# Group Assignment 3 - Group Lab Activity 3

TNE10006/TNE60006 Semester January, 2023

**Assignment Weight:**   
5%

**Assignment Points:**   
50

**Submission Due Date:**

Before Week 12 Lab Session

**Reference Material:**

* Sample Final Practical Assessment (available in Canvas Lab Sessions page, Week 11 tab)

**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 3 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 3
6. Submit Group Assignment 3, in the Canvas shell, under the Group Lab Activity 3
7. Late penalties will apply for submission after the due date.

**Group Assignment 3 Questions:**

* Section 1: Sample Final Practical Assessment Configuration (30 marks)
* Section 2: Sample Final Practical Assessment Verification and Troubleshooting (20 marks)

**Group Assignment 3:**

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| --- | --- |
| **Group Members** | |
| **Name** | **Student Id:** |
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**Section 1: Sample Final Practical Assessment Configuration   
(30 marks)**

Refer to the Sample Final Practical Assessment.

Q1. List the configuration commands required to complete **Task 1: Configure Device Names and MOTD**. For each command, specify the device(s) and operation mode.(1 mark)

**For Tokyo switch, in global configuration mode:**

hostname Tokyo

banner motd #Authorized access only! 104222196#

**For Lisbon switch, in global configuration mode:**

hostname Lisbon

banner motd #Authorized access only! 104222196#

**For Nairobi router, in global configuration mode:**

hostname Nairobi

banner motd #Authorized access only! 104222196#

Q2. List the configuration commands required to complete **Task 2: Configure VLANs and VLAN membership**. For each command, specify the device(s) and operation mode. (4 marks)

**On Tokyo switch, in global configuration mode:**

vlan 15

name Centralbank

vlan 50

name Royalmint

vlan 150

name Management

exit

**On Lisbon switch, in global configuration mode:**

vlan 15

name Centralbank

vlan 50

name Royalmint

vlan 150

name Management

exit

interface range GigabitEthernet 1/0/1-3

switchport mode access

switchport access vlan 15

interface range GigabitEthernet 1/0/11-13

switchport mode access

switchport access vlan 50

interface range GigabitEthernet 1/0/1-2, GigabitEthernet 1/0/4, GigabitEthernet 1/0/7-24, GigabitEthernet 1/1/1-4

shutdown

exit

Q3. List the configuration commands required to complete **Task 3: Configure Router-on-a-Stick**. For each command, specify the device(s) and operation mode. (6 marks)

**On Tokyo switch, in global configuration mode:**

interface GigabitEthernet 1/0/11

switchport mode trunk

exit

**On Nairobi router, in global configuration mode:**

interface GigabitEthernet 0/0/1

description Access to Centralbank, Royalmint and Management VLANs

no shutdown

interface GigabitEthernet 0/0/1.15

description Access to Centralbank VLAN

encapsulation dot1q 15

ip address 213.17.144.254 255.255.255.128

interface GigabitEthernet 0/0/1.50

description Access to Royalmint VLAN

encapsulation dot1q 50

ip address 165.45.191.254 255.255.224.0

interface GigabitEthernet 0/0/1.150

description Access to Management VLAN

encapsulation dot1q 150

ip address 55.252.16.254 255.255.255.240

interface lo0

description Loopback interface

ip address 53.15.30.33 255.255.255.248

exit

Q4. List the configuration commands required to complete **Task 4: Configure Switch Management**. For each command, specify the device(s) and operation mode. (6 marks)

**On Tokyo switch, in global configuration mode:**

interface vlan 150

ip address 55.252.16.253 255.255.255.240

exit

ip default-gateway 55.252.16.254

**On Lisbon switch, in global configuration mode:**

interface vlan 150

ip address 55.252.16.252 255.255.255.240

exit

ip default gateway 55.252.16.254

ip domain-name ccna.lab

username cisco privilege 15 secret cisco

crypto key generate rsa general-keys modulus 1024

line vty 0 4

transport input ssh

login local

exit

Q5. List the configuration commands required to complete **Task 5: Fine-tune STP**. For each command, specify the device(s) and operation mode. (4 marks)

**On Tokyo switch, in global configuration mode:**

spanning-tree vlan 50 root primary

**On Lisbon switch, in global configuration mode:**

spanning-tree vlan 15 root primary

interface range GigabitEthernet 1/0/1-3, GigabitEthernet 1/0/11-13

spanning-tree portfast

exit

Q6. List the configuration commands required to complete **Task 6: Configure Port-Security.** For each command, specify the device(s) and operation mode. (4 marks)

**On Lisbon switch, in global configuration mode:**

interface GigabitEthernet 1/0/3

switchport port-security

switchport port-security violation protect

switchport port-security mac-address sticky

switchport port-security maximum 2

exit

Q7. List the configuration commands required to complete **Task 7: Configure EtherChannel**. For each command, specify the device(s) and operation mode. (4 marks)

**On Tokyo switch, in global configuration mode:**

interface range GigabitEthernet 1/0/5-6

channel-group 1 mode active

interface Po1

switchport mode trunk

switchport trunk native vlan 150

no shutdown

exit

**On Lisbon switch, in global configuration mode:**

interface range GigabitEthernet 1/0/5-6

channel-group 1 mode active

interface Po1

switchport mode trunk

switchport trunk native vlan 150

no shutdown

exit

Q8. List the configuration commands required to complete **Task 8: Additional Settings.** For each command, specify the device(s) and operation mode. (1 mark)

**Descriptions on Nairobi’s interfaces were added earlier while configuring them.**

**On Tokyo switch, in global configuration mode:**

line console 0

logging synchronous

end

**On Lisbon switch, in global configuration mode:**

line console 0

logging synchronous

end

**Section 2: Sample Final Practical Assessment Validation and Troubleshooting   
(20 marks)**

Refer to the Sample Final Practical Assessment.

Q1. Answer the following questions regarding validating and troubleshooting **VLANs and VLAN membership**

* + 1. What command(s) can be used on **Tokyo** to validate VLANs and VLAN membership configuration? For each command, describe the expected output. (2 marks)

show vlan brief

This command displays the ID, name, status, and associated ports of each VLAN on the switch. For Tokyo, all VLANs should be active, and all switch ports should be assigned to the default VLAN (1).

show interfaces switchport

This command displays a list of all interfaces (logical and physical) on the switch along with their attributes, including the access mode VLAN. For Tokyo, all interfaces should have the access mode VLAN of 1 (the default VLAN).

* + 1. What command(s) can be use on **Lisbon** to validate VLANs and VLAN membership configuration? For each command, describe the expected output. (2 marks)

show vlan brief

This command displays the ID, name, status, and associated ports of each VLAN on the switch. For Lisbon, all VLANs should be active, Gig1/0/1-3 should be assigned to VLAN 15 (Centralbank), Gig1/0/11-13 should be assigned to VLAN 50 (Royalmint), and the rest should be assigned to the default VLAN.

show interfaces switchport

This command displays a list of all interfaces (logical and physical) on the switch along with their attributes, including the access mode VLAN. For Lisbon, all interfaces should have the access mode VLAN of 1, except for Gig1/0/1-3 which should have VLAN 15 (Centralbank), and Gig1/0/11-13 which should have VLAN 50 (Royalmint).

* + 1. What command(s) can be use on **Lisbon** to validate that all unused ports have been disabled? For each command, describe the expected output. (1 marks)

show ip interface brief

This command displays a list of all interfaces on the switch along with their status. Disabled ports will have their status labelled as administratively down. For Lisbon, all physical interfaces should be administratively down except Gig1/0/3, 5, and 6.

show interfaces <interface>

This command displays the status of the specified interface, including whether it is down or in operation. For Lisbon, interfaces Gig1/0/3, 5, and 6 should be labelled as up, while other physical interfaces should be labelled administratively down.

Q2. Answer the following question regarding validating and troubleshooting **Router-on-a-Stick**

* + 1. What command(s) can be used on **Nairobi** to validate Router-on-a-Stick configuration? List at least 2. For each command, describe the expected output. (4 marks)

show ip route

This command displays the router’s routing table. If router-on-a-stick has been correctly configured on Nairobi, its routing table will contain three connected routes (C) corresponding to the three VLANs. This command also shows the loopback interface.

show ip interface brief

This command displays all interfaces and subinterfaces on the router, along with their Ipv4 addresses and status. If router-on-a-stick has been correctly configured on Nairobi, this command will show Gi0/0/1.15 operational with address 213.17.144.254, Gi0/0/1.50 operational with address 165.45.191.254, and Gi0/0/1.150 operational with address 55.252.16.254.

* + 1. What command(s) can be used on **Tokyo** to validate Router-on-a-Stick configuration? For each command, describe the expected output. (1 mark)

show interfaces trunk

This command can be used to verify if the port on Tokyo that is connected to Nairobi is a trunk port, which is required for router-on-a-stick to work. If this port is correctly configured, Gi1/0/11 will appear in the list of trunks.

* + 1. Troubleshooting Scenario: The routing table on **Nairobi** is not displaying all the correct connected (C) routes and their exit interfaces.

What are the possible configuration issues? List at least 3 possible issues. (3 marks)

* Interface GigabitEthernet 0/0/1 has not been enabled with the no shutdown command.
* Subinterfaces have not been configured with the encapsulation dot1q <vlan\_id> command.
* Subinterfaces have not been configured with a valid IP address.

Q3. Answer the following questions regarding validating and troubleshooting **Switch Management**

* + 1. What command(s) can be used on **Tokyo** to validate that the Management IP has been correctly configured? For each command, describe the expected output. (1 mark)

show ip interface brief

This command displays a list of all interfaces on the switch along with their status. If the Management IP has been correctly configured, Vlan150 will appear in the list with the status up and the IP address of 55.252.16.253.

show interface vlan 150

This command displays information about the Vlan150 virtual interface, which is associated with the Management IP. If it has been correctly configured, Vlan150 will be shown with the status up and the IP address of 55.252.16.253.

* + 1. What command(s) can be used on **Tokyo** to test SSH access to **Lisbon**? (1 mark)

ssh -l cisco 55.252.16.252

* + 1. Troubleshooting Scenario: **Tokyo** and **Lisbon** can ping each other. **Tokyo** can ping all IP addresses configured on **Nairobi**. However, **Lisbon** can only ping the IP address configured on **Nairobi’s** Management sub-interface; it cannot ping any other router IP.

What is the most likely configuration issue? (1 mark)

Lisbon has not been configured with a default gateway address.

Q4. Answer the following questions regarding validating and troubleshooting **STP, Port-Security and EtherChannel**

* + 1. Using the ***show spanning-tree*** command, how do we validate that **Tokyo** has been correctly configured as the root bridge for the Royalmint VLAN? (1 mark)

The show spanning-tree command displays the root bridge information and the bridge information of the current switch for each VLAN in order. When a switch is set as the root of a VLAN, the root bridge information for that VLAN will contain the message “This bridge is the root.” We can check for this message under VLAN 50 to verify that Tokyo has been configured as the root bridge of Royalmint.

* + 1. What command can be used on **Lisbon** to validate the current Port-Security status of interface Gi1/0/3? (1 mark)

**In privilege EXEC mode:**

show port-security interface gigabitEthernet 1/0/3

* + 1. If the Port-Channel between **Tokyo** and **Lisbon** has been correctly configured and is fully operational; what should be the status flag(s) next to the Port-Channel interface on the ***show etherchannel summary*** output? (1 mark)

The status flags should be SU.

* + 1. If the Port-Channel between **Tokyo** and **Lisbon** has been correctly configured and is fully operational; what should be the status flag(s) next to the member interfaces on the ***show etherchannel summary*** output? (1 mark)

The status flag should be P.