VLAN Lab 1
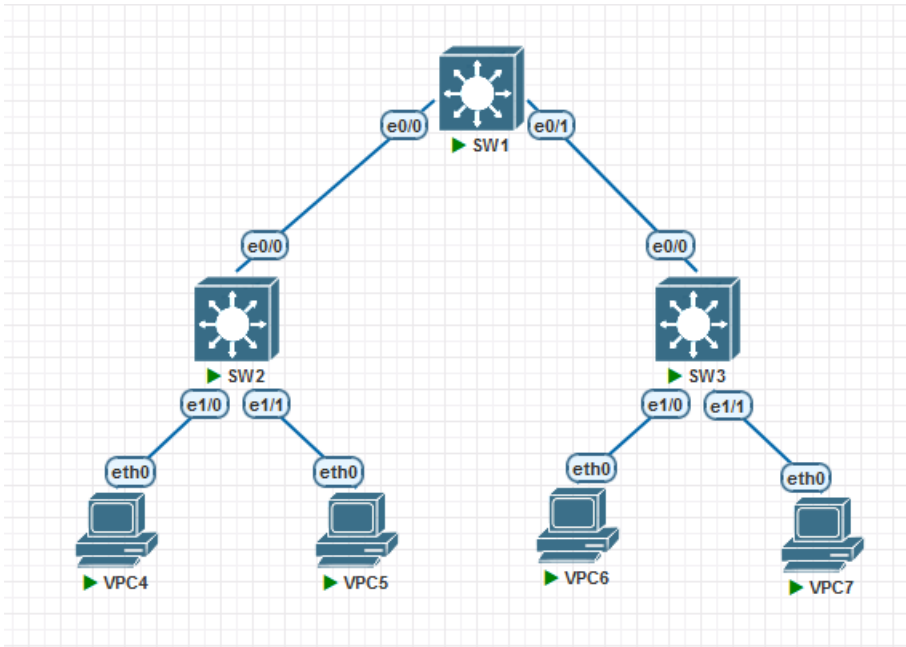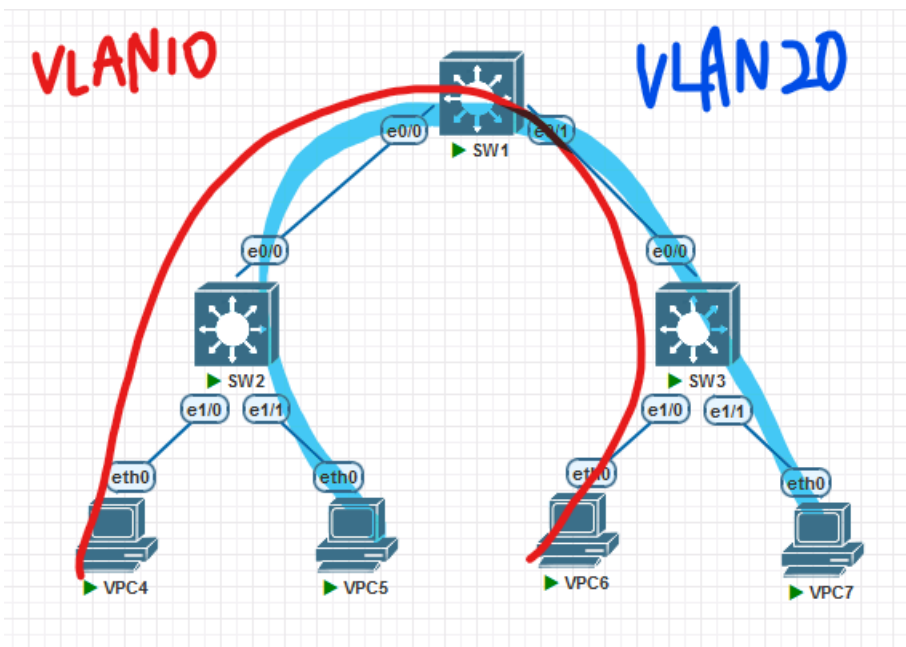
Set the 2 VLANs from the different PCs connected with different switches.

SW2 and SW3 left side PCs is in the VLAN10, and the right side is in the VLAN20

Set Switches and Set VLAN

```
SW1 ×   SW2   SW3

Switch>
Switch>
Switch>enable
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hos
Switch(config)#hostname SW1
SW1(config)#vlan 10
SW1(config-vlan)#vlan 20
SW1(config-vlan)#end
SW1#
*Jun 16 03:06:29.770: %SYS-5-CONFIG_I: Configured from console by console
SW1#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Et0/0, Et0/1, Et0/2, Et0/3
                                                Et1/0, Et1/1, Et1/2, Et1/3
10   VLAN0010                         active
20   VLAN0020                         active
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
SW1#
*Jun 16 03:07:29.112: %PNP-6-PNP_DISCOVERY_STOPPED: PnP Discovery stopped (Config Wizard)
SW1#
```

```
SW1   SW2 ×   SW3

Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hos
Switch(config)#hostname SW2
SW2(config)#vlan 10
SW2(config-vlan)#vlan20
                      ^
% Invalid input detected at '^' marker.

SW2(config-vlan)#vlan 20
SW2(config-vlan)#end
SW2#
*Jun 16 03:11:40.310: %SYS-5-CONFIG_I: Configured from console by console
SW2#show vl
SW2#show vlan brie
SW2#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Et0/0, Et0/1, Et0/2, Et0/3
                                                Et1/0, Et1/1, Et1/2, Et1/3
10   VLAN0010                         active
20   VLAN0020                         active
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
SW2#
```

```
SW1   SW2   SW3  ×

Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hos
Switch(config)#hostname SW3
SW3(config)#vlan 10
SW3(config-vlan)#vlan 20
SW3(config-vlan)#end
SW3#
*Jun 16 03:13:39.557: %SYS-5-CONFIG_I: Configured from console by console
SW3#sh
SW3#show vlan br
SW3#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Et0/0, Et0/1, Et0/2, Et0/3
                                                Et1/0, Et1/1, Et1/2, Et1/3
10   VLAN0010                         active
20   VLAN0020                         active
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
SW3#
```

vlan 10 and vlan 20 to create VLANs

Set Interfaces and Port Protocol, Mode

```
SW1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)#int
SW1(config)#interface ra
SW1(config)#interface range eth
SW1(config)#interface range ethernet 0/0 - 1
SW1(config-if-range)#shut
SW1(config-if-range)#shutdown
SW1(config-if-range)#
*Jun 16 03:19:00.922: %LINK-5-CHANGED: Interface Ethernet0/0, changed state to administratively down
*Jun 16 03:19:00.926: %LINK-5-CHANGED: Interface Ethernet0/1, changed state to administratively down
*Jun 16 03:19:01.926: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to down
*Jun 16 03:19:01.926: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to down
SW1(config-if-range)#swit
SW1(config-if-range)#switchport trunkenc
SW1(config-if-range)#switchport trunk en
SW1(config-if-range)#switchport trunk encapsulation do
SW1(config-if-range)#switchport trunk encapsulation dot1q
SW1(config-if-range)#switc
SW1(config-if-range)#switchport mod
SW1(config-if-range)#switchport mode tr
SW1(config-if-range)#switchport mode trunk
```

```
SW2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
SW2(config)#inte
SW2(config)#interface eth
SW2(config)#interface ethernet 0/0
SW2(config-if)#shut
SW2(config-if)#shutdown
SW2(config-if)#sw
SW2(config-if)#switchport
*Jun 16 03:26:52.079: %LINK-5-CHANGED: Interface Ethernet0/0, changed state to administratively down
*Jun 16 03:26:53.084: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to down
SW2(config-if)#switchport truc
SW2(config-if)#switchport trun
SW2(config-if)#switchport trunk enc
SW2(config-if)#switchport trunk encapsulation dot
SW2(config-if)#switchport trunk encapsulation dot1q
SW2(config-if)#swt
SW2(config-if)#swi
SW2(config-if)#switchport mod
SW2(config-if)#switchport mode tr
SW2(config-if)#switchport mode trunk
SW2(config-if)#
```

```
SW3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
SW3(config)#inter
SW3(config)#interface eth
SW3(config)#interface ethernet 0/0
SW3(config-if)#shut
SW3(config-if)#shutdown
SW3(config-if)#
*Jun 16 03:28:58.988: %LINK-5-CHANGED: Interface Ethernet0/0, changed state to administratively down
*Jun 16 03:28:59.988: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to down
SW3(config-if)#switch
SW3(config-if)#switchport trun
SW3(config-if)#switchport trunk enc
SW3(config-if)#switchport trunk encapsulation do
SW3(config-if)#switchport trunk encapsulation dot1q
SW3(config-if)#swi
SW3(config-if)#switchport mode tr
SW3(config-if)#switchport mode trunk
SW3(config-if)#
```

interface group setting, enter both these two interfaces at the same time.

switchport trunk encapsulation dot1q

set the encapsulation protocol 801.q

switchport mode trunk

set the switchport mode as the trunk

input no shutdown at the same time, to make sure the trunk can be activated at the same time

```
SW1(config-if-range)#no shutdown
SW1(config-if-range)#
*Jun 16 03:34:27.918: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to up
*Jun 16 03:34:27.918: %LINK-3-UPDOWN: Interface Ethernet0/1, changed state to up
*Jun 16 03:34:28.924: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up
*Jun 16 03:34:28.924: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to up
SW1(config-if-range)#end
SW1#
*Jun 16 03:34:47.117: %SYS-5-CONFIG_I: Configured from console by console
SW1#show int
SW1#show interfaces tr
SW1#show interfaces trunk

Port            Mode            Encapsulation   Status          Native vlan
Et0/0           on              802.1q          trunking        1
Et0/1           on              802.1q          trunking        1

Port            Vlans allowed on trunk
Et0/0           1-4094
Et0/1           1-4094

Port            Vlans allowed and active in management domain
Et0/0           1,10,20
Et0/1           1,10,20

Port            Vlans in spanning tree forwarding state and not pruned
Et0/0           1,10,20
Et0/1           1,10,20
SW1#
```

show interfaces trunk

      to see the status

Combine VLAN with Interface

```
SW2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
SW2(config)#interface eth
SW2(config)#interface ethernet 1/0
SW2(config-if)#inte
SW2(config-if)#sw
SW2(config-if)#switchport mode ac
SW2(config-if)#switchport mode access
SW2(config-if)#sw
SW2(config-if)#switchport acc
SW2(config-if)#switchport access vl
SW2(config-if)#switchport access vlan 10
SW2(config-if)#spa
SW2(config-if)#spanning-tree por
SW2(config-if)#spanning-tree portfa
SW2(config-if)#spanning-tree portfast edg
SW2(config-if)#spanning-tree portfast edge
%Warning: portfast should only be enabled on ports connected to a single
 host. Connecting hubs, concentrators, switches, bridges, etc... to this
 interface  when portfast is enabled, can cause temporary bridging loops.
 Use with CAUTION

%Portfast has been configured on Ethernet1/0 but will only
 have effect when the interface is in a non-trunking mode.
SW2(config-if)#exit
```

```
SW2(config)#interface eth
SW2(config)#interface ethernet 1/1
SW2(config-if)#sw
SW2(config-if)#switchport mo
SW2(config-if)#switchport mode acc
SW2(config-if)#switchport mode access
SW2(config-if)#swi
SW2(config-if)#switchport acc
SW2(config-if)#switchport access vl
SW2(config-if)#switchport access vlan 20
SW2(config-if)#sp
SW2(config-if)#spanning-tree portf
SW2(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a single
 host. Connecting hubs, concentrators, switches, bridges, etc... to this
 interface  when portfast is enabled, can cause temporary bridging loops.
 Use with CAUTION

%Portfast has been configured on Ethernet1/1 but will only
 have effect when the interface is in a non-trunking mode.
SW2(config-if)#spanning-tree portfast ed
SW2(config-if)#spanning-tree portfast edge
SW2(config-if)#end
```

switchport mode access, set as the access port

```
SW2#show vlan bir
SW2#show vlan bri
SW2#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Et0/1, Et0/2, Et0/3, Et1/2
                                                Et1/3
10   VLAN0010                         active    Et1/0
20   VLAN0020                         active    Et1/1
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

So here the interface is banded with vlan

```
SW3(config)#interface ethernet 1/0
SW3(config-if)#swi
SW3(config-if)#switchport mod
SW3(config-if)#switchport mode acc
SW3(config-if)#switchport mode access
SW3(config-if)#swi
SW3(config-if)#switchport aacc
SW3(config-if)#switchport acc
SW3(config-if)#switchport access vla
SW3(config-if)#switchport access vlan 10
SW3(config-if)#sp
SW3(config-if)#spanning-tree acc
SW3(config-if)#spanning-tree portf
SW3(config-if)#spanning-tree portfast edg
SW3(config-if)#spanning-tree portfast edge
%Warning: portfast should only be enabled on ports connected to a sing
le
 host. Connecting hubs, concentrators, switches, bridges, etc... to th
is
 interface  when portfast is enabled, can cause temporary bridging loo
ps.
 Use with CAUTION

%Portfast has been configured on Ethernet1/0 but will only
 have effect when the interface is in a non-trunking mode.
SW3(config-if)#exit
```

```
SW3(config)#interface ethernet 1/1
SW3(config-if)#swi
SW3(config-if)#switchport mod
SW3(config-if)#switchport mode acc
SW3(config-if)#switchport mode access
SW3(config-if)#swi
SW3(config-if)#switchport acc
SW3(config-if)#switchport access val
SW3(config-if)#switchport access vla
SW3(config-if)#switchport access vlan 20
SW3(config-if)#span
SW3(config-if)#spanning-tree portf
SW3(config-if)#spanning-tree portfast edg
SW3(config-if)#spanning-tree portfast edge
%Warning: portfast should only be enabled on ports connected to a sing
le
 host. Connecting hubs, concentrators, switches, bridges, etc... to th
is
 interface  when portfast is enabled, can cause temporary bridging loo
ps.
 Use with CAUTION

%Portfast has been configured on Ethernet1/1 but will only
 have effect when the interface is in a non-trunking mode.
SW3(config-if)#end
SW3#
*Jun 16 03:52:17.849: %SYS-5-CONFIG_I: Configured from console by cons
ole
```

Enter show vlan brief

Set PCs' IP

Set the ip addr of PCs

```
VPC4
VPCS> ip 10.1.1.4 255.255.255.0
VPC5
VPCS> ip 20.1.1.5 255.255.255.0
VPC6
VPCS> ip 10.1.1.6 255.255.255.0
VPC7
VPCS> ip 20.1.1.7 255.255.255.0
```

Result

VPC6

```
VPCS> ip 10.1.1.6 255.255.255.0
Checking for duplicate address...
PC1 : 10.1.1.6 255.255.255.0

VPCS> ping 10.1.1.4

84 bytes from 10.1.1.4 icmp_seq=1 ttl=64 time=0.738 ms
84 bytes from 10.1.1.4 icmp_seq=2 ttl=64 time=1.022 ms
84 bytes from 10.1.1.4 icmp_seq=3 ttl=64 time=0.834 ms
84 bytes from 10.1.1.4 icmp_seq=4 ttl=64 time=0.651 ms
84 bytes from 10.1.1.4 icmp_seq=5 ttl=64 time=0.550 ms

VPCS> ping 20.1.1.7

host (255.255.255.0) not reachable
```

Same vlan can be reached, even connect with the same switch, can not reachable

VPC5

```
VPCS> ip 20.1.1.5 255.255.255.0
Checking for duplicate address...
PC1 : 20.1.1.5 255.255.255.0

VPCS> ping 20.1.1.7

84 bytes from 20.1.1.7 icmp_seq=1 ttl=64 time=0.732 ms
84 bytes from 20.1.1.7 icmp_seq=2 ttl=64 time=1.016 ms
84 bytes from 20.1.1.7 icmp_seq=3 ttl=64 time=1.024 ms
84 bytes from 20.1.1.7 icmp_seq=4 ttl=64 time=1.452 ms
84 bytes from 20.1.1.7 icmp_seq=5 ttl=64 time=1.073 ms

VPCS> ping 10.1.1.4

host (255.255.255.0) not reachable
```