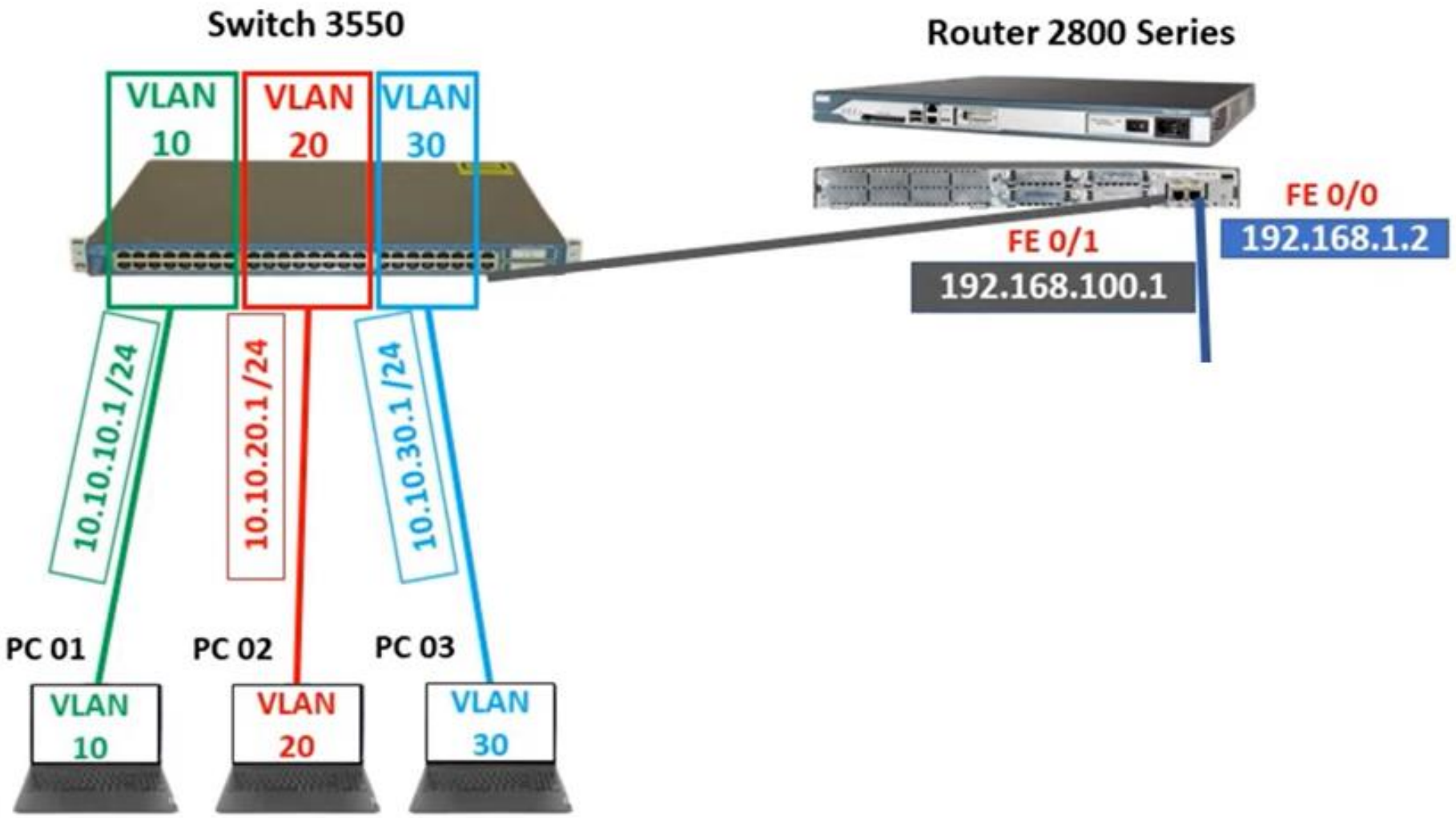
VLAN Configuration with Switch and Router



IP Configuration

DHCP Static

IP Address 192.168.2.1

Subnet Mask 255.255.255.0

Default Gateway

DNS Server

IP Configuration

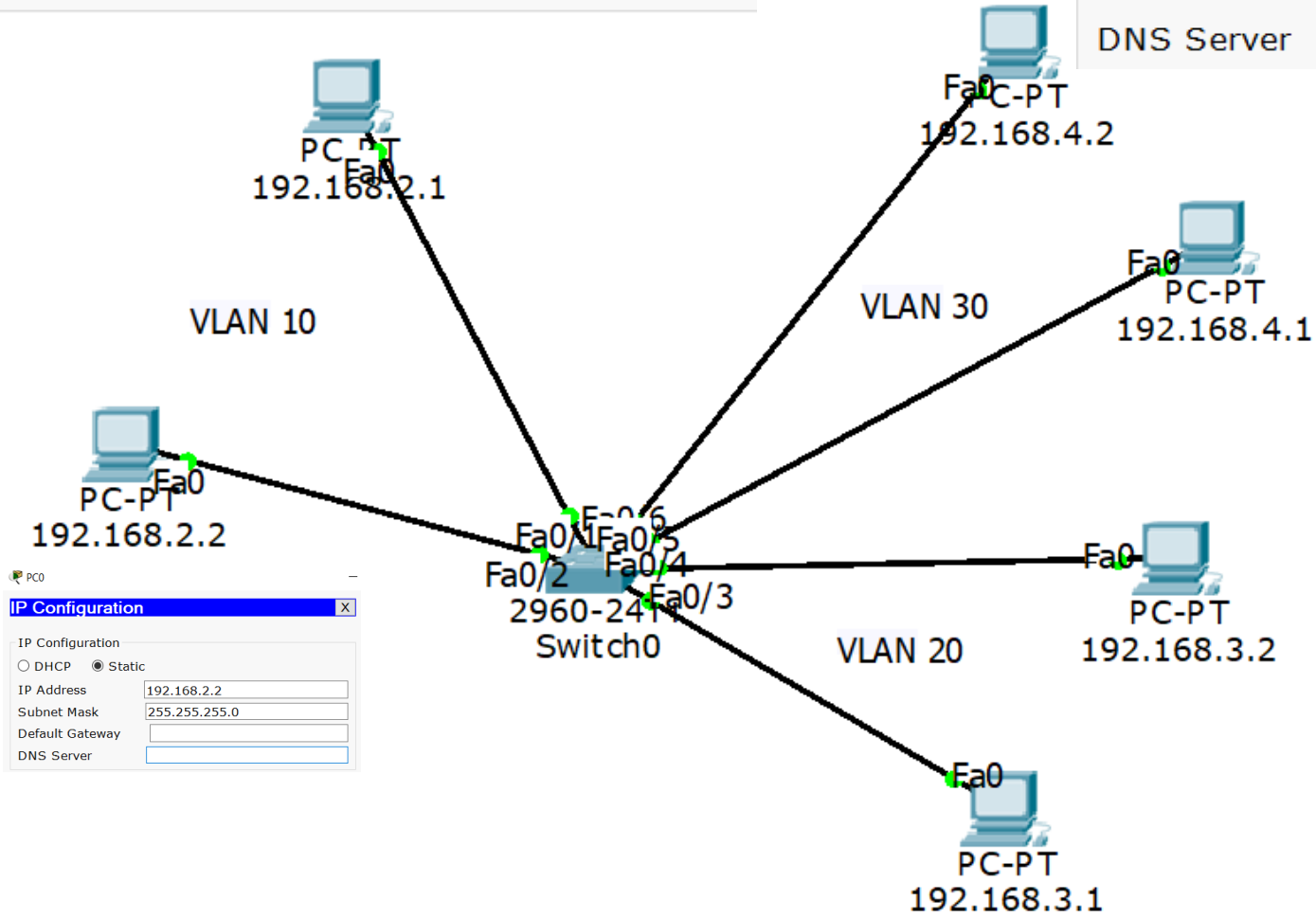
DHCP Static

IP Address 192.168.4.2

Subnet Mask 255.255.255.0

Default Gateway

DNS Server



PC0

IP Configuration

IP Configuration

DHCP Static

IP Address 192.168.2.2

Subnet Mask 255.255.255.0

Default Gateway

DNS Server

	Name	IP of PCs	Interface
VLAN 10	A	192.168.2.1 192.168.2.2	Fa0/1, Fa0/2
VLAN 20	B	192.168.3.1 192.168.3.2	Fa0/3, Fa0/4
NLAN 30	C	192.168.4.1 192.168.4.2	Fa0/5, Fa0/6

Provide IP and subnet must to each PC.
No default gateway is needed.

```
Switch>en
Switch# vlan database
Switch(vlan)# vlan 10 name A
Switch(vlan)# vlan 20 name B
Switch(vlan)# vlan 30 name C
Switch(vlan)# exit
Switch#
Switch# conf t
Switch(config)#int range fa0/1-2
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
```

	Name	IP of PCs	Interface
VLAN 10	A	192.168.2.1 192.168.2.2	Fa0/1, Fa0/2
VLAN 20	B	192.168.3.1 192.168.3.2	Fa0/3, Fa0/4
NLAN 30	C	192.168.4.1 192.168.4.2	Fa0/5, Fa0/6

```
Switch(config-if-range)#int range fa0/3-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#int range fa0/5-6
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#end
Switch#
```

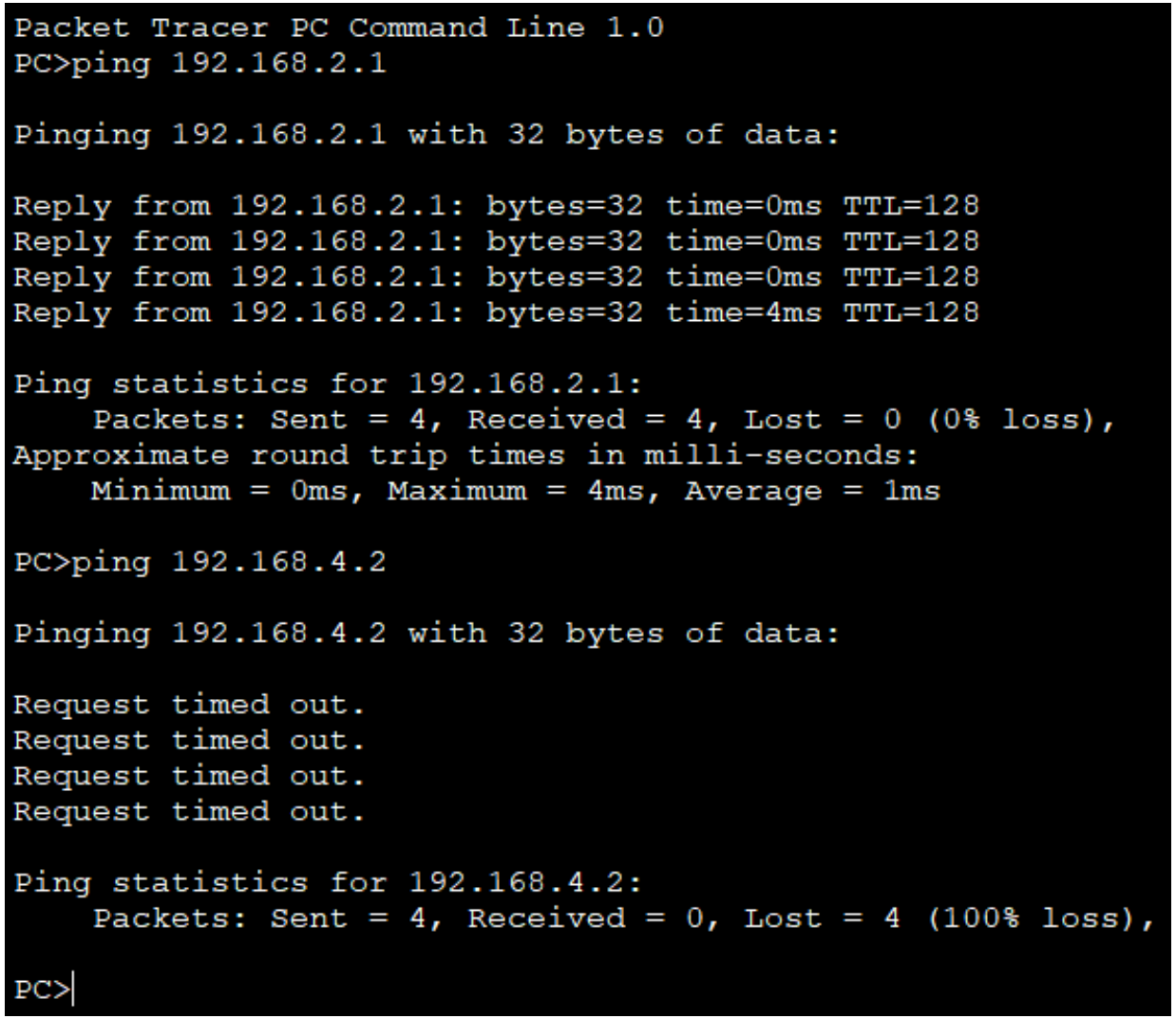
	Name	IP of PCs	Interface
VLAN 10	A	192.168.2.1 192.168.2.2	Fa0/1, Fa0/2
VLAN 20	B	192.168.3.1 192.168.3.2	Fa0/3, Fa0/4
NLAN 30	C	192.168.4.1 192.168.4.2	Fa0/5, Fa0/6

Switch#sh vlan brief

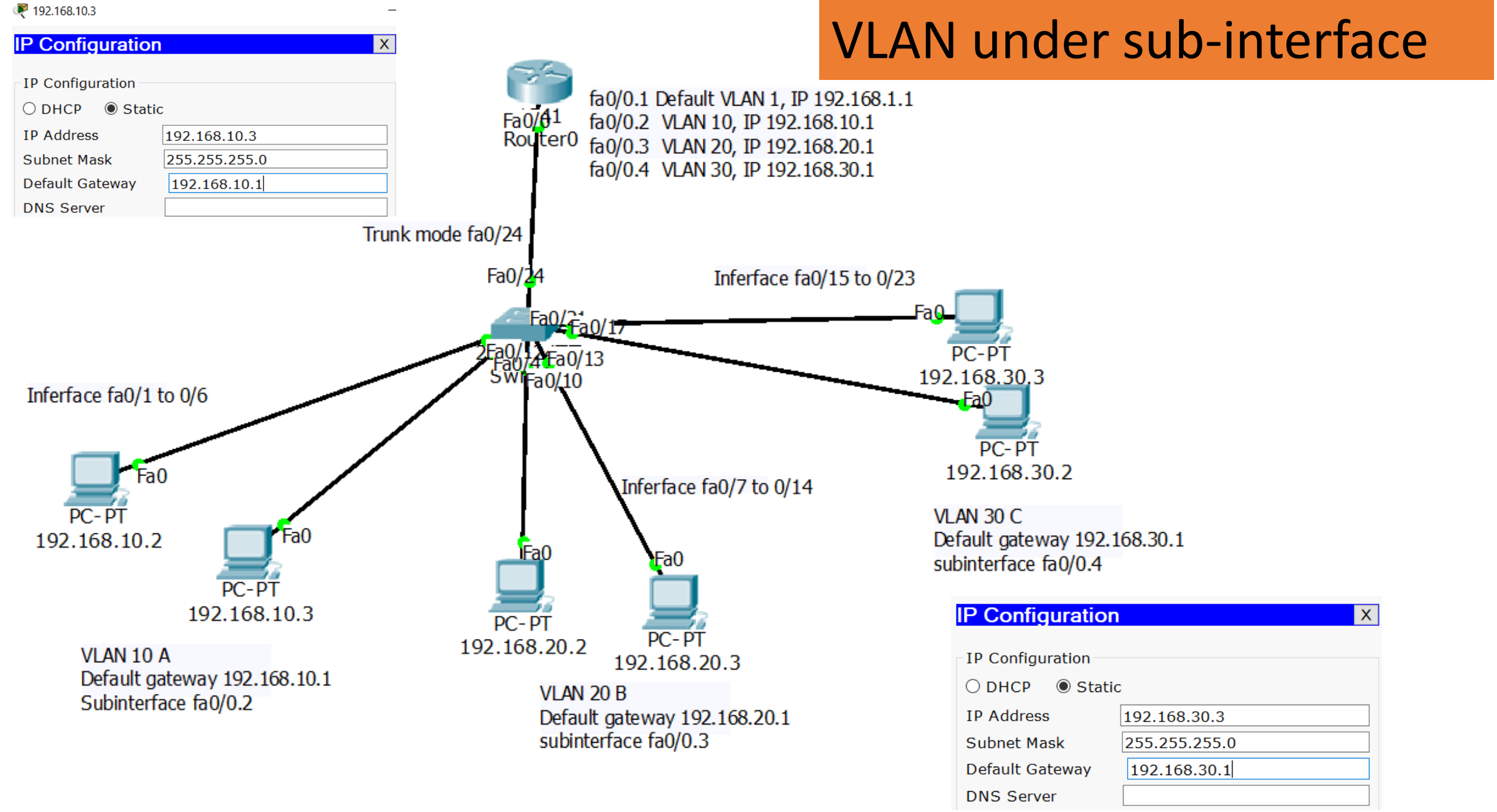
```
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                                 Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                 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   A                                 active    Fa0/1, Fa0/2
20   B                                 active    Fa0/3, Fa0/4
30   C                                 active    Fa0/5, Fa0/6
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

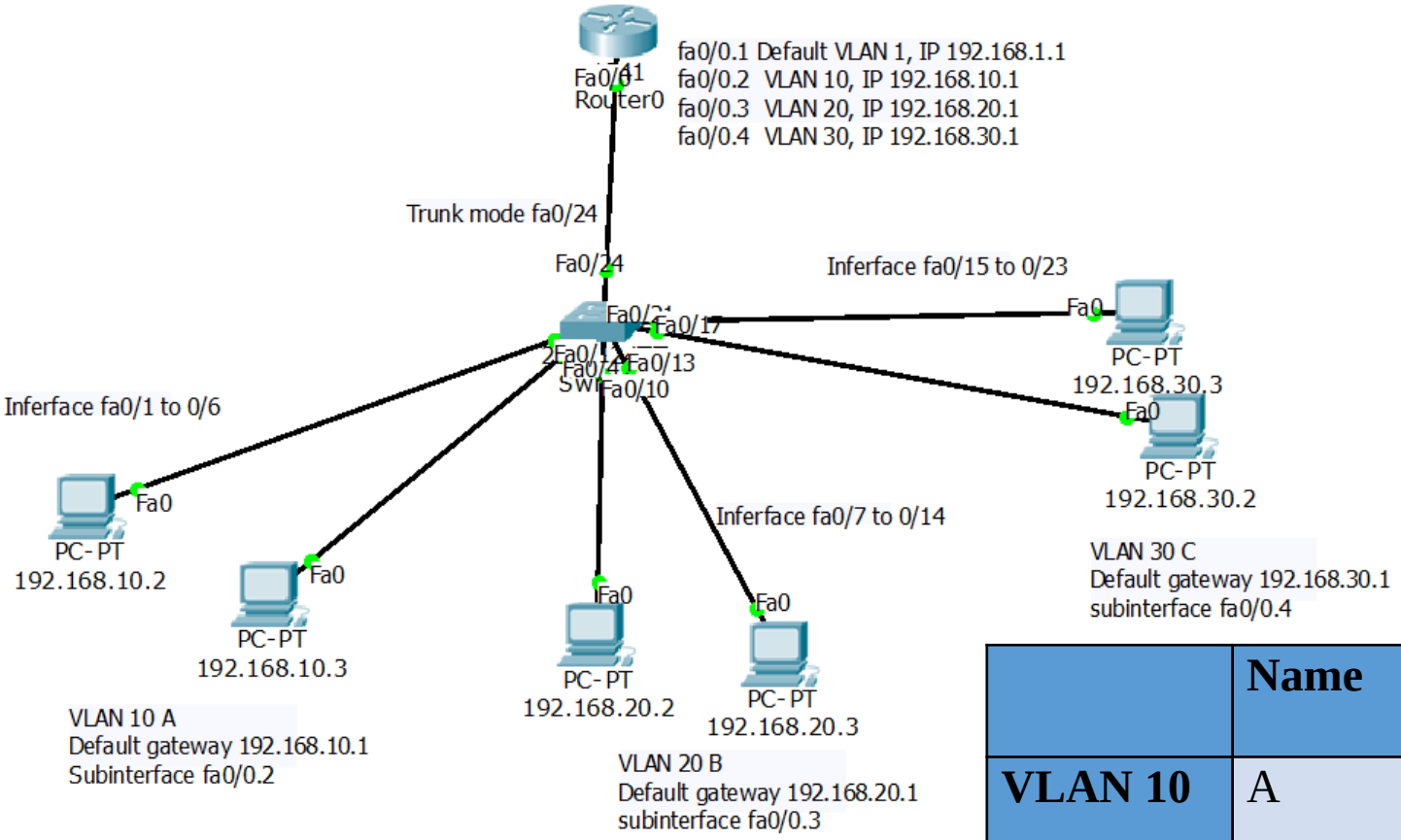
	Name	IP of PCs	Interface
VLAN 10	A	192.168.2.1 192.168.2.2	Fa0/1, Fa0/2
VLAN 20	B	192.168.3.1 192.168.3.2	Fa0/3, Fa0/4
NLAN 30	C	192.168.4.1 192.168.4.2	Fa0/5, Fa0/6

Now apply ping on PC of IP 192.168.2.2 to PC 192.168.2.2 of same VLAN 10 will be success. But to the PC 192.168.4.2 of different VLAN, the ping will be fail as shown below. Similarly you can verify the ICMP packet under simulation mode.



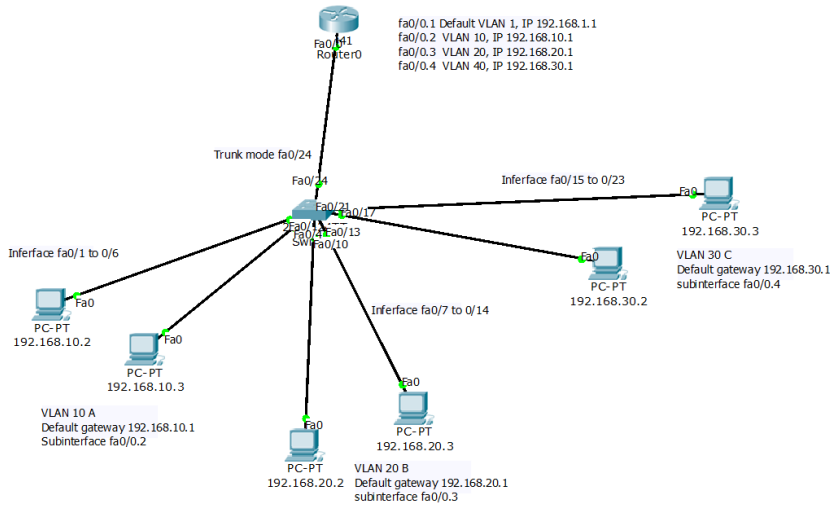
VLAN under sub-interface





	Name	IP of PCs	Default Gateway	Interface
VLAN 10	A	192.168.10.2 192.168.10.3	192.168.10.1 Sub interface fa0/0.2	Fa0/1 to Fa0/6
VLAN 20	B	192.168.20.2 192.168.20.3	192.168.20.1 Sub interface fa0/0.3	Fa0/7 to Fa0/14
VLAN 30	C	192.168.30.2 192.168.30.3	192.168.30.1 Sub interface fa0/0.4	Fa0/15 to Fa0/23
VLAN 1	Default VLAN Router itself		192.168.1.1 Sub interface fa0/0.1	The interface of the router Fa0/0

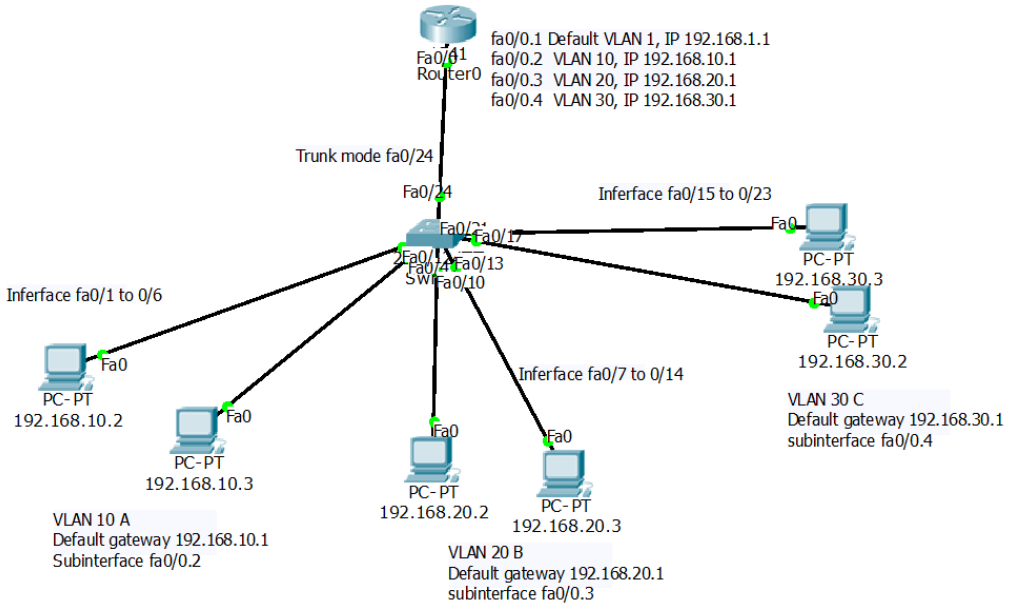
```
Switch>en
Switch#
Switch#vlan database
Switch(vlan)#vlan 10 name A
Switch(vlan)#vlan 20 name B
Switch(vlan)#vlan 30 name C
Switch(vlan)#exit
Switch#conf t
```




```
Switch(config)#int range fa0/1-6
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#int range fa0/7-14
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#int range fa0/15-23
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#int fa0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#end
Switch#sh vlan brief
```

```
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/24, Gig1/1, Gig1/2
10   A                                 active    Fa0/1, Fa0/2, Fa0/3, Fa0/4, Fa0/5, Fa0/6
20   B                                 active    Fa0/7, Fa0/8, Fa0/9, Fa0/10 ,Fa0/11, Fa0/12, Fa0/13, fa0/14
30   C                                 active    Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

```
Router>en
Router#conf t
Router(config)#int fa0/0
Router(config-if)#no shut
Router(config-if)#int fa0/0.1
Router(config-subif)#encapsulation dot1q 1
Router(config-subif)#ip add 192.168.1.1 255.255.255.0
Router(config-subif)#int fa0/0.2
Router(config-subif)#encapsulation dot1q 10
Router(config-subif)#ip add 192.168.10.1 255.255.255.0
Router(config-subif)#int fa0/0.3
Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip add 192.168.20.1 255.255.255.0
Router(config-subif)#int fa0/0.4
Router(config-subif)#encapsulation dot1q 30
Router(config-subif)#ip add 192.168.30.1 255.255.255.0
Router(config-subif)#end
```



```
Router#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0.1
C    192.168.10.0/24 is directly connected, FastEthernet0/0.2
C    192.168.20.0/24 is directly connected, FastEthernet0/0.3
C    192.168.30.0/24 is directly connected, FastEthernet0/0.4
```

Verify the network using ping and ICMP