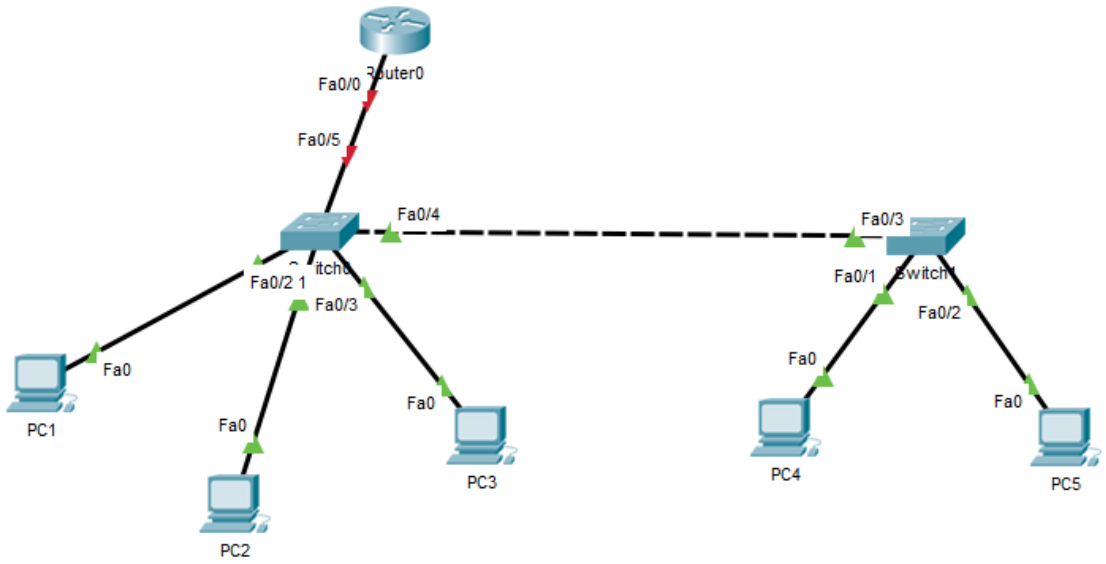
VLAN Practical



According to the lab sheet we have to create 3 VLANs

To create a VLAN we have to give an ID and a name.

- Creating VLANs in Switch0

Switch(config)#vlan <VLAN ID>
Switch(config-vlan)#name <VLAN NAME>
Switch(config-vlan)#exit

```
Switch(config)#vlan 50
Switch(config-vlan)#name HR
Switch(config-vlan)#exit

Switch(config)#vlan 100
Switch(config-vlan)#name IT
Switch(config-vlan)#exit

Switch(config)#vlan 150
Switch(config-vlan)#name SALES
Switch(config-vlan)#exit
```

Then go back to the privileged mode and run the command below to view information of the created VLANs

```
Switch#show vlan brief
```

```
Switch#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
50   HR                                active
100  IT                                active
150  SALES                             active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
Switch#
```

All the VLANs we created are still in the Switch0. We can create the same VLANs in other switch manually or by using VTP (Virtual Trunk Protocol) we can transfer these VLAN information to Switch1 (This is useful if we have many switches in the network that need to be configured for same VLANs).

To do so, first change the **switchport mode** of the interface of Switch0 which is connected with Switch1 to **TRUNK** (Fa0/4).

```
Switch(config)#interface FastEthernet 0/4
Switch(config-if)#switchport mode trunk
```

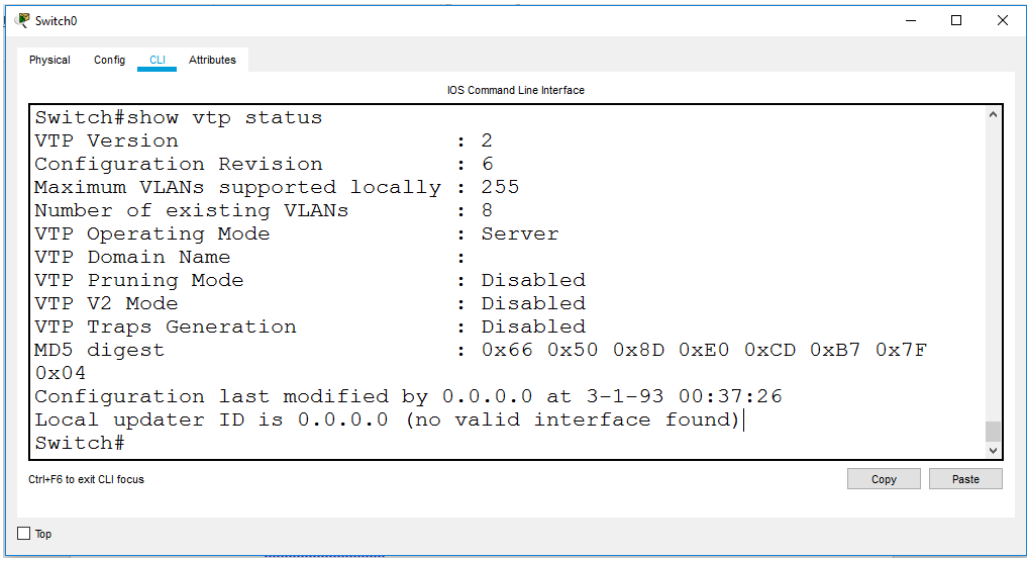
[Note: When using VTP, interfaces between network devices (routers, switches) should be in TRUNK mode and interfaces connected with end devices (PCs) should be in ACCESS mode. When you change a port mode of an interface the other end will automatically change its port mode accordingly]

According to the above description switchport mode of FastEthernet 0/5 should also change to TRUNK

```
Switch(config)#interface FastEthernet 0/5
Switch(config-if)#switchport mode trunk
```

To transfer the VLANs in Switch0 to Switch1, Switch0 should act as a Server and Switch1 should act as a Client. This information can be viewed by running the command

```
Switch#show vtp status
```

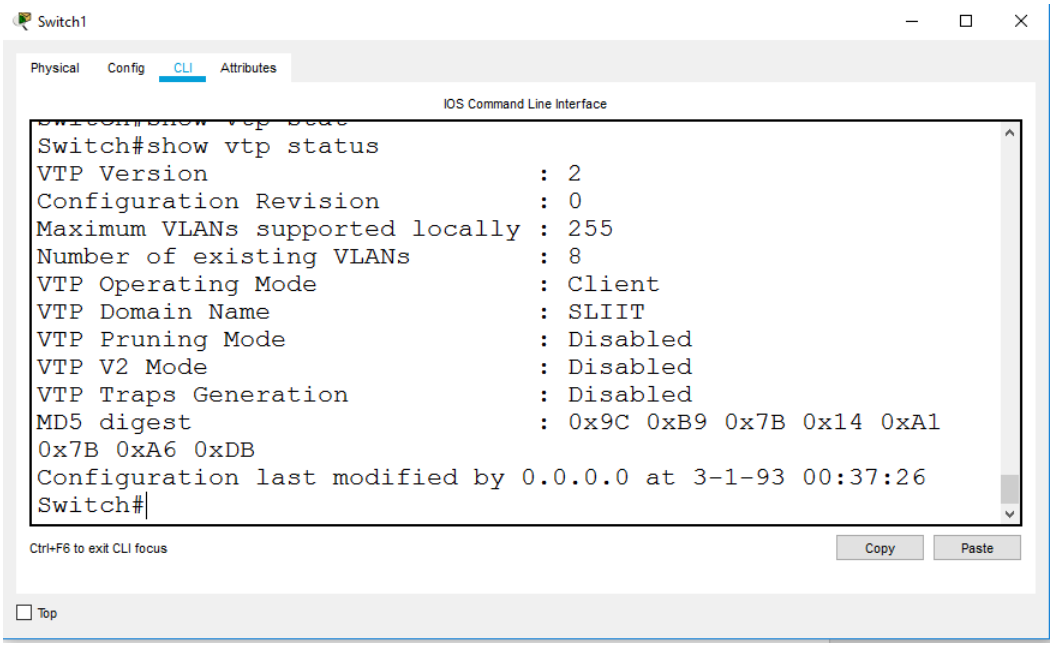


The domain names of the both Switches also have to be same because then only these switches will exchange VLAN information among them using VTP since they are in the same domain. The following commands are used to set the operating mode and domain name of Switch0

```
Switch(config)#vtp mode Server
Switch(config)#vtp domain SLIIT
```

In Switch1 run the commands below to set the domain as SLIIT and operating mode as Client

```
Switch(config)#vtp mode Client
Switch(config)#vtp domain SLIIT
```



Now again run ‘show vlan brief’ command in Switch1 and check whether the VLANs created in Switch0 are now available in Switch1 (It may take some time for VLANs to appear in Switch1).

VLANs are now available in both switches but still the PCs are not assigned to VLANs. This can be done by assigning the interfaces of the Switch to VLANs.

3.Assigning Ports to VLANs

Now the connected PCs must be allocated to VLANs and the port mode of interfaces which is connected with end devices (PCs) should be change to ACCESS. This can be achieved by executing following commands.

```
Switch(config)#interface <INTERFACE NAME>
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan <VLAN ID>
```

Following commands have to be executed in the Switch0 and Switch1

- Switch0 commands

```
Switch(config)#interface FastEthernet 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 100

Switch(config)#interface FastEthernet 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 50

Switch(config)#interface FastEthernet 0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 150
```

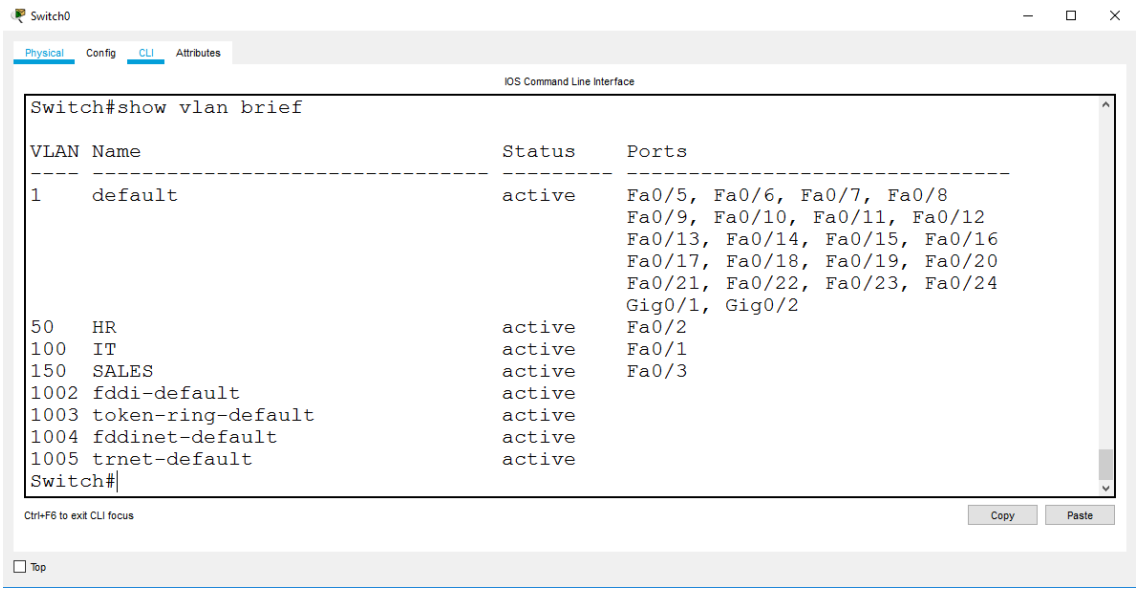
- Switch1 commands

```
Switch(config)#interface FastEthernet 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 100

Switch(config)#interface FastEthernet 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 50
```

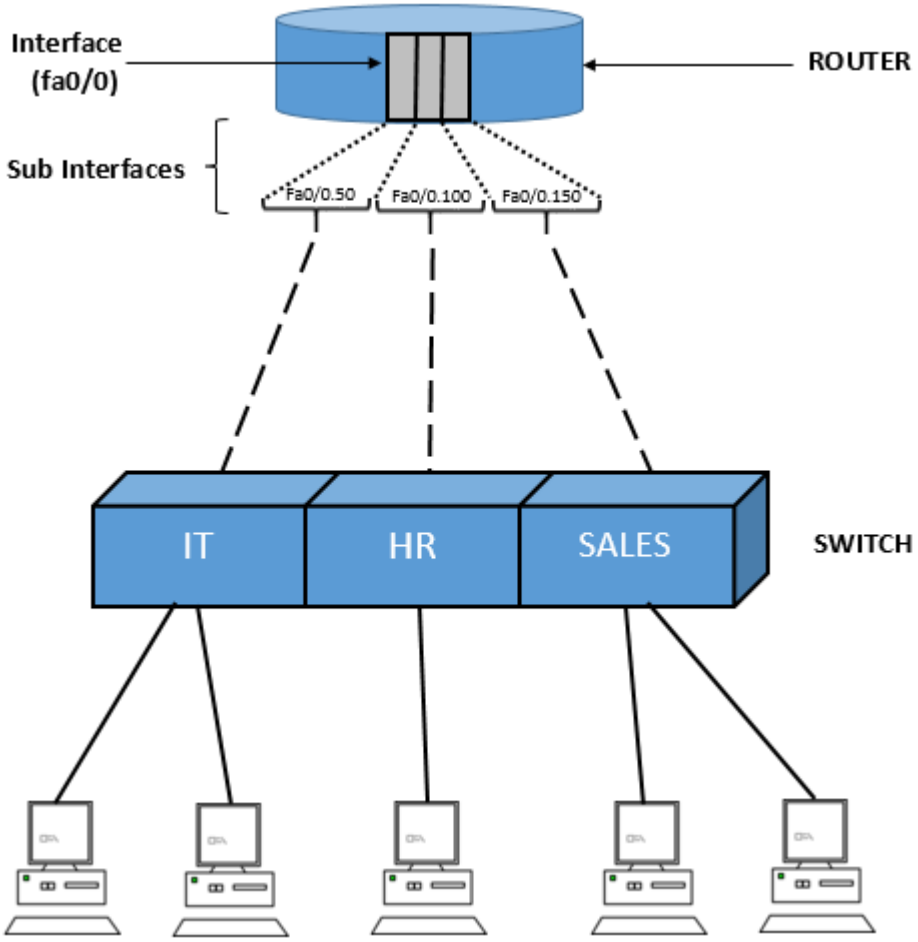
To check whether the ports are assigned to VLANs successfully run the following command in both switches

Switch#show vlan brief



4.Assign IP addresses for the routers's sub interfaces

Now the created VLANs should be connected with the sub interfaces in the router.



To create sub interfaces, assign dot1Q encapsulation and to assign IP addresses, go to the global configuration mode in Router and execute the following commands.

```
Router(config)#interface FastEthernet 0/0.50
Router(config-subif)#encapsulation dot1Q 50
Router(config-subif)#ip address 192.168.50.1 255.255.255.0

Router(config)#interface FastEthernet 0/0.100
Router(config-subif)#encapsulation dot1Q 100
Router(config-subif)#ip address 192.168.100.1 255.255.255.0

Router(config)#interface FastEthernet 0/0.150
Router(config-subif)#encapsulation dot1Q 150
Router(config-subif)#ip address 192.168.150.1 255.255.255.0
```

After configuring sub interfaces, go inside the main interface and run no shutdown command to turn on the main interface.

```
Router(config)#interface FastEthernet 0/0
Router(config-if)#no shutdown
```

Next you have to update the default gateways of the PCs in the network according to the VLAN they are belong to.

```
PC1 – Default Gateway - 192.168.100.1
PC2 – Default Gateway - 192.168.50.1
PC3 – Default Gateway - 192.168.150.1
PC4 – Default Gateway - 192.168.100.1
PC5 – Default Gateway - 192.168.50.1
```