LAB 6: VLAN and VLAN Trunking.

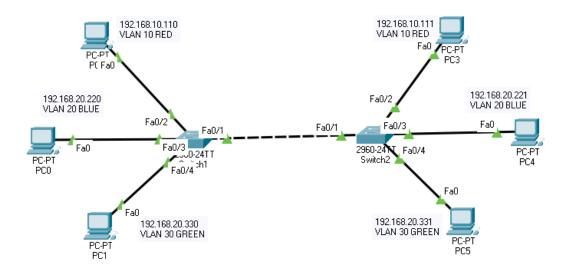
Objective(s):

 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

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2,
Fa0/3, Fa0/4 Fa0/7, Fa0/8		Fa0/5, Fa0/6,
Fa0/11, Fa0/12		Fa0/9, Fa0/10,
Fa0/14, Fa0/15, Fa0/16		Fa0/13,
Fa0/18, Fa0/19, Fa0/20		Fa0/17,
Fa0/22, Fa0/23, Fa0/24		Gig0/1, Gig0/2
10 RED 20 BLUE 30 GREEN	active active active	
1002 fddi-default 1003 token-ring-default 1004 fddinet-default	active active active	
1005 trnet-default SW1>	active	

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 Fa0/3, Fa0/4	active	Fa0/1, Fa0/2,	
Fa0/7, Fa0/8		Fa0/5, Fa0/6, Fa0/9, Fa0/10,	
Fa0/11, Fa0/12 Fa0/14, Fa0/15, Fa0/16		Fa0/13,	
Fa0/18, Fa0/19, Fa0/20		Fa0/17,	
Fa0/22, Fa0/23, Fa0/24	active	Gig0/1, Gig0/2	
20 BLUE 30 GREEN	active		
1002 fddi-default 1003 token-ring-default 1004 fddinet-default	active active active		
1005 trnet-default SW2# SW2#	active		>

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(switchport access vlan 30 SW1(config)#exit

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SW1#show vlan brief
%SYS-5-CONFIG_I: Configured from console by console
     default
                                                  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
    RED
BLUE
                                       active
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(switchport access vlan 30 SW2(switchport access vlan 30 SW2(switchport access vlan 30 SW2(switchport access vlan 30

SW2#show vlan brief %SYS-5-CONFIG_I: Configured from console by console				
VLAN Name	Status	Ports		
1 default Fa0/6, Fa0/7	active	Fa0/1, Fa0/5,		
Fa0/10, Fa0/11		Fa0/8, Fa0/9,		
Fa0/13, Fa0/14, Fa0/15		Fa0/12,		
Fa0/17, Fa0/18, Fa0/19		Fa0/20,		
Fa0/21, Fa0/22, Fa0/23 Giq0/1, Giq0/2		Fa0/24,		
10 RED	active	Fa0/2		
20 BLUE	active			
30 GREEN	active	Fa0/4		
1002 fddi-default 1003 token-ring-default	active active			
1003 token-fing-deladit	active			
1005 trnet-default	active			
SW2#			~	

3. Configure the Trunk Mode – Configure the mode trunk to all interface of the switches that connects to another 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 FastEtherneto/1, changed state to down %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEtherneto/1, changed state to up

SW1(config)#exit

Switch 2

SW2(config)#interface fastethernet 0/1 SW2(config-if)#switchport mode trunk SW2(config-if)#switchport nonegotiate SW2(config-if)#exit

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

SW2(config)#exit

4. Configure Trunk on Native VLAN 1 on both 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#

Switch 2

SW2(config)#interface fastethernet 0/24 SW2(config-if)#switchport mode trunk SW2(config-if)#switchport trunk native vlan 1 SW2(config-if)#exit SW2(config)#

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: 192.168.10.110 255.255.255.0 PC0: 192.168.20.220 255.255.255.0 PC1: 192.168.30.330 255.255.255.0 PC3: 192.168.10.111 255.255.255.0 PC4: 192.168.20.221 255.255.255.0 PC5: 192.168.30.331 255.255.255.0

6. Verify the Connections.

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Physical Config Desktop Programming Attributes

Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.110

Pinging 192.168.10.110 with 32 bytes of data:

Reply from 192.168.10.110: bytes=32 time<1ms TTL=128
Reply from 192.168.10.110: bytes=32 time<1ms TTL=128
Reply from 192.168.10.110: bytes=32 time=1ms TTL=128
Reply from 192.168.10.110: bytes=32 time=1lms TTL=128
Ping statistics for 192.168.10.110:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 11ms, Average = 3ms

C:\>
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