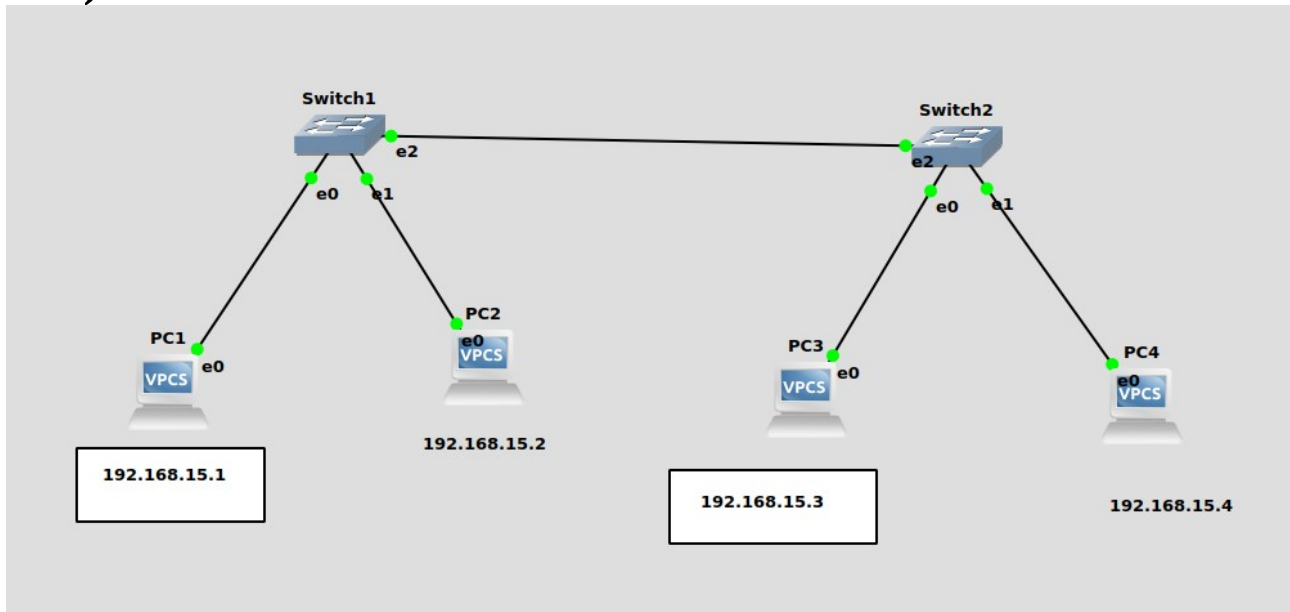


LAB 9> Design of VLANs Using GNS3

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EG)



PC1 and PC2 are connected to switch1. PC3 and PC4 are connected to switch2.
But pc1 and pc3 should be not accessible by other systems so we use vlan.

Switch1 configuration

General

Name: Switch1

Console type: none

Settings

Port: 9

VLAN: 1

Type: access

QinQ EtherType: 0x8100

Ports

Port	VLAN	Type	Ethe
0	3	access	
1	1	access	
2	1	dot1q	
3	1	access	
4	1	access	
5	1	access	
6	1	access	

Buttons: Add, Delete, Reset, Apply, Cancel, OK

Switch 1 and switch 2 are connected to each other using a trunk port(dot1q)

SO PC1 can ping PC3 but cannot ping pc2

PC1> ip 192.168.15.1

PC2> ip 192.168.15.2

PC3 : 192.168.15.3 255.255.255.0

PC4 : 192.168.15.4 255.255.255.0

Executing the startup file

```
PC1> ip 192.168.15.1
```

```
Checking for duplicate address...
```

```
PC1 : 192.168.15.1 255.255.255.0
```

```
PC1> ping 192.168.15.2
```

```
host (192.168.15.2) not reachable
```

```
PC1> ping 192.168.15.3
```

```
84 bytes from 192.168.15.3 icmp_seq=1 ttl=64 time=0.415 ms
```

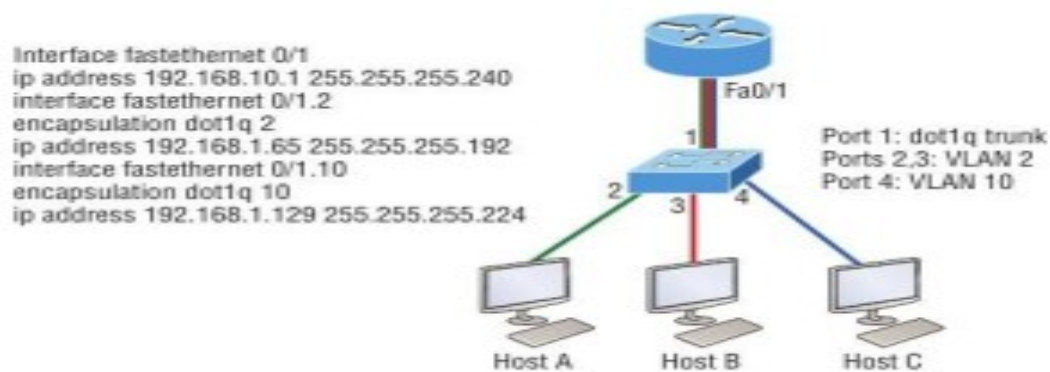
```
84 bytes from 192.168.15.3 icmp_seq=2 ttl=64 time=0.584 ms
```

```
84 bytes from 192.168.15.3 icmp_seq=3 ttl=64 time=0.470 ms
```

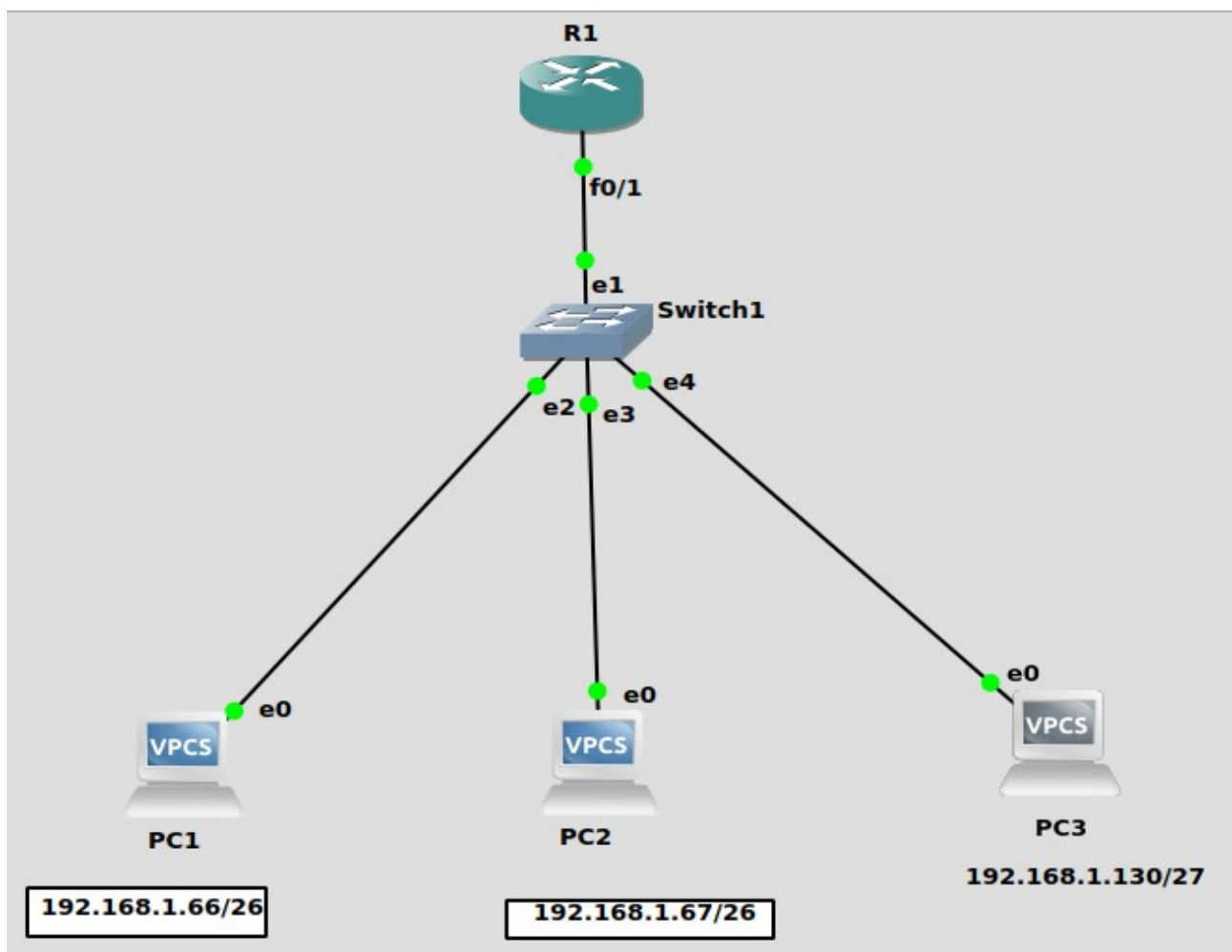
```
84 bytes from 192.168.15.3 icmp_seq=4 ttl=64 time=0.537 ms
```

```
84 bytes from 192.168.15.3 icmp_seq=5 ttl=64 time=0.446 ms
```

Q1)



Port	VLAN	Type	Ethe
0	1	access	
1	1	dot1q	
2	2	access	
3	2	access	
4	10	access	
5	1	access	
6	1	access	



PC1 and PC2 in same vlan and PC3 in different VLAN.

Our aim is to connect PC1 PC2 and PC3.

PC1> ip 192.168.1.66 255.255.255.192 192.168.1.65

Checking for duplicate address...

PC1 : 192.168.1.66 255.255.255.192 gateway 192.168.1.65

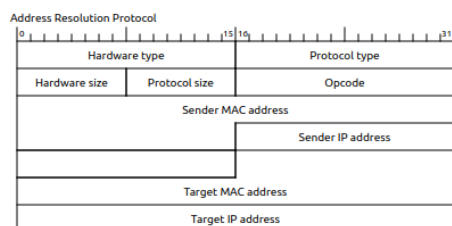
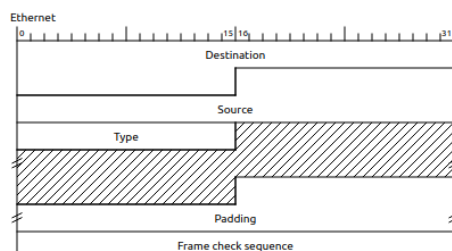
```
PC2> ip 192.168.1.67 255.255.255.192 192.168.1.65
Checking for duplicate address...
PC2 : 192.168.1.67 255.255.255.192 gateway 192.168.1.65
```

```
PC3> ip 192.168.1.130 255.255.255.224 192.168.1.129
Checking for duplicate address...
PC3 : 192.168.1.130 255.255.255.224 gateway 192.168.1.129
```

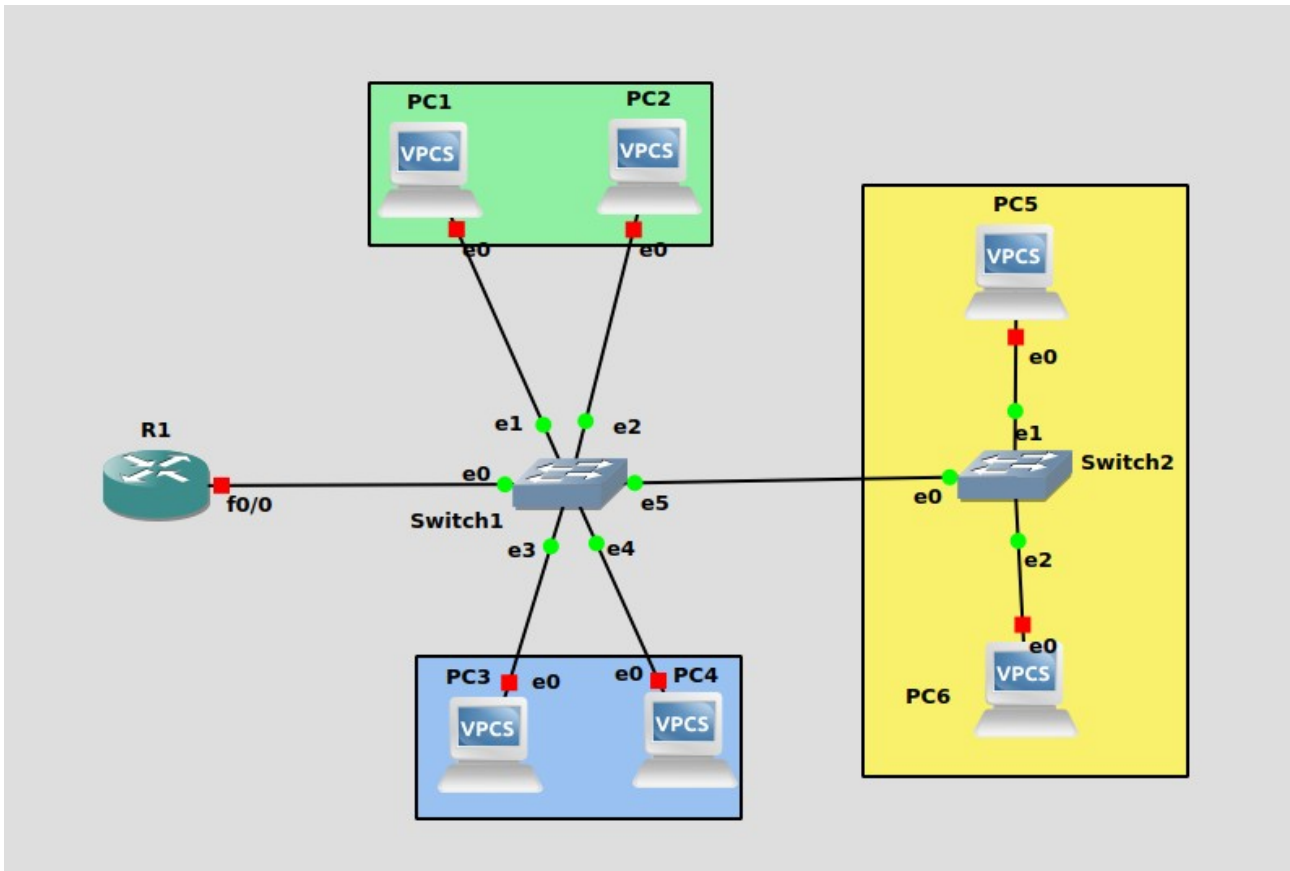
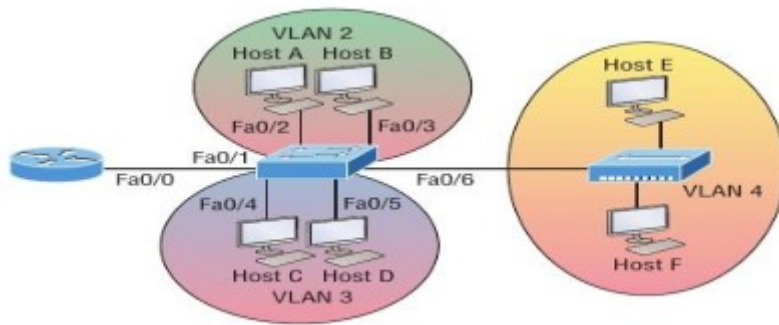
```
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface f0/1
R1(config-if)#ip address 192.168.10.1 255.255.255.240
R1(config-if)#no shut
R1(config)#interface f0/1.2
R1(config-subif)#encapsulation dot1q 2
R1(config-subif)#ip address 192.168.1.65 255.255.255.192
R1(config-subif)#no shut
R1(config-subif)#exit
R1(config)#interface f0/1.10
R1(config-subif)#encapsulation dot1q 10
R1(config-subif)#ip address 192.168.1.129 255.255.255.224
R1(config-subif)#no shut
R1(config-subif)#exit
R1(config)#exit
```

1	0.000000	Private:66:68:00	Broadcast	ARP	64	Who has 192.168.1.67? Tell 192.168.1.66	192.168.1.66 icmp_seq=3 ttl=64 time=0.001 ms
2	0.000148	Private:66:68:01	Private:66:68:00	ARP	64	192.168.1.67 is at 00:50:79:66:68:00	192.168.1.66 icmp_seq=4 ttl=64 time=0.001 ms
3	0.000941	192.168.1.66	192.168.1.67	ICMP	98	Echo (ping) request id=0xec999, seq=1	192.168.1.66 icmp_seq=5 ttl=64 time=0.001 ms
4	0.001023	192.168.1.67	192.168.1.66	ICMP	98	Echo (ping) reply id=0xec999, seq=1	
5	1.002248	192.168.1.66	192.168.1.67	ICMP	98	Echo (ping) request id=0xea999, seq=2	
6	1.002551	192.168.1.67	192.168.1.66	ICMP	98	Echo (ping) reply id=0xea999, seq=2	
7	2.003467	192.168.1.66	192.168.1.67	ICMP	98	Echo (ping) request id=0xeb999, seq=3	
8	2.003659	192.168.1.67	192.168.1.66	ICMP	98	Echo (ping) reply id=0xeb999, seq=3	
9	3.004732	192.168.1.66	192.168.1.67	ICMP	98	Echo (ping) request id=0xec999, seq=4	
10	3.004886	192.168.1.67	192.168.1.66	ICMP	98	Echo (ping) reply id=0xec999, seq=4	
11	4.005950	192.168.1.66	192.168.1.67	ICMP	98	Echo (ping) request id=0xed999, seq=5	
12	4.006293	192.168.1.67	192.168.1.66	ICMP	98	Echo (ping) reply id=0xed999, seq=5	
13	10.040883	Private:66:68:00	Broadcast	ARP	64	Who has 192.168.1.65? Tell 192.168.1.66	
14	10.056788	C4:01:15:aa:00:01	Private:66:68:00	ARP	60	192.168.1.65 is at C4:01:15:aa:00:01	
15	10.057917	192.168.1.66	192.168.1.130	ICMP	98	Echo (ping) request id=0xf4999, seq=1	
16	12.058029	192.168.1.66	192.168.1.130	ICMP	98	Echo (ping) request id=0xf6999, seq=2	
17	12.078130	192.168.1.130	192.168.1.66	ICMP	98	Echo (ping) reply id=0xf6999, seq=2	
18	13.078896	192.168.1.66	192.168.1.130	ICMP	98	Echo (ping) request id=0xf7999, seq=3	
19	13.098258	192.168.1.130	192.168.1.66	ICMP	98	Echo (ping) reply id=0xf7999, seq=3	
20	14.099084	192.168.1.66	192.168.1.130	ICMP	98	Echo (ping) request id=0xf8999, seq=4	
21	14.010883	192.168.1.130	192.168.1.66	ICMP	98	Echo (ping) reply id=0xf9999, seq=4	
22	15.020142	192.168.1.66	192.168.1.130	ICMP	98	Echo (ping) request id=0xf9999, seq=5	
23	15.039408	192.168.1.130	192.168.1.66	ICMP	98	Echo (ping) reply id=0xf9999, seq=5	

We can ping from pc1 to pc2 and pc3 and the same from pc3 and pc2. This shows the pcs on different VLANs are connected. Inter VLAN connection.



Q2)



S1)

General

Name:

Console type:

Settings

Port:

VLAN:

Type:

QinQ EtherType:

Ports

Port	VLAN	Type	Ethe
0	1	dot1q	
1	2	access	
2	2	access	
3	1	access	
4	1	access	
5	1	dot1q	
6	1	access	

S2)

General

Name:

Console type:

Settings

Port:

VLAN:

Type:

QinQ EtherType:

Ports

Port	VLAN	Type	Ethe
0	1	dot1q	
1	4	access	
2	4	access	
3	1	access	
4	1	access	
5	1	access	
6	1	access	

- PC1 : 10.0.0.2 255.255.255.0 gateway 10.0.0.1
- PC2 : 10.0.0.3 255.255.255.0 gateway 10.0.0.1
- PC3 : 10.0.1.2 255.255.255.0 gateway 10.0.1.1
- PC4 : 10.0.1.3 255.255.255.0 gateway 10.0.1.1
- PC5 : 10.0.2.2 255.255.255.0 gateway 10.0.2.1
- PC6 : 10.0.2.3 255.255.255.0 gateway 10.0.2.1

```
R1#config t
R1(config)#interface f0/0
R1(config-if)#ip address 192.168.1.65 255.255.255.0
R1(config-if)#do wr
```

```
R1(config-if)#no shut
R1(config-if)#end
```

```
R1#config t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface f0/0.2
R1(config-subif)#encapsulation dot1q 2
R1(config-subif)#ip address 10.0.0.1 255.255.255.0
R1(config-subif)#do wr
R1(config-subif)#no shut
R1(config-subif)#exit
R1(config)#interface f0/0.3
R1(config-subif)#encapsulation dot1q 3
R1(config-subif)#ip address 10.0.1.1 255.255.255.0
R1(config-subif)#do wr
Building configuration...
R1(config-subif)#no shut
R1(config-subif)#
R1(config-subif)#exit
R1(config)#interface f0/0.4
R1(config-subif)#encapsulation dot1q 4
R1(config-subif)#ip address 10.0.2.1 255.255.255.0
R1(config-subif)#do wr
R1(config-subif)#no shut
R1(config-subif)#exit
R1(config)#end
```

```
98 Echo (ping) request id
98 Echo (ping) reply id
98 Echo (ping) request id
98 Echo (ping) reply id
98 Echo (ping) request id
98 Echo (ping) reply id
98 Echo (ping) request id
98 Echo (ping) reply id
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98 Echo (ping) reply id
```