Inter -VLAN Routing

allowing the users of one VLAN to access resources of other VLAN
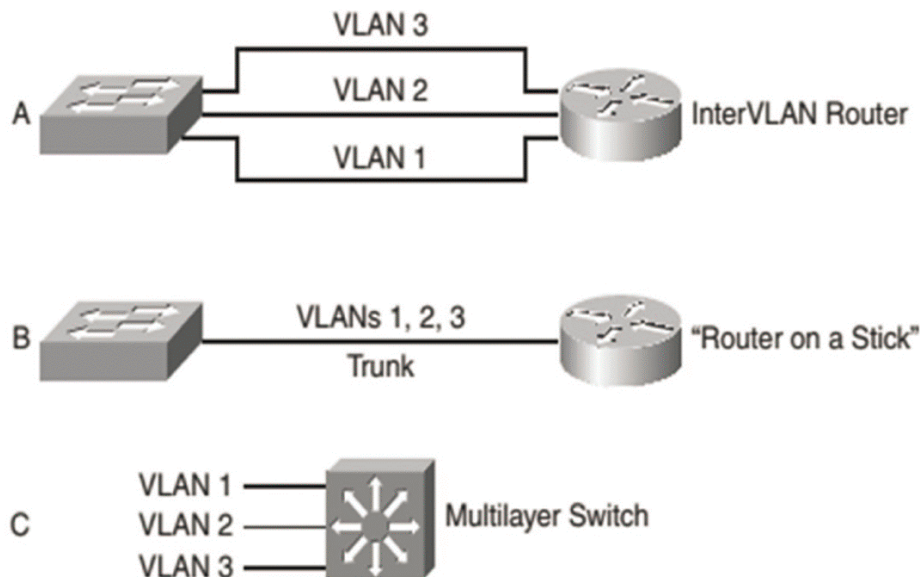

| 1 | 2 | 3 | 4 | | 5 | 6 | 7 | 8 | FTP server |

VLAN 10 Accounts   **VLAN 20 Finance**
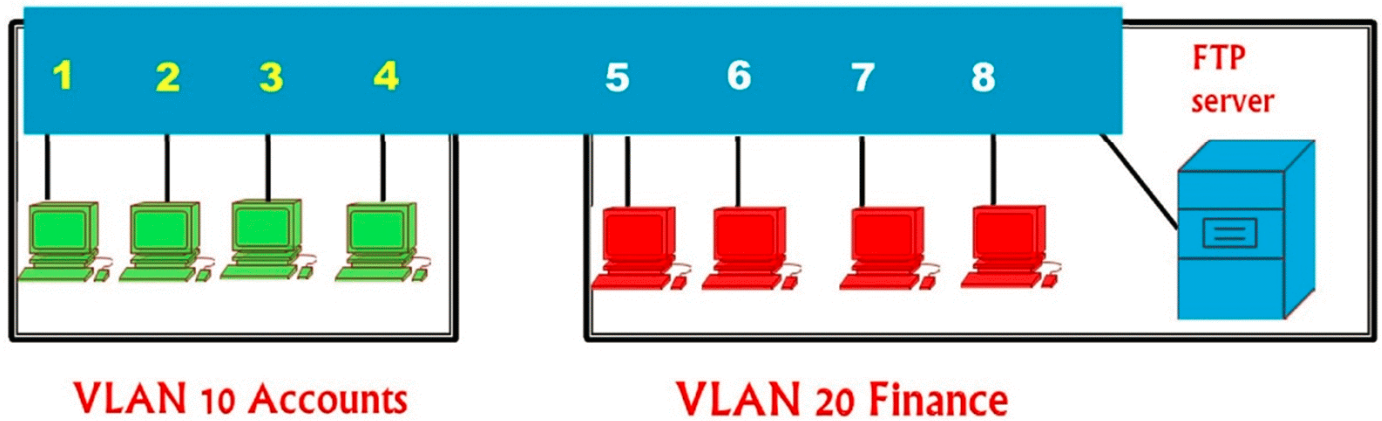
Inter -VLAN Routing

- Need a at-least one router
- Every VLAN must have a default gateway

VLAN 10 Accounts
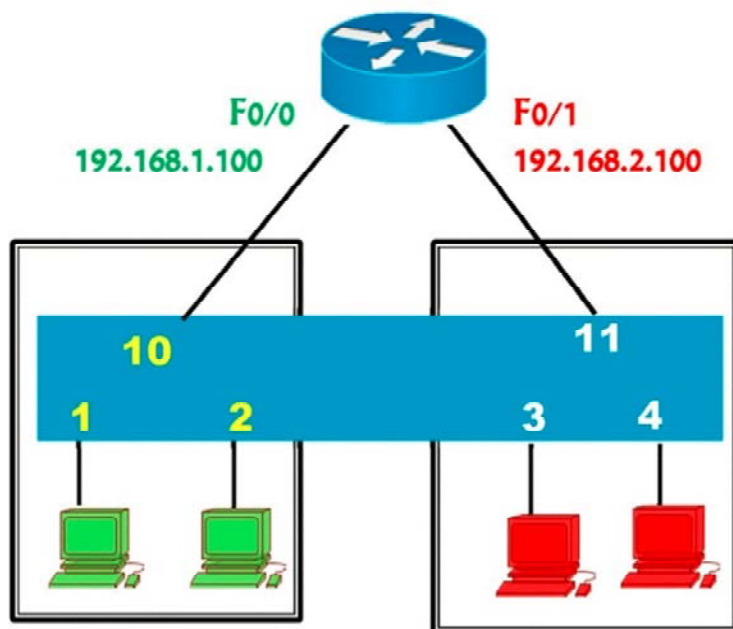**192.168.1.0/24**

VLAN 20 Finance
192.168.2.0/24
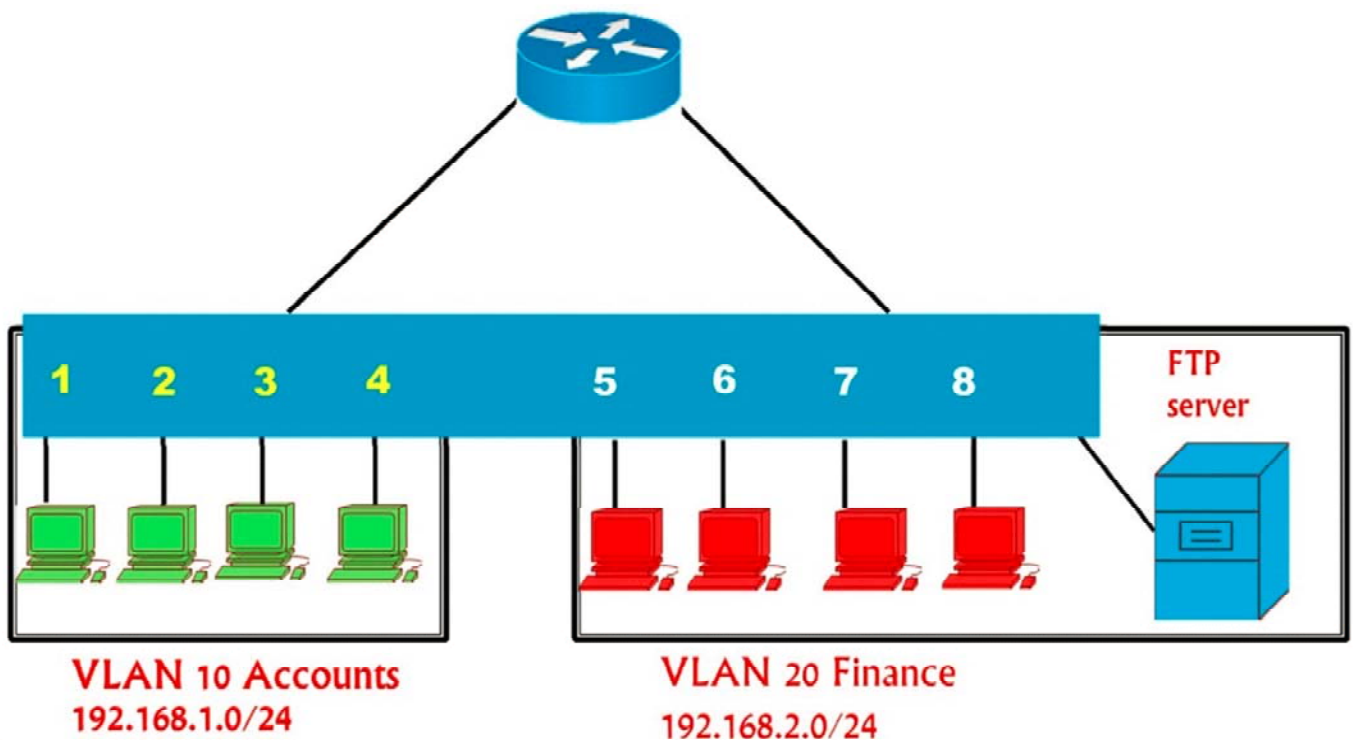
Inter-Vlan Routing Methods

A. **Separate Physical Gateway on Router**

B. **Using Sub-interfaces**

C. **Using Layer 3 Switch**

VLAN 3
VLAN 2
A
InterVLAN Router
VLAN 1

VLANs 1, 2, 3
B
"Router on a Stick"
Trunk

VLAN 1
VLAN 2
C
Multilayer Switch
VLAN 3

Inter- VLAN routing using separate interfaces

- Need a at-least one router
- Every VLAN must have a default gateway

F0/0
192.168.1.100

F0/1
192.168.2.100

10
11

1   2   3   4

VLAN 10 Sales
192.168.1.0/24

VLAN 20 marketing
192.168.2.0/24

1, 2, 10 - vlan 10
3, 4 , 11 – vlan 20

Inter-Vlan Routing using Separate Physical Gateway on Router

F0/0
192.168.1.100

F0/1
192.168.2.100

10

11

1   2

3   4

VLAN 10 Sales
192.168.1.0/24

VLAN 20 marketing
192.168.2.0/24
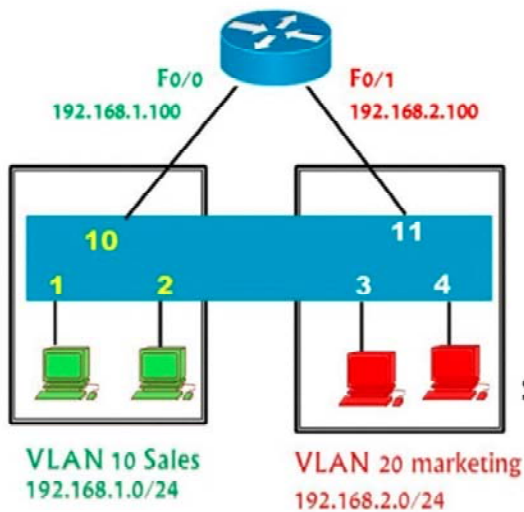
```
Router(config)#interface FastEthernet0/0
Router(config-if)# ip address 192.168.1.100 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit

Router(config)#interface FastEthernet0/1
Router(config-if)# ip address 192.168.2.100 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
```

Switch#sh vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/5, Fa0/6, Fa0/7, Fa0/8
			Fa0/9, 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	sales	active	Fa0/1, Fa0/2, Fa0/10
20	marketing	active	Fa0/3, Fa0/4, Fa0/11

Inter- VLAN routing using sub-interfaces

Router Sub-interfaces

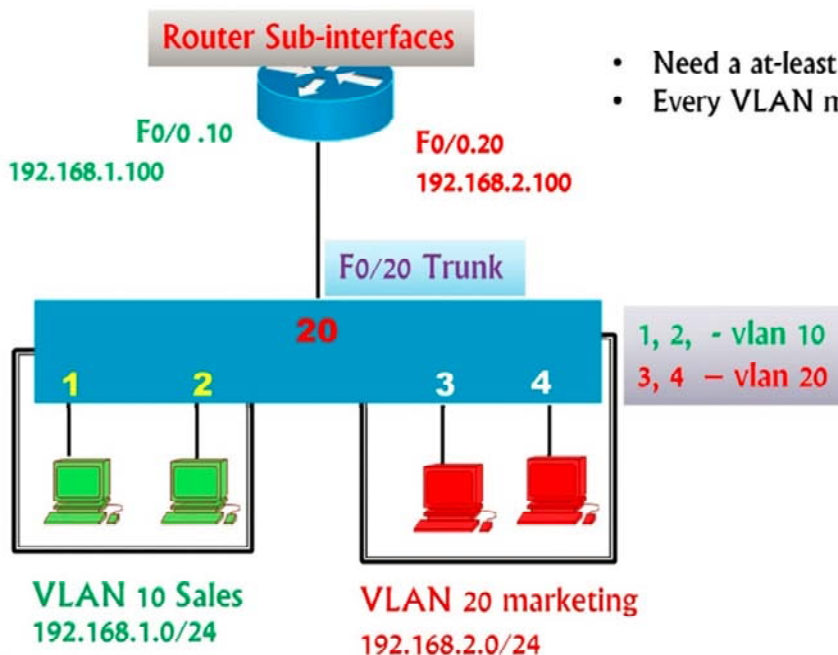F0/0 .10
192.168.1.100

F0/0.20
192.168.2.100

- Need a at-least one router
- Every VLAN must have a default gateway

F0/20 Trunk

20

1   2

3   4

1, 2, - vlan 10
3, 4 — vlan 20

VLAN 10 Sales
192.168.1.0/24

VLAN 20 marketing
192.168.2.0/24

Inter VLAN-routing using Router (Router On Stick)

```
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
```
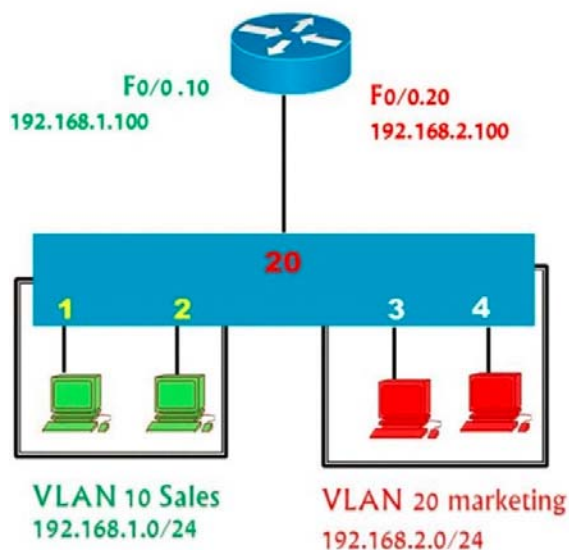
F0/0 .10
192.168.1.100

F0/0.20
192.168.2.100

20

1   2   3   4

VLAN 10 Sales
192.168.1.0/24

VLAN 20 marketing
192.168.2.0/24

SW-1(config)#**interface fastEthernet 0/20**

(Interface facing Router)

SW-1(config-if)#**switchport mode trunk**
SW-1(config-if)#**switchport trunk encapsulation dot1q**

INTER VLAN-ROUTING USING ROUTER
(Router On Stick)

R-1(config)#**int fa0/0**
R-1(config-if)# **no shutdown**
R-1(config-if)# **no ip address**
R-1(config-if)#   **exit**

R-1(config)#**int fa0/0.10**
R-1(config-sub-if)# **encapsulation dot1Q 10**
        It should be the exact vlan no (vlan 10)
R-1(config-sub-if)# **ip add 192.168.1.100 255.255.255.0**
R-1(config-sub-if)# **exit**

R-1(config)#**int fa0/0.20**
R-1(config-sub-if)#   **encapsulation dot1Q 20**

It should be the exact vlan no (vlan 20)

R-1(config-sub-if)# **ip add 192.168.2.100 255.255.255.0**

LAB: INTER VLAN-ROUTING USING ROUTER (Router On Stick)

F0/0 .10
192.168.1.100

F0/0.20
192.168.2.100

20

1   2   3   4

VLAN 10 Sales
192.168.1.0/24

VLAN 20 marketing
192.168.2.0/24