

Data Communication and Computer Networks

EEE314

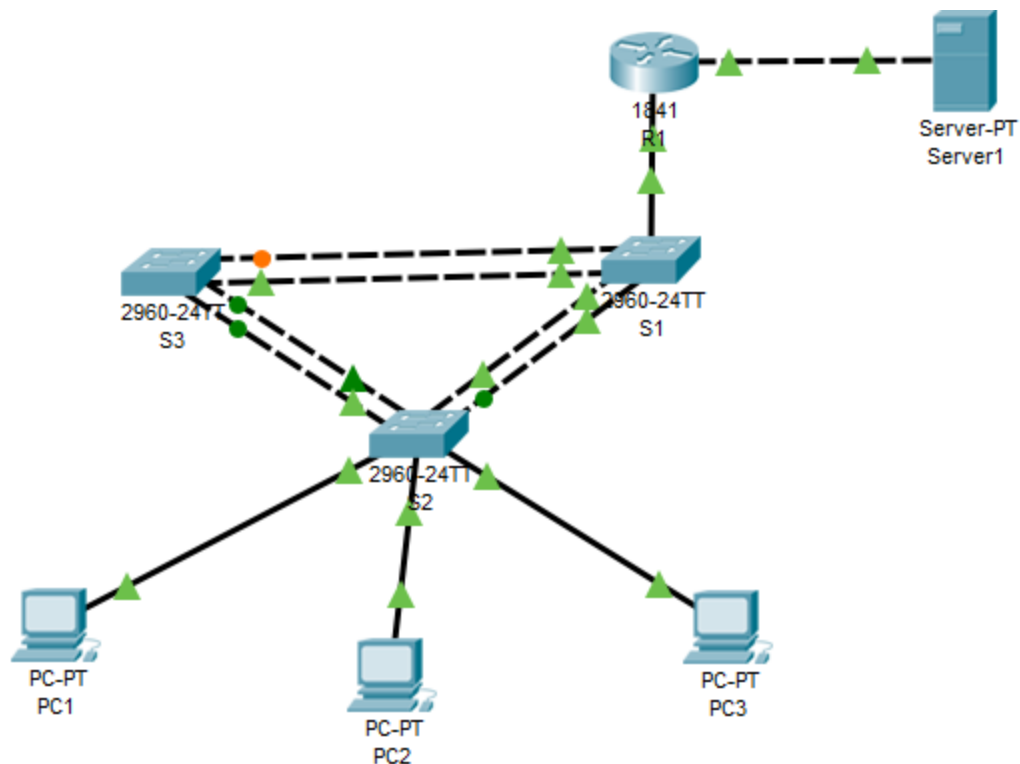
Lab # 10



| | |
|---------------------|----------------------|
| Name | Muhammad Haris Irfan |
| Registration Number | FA18-BCE-090 |
| Class | BCE-6B |
| Instructor's Name | Sir Asad Ali Malik. |

Lab #09 Inter VLAN Routing

In-Lab Task



Packet Switches

| PDU List Window | | | | | | | | | |
|-----------------|-------------|--------|-------------|------|-------|-----------|----------|-----|--------|
| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit |
| | Successful | PC1 | Server1 | ICMP | | 0.000 | N | 0 | (edit) |

| PDU List Window | | | | | | | | | |
|-----------------|-------------|--------|-------------|------|-------|-----------|----------|-----|--------|
| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit |
| | Successful | PC1 | PC2 | ICMP | | 0.000 | N | 0 | (edit) |

| PDU List Window | | | | | | | | | |
|-----------------|-------------|--------|-------------|------|-------|-----------|----------|-----|--------|
| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit |
| | Successful | PC1 | PC3 | ICMP | | 0.000 | N | 0 | (edit) |

Home Task

➤ Switch 1:

show running-config:

```
Switch#show running-config
Building configuration...
```

```
Current configuration : 1497 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
no ip domain-lookup
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/2
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/3
switchport trunk native vlan 99
switchport mode trunk
!
```

Lab#08 VLAN Configuration

```
interface FastEthernet0/4
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/5
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
```

```
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
no ip address
shutdown
!
interface Vlan99
mac-address 0004.9aec.4d01
ip address 172.17.99.11 255.255.255.0
!
ip default-gateway 172.17.99.1
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
End
```

➤ Switch 2:

show running-config:

```
Switch#show running-config
Building configuration...
```

```
Current configuration : 2029 bytes
!
version 12.2
no service timestamps log datetime msec
```

Lab#08 VLAN Configuration

```
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/2
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/3
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/4
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/5
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/6
switchport access vlan 30
switchport mode access
!
interface FastEthernet0/7
switchport access vlan 30
!
interface FastEthernet0/8
switchport access vlan 30
!
interface FastEthernet0/9
switchport access vlan 30
!
interface FastEthernet0/10
```

Lab#08 VLAN Configuration

```
switchport access vlan 30
!
interface FastEthernet0/11
switchport access vlan 10
switchport mode access
!
interface FastEthernet0/12
switchport access vlan 10
!
interface FastEthernet0/13
switchport access vlan 10
!
interface FastEthernet0/14
switchport access vlan 10
!
interface FastEthernet0/15
switchport access vlan 10
!
interface FastEthernet0/16
switchport access vlan 10
!
interface FastEthernet0/17
switchport access vlan 10
!
interface FastEthernet0/18
switchport access vlan 20
switchport mode access
!
interface FastEthernet0/19
switchport access vlan 20
!
interface FastEthernet0/20
switchport access vlan 20
!
interface FastEthernet0/21
switchport access vlan 20
!
interface FastEthernet0/22
switchport access vlan 20
!
interface FastEthernet0/23
switchport access vlan 20
!
interface FastEthernet0/24
switchport access vlan 20
!
```

```
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
no ip address
shutdown
!
interface Vlan99
mac-address 0005.5e62.6701
ip address 172.17.99.12 255.255.255.0
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
```

➤ Switch 3:

Show running-config:

```
Switch#show running-config
Building configuration...
```

```
Current configuration : 1444 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
```


Lab#08 VLAN Configuration

```
no service password-encryption
!
hostname Switch
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/2
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/3
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/4
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/5
switchport trunk native vlan 99
switchport mode trunk
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
```

Lab#08 VLAN Configuration

```
!  
interface FastEthernet0/14  
!  
interface FastEthernet0/15  
!  
interface FastEthernet0/16  
!  
interface FastEthernet0/17  
!  
interface FastEthernet0/18  
!  
interface FastEthernet0/19  
!  
interface FastEthernet0/20  
!  
interface FastEthernet0/21  
!  
interface FastEthernet0/22  
!  
interface FastEthernet0/23  
!  
interface FastEthernet0/24  
!  
interface GigabitEthernet0/1  
!  
interface GigabitEthernet0/2  
!  
interface Vlan1  
no ip address  
shutdown  
!  
interface Vlan99  
mac-address 000d.bd9a.6301  
ip address 172.17.99.13 255.255.255.0  
!  
!  
!  
!  
line con 0  
!  
line vty 0 4  
login  
line vty 5 15  
login  
!  
!
```

```
!  
!  
end
```

➤ Router 1:

Show ip route:

```
Router#show 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

172.17.0.0/24 is subnetted, 6 subnets
C 172.17.1.0 is directly connected, FastEthernet0/1.1
C 172.17.10.0 is directly connected, FastEthernet0/1.10
C 172.17.20.0 is directly connected, FastEthernet0/1.20
C 172.17.30.0 is directly connected, FastEthernet0/1.30
C 172.17.50.0 is directly connected, FastEthernet0/0
C 172.17.99.0 is directly connected, FastEthernet0/1.99

Show running-config:

```
Router#show running-config  
Building configuration...
```

Current configuration : 1055 bytes

```
!  
version 12.4  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption
```

Lab#08 VLAN Configuration

```
!  
hostname Router  
!  
!  
!  
!  
!  
!  
!  
!  
ip cef  
no ipv6 cef  
!  
!  
!  
!  
!  
!  
!  
!  
!  
spanning-tree mode pvst  
!  
!  
!  
!  
!  
interface FastEthernet0/0  
description server interface  
ip address 172.17.50.1 255.255.255.0  
duplex auto  
speed auto  
!  
interface FastEthernet0/1  
no ip address  
duplex auto  
speed auto  
!  
interface FastEthernet0/1.1  
encapsulation dot1Q 1  
ip address 172.17.1.1 255.255.255.0  
!
```

Lab#08 VLAN Configuration

```
interface FastEthernet0/1.10
encapsulation dot1Q 10
ip address 172.17.10.1 255.255.255.0
!
interface FastEthernet0/1.20
encapsulation dot1Q 20
ip address 172.17.20.1 255.255.255.0
!
interface FastEthernet0/1.30
encapsulation dot1Q 30
ip address 172.17.30.1 255.255.255.0
!
interface FastEthernet0/1.99
encapsulation dot1Q 99 native
ip address 172.17.99.1 255.255.255.0
!
interface Vlan1
no ip address
shutdown
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
```

Critical Analysis / Conclusion

In this lab we learnt about Inter-VLAN Routing. It is a way to forward traffic between different VLAN by implementing a router in the network.

Moreover, we implemented this on a topology given to us and successfully sent Packet between and we were unable to send packets between PC's connect and the server as well.

| Lab Assessment | | |
|-----------------------------------|----|-----|
| Pre Lab | /5 | /25 |
| Performance | /5 | |
| Results | /5 | |
| Viva | /5 | |
| Critical Analysis | /5 | |
| Instructor Signature and Comments | | |