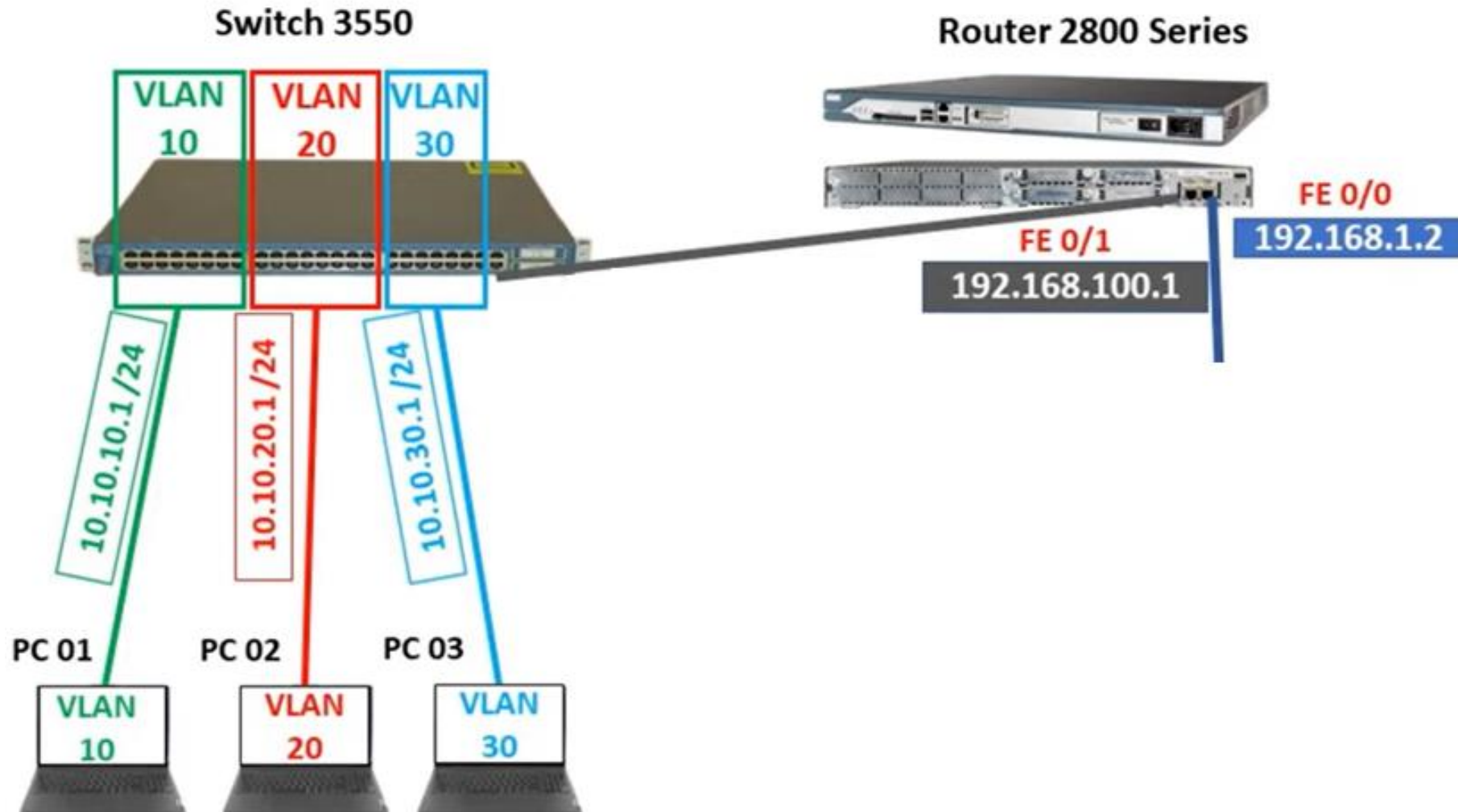


VLAN Configuration with Switch and Router



IP Configuration

☐ DHCP ☒ Static

IP Address

Subnet Mask

Default Gateway

DNS Server

IP Configuration

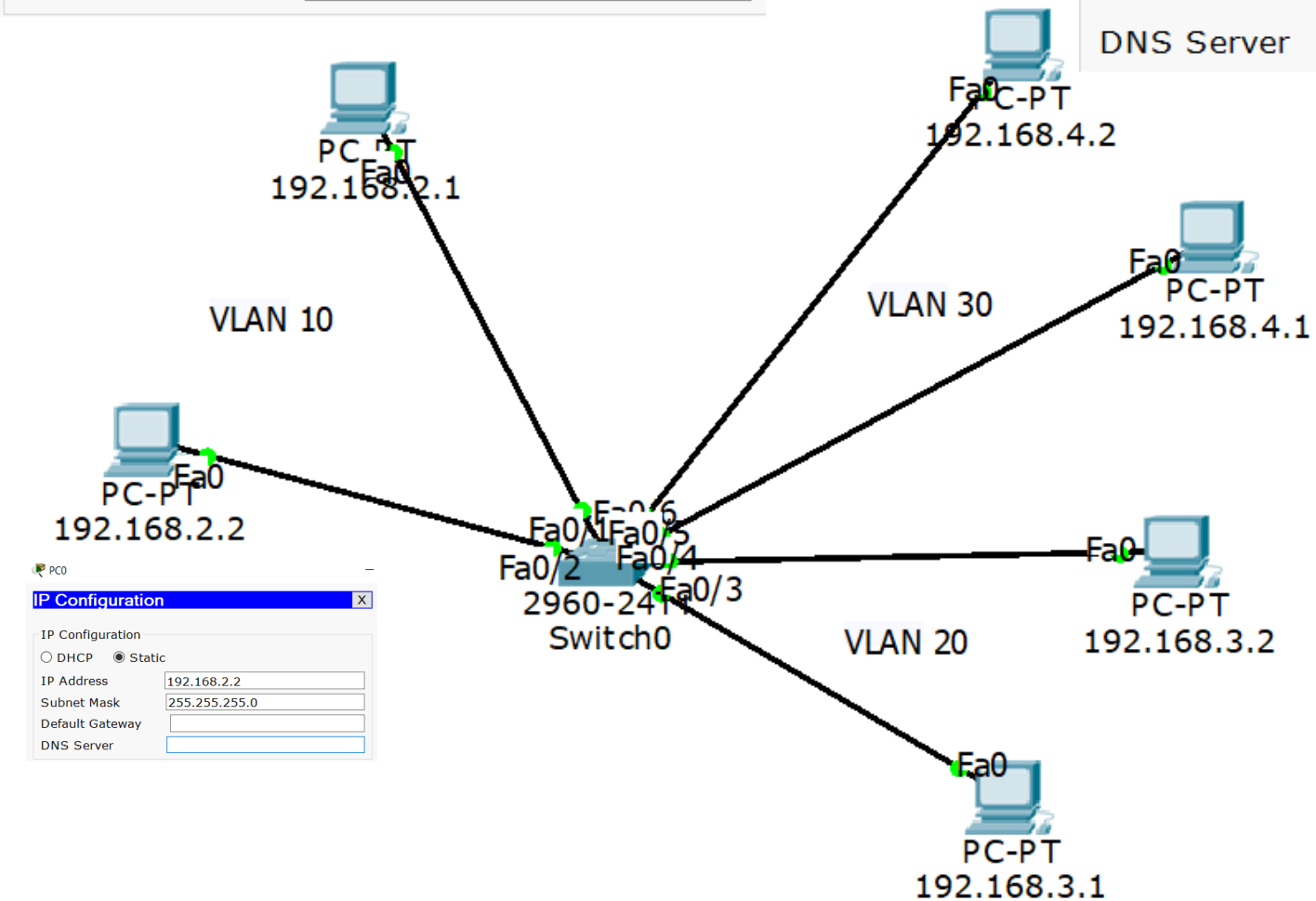
☐ DHCP ☒ Static

IP Address

Subnet Mask

Default Gateway

DNS Server



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

Provide IP and subnet mask 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 fa0/1

Switch(config-if)# switchport mode access

Switch(config-if)# 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
VLAN 30	C	192.168.4.1 192.168.4.2	Fa0/5, Fa0/6

```

Switch(config-if)# int fa0/2
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 10
Switch(config-if)# int fa0/3
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 20
Switch(config-if)# int fa0/4
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 20
Switch(config-if)# int fa0/5
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 30
Switch(config-if)# int fa0/6
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 30
Switch(config-if)#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
VLAN 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 192.168.2.1 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.

```
Packet Tracer PC Command Line 1.0
PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=0ms TTL=128
Reply from 192.168.2.1: bytes=32 time=0ms TTL=128
Reply from 192.168.2.1: bytes=32 time=0ms TTL=128
Reply from 192.168.2.1: bytes=32 time=4ms TTL=128

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 4ms, Average = 1ms

PC>ping 192.168.4.2

Pinging 192.168.4.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.4.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>|
```

VLAN under sub-interface

IP Configuration [X]

IP Configuration

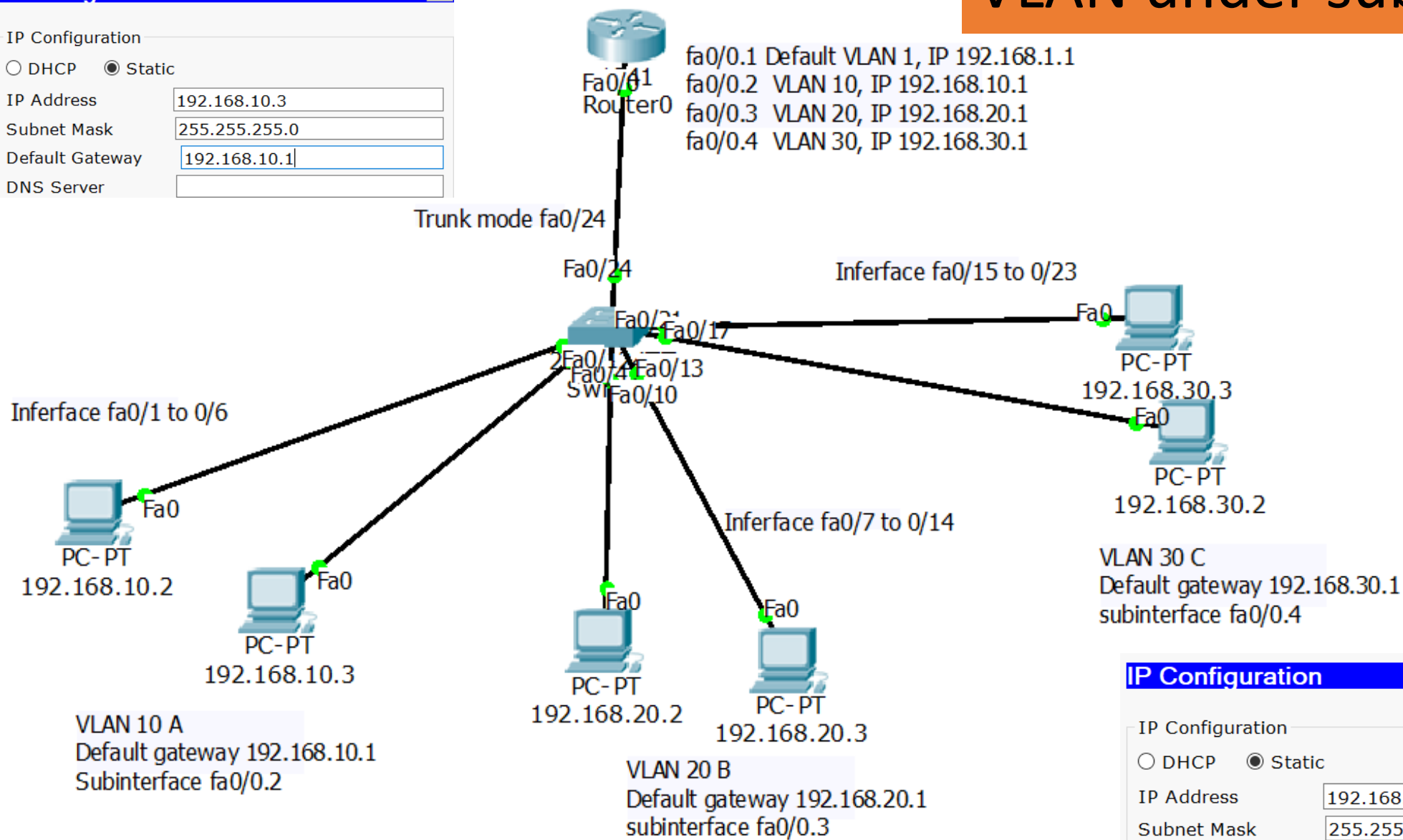
☐ DHCP ☒ Static

IP Address: 192.168.10.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.10.1

DNS Server:



IP Configuration [X]

IP Configuration

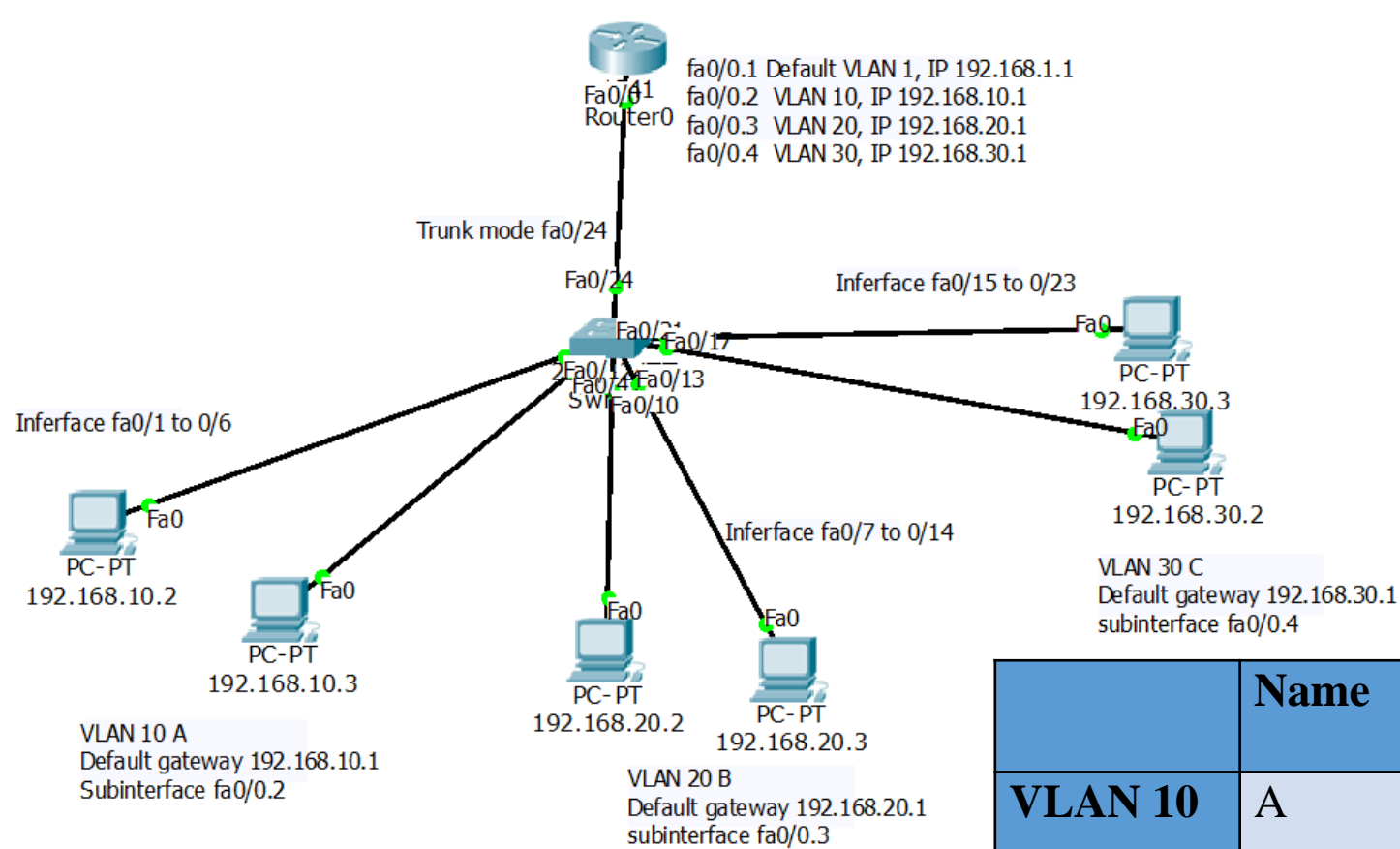
☐ DHCP ☒ Static

IP Address: 192.168.30.3

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.30.1

DNS Server:



	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		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

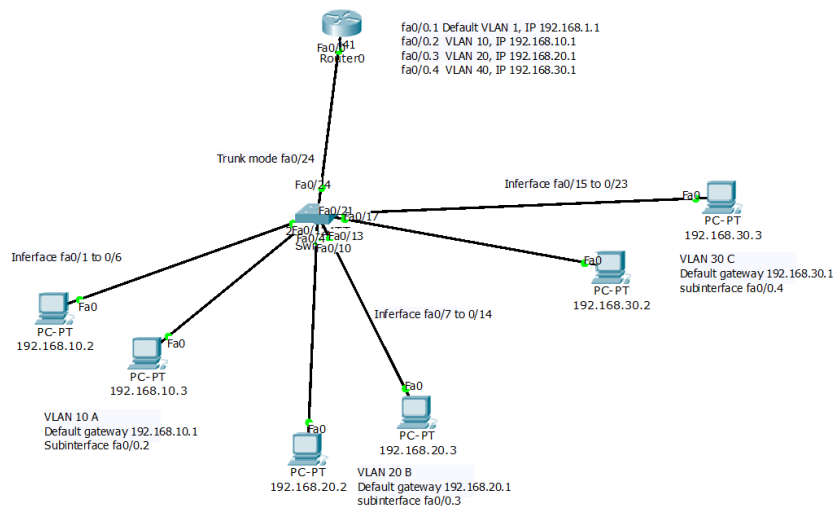
Switch(config-if-range)#switchport access vlan 30

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
```

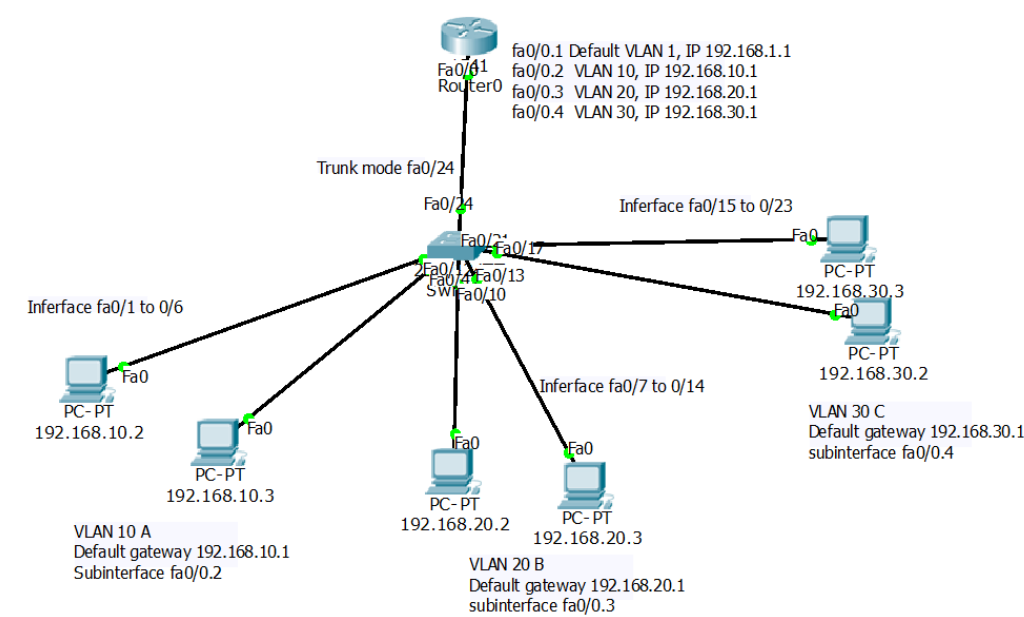
```
Router(config-subif)#ip add 192.168.20.1 255.255.255.0
```

```
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