Group Assignment 2 - Group Lab Activity 2

TNE10006/TNE60006 S1 2022

Assignment Weight:
5%

Assignment Points:
50

Submission Due Date:

By the start of Lab Session Week 6.

Reference Material:

- Lab SU-6a Troubleshooting Inter-VLAN Routing

Instructions:

1. Form a group of 3-4 people amongst the students present in the lab session
2. Your group discussion time will be in the last 20 minutes of the lab session in Collaborate Ultra, Breakout groups.
3. Discuss and answer the questions in Group Assignment 2 in your breakout group.
4. Organise for your group to meet again to complete all the questions.
5. Each group will submit one completed Group Assignment 2
6. Submit Group Assignment 2, in the Canvas shell, under the Group Lab Activity 2
7. Late penalties will apply for submission after the due date.

Group Assignment 2 Questions:

- Section 1: Troubleshoot Inter-VLAN Routing Configuration (10 marks)
- Section 2: Verify VLAN Configuration, Port Assignment and Trunking (16 marks)
- Section 3: Troubleshooting and Re-configuration Commands (18 marks)
- Section 4: Connectivity Scenarios (6 marks)

Group Assignment 2:

Group Members	
Name	**Student Id:**
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Section 1: Troubleshoot Inter-VLAN Routing Configuration (10 marks)

Refer to **Part 2 Troubleshoot Inter-VLAN Routing Configuration of Lab SU-6a**

Q1. Regarding R1's routing table,

a) **Were there any networks missing? If so, which networks?**
(2 marks)

All networks other than the Loopback network are missing. They are:

+ 192.168.1.0/24 on GigabitEthernet0/0/1.1.

+ 192.168.11.0/24 on GigabitEthernet0/0/1.10.

+ 192.168.20.0/24 on GigabitEthernet0/0/1.20.

All of these networks are missing because the interface GigabitEthernet0/0/1 is currently shut down.

b) **Were there any networks that should not have been present? If so, which networks?**
(2 marks)

192.168.11.0/24 on GigabitEthernet0/0/1.10 should not be on the Routing Table, as the given topology does not include network 192.168.11.0/24 but there was only 192.168.10.0/24. This may happen because of some typo error.

Q2. Regarding R1's interface configuration

a) Were all interfaces, loopback and sub-interfaces configured correctly? If not, list the configuration issues you found.
(6 marks)

+ The main physical interface, GigabitEthernet0/0/1 should be enabled.

+ The encapsulation on interface GigabitEthernet0/0/1.1 should be dot1q 1 instead of dot1q 11, because the number after dot1q will be the indication for the VLAN ID when transferring frame.

+ The IP address 192.168.11.1 on interface GigabitEthernet0/0/1.10 should be 192.168.10.1 as there is no network corresponding to 192.168.11.1

Section 2: Verify VLAN Configuration, Port Assignment and Trunking (16 marks)

Refer to **Part 3 Verify VLAN Configuration and Port Assignments and Trunking of Lab SU-6a**

Q1. Regarding S3's VLAN Database,

a) **Were there any VLANs numbers or names missing in the output? If so, list them. (2 marks)**

VLAN 20 (Engineering) is not in the VLAN list.

b) **Were all access ports assigned to the correct VLANs? If not, list the missing or incorrect assignments.**
(2 marks)

VLAN 10 (R&D) should be assigned with GigabitEthernet 1/0/7.

Q2. Regarding S4's VLAN Database,

a) **Were there any VLANs numbers or names missing in the output? If so, list them. (2 marks)**

VLAN 10 does not have a name assigned to it. It should be assigned R&D.

b) **Were all access ports assigned to the correct VLANs? If not, list the missing or incorrect assignments.**
(2 marks)

Interface GigabitEthernet1/0/24 should be assigned to VLAN 20 not VLAN 10.

Q3. Regarding Trunking configuration,

a) **Based on the topology diagram, which port(s) on S3 should operate in trunking mode? (2 marks)**

Interface GigabitEthernet1/0/5 and interface GigabitEthernet1/0/11 should be in trunking mode.

b) **Based on the topology diagram, which port(s) on S4 should operate in trunking mode? (2 marks)**

Interface GigabitEthernet1/0/5 should be in trunking mode.

c) **Were all ports that should operate in trunking mode configured correctly? If not, list the configuration issues you found**
(4 marks)

No, GigabitEthernet1/0/5 and GigabitEthernet1/0/11 should be in trunking mode.

Section 3: Troubleshooting and Re-configuration Commands (18 marks)

Q1. Use the table provided to list the configuration issues you found in Lab SU-6a. For each issue, list the troubleshooting command(s) that helped you find it and the configuration command(s) you used to fix it.
(3 marks for each correct issue)

Device	Configuration Issue	Troubleshooting Command(s)	Re-Configuration Command(s)
Router	G0/0/1 is not on	R1# show ip route	R1(config)#int gi0/0/1 R1(config-if)#no shutdown
Router	Encapsulation dot1q 11 should be encapsulation dot1q 1	R1#show ip route	R1(config)#int gi0/0/1.1 R1(config-subif)#encapsulation dot1Q 1 R1(config-subif)#ip address 192.168.1.1 255.255.255.0
Router	IP address 192.168.11.1 should be 192.168.10.1	R1#show ip int br	R1(config)#int g0/0/1.10 R1(config-subif)#encapsulation dot1Q 10 R1(config-subif)#ip address 192.168.10.1 255.255.255.0
Switch 3	VLAN 20 is unavailable.	S3#show vlan br	S3(config)#vlan 20 S3(config-vlan)#name Engineer
Switch 3	Gi1/0/7 is not assigned to VLAN 10.	S3(config-if)#do show vlan br	S3(config)#int gi1/0/7 S3(config-if)#switchport access vlan 10

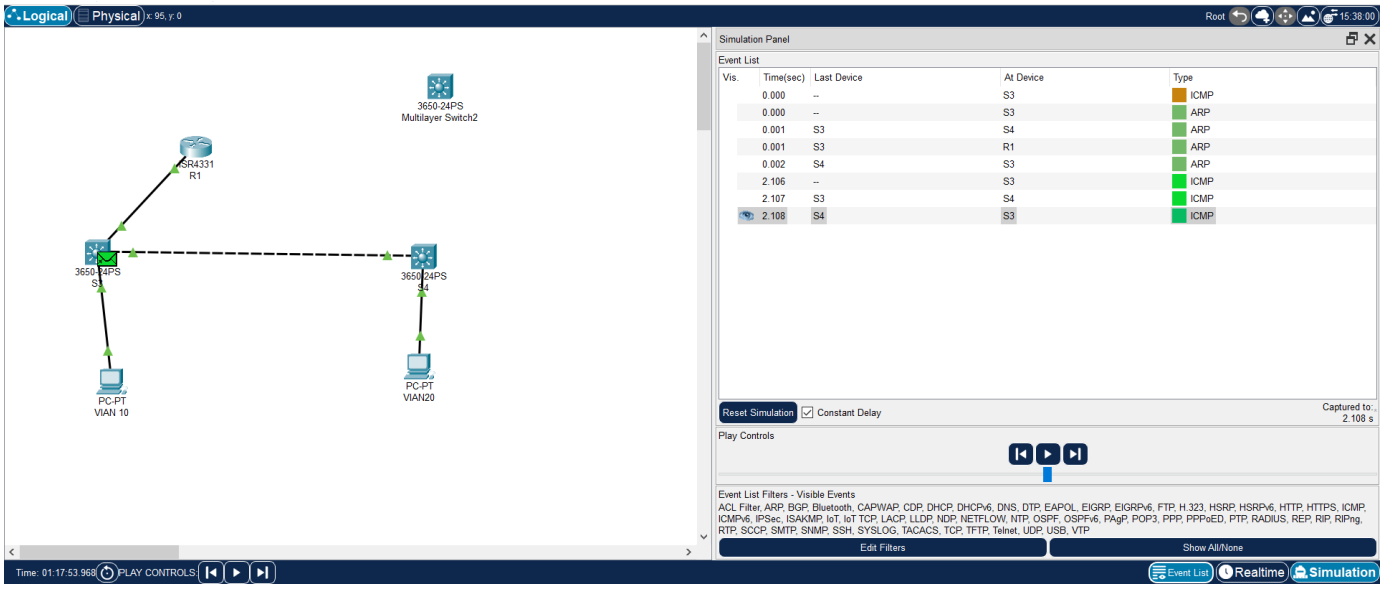
Switch 3	Interface Gi1/0/7 should be in trunking mode	S3#show int trunk	S3(config)#int gi1/0/5 S3(config-if)#switchport mode trunk
Switch 4	VLAN 10 does not have a name	S4#show vlan br	S4(config)#vlan 10 S4(config-vlan)#name R&D
Switch 4	Interface Gi1/0/24 should be assigned to VLAN 20	S4(config-vlan)#do show vlan br	S4(config-vlan)#int gi1/0/24 S4(config-if)#switchport access vlan 20
Switch 3	VLAN 1 on Switch 3 is currently shutdown	S3(config-if)#do show ip int br	S3(config-if)#int vlan 1 S3(config-if)#no shutdown
Switch 4	VLAN 1 on Switch 4 is currently shutdown	S4(config-if)#do show ip int br	S4(config-if)#int vlan 1 S4(config-if)#no shutdown

Section 4: Connectivity Scenarios (6 marks)

Q1. After fixing all configuration issues in Lab SU-6a,

a) **Can S3 and S4 ping each other? If so, does this traffic traverse R1? Give reasons for your answers.**
(1 mark)

S3 and S4 can ping each other, the traffic does not need to traverse R1. The reason for this is because their IP addresses share the same network (192.168.1.0/24) and they are also in the same VLAN. This can be illustrated further using the below picture:



Picture 1: Connection between S3 and S4

As we can see from the picture, the ICMP only traverse between S3 and S4, it is noteworthy that before the ICMP can take place, the S3 has yet to know the MAC address of S4, therefore, it needs to flood an ARP request to all devices (including R1). However, only S4 response to it request and thus the connection between them was established.

b) **Can S3 ping all router sub-interfaces and loopback interface? Give reasons for your answer.**
(1 mark)

S3 can ping all router sub-interface as well as the loopback interface because S3 is connected to the router through the trunk interface. This will allow S3 to communicate with other networks.

c) **Can S4 ping all router sub-interfaces and loopback interface? Give reasons for your answer.**
(1 mark)

S4 can ping all router sub-interface as well as the loopback interface because S4 is connected to the router through the trunk interface. This will allow S4 to communicate with other networks.

Q2. If you were to connect PC-A and PC-B to the network as shown in the Topology Diagram,

a) **What IP address would you configure on PC-A as the Default Gateway?**
(1 mark)

Default gateway is usually connected to the router so that it can traverse traffic to foreign network. As PC-A IP address is 192.168.10.3, its default gateway should be 192.168.10.1.

b) **What IP address would you configure on PC-B as the Default Gateway?**
(1 mark)

Default gateway is usually connected to the router so that it can traverse traffic to foreign network. As PC-B IP address is 192.168.20.3, its default gateway should be 192.168.20.1.

c) **Would PC-A and PC-B be able to ping each other? If so, would this traffic traverse R1? Give reasons for your answers.**
(1 mark)

PC-A and PC-B would be able to ping each other, and the traffic would traverse R1, as they are in different networks. It is required for a routing method to be adopted for devices on different networks to connect to each other.