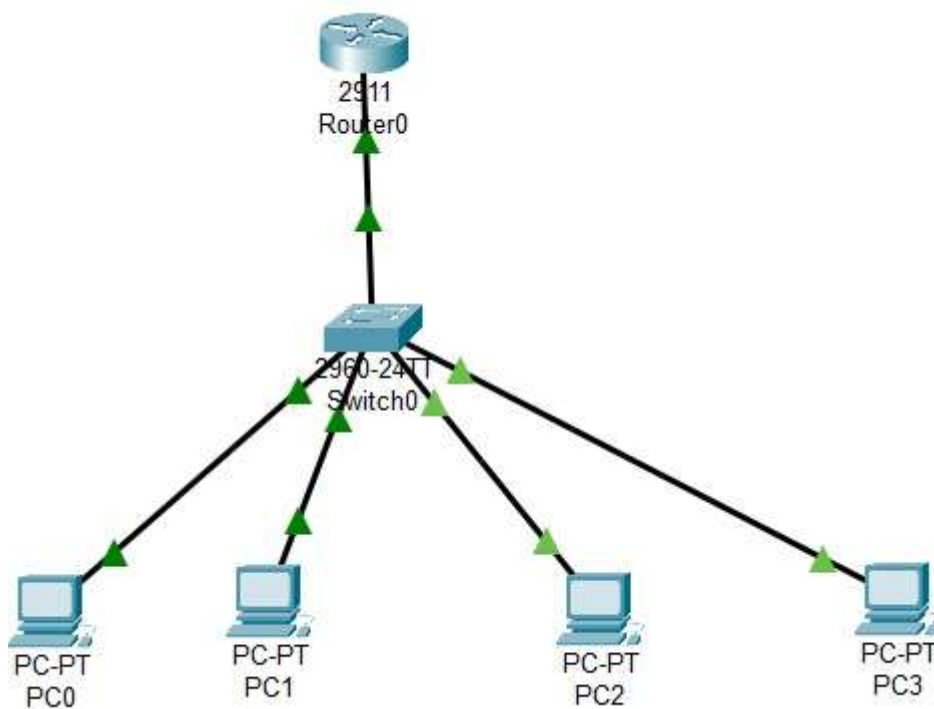


LINUX NETWORKING MODULE 7 AND 8 ASSESSMENT SOLUTION

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8. You configured VLANs 10 and 20 on your switch and assigned ports to each VLAN. However, devices in VLAN 10 cannot communicate with devices in VLAN 20. Troubleshoot the issue

Topology:



Steps for trouble shooting:

Assigning VLAN Correctly:

```
Switch0
Physical Config CLI Attributes
Switch>
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name VLAN10
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#vlan 20
Switch(config-vlan)#name VLAN20
Switch(config-vlan)#exit
Switch(config)#
Switch(config)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%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
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
Switch(config)#
Switch(config)#interface FastEthernet0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#
Switch(config)#interface FastEthernet0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
Switch(config)#
Switch(config)#interface FastEthernet0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
Switch(config)#
Switch(config)#interface FastEthernet0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-if)#exit
```

Verify VLAN Configuration:

```
Switch#show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    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   VLAN10                 active    Fa0/1, Fa0/2
20   VLAN20                 active    Fa0/3, Fa0/4
1002 fddi-default          active
1003 token-ring-default   active
1004 fddinet-default      active
1005 trnet-default        active
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface FastEthernet0/5
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#^Z
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

Verify port assignments

```
Switch>en
Switch#show interfaces status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Fa0/1		connected	10	auto	auto	10/100BaseTX
Fa0/2		connected	10	auto	auto	10/100BaseTX
Fa0/3		connected	20	auto	auto	10/100BaseTX
Fa0/4		connected	20	auto	auto	10/100BaseTX
Fa0/5		connected	trunk	auto	auto	10/100BaseTX
Fa0/6		notconnect	1	auto	auto	10/100BaseTX
Fa0/7		notconnect	1	auto	auto	10/100BaseTX
Fa0/8		notconnect	1	auto	auto	10/100BaseTX

Checking Trunk interfaces:

```
Switch#show interfaces trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Fa0/5	on	802.1q	trunking	1


```
Switch#show interfaces trunk
```

Port	Vlans allowed on trunk
Fa0/5	1-1005


```
Switch#show interfaces trunk
```

Port	Vlans allowed and active in management domain
Fa0/5	1,10,20


```
Switch#show interfaces trunk
```

Port	Vlans in spanning tree forwarding state and not pruned
Fa0/5	none

Enabling Inter-VLAN Routing:

```
Router0
Physical Config CLI Attributes
IOS C
```

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0.10
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#ip address 192.168.10.1 255.255.255.0
Router(config-subif)#exit
Router(config)#
Router(config)#interface GigabitEthernet0/0.20
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#ip address 192.168.20.1 255.255.255.0
Router(config-subif)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
Router(config)#
Router(config)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0.20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to up
Router(config)#ex
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	up	up
GigabitEthernet0/0.10	192.168.10.1	YES	manual	up	up
GigabitEthernet0/0.20	192.168.20.1	YES	manual	up	up
GigabitEthernet0/1	unassigned	YES	unset	administratively down	down
GigabitEthernet0/2	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

Checking Ip Route:

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

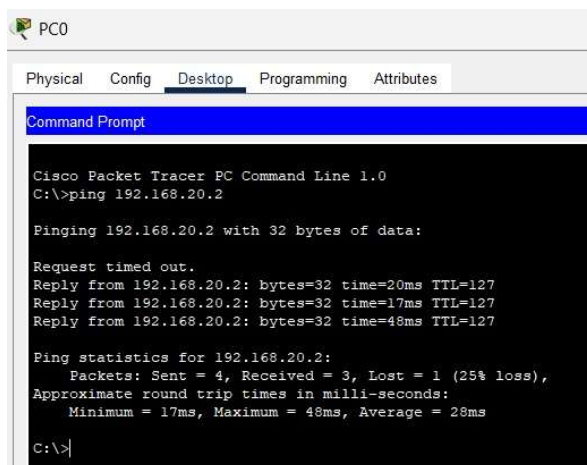
Gateway of last resort is not set

    192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/0.10
L       192.168.10.1/32 is directly connected, GigabitEthernet0/0.10
    192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, GigabitEthernet0/0.20
L       192.168.20.1/32 is directly connected, GigabitEthernet0/0.20

Router#
```

Ping Test:

Pinging PC of VLAN 2 from VLAN 1 and Vice versa:



```
PC0
Physical Config Desktop Programming Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.20.2: bytes=32 time=20ms TTL=127
Reply from 192.168.20.2: bytes=32 time=17ms TTL=127
Reply from 192.168.20.2: bytes=32 time=48ms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 17ms, Maximum = 48ms, Average = 28ms

C:\>
```

- If inter-VLAN routing is missing, configuring Router-on-a-Stick or an L3 switch.
- Ensuring correct VLAN assignment and trunking.
- Verifying default gateways and IP configurations.
- Checking ACLs that may be blocking traffic.
- Pinging into Different VLAN
- Checking IP route
- Verifying Port Assignments

These are the steps to troubleshoot the inter VLAN routing issues.