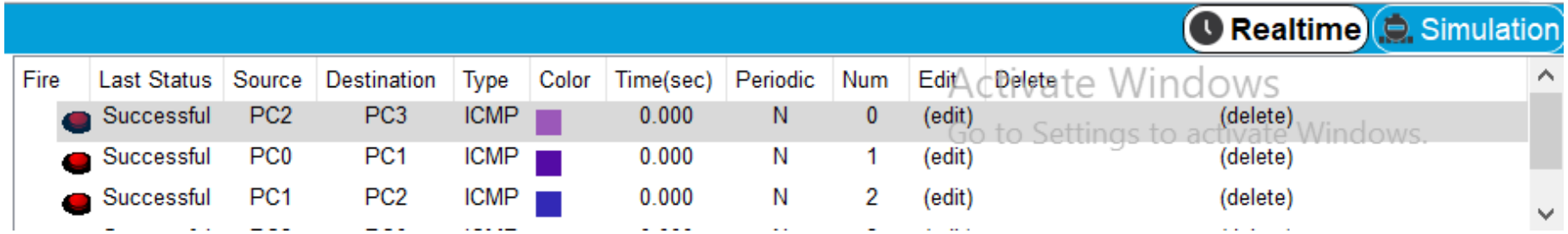
- **Open the port of router that connected to switch**
  - n(config)#int f0/0
  - n(config-if)#no shutdown
- **Generate sub interface**
- n(config-if)#int f0/0.2
- n(config-subif)#encapsulation dot1Q 10

- n(config-if)#int f0/0.2
- n(config-subif)#encapsulation dot1Q 10
- n(config-subif)#ip add 192.168.1.1 255.255.255.0
- n(config-subif)#int f0/0.3
- n(config-subif)#encapsulation dot1Q 20
- n(config-subif)#ip add 192.168.2.1 255.255.255.0

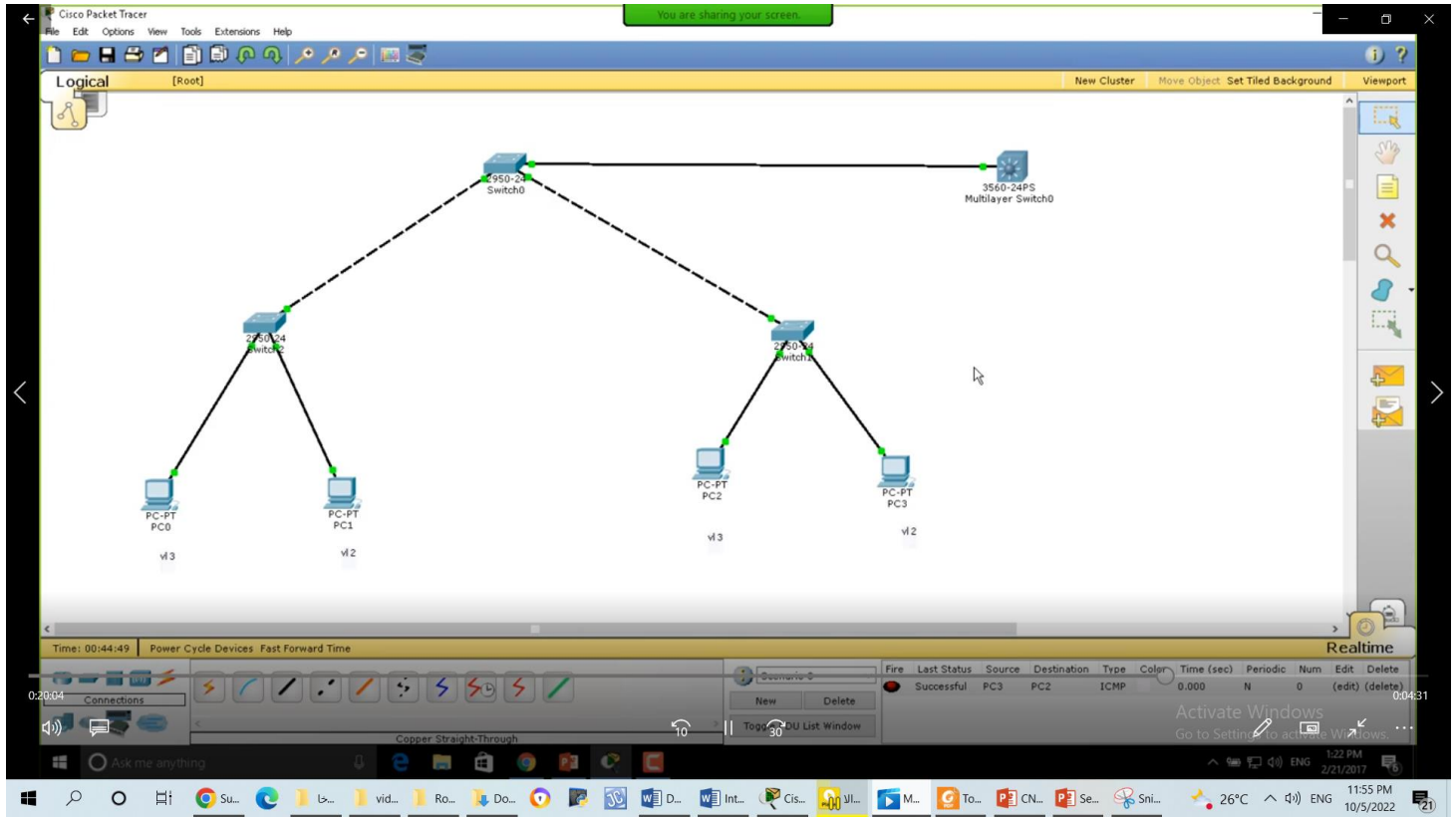
Assign static IP addresses to the four PCs

- **PC0 IP address** 192.168.1.10 **Subnet mask** 255.255.255.0 , 192.168.1.1
- **PC1: IP address** 192.168.2.10 **Subnet mask** 255.255.255.0 , 192.168.2.1
- **PC2: IP address** 192.168.1.20 **Subnet mask** 255.255.255.0 , 192.168.1.1
- **PC3: IP address** 192.168.2.20 **Subnet mask** 255.255.255.0 , 192.168.2.1

Test connection



Inter VLAN Routing using Switch virtual interface



Configure multi layer switch

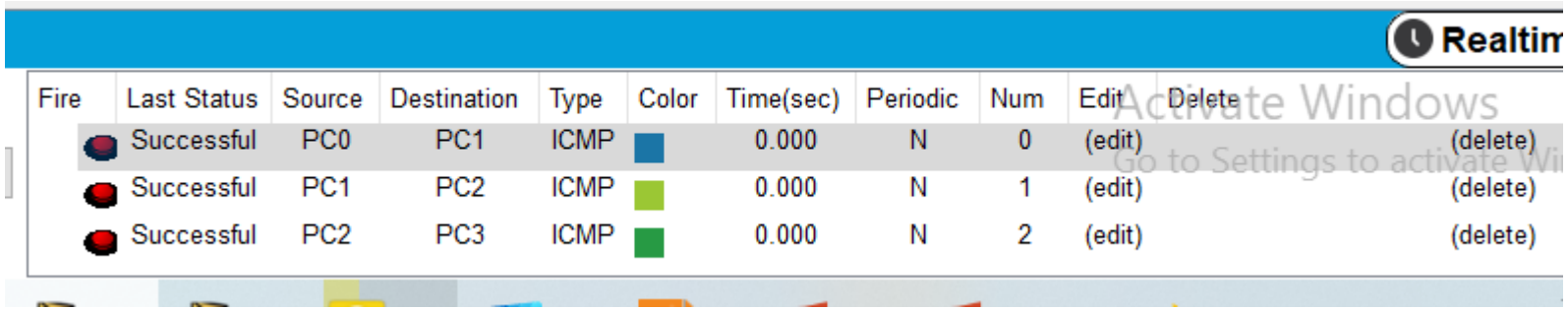
1. **Create vlan10,20**
   - Switch(config)#vlan 10
   - Switch(config-vlan)#vlan 20
2. **Create Interface and assign IP address**

- Switch(config-vlan)#int vlan 10
- Switch(config-if)#ip add 192.168.1.1 255.255.255.0
- Switch(config-if)#int vlan 20
- Switch(config-if)#ip add 192.168.2.1 255.255.255.0

3. Activate routing service on MLS

- Switch(config)#ip routing

Test connection



Thank You For Attention