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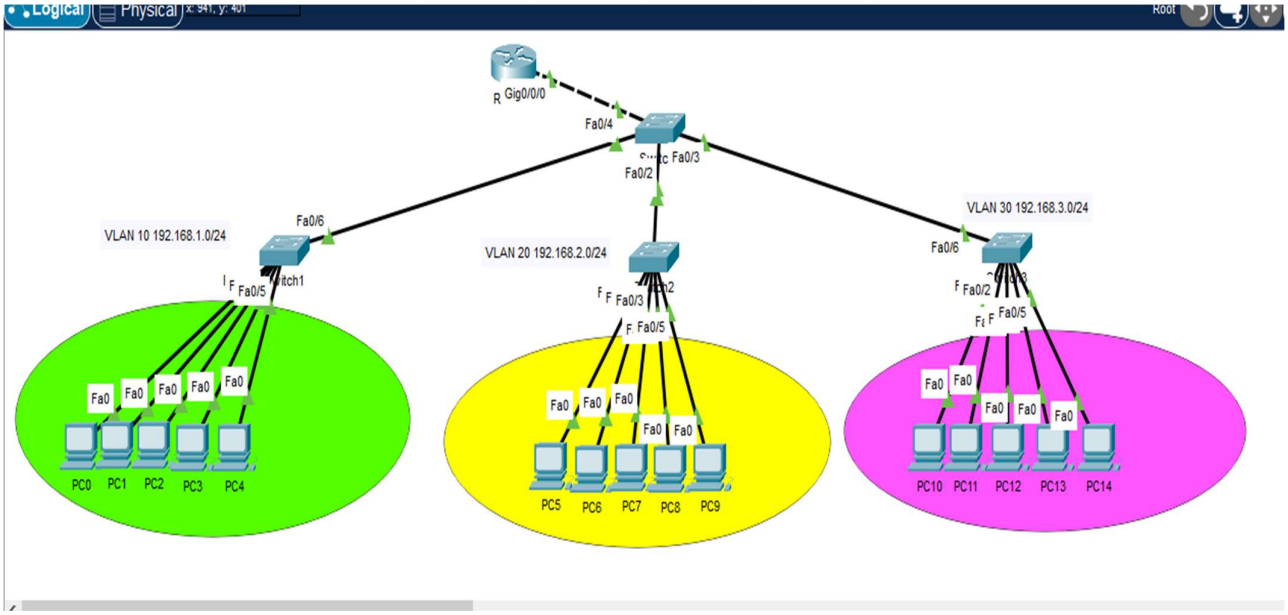
LAB3 Implementing VLANs and DHCP on a Network

The topology should look like the one below.



First start by selecting the range of interfaces that you will assign to particular VLAN. Do this to all three switches that belong to each network.

Switch 1

```
Switch>
Switch>enable
Switch#configure terminal
Switch(config)#vlan 10
Switch(config-vlan)#exit
Switch(config)#interface range fastEthernet 0/1-6
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#do write
Building configuration...
[OK]
Switch(config-if-range)#end
```

Switch 2

```
Switch>
Switch>enable
Switch#configure terminal
Switch(config)#vlan 20
Switch(config-vlan)#exit
Switch(config)#interface range fastEthernet 0/1-6
```

```
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#do write
Building configuration...
[OK]
Switch(config-if-range)#end
```

Switch 3

```
Switch>
Switch>enable
Switch#configure terminal
Switch(config)#vlan 30
Switch(config-vlan)#exit
Switch(config)#interface range fastEthernet 0/1-6
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#do write
Building configuration...
[OK]
Switch(config-if-range)#end
```

On Switch 4

Do the following on Switch 4 that connects to the router, you have to declare the three vlans, that is VLAN 10, VLAN 20 and VLAN 30. Assign interface 1-3 to the VLANs respectively, then configure interface 4 as trunk port that can transmit multiple vlan traffic.

Create vlan and assign interfaces to vlans

```
Switch>enable
Switch#configure terminal
Switch(config)#vlan 10
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#exit
Switch(config)#interface fastEthernet 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#int fastEthernet 0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#int fastEthernet 0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#exit
```

Switch(config)#do write
Building configuration...
[OK]
Switch(config)#

Configure interface 4 as trunk port

Switch>
Switch>enable
Switch#configure terminal
Switch(config)#interface fastEthernet 0/4
Switch(config-if)#switchport mode trunk
Switch(config-if)#do write
Building configuration...
[OK]
Switch(config-if)#

On the Router

Start by putting the interface up, You first configure virtual sub interfaces for each VLAN and assign them the first ip address of each network.

Put interface up

Router>
Router>enable
Router#configure terminal
Router(config)#interface gigabitEthernet 0/0/0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#

configure virtual sub interfaces for each VLAN and assign IP addresses

Router(config)#
Router(config)#interface gigabitEthernet 0/0/0.1
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 192.168.1.1 255.255.255.0
Router(config-subif)#exit

Router(config)#
Router(config)#interface gigabitEthernet 0/0/0.2
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 192.168.2.1 255.255.255.0
Router(config-subif)#exit
Router(config)#

Router(config)#
Router(config)#interface gigabitEthernet 0/0/0.3
Router(config-subif)#encapsulation dot1Q 30

Router(config-subif)#ip address 192.168.3.1 255.255.255.0
Router(config-subif)#exit
Router(config)#do write
Building configuration...
[OK]
Router(config)#

Configure DHCP for each VLAN you created above

Router>
Router>enable
Router#configure terminal
Router(config)#ip dhcp pool vlan10
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.1.1
Router(dhcp-config)#dns-server 8.8.8.8
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.1.1 192.168.1.10
Router(config)#

Router(config)#ip dhcp pool vlan20
Router(dhcp-config)#network 192.168.2.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.2.1
Router(dhcp-config)#dns-server 8.8.8.8
Router(dhcp-config)#exit
Router(config)#ip dhcp excluded-address 192.168.2.1 192.168.2.10

Router(config)#ip dhcp pool vlan30
Router(dhcp-config)#network 192.168.3.0 255.255.255.0
Router(dhcp-config)#default-router 192.168.3.1
Router(dhcp-config)#dns-server 8.8.8.8
Router(dhcp-config)#exit
Router(config)#do write
Building configuration...
[OK]
Router(config)#

Other commands

On switch

Switch#show vlan brief
Switch#show vlan id 10
Switch#show vlan id 20
Switch#show vlan id 30

On Router

Router#show interfaces