LAB 6: VLAN and VLAN Trunking.

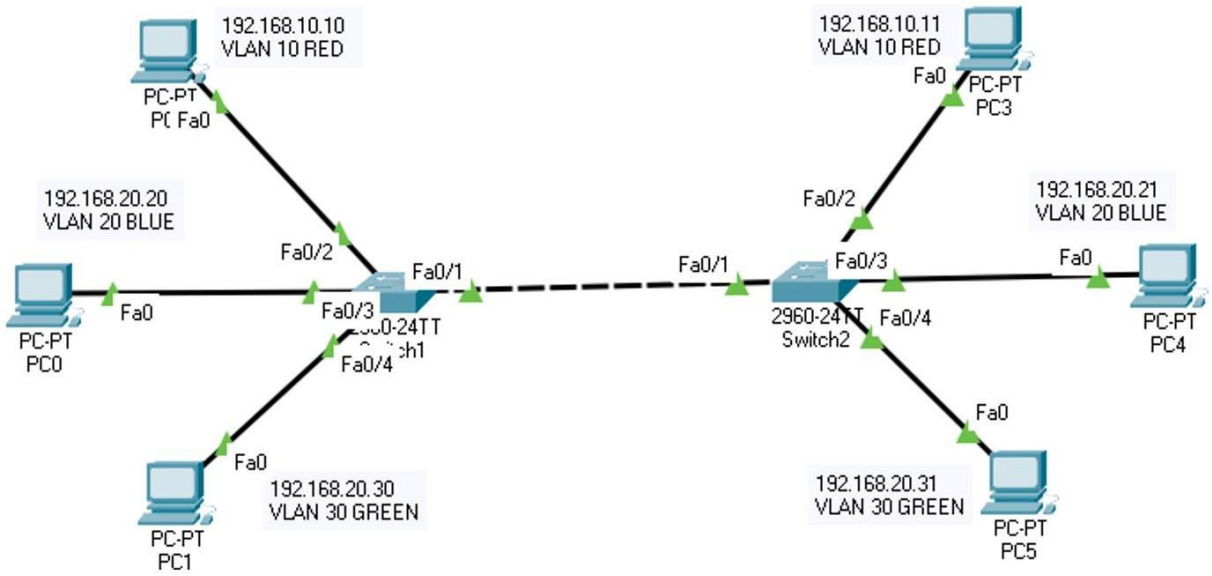
Objective(s):

- To understand LAN networking, creation of VLAN, IP addressing in the VLAN and VLAN Trunk.

Background

VLAN Trunking Protocol (VTP) is a Cisco proprietary protocol that propagates the definition of Virtual Local Area Networks (VLAN) on the whole local area network. To do this, VTP carries VLAN information to all the switches in a VTP domain.

Trunk links are required to pass VLAN information between switches. A port on a Cisco switch is either an access port or a trunk port. Access ports belong to a single VLAN and do not provide any identifying marks on the frames that are passed between switches. Access ports also carry traffic that comes from only the VLAN assigned to the port. A trunk port is by default a member of *all* the VLANs that exist on the switch and carry traffic for all those VLANs between the switches. To distinguish between the traffic flows, a trunk port must mark the frames with special tags as they pass between the switches. Trunking is a function that must be enabled on both sides of a link.

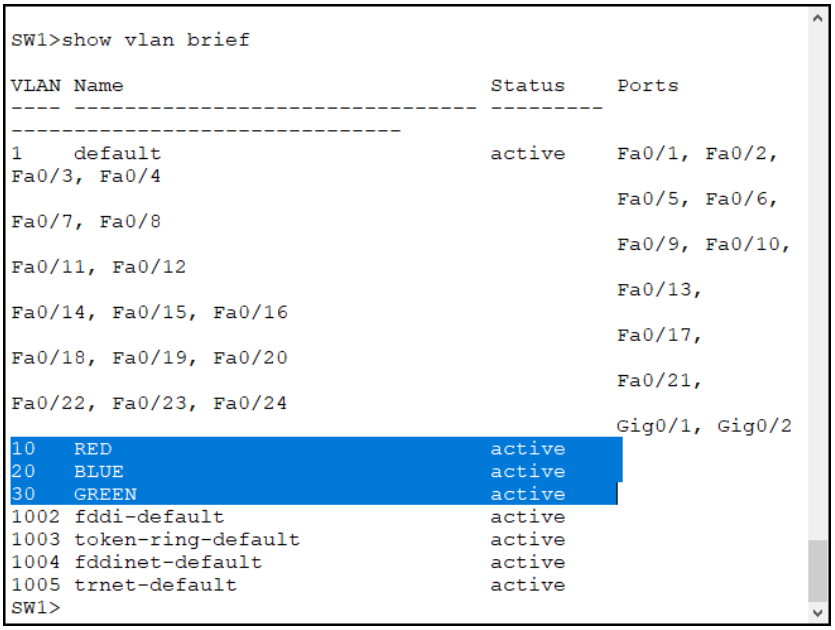


1. Configuration VLAN on Both Switches

Switch 1

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW1
SW1(config)#vlan 10
SW1(config-vlan)#name RED
SW1(config-vlan)#exit
SW1(config)#vlan 20

SW1(config-vlan)#name BLUE
SW1(config-vlan)#exit
SW1(config)#vlan 30
SW1(config-vlan)#name GREEN
SW1(config-vlan)#exit
SW1(config)#exit
SW1#show vlan brief



```
SW1>show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, 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
                                                 Gig0/1, Gig0/2
10   RED                               active
20   BLUE                              active
30   GREEN                             active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
SW1>
```

Switch 2

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW2
SW2(config)#vlan 10
SW2(config-vlan)#name RED
SW2(config-vlan)#exit
SW2(config)#vlan 20
SW2(config-vlan)#name BLUE
SW2(config-vlan)#exit
SW2(config)#vlan 30
SW2(config-vlan)#name GREEN
SW2(config-vlan)#exit
SW2(config)#exit
SW2#show vlan brief

```
SW2#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2,
Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6,
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
                                                 Gig0/1, Gig0/2
10   RED                               active
20   BLUE                              active
30   GREEN                             active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
SW2#
SW2#
```

2. Configure Access Mode on both the Switches

Switch 1

SW1(config)#interface fastethernet 0/2
SW1(config-if)#switchport mode access
SW1(config-if)#switchport access vlan 10
SW1(config-if)#interface fastethernet 0/3
SW1(config-if)#switchport mode access
SW1(config-if)#switchport access vlan 20
SW1(config-if)#interface fastethernet 0/4
SW1(config-if)#switchport mode access
SW1(config-if)#switchport access vlan 30
SW1(config-if)#exit
SW1(config)#exit
SW1#show vlan brief

```
SW1#show vlan brief
%SYS-5-CONFIG_I: Configured from console by console


VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/5,
Fa0/6, 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,
Gig0/1, Gig0/2
10   RED                               active    Fa0/2
20   BLUE                              active    Fa0/3
30   GREEN                             active    Fa0/4
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
SW1#
```

Switch 2

SW2(config)#interface fastethernet 0/2
SW2(config-if)#switchport mode access
SW2(config-if)#switchport access vlan 10
SW2(config-if)#interface fastethernet 0/3
SW2(config-if)#switchport mode access
SW2(config-if)#switchport access vlan 20
SW2(config-if)#interface fastethernet 0/4
SW2(config-if)#switchport mode access
SW2(config-if)#switchport access vlan 30
SW2(config-if)#exit
SW2(config)#exit
SW2#show vlan brief

```
SW2#show vlan brief
%SYS-5-CONFIG_I: Configured from console by console


VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/1, Fa0/5,
Fa0/6, 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,
Gig0/1, Gig0/2
10   RED                              active    Fa0/2
20   BLUE                             active    Fa0/3
30   GREEN                            active    Fa0/4
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
SW2#
```

3. Configure the Trunk Mode – Configure the mode trunk to one of port of the any switch that connects both the switches.

Switch 1

SW1(config)#interface fastethernet 0/1
SW1(config-if)#switchport mode trunk
SW1(config-if)#switchport nonegotiate
SW1(config-if)#exit

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

SW1(config)#exit

4. Configure Trunk on Native VLAN 1 on that Switch

Switch 1

SW1(config)#interface fastethernet 0/24
SW1(config-if)#switchport mode trunk
SW1(config-if)#switchport trunk native vlan 1
SW1(config-if)#exit
SW1(config)#exit
SW1#

5. Configure the IP address and subnet mask on the PCs as follows. There is no layer three device on the network so the default gateway will not be configured.

VLAN 10: 192.168.10.0/24
VLAN 20 : 192.168.20.0/24
VLAN 30: 192.168.30.0/24

PC2: 192.168.10.10 255.255.255.0
PC0 : 192.168.20.20 255.255.255.0
PC1: 192.168.30.30 255.255.255.0
PC3: 192.168.10.11 255.255.255.0
PC4: 192.168.20.21 255.255.255.0
PC5: 192.168.30.31 255.255.255.0

6. Verify the Connections.