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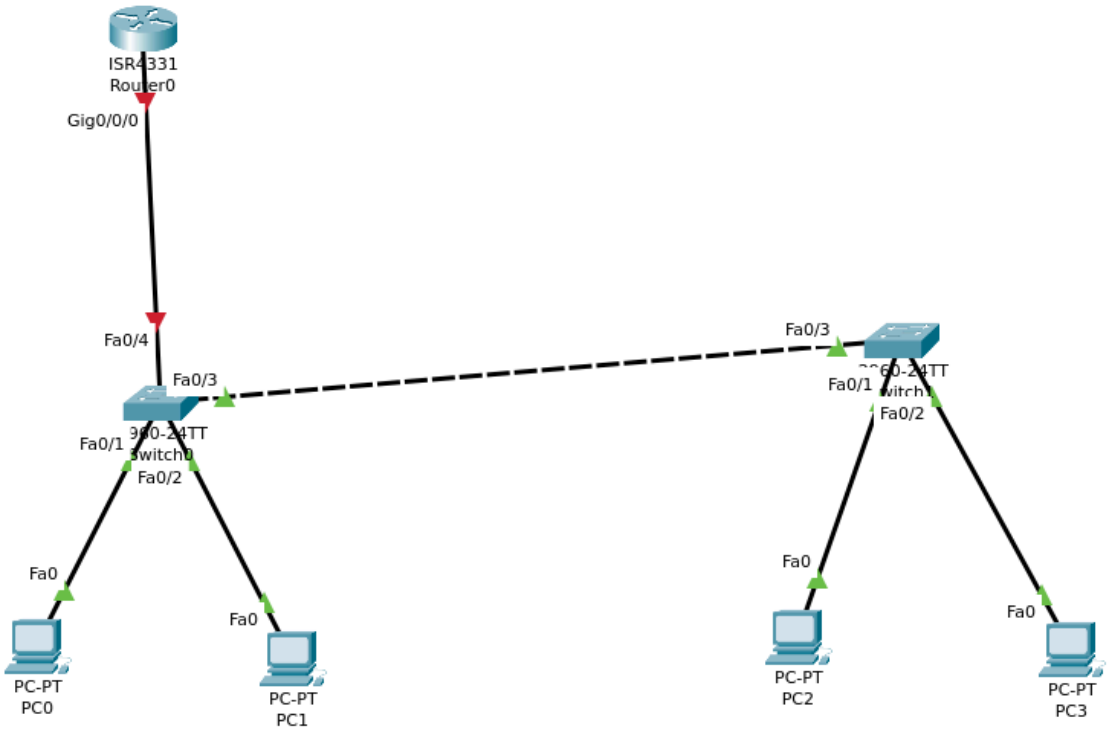
Q9)



Assigning VLAN in Switch1:

```
Switch(config)#vlan 20
Switch(config-vlan)#name VOICE
Switch(config-vlan)#
Switch(config-vlan)#ex
Switch(config)#intfa0/1
                 ^
% Invalid input detected at '^' marker.

Switch(config)#intf a0/1
                 ^
% Invalid input detected at '^' marker.

Switch(config)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan add 10
                                           ^
% Invalid input detected at '^' marker.

Switch(config-if)#switchport access add vlan 10
                                    ^
% Invalid input detected at '^' marker.

Switch(config-if)#switchport access vlan 10
Switch(config-if)#ex
Switch(config)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#ex
Switch(config)#
```

Assigning VLAN in switch 2:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up


Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name DATA
Switch(config-vlan)#ex
Switch(config)#vlan 20
Switch(config-vlan)#name VOICE
Switch(config-vlan)#ex
Switch(config)#
Switch(config)#
Switch(config)#int fa0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#ex
Switch(config)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#ex
Switch(config)#
Switch(config)#
```

Configuring Trunk Ports:
Switch 1:

```
                                        ^
% Invalid input detected at '^' marker.

Switch(config-if)#switchport access add vlan 10
                                   ^
% Invalid input detected at '^' marker.

Switch(config-if)#switchport access vlan 10
Switch(config-if)#ex
Switch(config)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#ex
Switch(config)#%SPANTREE-2-RECV_PVID_ERR: Received 802.1Q BPDU on non trunk FastEthernet0/3
VLAN1.

%SPANTREE-2-BLOCK_PVID_LOCAL: Blocking FastEthernet0/3 on VLAN0001. Inconsistent port type.


Switch(config)#
Switch(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

Switch(config)#
Switch(config)#int fa0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk allowed vlan 10,20
Switch(config-if)#
```

Switch 2:

```
Switch(config)#do show vlan br

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    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   DATA                              active    Fa0/1
20   VOICE                             active    Fa0/2
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#int fa0/3
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

Switch(config-if)#
Switch(config-if)#switchport trunk allowed vlan 10,20
Switch(config-if)#
```

IP Addresses:

PC0: 10.0.0.2
Default Gateway: 10.0.0.10

PC1 : 20.0.0.2
Default Gateway: 20.0.0.10

PC2 : 10.0.0.3
Default Gateway: 10.0.0.10

PC3: 20.0.0.3
Default Gateway: 20.0.0.10

Ping check:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Control-C
^C
C:\>ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:


Ping statistics for 20.0.0.2:
    Packets: Sent = 1, Received = 0, Lost = 1 (100% loss),

Control-C
^C
C:\>ping 10.0.0.3
```

As we can see, VLAN 10 pc cannot communicate with VLAN 20, this is because they are in different VLAN and it is not possible for pc from different VLANs to communicate with each other without inter-vlan routing.

Q10) Inter VLAN routing

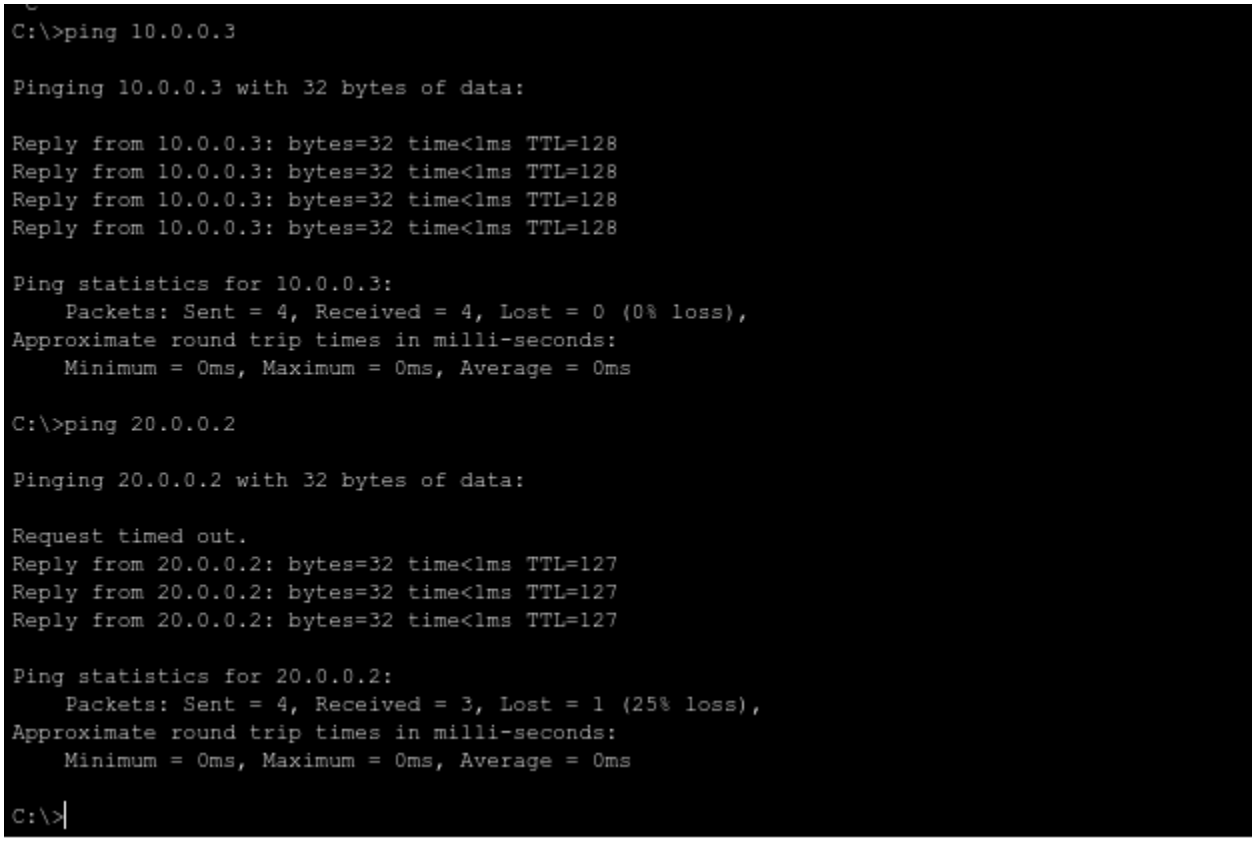
We will use the above network to implement inter VLAN routing

```
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

Router(config-if)#
Router(config-if)#ex
Router(config)#int g
Router(config)#int gigabitEthernet 0/0/0.10
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.10, changed state to up

Router(config-subif)#
Router(config-subif)#enca
Router(config-subif)#encapsulation q
Router(config-subif)#encapsulation d
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 10.0.0.10 255.0.0.0
Router(config-subif)#
Router(config-subif)#ex
Router(config)#int g
Router(config)#int gigabitEthernet 0/0/0.2
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.2, changed state to up

Router(config-subif)#
Router(config-subif)#enca
Router(config-subif)#encapsulation d
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 20.0.0.10 255.0.0.0
Router(config-subif)#
Router(config-subif)#ex
Router(config)#
```

We have assigned subinterfaces in Router

NOTE: We also have to make the interface between switch and router into a trunk, or else this will not work.

Ping Check:



As we can see, the PC from VLAN 10 can communicate with VLAN 20 now.