

Group Assignment 2 - Group Lab Activity 2

TNE10006/TNE60006 S2 2022

Assignment Weight:

7.5%

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 60 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:

Group Members	
Name	Student Id:
Tran Duc Anh Dang	103995439
Mahmudur Rahman Sakib	103126608
Tahmidul Haque Chowdhury	103541308

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)

Router:

```
Router>en
```

```
Router#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#hostname Nairobi
```

```
Nairobi(config)#banner motd *Student ID: 103995439 103126608 103541308 | Unauthorized  
access is prohibited! *
```

Switch3:

```
Switch>en
```

```
Switch#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#hostname Tokyo
```

```
Tokyo(config)# banner motd *Student ID: 103995439 103126608 103541308 | Unauthorized access  
is prohibited! *
```

Switch4:

```
Switch>en
```

```
Switch#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#hostname Lisbon
```

```
Lisbon(config)# banner motd *Student ID: 103995439 103126608 103541308 | Unauthorized  
access is prohibited! *
```

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)

Switch Tokyo:

```
Tokyo(config)#vl 15
```

```
Tokyo(config-vlan)#name Centralbank
```

```
Tokyo(config-vlan)#vl 50
```

```
Tokyo(config-vlan)#name Royalmint
```

```
Tokyo(config-vlan)#vl 150
```

```
Tokyo(config-vlan)#name Management
```

```
Tokyo(config-vlan)#exit
```

Switch Lisbon:

```
Lisbon(config)#vl 15
```

```
Lisbon(config-vlan)#name Centralbank
```

```
Lisbon(config-vlan)#vl 50
```

```
Lisbon(config-vlan)#name Royalmint
```

```
Lisbon(config-vlan)#vl 150
```

```
Lisbon(config-vlan)#name Management
```

```
Lisbon(config-vlan)#exit
```

```
Lisbon(config)#int range g1/0/1-24, g1/1/1-4
```

```
Lisbon(config-if-range)#shutdown
```

```
Lisbon(config-if-range)#int range g1/0/1-3
```

```
Lisbon(config-if-range)#switchport mode access
```

```
Lisbon(config-if-range)#switchport access vlan 15
```

```
Lisbon(config-if-range)#no shutdown
```

```
Lisbon(config)#int range g1/0/11-13
```

```
Lisbon(config-if-range)#switchport mode access
```

```
Lisbon(config-if-range)#switchport access vlan 50
```

Lisbon(config-if-range)#no shutdown

Lisbon(config-if-range)#exit

Lisbon(config)#int range g1/0/5-6

Lisbon(config-if-range)#no shutdown

Lisbon(config-if-range)#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)

Router Nairobi:

Nairobi(config)#int g0/0/1

Nairobi(config-if)#no shutdown

Nairobi(config-if)#exit

Nairobi(config)#int g0/0/1.15

Nairobi(config-subif)#encapsulation dot1Q 15

Nairobi(config-subif)#ip address 213.17.144.254 255.255.255.128

Nairobi(config-subif)#exit

Nairobi(config)#int g0/0/1.50

Nairobi(config-subif)#encapsulation dot1Q 50

Nairobi(config-subif)#ip address 165.45.191.254 255.255.224.0

Nairobi(config-subif)#exit

Nairobi(config)#int g0/0/1.150

Nairobi(config-subif)#encapsulation dot1Q 150

Nairobi(config-subif)#ip address 55.252.16.254 255.255.255.240

Nairobi(config-subif)#exit

Nairobi(config)#int Loopback0

Nairobi(config-if)#ip address 55.15.30.33 255.255.255.248

Nairobi(config-if)#exit

Switch Tokyo:

```
Tokyo(config)#int g1/0/11
Tokyo(config-if)#switchport mode trunk
Tokyo(config-if)#exit
Tokyo(config)#int range g1/0/5-6
Tokyo(config-if-range)#switchport mode trunk
Tokyo(config-if-range)#exit
```

Switch Lisbon:

```
Lisbon(config)#int range g1/0/5-6
Lisbon(config-if-range)#switchport mode trunk
Lisbon(config-if-range)#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)

Switch Tokyo:

```
Tokyo(config)#int vl 1
Tokyo(config-if)#shutdown
Tokyo(config-if)#exit
Tokyo(config)#int vl 150
Tokyo(config-if)#ip address 55.252.16.253 255.255.255.240
Tokyo(config-if)#exit
Tokyo(config)#ip default-gateway 55.252.16.254
```

Switch Lisbon:

```
Lisbon(config)#int vl 1
Lisbon(config-if)#shutdown
Lisbon(config-if)#exit
```

```
Lisbon(config)#int vl 150
Lisbon(config-if)#ip address 55.252.16.252 255.255.255.240
Lisbon(config-if)#exit
Lisbon(config)#ip default-gateway 55.252.16.254
Lisbon(config)#ip domain-name ccna.lab
Lisbon(config)#crypto key generate rsa general-keys modulus 1024
Lisbon(config)#username cisco privilege 15 secret cisco
Lisbon(config)#line vty 0 15
Lisbon(config-line)#transport input ssh
Lisbon(config-line)#login local
Lisbon(config-line)#end
```

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)

Switch Tokyo:

```
Tokyo(config)#spanning-tree vlan 50 root primary
Tokyo(config)#spanning-tree vlan 15 root secondary
```

Switch Lisbon:

```
Lisbon(config)#spanning-tree vlan 15 root primary
Lisbon(config)#spanning-tree vlan 50 root secondary
Lisbon(config)#int range g1/0/1-3, g1/0/11-13
Lisbon(config-if-range)#spanning-tree portfast
Lisbon(config-if-range)#end
```

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)

Switch Lisbon:

```
Lisbon(config)#int g1/0/3
Lisbon(config-if)#switchport port-security
Lisbon(config-if)#switchport port-security maximum 2
Lisbon(config-if)#switchport port-security violation protect
Lisbon(config-if)#switchport port-security mac-address sticky
```

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

Switch Toyko:

```
Tokyo(config)#int range g1/0/5-6
Tokyo (config-if-range)#shutdown
Tokyo (config-if-range)#exit
Tokyo (config)#int range g1/0/5-6
Tokyo (config-if-range)#switchport trunk native vl 150
Tokyo (config-if-range)#channel-group 1 mode active
Tokyo (config-if-range)#no shutdown
Tokyo (config-if-range)#exit
```

Switch Lisbon:

```
Lisbon(config)#int range g1/0/5-6
Lisbon(config-if-range)#shutdown
Lisbon(config-if-range)#exit
Lisbon(config)#int range g1/0/5-6
Lisbon(config-if-range)#switchport trunk native vl 150
Lisbon(config-if-range)#channel-group 1 mode active
Lisbon(config-if-range)#no shutdown
Lisbon(config-if-range)#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)

Switch Tokyo:

Tokyo(config)#no ip domain lookup

Tokyo(config)#line console 0

Tokyo(config-line)#logging synchronous

Switch Lisbon:

Lisbon(config)#no ip domain lookup

Lisbon(config)#line console 0

Lisbon(config-line)#logging synchronous

Router Nairobi:

Nairobi(config)#int g0/0/1

Nairobi(config-if)#desc Int for all sub-int

Nairobi(config-if)#int g0/0/1.15

Nairobi(config-subif)#desc Vlan 15 Connection

Nairobi(config-subif)#int g0/0/1.50

Nairobi(config-subif)#desc Vlan 50 Connection

Nairobi(config-subif)#int g0/0/1.150

Nairobi(config-subif)#desc Vlan 150 Connection

Nairobi(config-subif)#int Loopback0

Nairobi(config-if)#desc Loopback test int

Nairobi(config-if)#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**

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

sh vl br

Expected output:

- Vlan 1: all ports assigned(except G1/0/5, G1/0/6, G1/0/11)
- Vlan 15, Centralbank: no port assigned
- Vlan 50, Royalmint: no port assigned
- Vlan 150, Management: no port assigned
- Ports G1/0/5, G1/0/6, G1/0/11 are trunk ports therefore they shouldn't be in default list

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

sh vl br

Expected output:

- Vlan 1: all ports assigned (except G1/0/5, G1/0/6, G1/0/1-3 and G1/0/11-13)
- Vlan 15, Centralbank: ports G1/0/1-3 has been located in this vlan
- Vlan 50, Royalmint: ports G1/0/11-13 has been located in this vlan
- Vlan 150, Management: no port assigned
- Ports G1/0/5, G1/0/6 are trunk ports therefore they shouldn't be in default list

- c) 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)

sh ip int br

- G1/0/4, G1/0/7-10, G1/0/14-24, G1/1/1-4 : administratively down

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

- a) 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)

sh ip route

Expected output:

C 53.15.30.32/29 is directly connected, Loopback0

L 53.15.30.33/32 is directly connected, Loopback0

C 55.252.16.240/28 is directly connected, GigabitEthernet0/0/1.150

L 55.252.16.254/32 is directly connected, GigabitEthernet0/0/1.150

C 165.45.160.0/19 is directly connected, GigabitEthernet0/0/1.50

L 165.45.191.254/32 is directly connected, GigabitEthernet0/0/1.50

C 213.17.144.128/25 is directly connected, GigabitEthernet0/0/1.15

L 213.17.144.254/32 is directly connected, GigabitEthernet0/0/1.15

sh run

- Interfaces such as G0/0/1.15, G0/0/1.50, G0/0/1.150, Loopback0 must have the correct configures, encapsulation dot1q, ip address.

sh ip int br

- All used interfaces up and unused is down
- G0/0/1 should be unable
- Required sub interfaces such as G0/0/1.15, G0/0/1.50, G0/0/1.150 must be shown and having the last useable ip address in range of its vlans. (vlan 15, 50, 150 respectively)

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

sh run

- This will show the ports, vlans management ip address and switch default gateway, etc.

sh int trunk

- G1/0/5, G1/0/6, G1/0/11 are in trunk mode with 802.1q encapsulation

- c) 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)

- dot1q encapsulation for sub interfaces is not correct
- Loopback0 or sub-interfaces hasn't been created
- Ip address is incorrect for the interfaces
- Interface G0/0/1 is still disabled by defaults (this must be enabled)

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

- a) 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)

sh ip int br

- Ip address (55.252.16.253) has been assigned to interface vlan 150

sh int vl 150

- Vlan 150 must be up with the correct ip address of 55.252.16.253/28

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

ssh -l cisco 55.252.16.252

Password: cisco

- c) 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)

- This most likely because of the default gateway hasn't been configured on the switch.
 - ⇒ On switch Lisbon uses these command to configure default gateway:
 1. en
 2. conf t
 3. ip default-gateway 55.252.16.254

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

- a) 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)
- Tokyo has been configured as the root bridge by default but still need to force it to be the root bridge.

Its priority will lower than the default one after using "**spanning-tree vlan 50 root primary**"

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

sh port-security int g1/0/3

- c) 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)

SU: verified layer 2 port channel is in used

- d) 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)

P: verified ports are bundled in a port channel