<u>LAB: Inter Vlan-Routing Using MLS</u>

SVI interfaces

Vlan 10
192.168.1.100

Vlan 20
192.168.2.100

Multilayer Switch

1   2   3   4

VLAN 10 Sales
192.168.1.0/24

VLAN 20 marketing
192.168.2.0/24
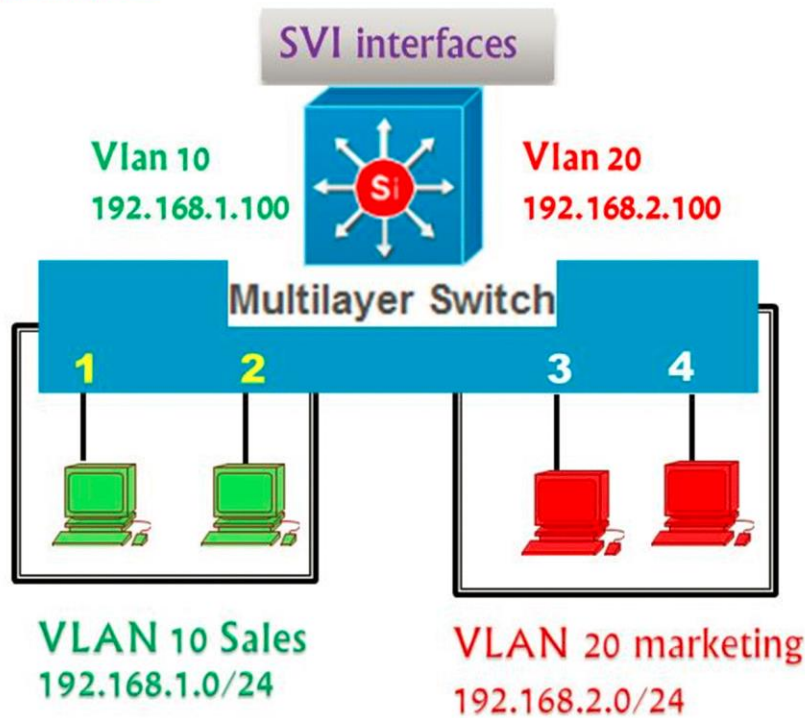
<u>TASK:</u>
- Create vlan and shift the ports as per the diagram
- create SVI (switch virtual interface) for each vlan and assing IP as per vlan addressing as per the diagram given
- Ensure that IP routing is enabled on Multilayer Switch
- verify connectivity between vlans (ping 192.168.1.1 ---192.168.2.1)

<u>TASK:</u> Create vlan and Shift the Ports According To the Diagram

        Switch(config)#**vlan 10**
        Switch(config-vlan)#**vlan 20**
        Switch(config-vlan)#**exit**

        Switch(config)#**int range f0/1 - 2**
        Switch(config-if-range)#**switchport mode access**
        Switch(config-if-range)#**switchport access vlan 10**
        Switch(config-if-range)#**exit**

        Switch(config)#**int range f0/3 - 4**
        Switch(config-if-range)#**switchport mode access**
        Switch(config-if-range)#**switchport access vlan 20**
        Switch(config-if-range)#**exit**

SW-1#sh vlan

```
VLAN Name                        Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                     active    Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                           Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                           Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                           Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                           Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                           Gig1/1, Gig1/2
10   VLAN0010                    active    Fa0/1, Fa0/2
20   VLAN0020                    active    Fa0/3, Fa0/4
1002 fddi-default                act/unsup
1003 token-ring-default          act/unsup
1004 fddinet-default             act/unsup
1005 trnet-default               act/unsup
```

TASK: Create SVI (Switch Virtual Interface) For Each Vlan

```
Switch (config)#int vlan 10
Switch(config-if)#ip address 192.168.1.100 255.255.255.0
Switch(config-if)#no shutdown
Switch(config-if)#exit

Switch(config)#int vlan 20
Switch(config-if)#ip address 192.168.2.100 255.255.255.0
Switch(config-if)#no shutdown
Switch(config-if)#exit

Switch # sh ip int brief
    Vlan10          192.168.1.100   YES manual up              up
    Vlan20          192.168.2.100   YES manual up              up
```

- The VLAN must be defined and active on the switch before the SVI can be used.
- The VLAN and the SVI are configured separately, even though they interoperate. Creating or configuring the SVI doesn't create or configure the VLAN; you still must define each one independently

```
Switch(config)#ip routing
```

- Enable routing on the switch by using the ip routing command. Even if IP routing was previously enabled, this step ensures that it is activated.

Task : Verify Connectivity between VLANs (Ping 192.168.1.1 ---192.168.2.1)

PC>ipconfig

      IP Address.......................: ==192.168.1.1==
      Subnet Mask.....................: 255.255.255.0
      Default Gateway.................: 192.168.1.100

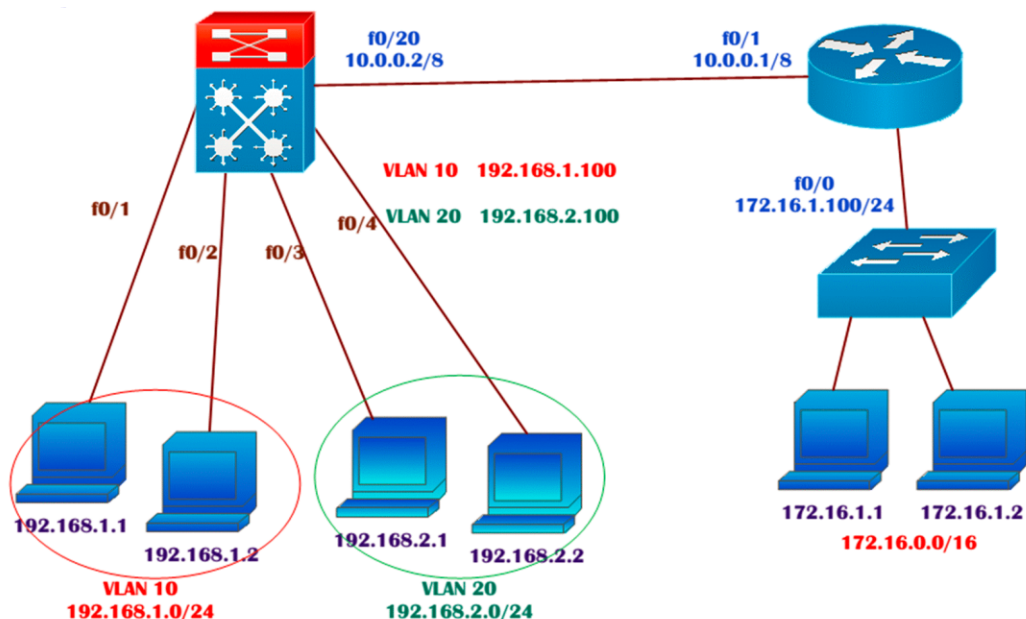PC>ping 192.168.2.1

      Pinging 192.168.2.1 with 32 bytes of data:
      Request timed out.
      ==Reply from 192.168.2.1: bytes=32 time=62ms TTL=127==
      ==Reply from 192.168.2.1: bytes=32 time=125ms TTL=127==
      ==Reply from 192.168.2.1: bytes=32 time=109ms TTL=127==

PC>tracert 192.168.2.1

      Tracing route to 192.168.2.1 over a maximum of 30 hops:
     1   47 ms   63 ms   62 ms   ==192.168.1.100==
     2   109 ms   125 ms   78 ms   192.168.2.1

TASK:

- Continue With The Previous Lab Configurations
- Add A Router Connecting To MLS as per the diagram (Assuming that there is a Wan Connection Between Router And MLS and they are different locations)

VLAN 10   192.168.1.100
VLAN 20   192.168.2.100

f0/20
10.0.0.2/8

f0/1
10.0.0.1/8

f0/0
172.16.1.100/24

f0/1
f0/2   f0/3
f0/4

192.168.1.1
192.168.1.2
VLAN 10
192.168.1.0/24

192.168.2.1
192.168.2.2
VLAN 20
192.168.2.0/24

172.16.1.1   172.16.1.2
172.16.0.0/16

TASK: Configure IP addressing as per the Diagram on all Devices.

Router(config)#int f0/0
Router(config-if)#ip address 172.16.1.100 255.255.0.0
Router(config-if)#no shutdown
Router(config-if)#exit

Router(config)#int f0/1
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#end

Router#sh ip int brief

Interface	IP-Address	OK? Method Status	Protocol
FastEthernet0/0	172.16.1.100	YES manual up	up
FastEthernet0/1	10.0.0.1	YES manual up	up

On MLS

Switch(config)#int fa0/20
Switch(config-if)#ip address 10.0.0.2 255.0.0.0

% Invalid input detected at '^' marker.

- By default, every switch port on most Catalyst switch platforms is a Layer 2 interface, whereas every switch port on a Catalyst 6500 is a Layer 3 interface.
- If an interface needs to operate in a different mode, you must explicitly configure it.
- An interface is either in Layer 2 or Layer 3 mode, depending on the use of the switchport interface configuration command.
- You can display a port's current mode with the following command:
  - Switch# show interface type mod/num switchport
- If theSwitchport:line in the command output is shown as enabled, the port is in Layer 2 mode. If this line is shown as disabled, as in the following example, the port is inLayer 3 mode:
  Switch# show interface gigabitethernet 0/1 switchport
    Name: Gi0/1
    Switchport: Disabled
  Switch#

NOTE:
- By default all the ports ofany Multilayer Switch will be swithport (Layer 2)
- they don't understand IP addressing and just forward frames by identifying MAC address
- In our example we want f0/20 port of MLS as Router port (layer 3)
- To change the default Layer 2 port to a Router port we need to add command "no switchport"

  Switch(config-if)#no switchport

Switch(config-if)#ip address 10.0.0.2 255.0.0.0

Switch #Sh ip int brief
FastEthernet0/20   10.0.0.2   YES manual up   up

Switch#ping 10.0.0.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 4/5/7 ms

MLS (3560)

Switch(config)#router rip
Switch(config-router)#version 2
Switch(config-router)#network 192.168.1.0
Switch(config-router)#network 192.168.2.0
Switch(config-router)#network 10.0.0.0
Switch(config-router)#no auto-summary
Switch(config-router)#end

ROUTER

Router(config)#router rip
Router(config-router)#ver 2
Router(config-router)#network 172.16.0.0
Router(config-router)#network 10.0.0.0
Router(config-router)#no auto-summary
Router(config-router)#end

Router#sh ip route
C   10.0.0.0/8 is directly connected, FastEthernet0/1
C   172.16.0.0/16 is directly connected, FastEthernet0/0
R   192.168.1.0/24 [120/1] via 10.0.0.1, 00:00:01, FastEthernet0/1
R   192.168.2.0/24 [120/1] via 10.0.0.1, 00:00:01, FastEth

Switch#sh ip route
Gateway of last resort is not set
C   10.0.0.0/8 is directly connected, FastEthernet0/20
R   172.16.0.0/16 [120/1] via 10.0.0.2, 00:00:01, FastEthernet0/20
C   192.168.1.0/24 is directly connected, Vlan10
C   192.168.2.0/24 is directly connected, Vlan20

PC>ipconfig
IP Address.......................: 192.168.1.1

Subnet Mask......................: 255.255.255.0
Default Gateway.................: 192.168.1.100

PC>ping 172.16.1.1

Pinging 172.16.1.1 with 32 bytes of data:
Request timed out.
Reply from 172.16.1.1: bytes=32 time=125ms TTL=126
Reply from 172.16.1.1: bytes=32 time=125ms TTL=126
Reply from 172.16.1.1: bytes=32 time=125ms TTL=126

PC>tracert 172.16.1.1

Tracing route to 172.16.1.1 over a maximum of 30 hops:
  1   31 ms   31 ms   32 ms   192.168.1.100
  2   63 ms   62 ms   62 ms   10.0.0.1
  3   109 ms   125 ms   125 ms   172.16.1.1
Trace complete.