# Group Assignment 1 - Group Lab Activity 1

TNE10006/TNE60006 Semester January, 2023

**Assignment Weight:**   
5%

**Assignment Points:**   
50

**Submission Due Date:**

By the start of Lab Session Week 5.

**Reference Material:**

* Lab SU-5a Configuring Per-Interface Inter-VLAN Routing
* Lab SU-5b – Configuring 802.1Q Trunk-Based 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 1 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 1
6. Submit Group Assignment 1, in the Canvas shell, under the Group Lab Activity 1
7. Late penalties will apply for submission after the due date.

**Group Assignment 1 Questions:**

* Section 1: Lab SU-5a Configuring Per-Interface Inter-VLAN Routing (15 marks)
* Section 2: Lab SU-5b – Configuring 802.1Q Trunk-Based Inter-VLAN Routing (9 marks)
* Section 3: Reflection on Labs SU-5a and SU-5b(26 marks)

**Group Assignment 1:**

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| --- | --- |
| **Group Members** | |
| **Name** | **Student Id:** |
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**Section 1: Lab SU-5a Connectivity Scenarios (15 marks)**

Q1. After completing steps 1 – 3 in **Part 2 Configure Switches with VLANs and Trunking of Lab SU-5a**

* + 1. Did S3 and S4 ping each other? Yes/No? If yes, explain why? If no, explain why not.  
       (1 mark)
    2. Would S3 ping PC-A? Yes/No? If yes, explain why? If no, explain why not  
       (1 mark)
    3. Would S3 ping PC-B? Yes/No? If yes, explain why? If no explain why not   
       (1 mark)
    4. Would S4 ping PC-A? Yes/No? If yes, explain why? If no, explain why not  
       (1 mark)
    5. Would PC-A ping PC-B? Yes/No? If yes, explain why? If no explain why not  
       (1 mark)

Q2. After completing Step 3 in **Part 3: Basic Router Configuration** **of Lab SU-5a**

* + 1. How many directly connected networks (C) were there in R1’s routing table? If any, list them.   
       (2 marks)
    2. Would all devices now be able to ping each other? Give reasons for your answer.   
       (2 marks)
    3. When PC-A pings PC-B, would this traffic traverse R1? Yes/No? If yes, explain why. If no, explain why not.  
       (1 mark)
    4. When PC-A pings S3, would this traffic traverse R1? Yes/No? If yes, explain why. If no, explain why not.  
       (1 mark)

Q3. If you shutdown port Gi0/0/1 on R1:

* + 1. How many directly connected (C) networks would there be in R1’s routing table? If any, list them.   
       (2 marks)
    2. Would S3 and S4 still ping each other? Yes/No? If yes, explain why. If no, explain why not.  
       (1 mark)
    3. Would PC-A and PC-B still ping each other? Yes/No? If yes, explain why. If no, explain why not.  
       (1 mark)

**Section 2: Lab SU-5b Connectivity Scenarios (9 marks)**

Q1. After completing steps 1 – 4 in **Part 2 Configure Switches with VLANs and Trunking of lab SU-5b**

* + 1. How many directly connected (C) networks are there in R1’s routing table? If any, list them.  
       (2 marks)
    2. Would S3 ping PC-A? If yes, would this traffic traverse R1?  
       (1 mark)
    3. Would S3 ping PC-B? If yes, would this traffic traverse R1?  
       (1 mark)
    4. Would S4 ping PC-A? If yes, would this traffic traverse R1?  
       (1 mark)
    5. Would PC-A ping PC-B? If yes, would this traffic traverse R1?  
       (1 mark)
    6. What was the purpose of pinging S3 and S4 using the *source* option from R1?  
       (1 mark)

Q2. If you shutdown port Gi0/0/1 on R1,

* + 1. How many directly connected (C) networks would there be in R1’s routing table? If any, list them.   
       (2 marks)

**Section 3: Reflection on Labs SU-5a and SU-5b (26 marks)**

**In this section you will need to reflect on what you have learned and apply that knowledge**

Q1. Answer the following questions regarding IP settings on layer 2 switches.

* + 1. On a layer 2 switch, what is the purpose of creating an interface VLAN and allocating and IP address to it?  
       (2 marks)
    2. On a layer 2 switch, what is the purpose of configuring a default gateway?   
       (2 marks)
    3. Based on what you learned on labs SU-5a and SU-5b, which IP address should be configured as the default gateway IP on layer 2 switches?   
       (2 marks)

Q2. Answer the following questions regarding inter-vlan routing configuration.

* + 1. In labs SU-5a and SU-5b, you used two different approaches to configuring inter-vlan routing. Explain the difference(s) between the two.   
       (6 marks)
    2. When configuring a router-on-a-stick topology, the link between the switch and the router must carry traffic for multiple VLANs. How is this achieved on the router? How is this achieved on the switch?   
       (4 marks)
    3. What are the benefits of using the “router-on-a-stick” topology for inter-vlan routing?  
       (6 marks)
    4. Are there any disadvantages to using “router-on-a-stick” inter-vlan routing as compared to the per-interface approach?   
       (2 marks)
    5. Other than directly connected (C) networks, did you observe any other type of networks in R1’s routing table? If yes, specify what type of networks were there and what do they represent.  
       (2 marks)