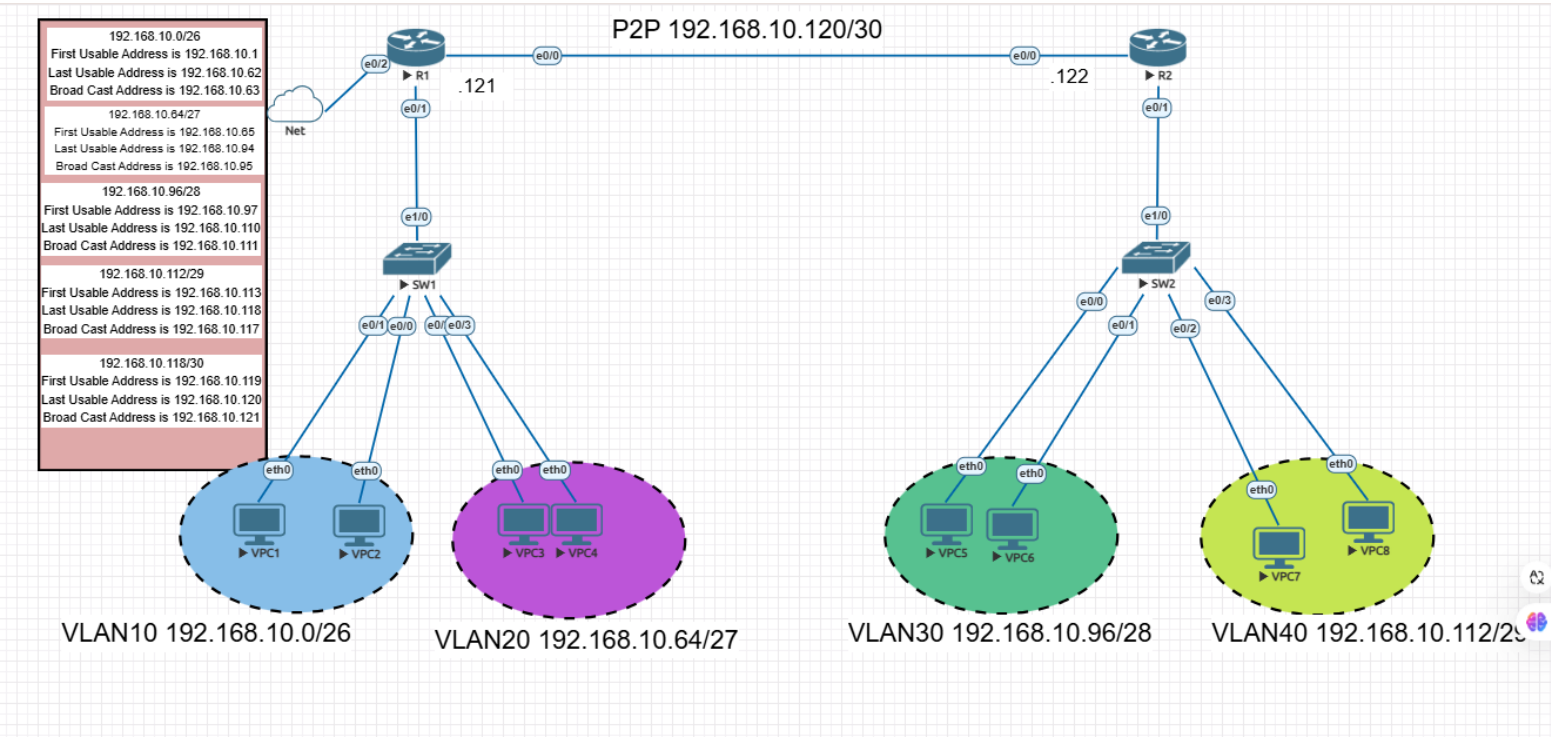
LAB Tapology



Basic cisco Configuration

```
Switch>enable

Enter Privileged Exec Mode on Switch 1

Switch#configure terminal

Enter global configuration mode

Switch(config)#hostname SW1

Configure hostname

SW1(config)#enable secret Cisco

Set enable secret to "cisco"

SW1(config)#no ip domain lookup

**********************************************************************
******

Switch>enable

Enter Privileged Exec Mode on Switch 2
Switch#configure terminal
Enter global configuration mode
Switch(config)#hostname SW2
Configure hostname
SW2(config)#enable secret Cisco

Set enable secret to "cisco"

SW2(config)#no ip domain lookup
SW2(config)# write
Save the configuration to the memory
```

Go to SW1 and configigure vlans

```
SW1#conf t
SW1(config)#vlan 10
SW1(config-vlan)#name sales
SW1(config-vlan)#exit
SW1(config)#vlan 20
SW1(config-vlan)#name finance
SW1(config-vlan)#end
SW1#wr
```

Verify your vlan is created

```
SW1# show vlans
```

Create IP addresses for VLAN 10 and VLAN 20

```
SW1#conf t
SW1(config)#interface vlan 10
SW1(config-if)#no shut
SW1(config-if)#ip add 192.168.10.2 255.255.255.192
SW1(config-if)#exit

SW1(config)#interface vlan 20
SW1(config-if)#no shut
SW1(config-if)#ip add 192.168.10.66 255.255.255.224
SW1(config-if)#end
SW1#wr
```

Verify the ip address of the vlan interface

```
SW1#show ip int br
```

Assign Vlans to appropiate port

```
SW1#conf t
SW1(config)# int e0/0
SW1(config-if)#switchport access vlan 10
SW1(config)# int e0/1
SW1(config-if)#switchport access vlan 10
```

```
SW1(config)# int e0/2
SW1(config-if)#switchport access  vlan 20
SW1(config)# int e0/3
SW1(config-if)#switchport access  vlan 20
SW1(config-if)#end
SW1#wr
```

Verify

```
SW1#sh vlans
```

Create DHCP for VLAN 10 and VLAN 20

```
SW1#conf t

SW1(config)#ip DHCP pool VLAN10

SW1(dhcp-config)#network 192.168.10.0 255.255.255.192
SW1(dhcp-config)#default-router 192.168.10.1

SW1(dhcp-config)#dns-server 8.8.8.8

SW1(dhcp-config)#exit

SW1(config)#ip dhcp excluded-address 192.168.10.1 192.168.10.10

SW1(config)#ip DHCP pool VLAN20

SW1(dhcp-config)#network 192.168.10.64 255.255.255.224
SW1(dhcp-config)#default-router 192.168.10.65

SW1(dhcp-config)#dns-server 8.8.8.8

SW1(dhcp-config)#exit

SW1(config)#ip dhcp excluded-address 192.168.10.65 192.168.10.68

SW1(config)#end

SW1#wr
```

Verification Command

```
SW1#show run | sec ip dhcp
```

Now, check That VPC1 and VPC2 have DHCP

Ip dhcp
Show ip

Ping from PC1 to PC2 and PC3 to PC4

Discuss why PC4 and PC2 or PC1 can't ping pc3 ?

Go to SW2 and configigure vlans

```
SW2#conf t
SW2(config)#vlan 30
SW2(config-vlan)#name HR
SW2(config-vlan)#exit
SW2(config)#vlan 40
SW2(config-vlan)#name IT
SW2(config-vlan)#end
SW2#wr
```

Verify your vlan is created

```
SW2# show vlans
```

Create IP addresses for VLAN 10 and VLAN 20

```
SW2#conf t
SW2(config)#interface vlan 30
SW2(config-if)#no shut
SW2(config-if)#ip add 192.168.10.98 255.255.255.240
SW2(config-if)#exit

SW2(config)#interface vlan 40
SW2(config-if)#no shut
SW2(config-if)#ip add 192.168.10.114 255.255.255.248
SW2(config-if)#end
SW2#wr
```

Verify the ip address of the vlan interface

```
SW2#show ip int br
```

Assign Vlans to appropiate port

```
SW2#conf t
SW2(config)# int e0/0
SW2(config-if)#switchport access vlan 30
```

```
SW2(config)# int e0/1
SW2(config-if)#switchport  access vlan 30
SW2(config)# int e0/2
SW2(config-if)#switchport  access vlan 40
SW2(config)# int e0/3
SW2(config-if)#switchport  access vlan 40
SW2(config-if)#end
SW2#wr
```

Verify

```
SW2#sh vlans
```

Create DHCP for VLAN 10 and VLAN 20

```
SW2#conf t

SW2config)#ip DHCP pool VLAN30

SW2dhcp-config)#network 192.168.10.96 255.255.255.240
SW2(dhcp-config)#default-router 192.168.10.97

SW2(dhcp-config)#dns-server 8.8.8.8

SW2(dhcp-config)#exit

SW2(config)#ip dhcp excluded-address 192.168.10.97 192.168.10.99

SW2(config)#ip DHCP pool VLAN40

SW2(dhcp-config)#network 192.168.10.112 255.255.255.248
SW2(dhcp-config)#default-router 192.168.10.113

SW2(dhcp-config)#dns-server 8.8.8.8

SW2(dhcp-config)#exit

SW2(config)#ip dhcp excluded-address 192.168.10.113 192.168.10.114

SW2(config)#end

SW2#wr
```

Verification Command

```
SW1#show run | sec ip dhcp
```

Now, check That VPC1 and VPC2 have DHCP

```
Ip dhcp
Show ip
```

Ping from PC1 to PC2 and PC3 to PC4

Discuss why PC4 and PC2 or PC1 can't ping pc3 ?

Configuring Inter VLAN Routing

Housekeeping configuration Router 1

```
Router>enable
Router#conf t
Router(config)#hostname R1
R1(Config)#enable secret cisco
R11(config)#no ip domain lookup
```

****

Check if your configuration is okey

****

```
R1#show run
```

Configure Sub-interface ip address

```
R1#conf t
R1(config)#int e0/1
R1(config-if)#no shutdown
R1(config-if)#exit
Configure the gateway of VLAN 10
R1(config)#int e0/1.10
R1(config-subif)# encapsulation dot1Q 10
R1(config-subif)#ip address 192.168.10.1 255.255.255.192
R1(config-subif)#exit
Configure the gateway of VLAN 20
R1(config)#int e0/1.20
R1(config-subif)# encapsulation dot1Q 20
R1(config-subif)#ip address 192.168.10.65 255.255.255.224
R1(config-subif)#end
```

****

Check if your interface configuration is okey

****

```
R1#show ip interface brief
```

Go back to SW1 and configure e0/0 trunk

```
SW1#sh vlan
SW1#conf t
SW1(config)#interface e1/0
SW1(config-if)#switchport trunk encapsulate dot1q
SW1(config-if)#switchport mode trunk
```

****

```
SW1#show interface trunk
```

**********Verify that the PC in VLAN 10 can communicate to the PCs on VLAN20 and vise versa

PC1:Ping "PC4 IP address"

PC4:Ping "PC1 IP address"Housekeeping configuration Router 2

```
Router>enable
Router#conf t
Router(config)#hostname R2
R2(Config)#enable secret cisco
R2(config)#no ip domain lookup
```

****

Check if your configuration is okey

****

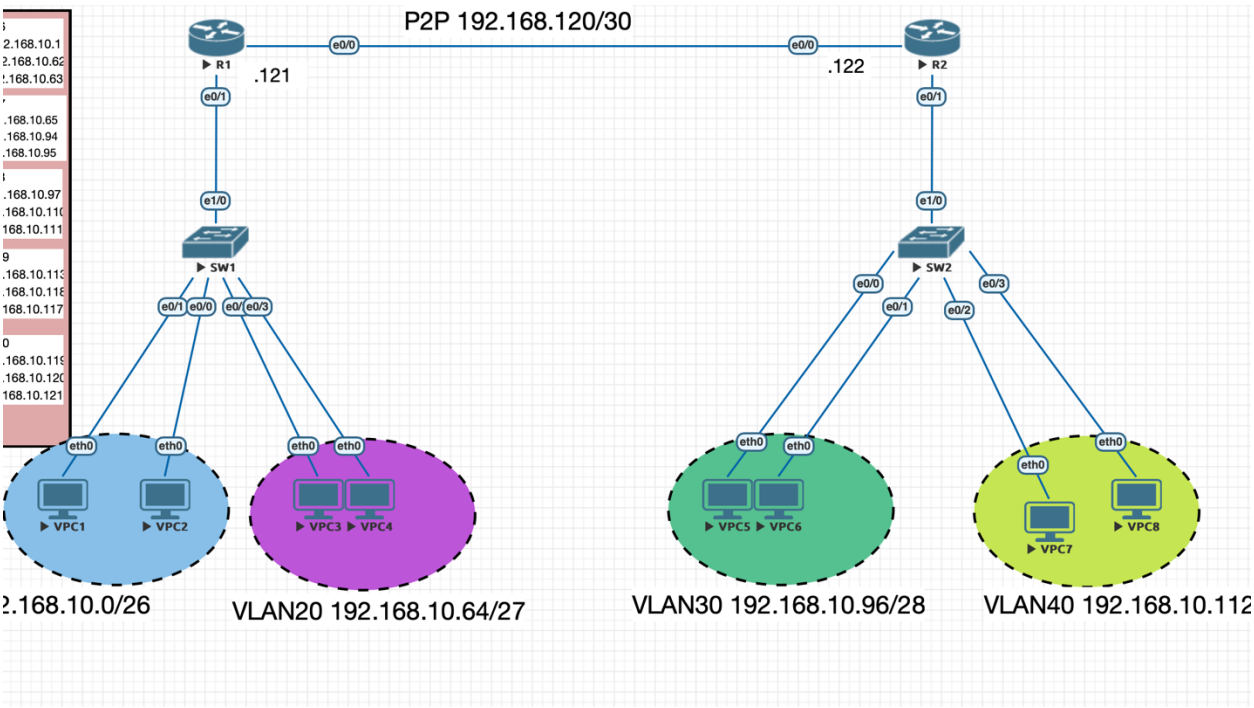
Router 2

```
R2#show run
```

Configure Sub-interface ip address

```
R2#conf t
R2(config)#int e0/1
R2(config-if)#no shutdown
R2(config-if)#exit
Configure the gateway of VLAN 30
R2(config)#int e0/1.30
```

```
R2(config-subif)# encapsulation dot1Q 30
R2(config-subif)#ip address 192.168.10.97 255.255.255.240
R2(config-subif)#exit
Configure the gateway of VLAN 40
R2(config)#int e0/1.40
R2(config-subif)# encapsulation dot1Q 40
R2(config-subif)#ip address 192.168.10.113 255.255.255.248
R2(config-subif)#end
*********************************************
```
Check if your interface configuration is okey
```
*********************************************
R2#show ip interface brief
```
Go back to SW2 and configure e0/0 trunk
```
SW2#sh vlan
SW2#conf t
SW2(config)#interface e1/0
SW2(config-if)#switchport trunk encapsulate dot1q
SW2(config-if)#switchport mode trunk
************************************
SW2#show interface trunk
************************************
Verify that the PC in VLAN 30 can communicate to the PCs on
VLAN40 and vise versa
```
VPC5:Ping "VPC8 IP address"
VPC6:Ping "VPC7 IP address"



On Router1:
Router>enable
R1#configure terminal
R1 R1(config)#int e0/0
R1(config-if)#description Link to R2
R1(config-if)#no shut
R1(config-if)#ip addr 192.168.10.121 255.255.255.252
Verify IP address assignments:

R1#sh ip int br

On Router2:
R2>enable
R2#config t
R2 R2(config)#int e0/1
R2(config-if)#description Link to R1
R2(config-if)#no shut
R2(config-if)#ip addr 192.168.10.122 255.255.255.252
Verify IP address assignments:
R2#sh ip int br
Check if you can reach the R1.:
R2#ping 192.168.10.121
NB: !!!!! Exclamation mark means Success while ….. means unreachable

Static Route

On R1:
R1>enable
R1#conf t
R1(config)#ip route 192.168.10.96 255.255.255.240 192.168.10.122
R1(config)#ip route 192.168.10.112 255.255.255.248 192.168.10.122
On R2:
R2>enable R2#conf t
R2(config)#ip route 192.168.10.0 255.255.255.192 192.168.10.121
R2(config)#ip route 192.168.10.64 255.255.255.224 192.168.10.121
Verify:
R1#sh ip route
NB: You will see C for some networks which means it is a directly connected network while the other 2 will be S which means it is static route.
From PC VLAN10, go to command prompt and ping PC IN VLAN 30/40:

Deleting Static Route

R1>enable
R1#conf t
R1(config)#no ip route 192.168.10.96 255.255.255.240 192.168.10.122
R1(config)#no ip route 192.168.10.112 255.255.255.248 192.168.10.122

On R2:
R2>enable R2#conf t
R2(config)#no ip route 192.168.10.0 255.255.255.192 192.168.10.121
R2(config)#no ip route 192.168.10.64 255.255.255.224 192.168.10.121

OSPF Configuration:
On R1:

R1(config)#router ospf 1
R1(config-router)#network 192.168.10.0 0.0.0.63 area 0
R1(config-router)#network 192.168.10.64 0.0.0.31 area 0
R1(config-router)#network 192.168.10.120 0.0.0.3 area 0

R1(config-router)#end

Save configurations:
R1#wr

Verify:
R1#sh run l sec ospf

****
On R2:

R2(config)#router ospf 1
R2(config-router)# network 192.168.10.96 0.0.0.15 area 0
R2(config-router)#network 192.168.10.0 0.0.0.255 area 0
R2(config-router)#network 192.168.10.120 0.0.0.3 area 0

R2(config-router)#end
Save configurations:
R2#wr

Verify:
R2#sh run l sec ospf
R2#sh ip route
****

NAT Configuration LAB
On R1:

```
R1>enable
R1#configure terminal
R1(config)#int e0/2
R1(config-if)#description Link to WAN
R1(config-if)#no shut
R1(config-if)#ip addr dhcp
R1(config-if)#end
```

Verify:

```
R1#show ip int br
R1#ping 8.8.8.8
R1#configure terminal
R1(config)# access-list 1 permit any
R1(config)# ip nat inside source list 1 interface ethernet0/2 overload
R1(config)# int e0/2
R1(config-if)#ip nat outside
R1(config)# int e0/1
R1(config-if)#ip nat inside
R1(config-if)#exit
R1(config-if)#int e0/1.10
R1(config-if)# ip nat inside
R1(config-if)#exit
R1(config-if)# int e0/1.20
R1(config-if)# ip nat inside
```

**********Verify:-

```
R1#sh run l sec nat
R1#sh run l sec int
```

On the PC : test if you have an Internet

Ping 8.8.8.8

****

```
R1#conf t
R1(config)#router ospf 1
R1(config-router)# default-information originate
R1(config-router)#end
R1#wr
```

****

On R2

```
R2#sh ip route
```

If you can see O*E2 0.0.0.0/0 [110/1] it means you have configure ospf default route, now try to ping 8.8.8.8 from R2