CCNA 2: SRWE Practice PT Skills Assessment (PTSA) – Part 1 Answers

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CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers

SRWE PT Practice Skills Assessment (PTSA) Part 1

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A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
Edge-Router	G0/0/0	192.168.0.1	255.255.255. 0
	G0/0/1.40	192.168.40.1	255.255.255.0
	G0/0/1.50	192.168.50.1	255.255.255.0
	G0/0/1.60	192.168.60.1	255.255.255.0
	G0/0/1.99	192.168.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
L3-SW1	G1/1/1	192.168.0.2	255.255.255.0
	VLAN10	192.168.10.1	255.255.255.0
	VLAN20	192.168.20.1	255.255.255.0
	VLAN30	192.168.30.1	255.255.255.0
	VLAN99	192.168.99.2	255..255.255.240
Sw-C	VLAN99	192.168.99.18	255.255.255.240
WS-1.1	NIC	192.168.10.10	255.255.255.0
WS-1.2	NIC	192.168.20.20	255.255.255.0
WS-1.3	NIC	192.168.30.30	255.255.255.0
WS-1.4	NIC	192.168.10.11	255.255.255.0
WS-1.5	NIC	192.168.20.21	255.255.255.0
WS-1.6	NIC	192.168.30.31	255.255.255.0
WS-2.1	NIC	192.168.40.40	255.255.255.0
WS-2.2	NIC	192.168.50.50	255.255.255.0

Device	Interface	IP Address	Subnet Mask
WS-2.3	NIC	192.168.60.60	255.255.255.0
Management PC	NIC	192.168.99.19	255.255.255.0
Outside Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router Edge-Router with required settings.

a. Open a command window on router **Edge-Router** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the Edge-Router router CLI.

```
ip route 192.168.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.
- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname Edge-Router

Edge-Router(config)#service password-encryption

Edge-Router(config)#interface g0/0/0
Edge-Router(config-if)#ip address 192.168.0.1 255.255.255.0
Edge-Router(config-if)#no shutdown
Edge-Router(config-if)#description Link to Sciences LAN
Edge-Router(config-if)#exit

Edge-Router(config)#interface s0/1/0
Edge-Router(config-if)#ip address 209.165.201.2 255.255.255.252
Edge-Router(config-if)#no shutdown
Edge-Router(config-if)#description Link to Internet
Edge-Router(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch Sw-C with IP addressing according to the Addressing Table.
b. The Sw-C switch SVI should be reachable from other networks.

```
Sw-C(config)#interface vlan 99
Sw-C(config-if)#ip address 192.168.99.18 255.255.255.240
Sw-C(config-if)#no shutdown
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#ip default-gateway 192.168.99.17
```

Step 2: Configure Secure Remote Access

On switch Sw-C, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
Sw-C(config)#ip domain-name acad.pt
Sw-C(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

Sw-C(config)#username admin privilege 15 secret C1sco123!
Sw-C(config)#enable secret C1sco123!
Sw-C(config)#line vty 0 15
Sw-C(config-line)#transport input ssh
Sw-C(config-line)#login local
Sw-C(config-line)#exit
Sw-C(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	FL1	192.168.10.0	255.255.255.0	L3-SW1, Sw-A, Sw-B
20	FL2	192.168.20.0	255.255.255.0	L3-SW1, Sw-A, Sw-B
30	FL3	192.168.30.0	255.255.255.0	L3-SW1, Sw-A, Sw-B
40	FAC	192.168.40.0	255.255.255.0	Sw-C
50	BDG5	192.168.50.0	255.255.255.0	Sw-C
60	BDG6	192.168.60.0	255.255.255.0	Sw-C
99	Management	192.168.99.16	255.255.255.240	Sw-C, L3-SW1

L3-SW1

```
L3-SW1(config)#vlan 10
L3-SW1(config-vlan)#name FL1
L3-SW1(config-vlan)#interface vlan 10
L3-SW1(config-if)#description FL1
L3-SW1(config-if)#ip address 192.168.10.1 255.255.255.0
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#vlan 20
L3-SW1(config-vlan)#name FL2
L3-SW1(config-vlan)#interface vlan 20
L3-SW1(config-if)#description FL2
L3-SW1(config-if)#ip address 192.168.20.1 255.255.255.0
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#vlan 30
L3-SW1(config-vlan)#name FL3
L3-SW1(config-vlan)#interface vlan 30
L3-SW1(config-if)#description FL3
L3-SW1(config-if)#ip address 192.168.30.1 255.255.255.0
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#vlan 99
L3-SW1(config-vlan)#name Management
L3-SW1(config-vlan)#interface vlan 99
L3-SW1(config-if)#description Management
L3-SW1(config-if)#ip address 192.168.99.2 255.255.255.240
L3-SW1(config-if)#exit
```

Sw-A

```
Sw-A(config)#vlan 10
Sw-A(config-vlan)#name FL1
Sw-A(config-vlan)#interface vlan 10
Sw-A(config-if)#description FL1
Sw-A(config-if)#exit
Sw-A(config)#
Sw-A(config)#vlan 20
Sw-A(config-vlan)#name FL2
Sw-A(config-vlan)#interface vlan 20
Sw-A(config-if)#description FL2
Sw-A(config-if)#exit
Sw-A(config)#
Sw-A(config)#vlan 30
Sw-A(config-vlan)#name FL3
Sw-A(config-vlan)#interface vlan 30
Sw-A(config-if)#description FL3
Sw-A(config-if)#exit
```

Sw-B

```
Sw-B(config)#vlan 10
Sw-B(config-vlan)#name FL1
Sw-B(config-vlan)#interface vlan 10
Sw-B(config-if)#description FL1
Sw-B(config-if)#exit
Sw-B(config)#
Sw-B(config)#vlan 20
Sw-B(config-vlan)#name FL2
Sw-B(config-vlan)#interface vlan 20
Sw-B(config-if)#description FL2
Sw-B(config-if)#exit
Sw-B(config)#
Sw-B(config)#vlan 30
Sw-B(config-vlan)#name FL3
Sw-B(config-vlan)#interface vlan 30
Sw-B(config-if)#description FL3
Sw-B(config-if)#exit
```

Sw-C

```
Sw-C(config)#vlan 40
Sw-C(config-vlan)#name BDG4
Sw-C(config-vlan)#interface vlan 40
Sw-C(config-if)#ip address 192.168.40.1 255.255.255.0
Sw-C(config-if)#description BDG4
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#vlan 50
Sw-C(config-vlan)#name BDG5
Sw-C(config-vlan)#interface vlan 50
Sw-C(config-if)#ip address 192.168.50.1 255.255.255.0
Sw-C(config-if)#description BDG5
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#vlan 60
Sw-C(config-vlan)#name BDG6
Sw-C(config-vlan)#interface vlan 60
Sw-C(config-if)#ip address 192.168.60.1 255.255.255.0
Sw-C(config-if)#description BDG6
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#vlan 99
Sw-C(config-vlan)#name Management
Sw-C(config-vlan)#interface vlan 99
Sw-C(config-if)#ip address 192.168.99.18 255.255.255.240
Sw-C(config-if)#description Management
Sw-C(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments
Sw-A	10	FL1	F0/7-10
	20	FL2	F0/11-15
	30	FL3	F0/16-24
Sw-B	10	FL1	F0/7-10
	20	FL2	F0/11-15
	30	FL3	F0/16-24
Sw-C	40	FAC	F0/1-5
	50	BDG5	F0/6-10
	60	BDG6	F0/11-15
	99	Management Native	F0/24

Sw-A

```
Sw-A(config)#interface range f0/7-10
Sw-A(config-if-range)#switchport mode access
Sw-A(config-if-range)#switchport access vlan 10
Sw-A(config-if-range)#exit
Sw-A(config)#interface range f0/11-15
Sw-A(config-if-range)#switchport mode access
Sw-A(config-if-range)#switchport access vlan 20
Sw-A(config-if-range)#exit
Sw-A(config)#interface range f0/16-24
Sw-A(config-if-range)#switchport mode access
Sw-A(config-if-range)#switchport access vlan 30
Sw-A(config-if-range)#exit
```

Sw-B

```
Sw-B(config)#interface range f0/7-10
Sw-B(config-if-range)#switchport mode access
Sw-B(config-if-range)#switchport access vlan 10
Sw-B(config-if-range)#exit
Sw-B(config)#interface range f0/11-15
Sw-B(config-if-range)#switchport mode access
Sw-B(config-if-range)#switchport access vlan 20
Sw-B(config-if-range)#exit
Sw-B(config)#interface range f0/16-24
Sw-B(config-if-range)#switchport mode access
Sw-B(config-if-range)#switchport access vlan 30
Sw-B(config-if-range)#exit
```

Sw-C

```
Sw-C(config)#interface range f0/1-5
Sw-C(config-if-range)#switchport mode access
Sw-C(config-if-range)#switchport access vlan 40
Sw-C(config-if-range)#exit
Sw-C(config)#interface range f0/6-10
Sw-C(config-if-range)#switchport mode access
Sw-C(config-if-range)#switchport access vlan 50
Sw-C(config-if-range)#exit
Sw-C(config)#interface range f0/11-15
Sw-C(config-if-range)#switchport mode access
Sw-C(config-if-range)#switchport access vlan 60
Sw-C(config-if-range)#exit
Sw-C(config)#interface f0/24
Sw-C(config-if)#switchport mode access
Sw-C(config-if)#switchport access vlan 99
Sw-C(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	L3-SW1	G1/0/1, G1/0/2
	Sw-A	G0/1, G0/2
2	L3-SW1	G1/0/3, G1/0/4
	Sw-B	G0/1, G0/2
3	Sw-A	F0/5, F0/6
	Sw-B	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

L3-SW1

```
L3-SW1(config)#interface range g1/0/1-2
L3-SW1(config-if-range)#channel-group 1 mode active
L3-SW1(config-if-range)#exit
L3-SW1(config)#
L3-SW1(config)#interface range g1/0/3-4
L3-SW1(config-if-range)#channel-group 2 mode active
L3-SW1(config-if-range)#exit
```

Sw-A

```
Sw-A(config)#interface range g0/1-2
Sw-A(config-if-range)#channel-group 1 mode active
Sw-A(config-if-range)#exit
Sw-A(config)#
Sw-A(config)#interface range f0/5-6
Sw-A(config-if-range)#channel-group 3 mode active
Sw-A(config-if-range)#exit
```

Sw-B

```
Sw-B(config)#interface range g0/1-2
Sw-B(config-if-range)#channel-group 2 mode active
Sw-B(config-if-range)#exit
Sw-B(config)#
Sw-B(config)#interface range f0/5-6
Sw-B(config-if-range)#channel-group 3 mode active
Sw-B(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

L3-SW1

```
L3-SW1(config)#interface port-channel 1
L3-SW1(config-if)#switchport mode trunk
L3-SW1(config-if)#switchport trunk allowed vlan 10,20,30
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#interface port-channel 2
L3-SW1(config-if)#switchport mode trunk
L3-SW1(config-if)#switchport trunk allowed vlan 10,20,30
L3-SW1(config-if)#exit
```

Sw-A

```
Sw-A(config)#interface port-channel 1
Sw-A(config-if)#switchport mode trunk
Sw-A(config-if)#switchport nonegotiate
Sw-A(config-if)#exit
Sw-A(config)#
Sw-A(config)#interface port-channel 3
Sw-A(config-if)#switchport mode trunk

Sw-A(config-if)#switchport nonegotiate
Sw-A(config-if)#exit
```

Sw-B

```
Sw-B(config)#interface port-channel 2
Sw-B(config-if)#switchport mode trunk
Sw-B(config-if)#switchport nonegotiate
Sw-B(config-if)#exit
Sw-B(config)#
Sw-B(config)#interface port-channel 3
Sw-B(config-if)#switchport mode trunk

Sw-B(config-if)#switchport nonegotiate
Sw-B(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the Sw-C switch, configure the port that is connected to Edge-Router G0/0/0 as a static trunk.
b. Configure the Management VLAN as the native VLAN.
c. Disable DTP on the port.

Sw-C

```
Sw-C(config)#interface g0/1
Sw-C(config-if)#switchport mode trunk
Sw-C(config-if)#switchport nonegotiate
Sw-C(config-if)#switchport trunk native vlan 99
Sw-C(config-if)#switchport trunk allowed vlan 40,50,60,99
Sw-C(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the L3-SW1 Layer 3 switch for all VLANs in the VLAN Table that are configured on L3-SW1.
b. Configure the switchport on L3-SW1 that is connected to Edge-Router with an IP address as shown in the Addressing Table.

L3-SW1

```
L3-SW1(config)#ip routing
L3-SW1(config)#interface g1/1/1
L3-SW1(config-if)#no switchport
L3-SW1(config-if)#ip address 192.168.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on Edge-Router for all the VLANs that are configured on the Sw-C switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

Edge-Router

```
Edge-Router(config)#interface g0/0/1
Edge-Router(config-if)#no shutdown
Edge-Router(config)#interface g0/0/1.40
Edge-Router(config-subif)#description "Gateway for VLAN40"
Edge-Router(config-subif)#encapsulation dot1q 40
Edge-Router(config-subif)#ip address 192.168.40.1 255.255.255.0
Edge-Router(config-subif)#exit
Edge-Router(config)#interface g0/0/1.50
Edge-Router(config-subif)#description "Gateway for VLAN50"
Edge-Router(config-subif)#encapsulation dot1q 50
Edge-Router(config-subif)#ip address 192.168.50.1 255.255.255.0
Edge-Router(config-subif)#exit
Edge-Router(config)#interface g0/0/1.60
Edge-Router(config-subif)#description "Gateway for VLAN60"
Edge-Router(config-subif)#encapsulation dot1q 60
Edge-Router(config-subif)#ip address 192.168.60.1 255.255.255.0
Edge-Router(config-subif)#exit
Edge-Router(config)#interface g0/0/1.99
Edge-Router(config-subif)#description "Gateway for VLAN99"
Edge-Router(config-subif)#encapsulation dot1q 99 native
Edge-Router(config-subif)#ip address 192.168.99.17 255.255.255.240
Edge-Router(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **WS-1.1** and **WS-1.4**: **192.168.10.1**
Default gateway on **WS-1.2** and **WS-1.5**: **192.168.20.1**
Default gateway on **WS-1.3** and **WS-1.6**: **192.168.30.1**

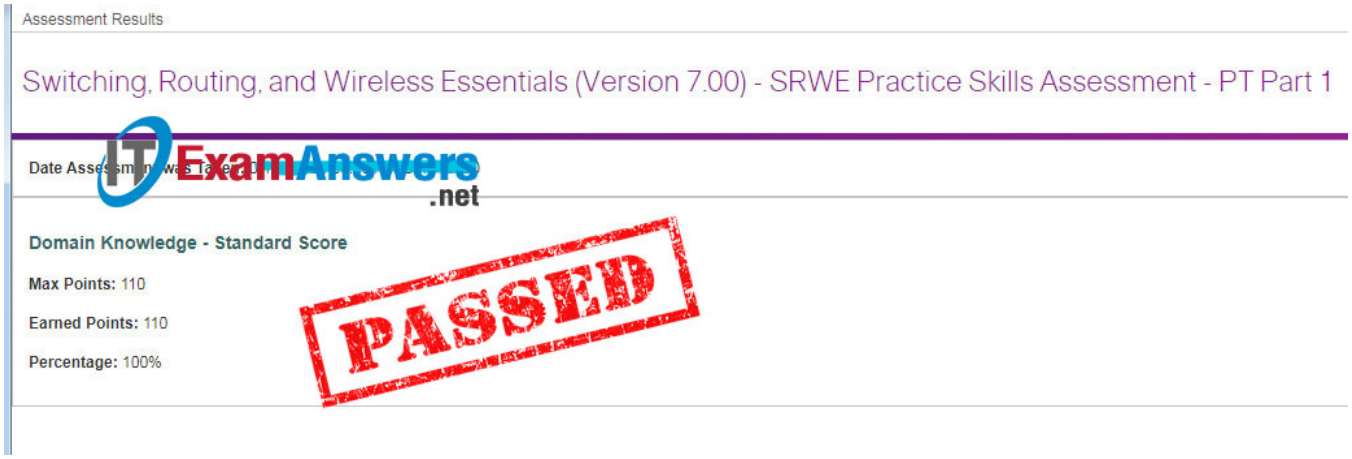
Default gateway on **WS-2.1**: **192.168.40.1**
Default gateway on **WS-2.2**: **192.168.50.1**
Default gateway on **WS-2.3**: **192.168.60.1**
Default gateway on **Management PC**: **192.168.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Outside Server server.
c. Verify that a host can connect to the SVI of switch Sw-C over SSH.

Last Updated: January 2021

ID 211

Intructions – Answers



Router Edge-Router

```
en
conf t
ip route 192.168.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname Edge-Router
service password-encryption
interface g0/0/0
ip address 192.168.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 192.168.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 192.168.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 192.168.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 192.168.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch Sw-C

```
en
config t
interface vlan 99
ip address 192.168.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 192.168.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name BDG4
exit
interface vlan 40
ip address 192.168.40.1 255.255.255.0
description BDG4
exit
vlan 50
name BDG5
exit
interface vlan 50
ip address 192.168.50.1 255.255.255.0
description BDG5
exit
vlan 60
name BDG6
exit
interface vlan 60
ip address 192.168.60.1 255.255.255.0
description BDG6
exit
vlan 99
name Management
exit
interface vlan 99
ip address 192.168.99.18 255.255.255.240
description Management
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch L3-SW1

```
en
config t
vlan 10
name FL1
interface vlan 10
description FL1
ip address 192.168.10.1 255.255.255.0
exit
vlan 20
name FL2
interface vlan 20
description FL2
ip address 192.168.20.1 255.255.255.0
exit
vlan 30
name FL3
interface vlan 30
description FL3
ip address 192.168.30.1 255.255.255.0
exit
vlan 99
name Management
interface vlan 99
description Management
ip address 192.168.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 192.168.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch Sw-A

```
enable
config terminal
vlan 10
name FL1
interface vlan 10
description FL1
exit
vlan 20
name FL2
interface vlan 20
description FL2
exit
vlan 30
name FL3
interface vlan 30
description FL3
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch Sw-B

```
en
config t
vlan 10
name FL1
interface vlan 10
description FL1
exit
vlan 20
name FL2
interface vlan 20
description FL2
exit
vlan 30
name FL3
interface vlan 30
description FL3
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Configure default gateway addresses on all hosts on the LANs.

Default gateway on **WS-1.1** and **WS-1.4**: **192.168.10.1**
Default gateway on **WS-1.2** and **WS-1.5**: **192.168.20.1**
Default gateway on **WS-1.3** and **WS-1.6**: **192.168.30.1**

Default gateway on **WS-2.1**: **192.168.40.1**
Default gateway on **WS-2.2**: **192.168.50.1**
Default gateway on **WS-2.3**: **192.168.60.1**

Default gateway on **Management PC**: **192.168.99.17**

CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers

SRWE PT Practice Skills Assessment (PTSA) Part 1

SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
Edge-Router	G0/0/0	172.31.0.1	255.255.255. 0
	G0/0/1.40	172.31.40.1	255.255.255.0
	G0/0/1.50	172.31.50.1	255.255.255.0
	G0/0/1.60	172.31.60.1	255.255.255.0
	G0/0/1.99	172.31.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
L3-SW1	G1/1/1	172.31.0.2	255.255.255.0
	VLAN10	172.31.10.1	255.255.255.0
	VLAN20	172.31.20.1	255.255.255.0
	VLAN30	172.31.30.1	255.255.255.0
	VLAN99	172.31.99.2	255..255.255.240
Sw-C	VLAN99	172.31.99.18	255.255.255.240
WS-1.1	NIC	172.31.10.10	255.255.255.0
WS-1.2	NIC	172.31.20.20	255.255.255.0
WS-1.3	NIC	172.31.30.30	255.255.255.0
WS-1.4	NIC	172.31.10.11	255.255.255.0
WS-1.5	NIC	172.31.20.21	255.255.255.0
WS-1.6	NIC	172.31.30.31	255.255.255.0
WS-2.1	NIC	172.31.40.40	255.255.255.0
WS-2.2	NIC	172.31.50.50	255.255.255.0
WS-2.3	NIC	172.31.60.60	255.255.255.0
Management PC	NIC	172.31.99.19	255.255.255.0
Outside Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will

also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router Edge-Router with required settings.

a. Open a command window on router **Edge-Router** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the Edge-Router router CLI.

```
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.
- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname Edge-Router

Edge-Router(config)#service password-encryption

Edge-Router(config)#interface g0/0/0
Edge-Router(config-if)#ip address 172.31.0.1 255.255.255.0
Edge-Router(config-if)#no shutdown
Edge-Router(config-if)#description Link to Sciences LAN
Edge-Router(config-if)#exit

Edge-Router(config)#interface s0/1/0
Edge-Router(config-if)#ip address 209.165.201.2 255.255.255.252
Edge-Router(config-if)#no shutdown
Edge-Router(config-if)#description Link to Internet
Edge-Router(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch Sw-C with IP addressing according to the Addressing Table.
b. The Sw-C switch SVI should be reachable from other networks.

```
Sw-C(config)#interface vlan 99
Sw-C(config-if)#ip address 172.31.99.18 255.255.255.240
Sw-C(config-if)#no shutdown
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#ip default-gateway 172.31.99.17
```

Step 2: Configure Secure Remote Access

On switch Sw-C, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
Sw-C(config)#ip domain-name acad.pt
Sw-C(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

Sw-C(config)#username admin privilege 15 secret C1sco123!
Sw-C(config)#enable secret C1sco123!
Sw-C(config)#line vty 0 15
Sw-C(config-line)#transport input ssh
Sw-C(config-line)#login local
Sw-C(config-line)#exit
Sw-C(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	SALES	172.31.10.0	255.255.255.0	L3-SW1, Sw-A,
				Sw-B
20	ACCT	172.31.20.0	255.255.255.0	L3-SW1, Sw-A,
				Sw-B
30	EXEC	172.31.30.0	255.255.255.0	L3-SW1, Sw-A,
				Sw-B
40	FAC	172.31.40.0	255.255.255.0	Sw-C
50	FAB1	172.31.50.0	255.255.255.0	Sw-C
60	FAB2	172.31.60.0	255.255.255.0	Sw-C
99	ADMIN	172.31.99.16	255.255.255.240	Sw-C, L3-SW1

L3-SW1

```
L3-SW1(config)#vlan 10
L3-SW1(config-vlan)#name SALES
L3-SW1(config-vlan)#interface vlan 10
L3-SW1(config-if)#description SALES
L3-SW1(config-if)#ip address 172.31.10.1 255.255.255.0
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#vlan 20
L3-SW1(config-vlan)#name ACCT
L3-SW1(config-vlan)#interface vlan 20
L3-SW1(config-if)#description ACCT
L3-SW1(config-if)#ip address 172.31.20.1 255.255.255.0
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#vlan 30
L3-SW1(config-vlan)#name EXEC
L3-SW1(config-vlan)#interface vlan 30
L3-SW1(config-if)#description EXEC
L3-SW1(config-if)#ip address 172.31.30.1 255.255.255.0
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#vlan 99
L3-SW1(config-vlan)#name ADMIN
L3-SW1(config-vlan)#interface vlan 99
L3-SW1(config-if)#description ADMIN
L3-SW1(config-if)#ip address 172.31.99.2 255.255.255.240
L3-SW1(config-if)#exit
```

Sw-A

```
Sw-A(config)#vlan 10
Sw-A(config-vlan)#name SALES
Sw-A(config-vlan)#interface vlan 10
Sw-A(config-if)#description SALES
Sw-A(config-if)#exit
Sw-A(config)#
Sw-A(config)#vlan 20
Sw-A(config-vlan)#name ACCT
Sw-A(config-vlan)#interface vlan 20
Sw-A(config-if)#description ACCT
Sw-A(config-if)#exit
Sw-A(config)#
Sw-A(config)#vlan 30
Sw-A(config-vlan)#name EXEC
Sw-A(config-vlan)#interface vlan 30
Sw-A(config-if)#description EXEC
Sw-A(config-if)#exit
```

Sw-B

```
Sw-B(config)#vlan 10
Sw-B(config-vlan)#name SALES
Sw-B(config-vlan)#interface vlan 10
Sw-B(config-if)#description SALES
Sw-B(config-if)#exit
Sw-B(config)#
Sw-B(config)#vlan 20
Sw-B(config-vlan)#name ACCT
Sw-B(config-vlan)#interface vlan 20
Sw-B(config-if)#description ACCT
Sw-B(config-if)#exit
Sw-B(config)#
Sw-B(config)#vlan 30
Sw-B(config-vlan)#name EXEC
Sw-B(config-vlan)#interface vlan 30
Sw-B(config-if)#description EXEC
Sw-B(config-if)#exit
```

Sw-C

```
Sw-C(config)#vlan 40
Sw-C(config-vlan)#name FAC
Sw-C(config-vlan)#interface vlan 40
Sw-C(config-if)#ip address 172.31.40.1 255.255.255.0
Sw-C(config-if)#description FAC
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#vlan 50
Sw-C(config-vlan)#name FAB1
Sw-C(config-vlan)#interface vlan 50
Sw-C(config-if)#ip address 172.31.50.1 255.255.255.0
Sw-C(config-if)#description FAB1
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#vlan 60
Sw-C(config-vlan)#name FAB2
Sw-C(config-vlan)#interface vlan 60
Sw-C(config-if)#ip address 172.31.60.1 255.255.255.0
Sw-C(config-if)#description FAB2
Sw-C(config-if)#exit
Sw-C(config)#
Sw-C(config)#vlan 99
Sw-C(config-vlan)#name ADMIN
Sw-C(config-vlan)#interface vlan 99
Sw-C(config-if)#ip address 172.31.99.18 255.255.255.240
Sw-C(config-if)#description ADMIN
Sw-C(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments
Sw-A	10	SALES	F0/7-10
	20	ACCT	F0/11-15
	30	EXEC	F0/16-24
Sw-B	10	SALES	F0/7-10
	20	ACCT	F0/11-15
	30	EXEC	F0/16-24
Sw-C	40	FAC	F0/1-5
	50	FAB1	F0/6-10
	60	FAB2	F0/11-15
	99	ADMIN Native	F0/24

Sw-A

```
Sw-A(config)#interface range f0/7-10
Sw-A(config-if-range)#switchport mode access
Sw-A(config-if-range)#switchport access vlan 10
Sw-A(config-if-range)#exit
Sw-A(config)#interface range f0/11-15
Sw-A(config-if-range)#switchport mode access
Sw-A(config-if-range)#switchport access vlan 20
Sw-A(config-if-range)#exit
Sw-A(config)#interface range f0/16-24
Sw-A(config-if-range)#switchport mode access
Sw-A(config-if-range)#switchport access vlan 30
Sw-A(config-if-range)#exit
```

Sw-B

```
Sw-B(config)#interface range f0/7-10
Sw-B(config-if-range)#switchport mode access
Sw-B(config-if-range)#switchport access vlan 10
Sw-B(config-if-range)#exit
Sw-B(config)#interface range f0/11-15
Sw-B(config-if-range)#switchport mode access
Sw-B(config-if-range)#switchport access vlan 20
Sw-B(config-if-range)#exit
Sw-B(config)#interface range f0/16-24
Sw-B(config-if-range)#switchport mode access
Sw-B(config-if-range)#switchport access vlan 30
Sw-B(config-if-range)#exit
```

Sw-C

```
Sw-C(config)#interface range f0/1-5
Sw-C(config-if-range)#switchport mode access
Sw-C(config-if-range)#switchport access vlan 40
Sw-C(config-if-range)#exit
Sw-C(config)#interface range f0/6-10
Sw-C(config-if-range)#switchport mode access
Sw-C(config-if-range)#switchport access vlan 50
Sw-C(config-if-range)#exit
Sw-C(config)#interface range f0/11-15
Sw-C(config-if-range)#switchport mode access
Sw-C(config-if-range)#switchport access vlan 60
Sw-C(config-if-range)#exit
Sw-C(config)#interface f0/24
Sw-C(config-if)#switchport mode access
Sw-C(config-if)#switchport access vlan 99
Sw-C(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	L3-SW1	G1/0/1, G1/0/2
	Sw-A	G0/1, G0/2
2	L3-SW1	G1/0/3, G1/0/4
	Sw-B	G0/1, G0/2
3	Sw-A	F0/5, F0/6
	Sw-B	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

L3-SW1

```
L3-SW1(config)#interface range g1/0/1-2
L3-SW1(config-if-range)#channel-group 1 mode active
L3-SW1(config-if-range)#exit
L3-SW1(config)#
L3-SW1(config)#interface range g1/0/3-4
L3-SW1(config-if-range)#channel-group 2 mode active
L3-SW1(config-if-range)#exit
```

Sw-A

```
Sw-A(config)#interface range g0/1-2
Sw-A(config-if-range)#channel-group 1 mode active
Sw-A(config-if-range)#exit
Sw-A(config)#
Sw-A(config)#interface range f0/5-6
Sw-A(config-if-range)#channel-group 3 mode active
Sw-A(config-if-range)#exit
```

Sw-B

```
Sw-B(config)#interface range g0/1-2
Sw-B(config-if-range)#channel-group 2 mode active
Sw-B(config-if-range)#exit
Sw-B(config)#
Sw-B(config)#interface range f0/5-6
Sw-B(config-if-range)#channel-group 3 mode active
Sw-B(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

L3-SW1

```
L3-SW1(config)#interface port-channel 1
L3-SW1(config-if)#switchport mode trunk
L3-SW1(config-if)#switchport trunk allowed vlan 10,20,30
L3-SW1(config-if)#exit
L3-SW1(config)#
L3-SW1(config)#interface port-channel 2
L3-SW1(config-if)#switchport mode trunk
L3-SW1(config-if)#switchport trunk allowed vlan 10,20,30
L3-SW1(config-if)#exit
```

Sw-A

```
Sw-A(config)#interface port-channel 1
Sw-A(config-if)#switchport mode trunk
Sw-A(config-if)#switchport nonegotiate
Sw-A(config-if)#exit
Sw-A(config)#
Sw-A(config)#interface port-channel 3
Sw-A(config-if)#switchport mode trunk

Sw-A(config-if)#switchport nonegotiate
Sw-A(config-if)#exit
```

Sw-B

```
Sw-B(config)#interface port-channel 2
Sw-B(config-if)#switchport mode trunk
Sw-B(config-if)#switchport nonegotiate
Sw-B(config-if)#exit
Sw-B(config)#
Sw-B(config)#interface port-channel 3
Sw-B(config-if)#switchport mode trunk

Sw-B(config-if)#switchport nonegotiate
Sw-B(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the Sw-C switch, configure the port that is connected to Edge-Router G0/0/0 as a static trunk.
b. Configure the ADMIN VLAN as the native VLAN.
c. Disable DTP on the port.

Sw-C

```
Sw-C(config)#interface g0/1
Sw-C(config-if)#switchport mode trunk
Sw-C(config-if)#switchport nonegotiate
Sw-C(config-if)#switchport trunk native vlan 99
Sw-C(config-if)#switchport trunk allowed vlan 40,50,60,99
Sw-C(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the L3-SW1 Layer 3 switch for all VLANs in the VLAN Table that are configured on L3-SW1.
b. Configure the switchport on L3-SW1 that is connected to Edge-Router with an IP address as shown in the Addressing Table.

L3-SW1

```
L3-SW1(config)#ip routing
L3-SW1(config)#interface g1/1/1
L3-SW1(config-if)#no switchport
L3-SW1(config-if)#ip address 172.31.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on Edge-Router for all the VLANs that are configured on the Sw-C switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

Edge-Router

```
Edge-Router(config)#interface g0/0/1
Edge-Router(config-if)#no shutdown
Edge-Router(config)#interface g0/0/1.40
Edge-Router(config-subif)#description "Gateway for VLAN40"
Edge-Router(config-subif)#encapsulation dot1q 40
Edge-Router(config-subif)#ip address 172.31.40.1 255.255.255.0
Edge-Router(config-subif)#exit
Edge-Router(config)#interface g0/0/1.50
Edge-Router(config-subif)#description "Gateway for VLAN50"
Edge-Router(config-subif)#encapsulation dot1q 50
Edge-Router(config-subif)#ip address 172.31.50.1 255.255.255.0
Edge-Router(config-subif)#exit
Edge-Router(config)#interface g0/0/1.60
Edge-Router(config-subif)#description "Gateway for VLAN60"
Edge-Router(config-subif)#encapsulation dot1q 60
Edge-Router(config-subif)#ip address 172.31.60.1 255.255.255.0
Edge-Router(config-subif)#exit
Edge-Router(config)#interface g0/0/1.99
Edge-Router(config-subif)#description "Gateway for VLAN99"
Edge-Router(config-subif)#encapsulation dot1q 99 native
Edge-Router(config-subif)#ip address 172.31.99.17 255.255.255.240
Edge-Router(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **WS-1.1** and **WS-1.4**: **172.31.10.1**
Default gateway on **WS-1.2** and **WS-1.5**: **172.31.20.1**
Default gateway on **WS-1.3** and **WS-1.6**: **172.31.30.1**

Default gateway on **WS-2.1**: **172.31.40.1**
Default gateway on **WS-2.2**: **172.31.50.1**
Default gateway on **WS-2.3**: **172.31.60.1**
Default gateway on **Management PC**: **172.31.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Outside Server server.
c. Verify that a host can connect to the SVI of switch Sw-C over SSH.
Last Updated: January 2021

ID 211

Intructions – Answers

Router Edge-Router

```
en
conf t
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname Edge-Router
service password-encryption
interface g0/0/0
ip address 172.31.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 172.31.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 172.31.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 172.31.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 172.31.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch Sw-C

```
en
config t
interface vlan 99
ip address 172.31.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 172.31.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name FAC
exit
interface vlan 40
ip address 172.31.40.1 255.255.255.0
description FAC
exit
vlan 50
name FAB1
exit
interface vlan 50
ip address 172.31.50.1 255.255.255.0
description FAB1
exit
vlan 60
name FAB2
exit
interface vlan 60
ip address 172.31.60.1 255.255.255.0
description FAB2
exit
vlan 99
name ADMIN
exit
interface vlan 99
ip address 172.31.99.18 255.255.255.240
description ADMIN
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch L3-SW1

```
en
config t
vlan 10
name SALES
interface vlan 10
description SALES
ip address 172.31.10.1 255.255.255.0
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
ip address 172.31.20.1 255.255.255.0
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
ip address 172.31.30.1 255.255.255.0
exit
vlan 99
name ADMIN
interface vlan 99
description ADMIN
ip address 172.31.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 172.31.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch Sw-A

```
enable
config terminal
vlan 10
name SALES
interface vlan 10
description SALES
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch Sw-B

```
en
config t
vlan 10
name SALES
interface vlan 10
description SALES
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

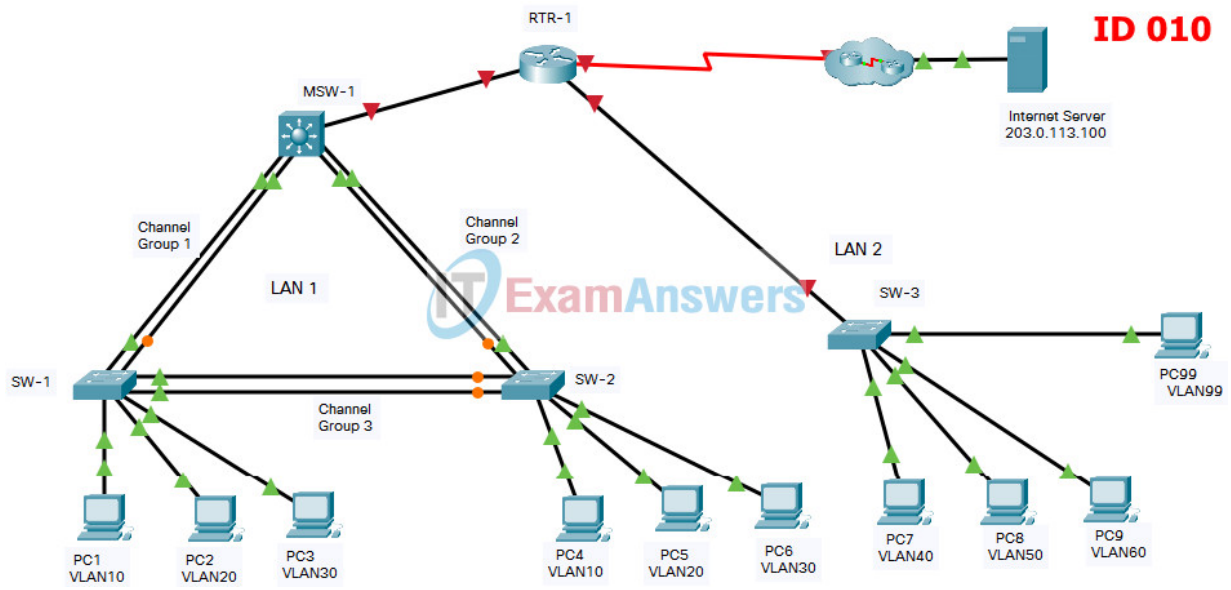
Configure default gateway addresses on all hosts on the LANs.

Default gateway on **WS-1.1** and **WS-1.4**: **172.31.10.1**
Default gateway on **WS-1.2** and **WS-1.5**: **172.31.20.1**
Default gateway on **WS-1.3** and **WS-1.6**: **172.31.30.1**

Default gateway on **WS-2.1**: **172.31.40.1**
Default gateway on **WS-2.2**: **172.31.50.1**
Default gateway on **WS-2.3**: **172.31.60.1**

Default gateway on **Management PC**: **172.31.99.17**

CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers



SRWE PT Practice Skills Assessment (PTSA) Part 1 - ID 010

SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
RTR-1	G0/0/0	192.168.0.1	255.255.255. 0
	G0/0/1.40	192.168.40.1	255.255.255.0
	G0/0/1.50	192.168.50.1	255.255.255.0
	G0/0/1.60	192.168.60.1	255.255.255.0

Device	Interface	IP Address	Subnet Mask
	G0/0/1.99	192.168.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
MSW-1	G1/1/1	192.168.0.2	255.255.255.0
	VLAN10	192.168.10.1	255.255.255.0
	VLAN20	192.168.20.1	255.255.255.0
	VLAN30	192.168.30.1	255.255.255.0
	VLAN99	192.168.99.2	255..255.255.240
SW-3	VLAN99	192.168.99.18	255.255.255.240
PC1	NIC	192.168.10.10	255.255.255.0
PC2	NIC	192.168.20.20	255.255.255.0
PC3	NIC	192.168.30.30	255.255.255.0
PC4	NIC	192.168.10.11	255.255.255.0
PC5	NIC	192.168.20.21	255.255.255.0
PC6	NIC	192.168.30.31	255.255.255.0
PC7	NIC	192.168.40.40	255.255.255.0
PC8	NIC	192.168.50.50	255.255.255.0
PC9	NIC	192.168.60.60	255.255.255.0
PC99	NIC	192.168.99.19	255.255.255.0
Internet Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router RTR-1 with required settings.

a. Open a command window on router **RTR-1** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the RTR-1 router CLI.

```
ip route 192.168.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.

- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname RTR-1

RTR-1(config)#service password-encryption

RTR-1(config)#interface g0/0/0
RTR-1(config-if)#ip address 192.168.0.1 255.255.255.0
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to LAN 1
RTR-1(config-if)#exit

RTR-1(config)#interface s0/1/0
RTR-1(config-if)#ip address 209.165.201.2 255.255.255.252
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to Internet
RTR-1(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch SW-3 with IP addressing according to the Addressing Table.

b. The SW-3 switch SVI should be reachable from other networks.

```
SW-3(config)#interface vlan 99
SW-3(config-if)#ip address 192.168.99.18 255.255.255.240
SW-3(config-if)#no shutdown
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#ip default-gateway 192.168.99.17
```

Step 2: Configure Secure Remote Access

On switch SW-3, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
SW-3(config)#ip domain-name acad.pt
SW-3(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

SW-3(config)#username admin privilege 15 secret C1sco123!
SW-3(config)#enable secret C1sco123!
SW-3(config)#line vty 0 15
SW-3(config-line)#transport input ssh
SW-3(config-line)#login local
SW-3(config-line)#exit
SW-3(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	SALES	192.168.10.0	255.255.255.0	MSW-1, SW-1, SW-2
20	ACCT	192.168.20.0	255.255.255.0	MSW-1, SW-1, SW-2
30	EXEC	192.168.30.0	255.255.255.0	MSW-1, SW-1, SW-2
40	FAC	192.168.40.0	255.255.255.0	SW-3
50	FAB1	192.168.50.0	255.255.255.0	SW-3
60	FAB2	192.168.60.0	255.255.255.0	SW-3
99	ADMIN	192.168.99.16	255.255.255.240	SW-3, MSW-1

MSW-1

```
MSW-1(config)#vlan 10
MSW-1(config-vlan)#name SALES
MSW-1(config-vlan)#interface vlan 10
MSW-1(config-if)#description SALES
MSW-1(config-if)#ip address 192.168.10.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 20
MSW-1(config-vlan)#name ACCT
MSW-1(config-vlan)#interface vlan 20
MSW-1(config-if)#description ACCT
MSW-1(config-if)#ip address 192.168.20.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 30
MSW-1(config-vlan)#name EXEC
MSW-1(config-vlan)#interface vlan 30
MSW-1(config-if)#description EXEC
MSW-1(config-if)#ip address 192.168.30.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 99
MSW-1(config-vlan)#name ADMIN
MSW-1(config-vlan)#interface vlan 99
MSW-1(config-if)#description ADMIN
MSW-1(config-if)#ip address 192.168.99.2 255.255.255.240
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#vlan 10
SW-1(config-vlan)#name SALES
SW-1(config-vlan)#interface vlan 10
SW-1(config-if)#description SALES
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 20
SW-1(config-vlan)#name ACCT
SW-1(config-vlan)#interface vlan 20
SW-1(config-if)#description ACCT
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 30
SW-1(config-vlan)#name EXEC
SW-1(config-vlan)#interface vlan 30
SW-1(config-if)#description EXEC
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#vlan 10
SW-2(config-vlan)#name SALES
SW-2(config-vlan)#interface vlan 10
SW-2(config-if)#description SALES
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 20
SW-2(config-vlan)#name ACCT
SW-2(config-vlan)#interface vlan 20
SW-2(config-if)#description ACCT
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 30
SW-2(config-vlan)#name EXEC
SW-2(config-vlan)#interface vlan 30
SW-2(config-if)#description EXEC
SW-2(config-if)#exit
```

SW-3

```
SW-3(config)#vlan 40
SW-3(config-vlan)#name FAC
SW-3(config-vlan)#interface vlan 40
SW-3(config-if)#ip address 192.168.40.1 255.255.255.0
SW-3(config-if)#description FAC
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 50
SW-3(config-vlan)#name FAB1
SW-3(config-vlan)#interface vlan 50
SW-3(config-if)#ip address 192.168.50.1 255.255.255.0
SW-3(config-if)#description FAB1
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 60
SW-3(config-vlan)#name FAB2
SW-3(config-vlan)#interface vlan 60
SW-3(config-if)#ip address 192.168.60.1 255.255.255.0
SW-3(config-if)#description FAB2
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 99
SW-3(config-vlan)#name ADMIN
SW-3(config-vlan)#interface vlan 99
SW-3(config-if)#ip address 192.168.99.18 255.255.255.240
SW-3(config-if)#description ADMIN
SW-3(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments

Device	VLAN	VLAN Name	Port Assignments
SW-1	10	SALES	F0/7-10
	20	ACCT	F0/11-15
	30	EXEC	F0/16-24
SW-2	10	SALES	F0/7-10
	20	ACCT	F0/11-15
	30	EXEC	F0/16-24
SW-3	40	FAC	F0/1-5
	50	FAB1	F0/6-10
	60	FAB2	F0/11-15
	99	ADMIN Native	F0/24

SW-1

```
SW-1(config)#interface range f0/7-10
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 10
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/11-15
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 20
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/16-24
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 30
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range f0/7-10
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 10
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/11-15
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 20
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/16-24
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 30
SW-2(config-if-range)#exit
```

SW-3

```
SW-3(config)#interface range f0/1-5
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 40
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/6-10
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 50
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/11-15
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 60
SW-3(config-if-range)#exit
SW-3(config)#interface f0/24
SW-3(config-if)#switchport mode access
SW-3(config-if)#switchport access vlan 99
SW-3(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	MSW-1	G1/0/1, G1/0/2
	SW-1	G0/1, G0/2
2	MSW-1	G1/0/3, G1/0/4
	SW-2	G0/1, G0/2
3	SW-1	F0/5, F0/6
	SW-2	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

MSW-1

```
MSW-1(config)#interface range g1/0/1-2
MSW-1(config-if-range)#channel-group 1 mode active
MSW-1(config-if-range)#exit
MSW-1(config)#
MSW-1(config)#interface range g1/0/3-4
MSW-1(config-if-range)#channel-group 2 mode active
MSW-1(config-if-range)#exit
```

SW-1

```
SW-1(config)#interface range g0/1-2
SW-1(config-if-range)#channel-group 1 mode active
SW-1(config-if-range)#exit
SW-1(config)#
SW-1(config)#interface range f0/5-6
SW-1(config-if-range)#channel-group 3 mode active
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range g0/1-2
SW-2(config-if-range)#channel-group 2 mode active
SW-2(config-if-range)#exit
SW-2(config)#
SW-2(config)#interface range f0/5-6
SW-2(config-if-range)#channel-group 3 mode active
SW-2(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

MSW-1

```
MSW-1(config)#interface port-channel 1
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#interface port-channel 2
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#interface port-channel 1
SW-1(config-if)#switchport mode trunk
SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#interface port-channel 3
SW-1(config-if)#switchport mode trunk

SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#interface port-channel 2
SW-2(config-if)#switchport mode trunk
SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#interface port-channel 3
SW-2(config-if)#switchport mode trunk

SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the SW-3 switch, configure the port that is connected to RTR-1 G0/0/0 as a static trunk.
b. Configure the ADMIN VLAN as the native VLAN.
c. Disable DTP on the port.

SW-3

```
SW-3(config)#interface g0/1
SW-3(config-if)#switchport mode trunk
SW-3(config-if)#switchport nonegotiate
SW-3(config-if)#switchport trunk native vlan 99
SW-3(config-if)#switchport trunk allowed vlan 40,50,60,99
SW-3(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the MSW-1 Layer 3 switch for all VLANs in the VLAN Table that are configured on MSW-1.
b. Configure the switchport on MSW-1 that is connected to RTR-1 with an IP address as shown in the Addressing Table.

MSW-1

```
MSW-1(config)#ip routing
MSW-1(config)#interface g1/1/1
MSW-1(config-if)#no switchport
MSW-1(config-if)#ip address 192.168.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on RTR-1 for all the VLANs that are configured on the SW-3 switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

RTR-1

```
RTR-1(config)#interface g0/0/1
RTR-1(config-if)#no shutdown
RTR-1(config)#interface g0/0/1.40
RTR-1(config-subif)#description "Gateway for VLAN40"
RTR-1(config-subif)#encapsulation dot1q 40
RTR-1(config-subif)#ip address 192.168.40.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.50
RTR-1(config-subif)#description "Gateway for VLAN50"
RTR-1(config-subif)#encapsulation dot1q 50
RTR-1(config-subif)#ip address 192.168.50.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.60
RTR-1(config-subif)#description "Gateway for VLAN60"
RTR-1(config-subif)#encapsulation dot1q 60
RTR-1(config-subif)#ip address 192.168.60.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.99
RTR-1(config-subif)#description "Gateway for VLAN99"
RTR-1(config-subif)#encapsulation dot1q 99 native
RTR-1(config-subif)#ip address 192.168.99.17 255.255.255.240
RTR-1(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **192.168.10.1**
Default gateway on **PC2** and **PC5**: **192.168.20.1**
Default gateway on **PC3** and **PC6**: **192.168.30.1**

Default gateway on **PC7**: **192.168.40.1**
Default gateway on **PC8**: **192.168.50.1**
Default gateway on **PC9**: **192.168.60.1**
Default gateway on **PC99**: **192.168.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Internet Server server.
c. Verify that a host can connect to the SVI of switch SW-3 over SSH.
Last Updated: January 2021

ID 010

Intructions – Answers

Router RTR-1

```
en
conf t
ip route 192.168.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname RTR-1
service password-encryption
interface g0/0/0
ip address 192.168.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 192.168.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 192.168.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 192.168.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 192.168.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch SW-3

```
en
config t
interface vlan 99
ip address 192.168.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 192.168.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name FAC
exit
interface vlan 40
ip address 192.168.40.1 255.255.255.0
description FAC
exit
vlan 50
name FAB1
exit
interface vlan 50
ip address 192.168.50.1 255.255.255.0
description FAB1
exit
vlan 60
name FAB2
exit
interface vlan 60
ip address 192.168.60.1 255.255.255.0
description FAB2
exit
vlan 99
name ADMIN
exit
interface vlan 99
ip address 192.168.99.18 255.255.255.240
description ADMIN
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch MSW-1

```
en
config t
vlan 10
name SALES
interface vlan 10
description SALES
ip address 192.168.10.1 255.255.255.0
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
ip address 192.168.20.1 255.255.255.0
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
ip address 192.168.30.1 255.255.255.0
exit
vlan 99
name ADMIN
interface vlan 99
description ADMIN
ip address 192.168.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 192.168.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch SW-1

```
enable
config terminal
vlan 10
name SALES
interface vlan 10
description SALES
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch SW-2

```
en
config t
vlan 10
name SALES
interface vlan 10
description SALES
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

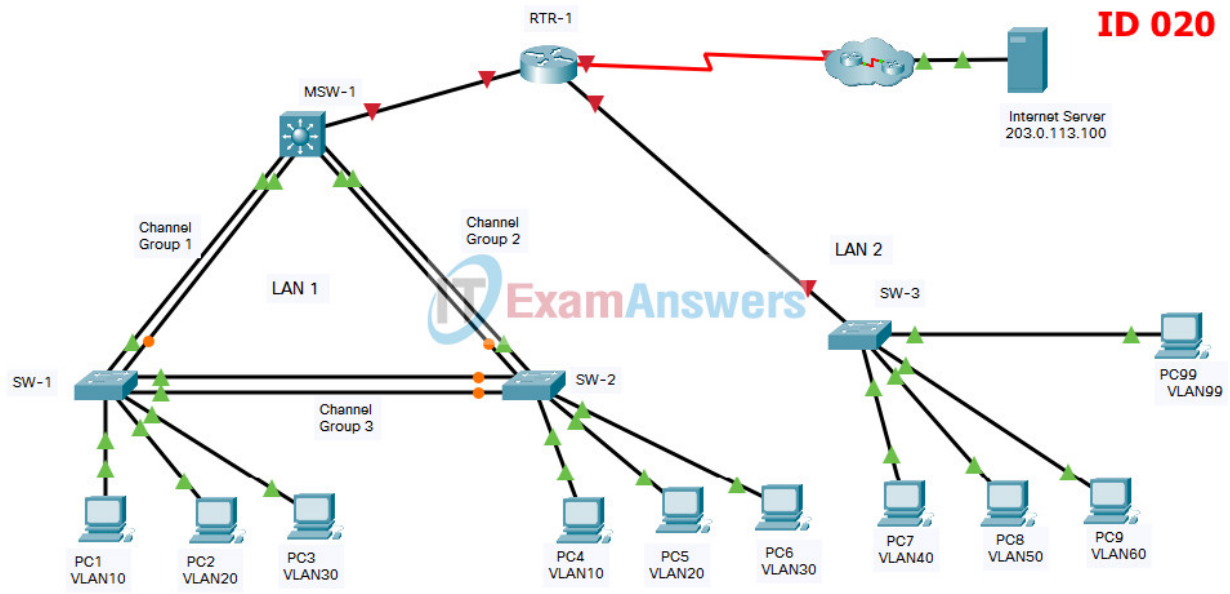
Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **192.168.10.1**
Default gateway on **PC2** and **PC5**: **192.168.20.1**
Default gateway on **PC3** and **PC6**: **192.168.30.1**

Default gateway on **PC7**: **192.168.40.1**
Default gateway on **PC8**: **192.168.50.1**
Default gateway on **PC9**: **192.168.60.1**

Default gateway on **PC99**: **192.168.99.17**

CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers



SRWE PT Practice Skills Assessment (PTSA) Part 1 - ID 020

SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
RTR-1	G0/0/0	192.168.0.1	255.255.255. 0
	G0/0/1.40	192.168.40.1	255.255.255.0
	G0/0/1.50	192.168.50.1	255.255.255.0
	G0/0/1.60	192.168.60.1	255.255.255.0

Device	Interface	IP Address	Subnet Mask
	G0/0/1.99	192.168.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
MSW-1	G1/1/1	192.168.0.2	255.255.255.0
	VLAN10	192.168.10.1	255.255.255.0
	VLAN20	192.168.20.1	255.255.255.0
	VLAN30	192.168.30.1	255.255.255.0
	VLAN99	192.168.99.2	255..255.255.240
SW-3	VLAN99	192.168.99.18	255.255.255.240
PC1	NIC	192.168.10.10	255.255.255.0
PC2	NIC	192.168.20.20	255.255.255.0
PC3	NIC	192.168.30.30	255.255.255.0
PC4	NIC	192.168.10.11	255.255.255.0
PC5	NIC	192.168.20.21	255.255.255.0
PC6	NIC	192.168.30.31	255.255.255.0
PC7	NIC	192.168.40.40	255.255.255.0
PC8	NIC	192.168.50.50	255.255.255.0
PC9	NIC	192.168.60.60	255.255.255.0
PC99	NIC	192.168.99.19	255.255.255.0
Internet Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router RTR-1 with required settings.

a. Open a command window on router **RTR-1** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the RTR-1 router CLI.

```
ip route 192.168.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 192.168.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.

- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname RTR-1

RTR-1(config)#service password-encryption

RTR-1(config)#interface g0/0/0
RTR-1(config-if)#ip address 192.168.0.1 255.255.255.0
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to LAN 1
RTR-1(config-if)#exit

RTR-1(config)#interface s0/1/0
RTR-1(config-if)#ip address 209.165.201.2 255.255.255.252
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to Internet
RTR-1(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch SW-3 with IP addressing according to the Addressing Table.

b. The SW-3 switch SVI should be reachable from other networks.

```
SW-3(config)#interface vlan 99
SW-3(config-if)#ip address 192.168.99.18 255.255.255.240
SW-3(config-if)#no shutdown
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#ip default-gateway 192.168.99.17
```

Step 2: Configure Secure Remote Access

On switch SW-3, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
SW-3(config)#ip domain-name acad.pt
SW-3(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

SW-3(config)#username admin privilege 15 secret C1sco123!
SW-3(config)#enable secret C1sco123!
SW-3(config)#line vty 0 15
SW-3(config-line)#transport input ssh
SW-3(config-line)#login local
SW-3(config-line)#exit
SW-3(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	B1F1	192.168.10.0	255.255.255.0	MSW-1, SW-1, SW-2
20	B1F2	192.168.20.0	255.255.255.0	MSW-1, SW-1, SW-2
30	B1F4	192.168.30.0	255.255.255.0	MSW-1, SW-1, SW-2
40	B3	192.168.40.0	255.255.255.0	SW-3
50	B4	192.168.50.0	255.255.255.0	SW-3
60	B5	192.168.60.0	255.255.255.0	SW-3
99	NetAdmin	192.168.99.16	255.255.255.240	SW-3, MSW-1

MSW-1

```
MSW-1(config)#vlan 10
MSW-1(config-vlan)#name B1F1
MSW-1(config-vlan)#interface vlan 10
MSW-1(config-if)#description B1F1
MSW-1(config-if)#ip address 192.168.10.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 20
MSW-1(config-vlan)#name B1F2
MSW-1(config-vlan)#interface vlan 20
MSW-1(config-if)#description B1F2
MSW-1(config-if)#ip address 192.168.20.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 30
MSW-1(config-vlan)#name B1F4
MSW-1(config-vlan)#interface vlan 30
MSW-1(config-if)#description B1F4
MSW-1(config-if)#ip address 192.168.30.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 99
MSW-1(config-vlan)#name NetAdmin
MSW-1(config-vlan)#interface vlan 99
MSW-1(config-if)#description NetAdmin
MSW-1(config-if)#ip address 192.168.99.2 255.255.255.240
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#vlan 10
SW-1(config-vlan)#name B1F1
SW-1(config-vlan)#interface vlan 10
SW-1(config-if)#description B1F1
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 20
SW-1(config-vlan)#name B1F2
SW-1(config-vlan)#interface vlan 20
SW-1(config-if)#description B1F2
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 30
SW-1(config-vlan)#name B1F4
SW-1(config-vlan)#interface vlan 30
SW-1(config-if)#description B1F4
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#vlan 10
SW-2(config-vlan)#name B1F1
SW-2(config-vlan)#interface vlan 10
SW-2(config-if)#description B1F1
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 20
SW-2(config-vlan)#name B1F2
SW-2(config-vlan)#interface vlan 20
SW-2(config-if)#description B1F2
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 30
SW-2(config-vlan)#name B1F4
SW-2(config-vlan)#interface vlan 30
SW-2(config-if)#description B1F4
SW-2(config-if)#exit
```

SW-3

```
SW-3(config)#vlan 40
SW-3(config-vlan)#name B3
SW-3(config-vlan)#interface vlan 40
SW-3(config-if)#ip address 192.168.40.1 255.255.255.0
SW-3(config-if)#description B3
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 50
SW-3(config-vlan)#name B4
SW-3(config-vlan)#interface vlan 50
SW-3(config-if)#ip address 192.168.50.1 255.255.255.0
SW-3(config-if)#description B4
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 60
SW-3(config-vlan)#name B5
SW-3(config-vlan)#interface vlan 60
SW-3(config-if)#ip address 192.168.60.1 255.255.255.0
SW-3(config-if)#description B5
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 99
SW-3(config-vlan)#name NetAdmin
SW-3(config-vlan)#interface vlan 99
SW-3(config-if)#ip address 192.168.99.18 255.255.255.240
SW-3(config-if)#description NetAdmin
SW-3(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments

Device	VLAN	VLAN Name	Port Assignments
SW-1	10	B1F1	F0/7-10
	20	B1F2	F0/11-15
	30	B1F4	F0/16-24
SW-2	10	B1F1	F0/7-10
	20	B1F2	F0/11-15
	30	B1F4	F0/16-24
SW-3	40	FAC	F0/1-5
	50	B4	F0/6-10
	60	B5	F0/11-15
	99	ADMIN Native	F0/24

SW-1

```
SW-1(config)#interface range f0/7-10
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 10
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/11-15
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 20
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/16-24
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 30
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range f0/7-10
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 10
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/11-15
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 20
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/16-24
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 30
SW-2(config-if-range)#exit
```

SW-3

```
SW-3(config)#interface range f0/1-5
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 40
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/6-10
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 50
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/11-15
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 60
SW-3(config-if-range)#exit
SW-3(config)#interface f0/24
SW-3(config-if)#switchport mode access
SW-3(config-if)#switchport access vlan 99
SW-3(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	MSW-1	G1/0/1, G1/0/2
	SW-1	G0/1, G0/2
2	MSW-1	G1/0/3, G1/0/4
	SW-2	G0/1, G0/2
3	SW-1	F0/5, F0/6
	SW-2	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

MSW-1

```
MSW-1(config)#interface range g1/0/1-2
MSW-1(config-if-range)#channel-group 1 mode active
MSW-1(config-if-range)#exit
MSW-1(config)#
MSW-1(config)#interface range g1/0/3-4
MSW-1(config-if-range)#channel-group 2 mode active
MSW-1(config-if-range)#exit
```

SW-1

```
SW-1(config)#interface range g0/1-2
SW-1(config-if-range)#channel-group 1 mode active
SW-1(config-if-range)#exit
SW-1(config)#
SW-1(config)#interface range f0/5-6
SW-1(config-if-range)#channel-group 3 mode active
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range g0/1-2
SW-2(config-if-range)#channel-group 2 mode active
SW-2(config-if-range)#exit
SW-2(config)#
SW-2(config)#interface range f0/5-6
SW-2(config-if-range)#channel-group 3 mode active
SW-2(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

MSW-1

```
MSW-1(config)#interface port-channel 1
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#interface port-channel 2
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#interface port-channel 1
SW-1(config-if)#switchport mode trunk
SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#interface port-channel 3
SW-1(config-if)#switchport mode trunk

SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#interface port-channel 2
SW-2(config-if)#switchport mode trunk
SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#interface port-channel 3
SW-2(config-if)#switchport mode trunk

SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the SW-3 switch, configure the port that is connected to RTR-1 G0/0/0 as a static trunk.
b. Configure the NetAdmin VLAN as the native VLAN.
c. Disable DTP on the port.

SW-3

```
SW-3(config)#interface g0/1
SW-3(config-if)#switchport mode trunk
SW-3(config-if)#switchport nonegotiate
SW-3(config-if)#switchport trunk native vlan 99
SW-3(config-if)#switchport trunk allowed vlan 40,50,60,99
SW-3(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the MSW-1 Layer 3 switch for all VLANs in the VLAN Table that are configured on MSW-1.
b. Configure the switchport on MSW-1 that is connected to RTR-1 with an IP address as shown in the Addressing Table.

MSW-1

```
MSW-1(config)#ip routing
MSW-1(config)#interface g1/1/1
MSW-1(config-if)#no switchport
MSW-1(config-if)#ip address 192.168.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on RTR-1 for all the VLANs that are configured on the SW-3 switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

RTR-1

```
RTR-1(config)#interface g0/0/1
RTR-1(config-if)#no shutdown
RTR-1(config)#interface g0/0/1.40
RTR-1(config-subif)#description "Gateway for VLAN40"
RTR-1(config-subif)#encapsulation dot1q 40
RTR-1(config-subif)#ip address 192.168.40.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.50
RTR-1(config-subif)#description "Gateway for VLAN50"
RTR-1(config-subif)#encapsulation dot1q 50
RTR-1(config-subif)#ip address 192.168.50.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.60
RTR-1(config-subif)#description "Gateway for VLAN60"
RTR-1(config-subif)#encapsulation dot1q 60
RTR-1(config-subif)#ip address 192.168.60.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.99
RTR-1(config-subif)#description "Gateway for VLAN99"
RTR-1(config-subif)#encapsulation dot1q 99 native
RTR-1(config-subif)#ip address 192.168.99.17 255.255.255.240
RTR-1(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **192.168.10.1**
Default gateway on **PC2** and **PC5**: **192.168.20.1**
Default gateway on **PC3** and **PC6**: **192.168.30.1**

Default gateway on **PC7**: **192.168.40.1**
Default gateway on **PC8**: **192.168.50.1**
Default gateway on **PC9**: **192.168.60.1**
Default gateway on **PC99**: **192.168.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Internet Server server.
c. Verify that a host can connect to the SVI of switch SW-3 over SSH.
Last Updated: January 2021

ID 020

Intructions – Answers

Router RTR-1

```
en
conf t
ip route 192.168.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 192.168.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname RTR-1
service password-encryption
interface g0/0/0
ip address 192.168.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 192.168.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 192.168.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 192.168.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 192.168.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch SW-3

```
en
config t
interface vlan 99
ip address 192.168.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 192.168.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name B3
exit
interface vlan 40
ip address 192.168.40.1 255.255.255.0
description B3
exit
vlan 50
name B4
exit
interface vlan 50
ip address 192.168.50.1 255.255.255.0
description B4
exit
vlan 60
name B5
exit
interface vlan 60
ip address 192.168.60.1 255.255.255.0
description B5
exit
vlan 99
name NetAdmin
exit
interface vlan 99
ip address 192.168.99.18 255.255.255.240
description NetAdmin
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch MSW-1

```
en
config t
vlan 10
name B1F1
interface vlan 10
description B1F1
ip address 192.168.10.1 255.255.255.0
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
ip address 192.168.20.1 255.255.255.0
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
ip address 192.168.30.1 255.255.255.0
exit
vlan 99
name NetAdmin
interface vlan 99
description NetAdmin
ip address 192.168.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 192.168.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch SW-1

```
enable
config terminal
vlan 10
name B1F1
interface vlan 10
description B1F1
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch SW-2

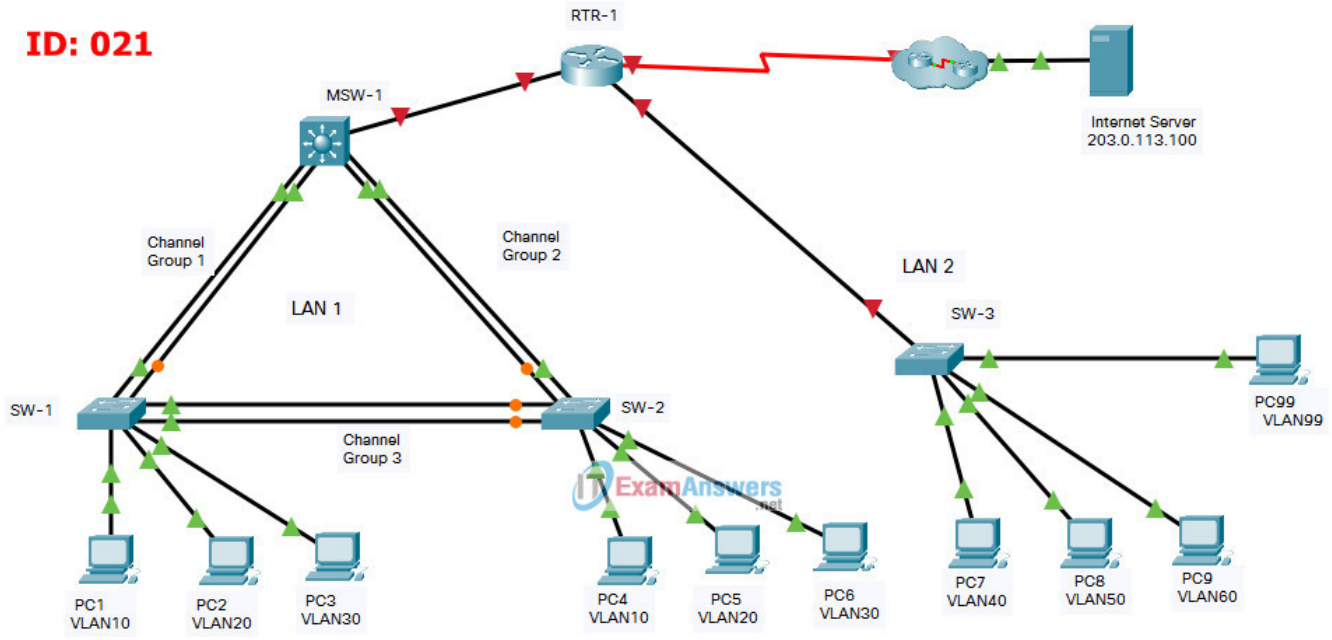
```
en
config t
vlan 10
name B1F1
interface vlan 10
description B1F1
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **192.168.10.1**
Default gateway on **PC2** and **PC5**: **192.168.20.1**
Default gateway on **PC3** and **PC6**: **192.168.30.1**

Default gateway on **PC7**: **192.168.40.1**
Default gateway on **PC8**: **192.168.50.1**
Default gateway on **PC9**: **192.168.60.1**

Default gateway on **PC99**: **192.168.99.17**



SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
RTR-1	G0/0/0	172.31.0.1	255.255.255. 0
	G0/0/1.40	172.31.40.1	255.255.255.0
	G0/0/1.50	172.31.50.1	255.255.255.0
	G0/0/1.60	172.31.60.1	255.255.255.0

Device	Interface	IP Address	Subnet Mask
	G0/0/1.99	172.31.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
MSW-1	G1/1/1	172.31.0.2	255.255.255.0
	VLAN10	172.31.10.1	255.255.255.0
	VLAN20	172.31.20.1	255.255.255.0
	VLAN30	172.31.30.1	255.255.255.0
	VLAN99	172.31.99.2	255..255.255.240
SW-3	VLAN99	172.31.99.18	255.255.255.240
PC1	NIC	172.31.10.10	255.255.255.0
PC2	NIC	172.31.20.20	255.255.255.0
PC3	NIC	172.31.30.30	255.255.255.0
PC4	NIC	172.31.10.11	255.255.255.0
PC5	NIC	172.31.20.21	255.255.255.0
PC6	NIC	172.31.30.31	255.255.255.0
PC7	NIC	172.31.40.40	255.255.255.0
PC8	NIC	172.31.50.50	255.255.255.0
PC9	NIC	172.31.60.60	255.255.255.0
PC99	NIC	172.31.99.19	255.255.255.0
Internet Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router RTR-1 with required settings.

a. Open a command window on router **RTR-1** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the RTR-1 router CLI.

```
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.

- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname RTR-1

RTR-1(config)#service password-encryption

RTR-1(config)#interface g0/0/0
RTR-1(config-if)#ip address 172.31.0.1 255.255.255.0
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to LAN 1
RTR-1(config-if)#exit

RTR-1(config)#interface s0/1/0
RTR-1(config-if)#ip address 209.165.201.2 255.255.255.252
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to Internet
RTR-1(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch SW-3 with IP addressing according to the Addressing Table.

b. The SW-3 switch SVI should be reachable from other networks.

```
SW-3(config)#interface vlan 99
SW-3(config-if)#ip address 172.31.99.18 255.255.255.240
SW-3(config-if)#no shutdown
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#ip default-gateway 172.31.99.17
```

Step 2: Configure Secure Remote Access

On switch SW-3, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
SW-3(config)#ip domain-name acad.pt
SW-3(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

SW-3(config)#username admin privilege 15 secret C1sco123!
SW-3(config)#enable secret C1sco123!
SW-3(config)#line vty 0 15
SW-3(config-line)#transport input ssh
SW-3(config-line)#login local
SW-3(config-line)#exit
SW-3(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	B1F1	172.31.10.0	255.255.255.0	MSW-1, SW-1, SW-2
20	B1F2	172.31.20.0	255.255.255.0	MSW-1, SW-1, SW-2
30	B1F4	172.31.30.0	255.255.255.0	MSW-1, SW-1, SW-2
40	B3	172.31.40.0	255.255.255.0	SW-3
50	B4	172.31.50.0	255.255.255.0	SW-3
60	B5	172.31.60.0	255.255.255.0	SW-3
99	NetAdmin	172.31.99.16	255.255.255.240	SW-3, MSW-1

MSW-1

```
MSW-1(config)#vlan 10
MSW-1(config-vlan)#name B1F1
MSW-1(config-vlan)#interface vlan 10
MSW-1(config-if)#description B1F1
MSW-1(config-if)#ip address 172.31.10.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 20
MSW-1(config-vlan)#name B1F2
MSW-1(config-vlan)#interface vlan 20
MSW-1(config-if)#description B1F2
MSW-1(config-if)#ip address 172.31.20.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 30
MSW-1(config-vlan)#name B1F4
MSW-1(config-vlan)#interface vlan 30
MSW-1(config-if)#description B1F4
MSW-1(config-if)#ip address 172.31.30.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 99
MSW-1(config-vlan)#name NetAdmin
MSW-1(config-vlan)#interface vlan 99
MSW-1(config-if)#description NetAdmin
MSW-1(config-if)#ip address 172.31.99.2 255.255.255.240
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#vlan 10
SW-1(config-vlan)#name B1F1
SW-1(config-vlan)#interface vlan 10
SW-1(config-if)#description B1F1
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 20
SW-1(config-vlan)#name B1F2
SW-1(config-vlan)#interface vlan 20
SW-1(config-if)#description B1F2
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 30
SW-1(config-vlan)#name B1F4
SW-1(config-vlan)#interface vlan 30
SW-1(config-if)#description B1F4
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#vlan 10
SW-2(config-vlan)#name B1F1
SW-2(config-vlan)#interface vlan 10
SW-2(config-if)#description B1F1
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 20
SW-2(config-vlan)#name B1F2
SW-2(config-vlan)#interface vlan 20
SW-2(config-if)#description B1F2
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 30
SW-2(config-vlan)#name B1F4
SW-2(config-vlan)#interface vlan 30
SW-2(config-if)#description B1F4
SW-2(config-if)#exit
```

SW-3

```
SW-3(config)#vlan 40
SW-3(config-vlan)#name B3
SW-3(config-vlan)#interface vlan 40
SW-3(config-if)#ip address 172.31.40.1 255.255.255.0
SW-3(config-if)#description B3
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 50
SW-3(config-vlan)#name B4
SW-3(config-vlan)#interface vlan 50
SW-3(config-if)#ip address 172.31.50.1 255.255.255.0
SW-3(config-if)#description B4
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 60
SW-3(config-vlan)#name B5
SW-3(config-vlan)#interface vlan 60
SW-3(config-if)#ip address 172.31.60.1 255.255.255.0
SW-3(config-if)#description B5
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 99
SW-3(config-vlan)#name NetAdmin
SW-3(config-vlan)#interface vlan 99
SW-3(config-if)#ip address 172.31.99.18 255.255.255.240
SW-3(config-if)#description NetAdmin
SW-3(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments

Device	VLAN	VLAN Name	Port Assignments
SW-1	10	B1F1	F0/7-10
	20	B1F2	F0/11-15
	30	B1F4	F0/16-24
SW-2	10	B1F1	F0/7-10
	20	B1F2	F0/11-15
	30	B1F4	F0/16-24
SW-3	40	FAC	F0/1-5
	50	B4	F0/6-10
	60	B5	F0/11-15
	99	ADMIN Native	F0/24

SW-1

```
SW-1(config)#interface range f0/7-10
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 10
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/11-15
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 20
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/16-24
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 30
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range f0/7-10
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 10
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/11-15
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 20
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/16-24
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 30
SW-2(config-if-range)#exit
```

SW-3

```
SW-3(config)#interface range f0/1-5
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 40
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/6-10
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 50
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/11-15
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 60
SW-3(config-if-range)#exit
SW-3(config)#interface f0/24
SW-3(config-if)#switchport mode access
SW-3(config-if)#switchport access vlan 99
SW-3(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	MSW-1	G1/0/1, G1/0/2
	SW-1	G0/1, G0/2
2	MSW-1	G1/0/3, G1/0/4
	SW-2	G0/1, G0/2
3	SW-1	F0/5, F0/6
	SW-2	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

MSW-1

```
MSW-1(config)#interface range g1/0/1-2
MSW-1(config-if-range)#channel-group 1 mode active
MSW-1(config-if-range)#exit
MSW-1(config)#
MSW-1(config)#interface range g1/0/3-4
MSW-1(config-if-range)#channel-group 2 mode active
MSW-1(config-if-range)#exit
```

SW-1

```
SW-1(config)#interface range g0/1-2
SW-1(config-if-range)#channel-group 1 mode active
SW-1(config-if-range)#exit
SW-1(config)#
SW-1(config)#interface range f0/5-6
SW-1(config-if-range)#channel-group 3 mode active
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range g0/1-2
SW-2(config-if-range)#channel-group 2 mode active
SW-2(config-if-range)#exit
SW-2(config)#
SW-2(config)#interface range f0/5-6
SW-2(config-if-range)#channel-group 3 mode active
SW-2(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

MSW-1

```
MSW-1(config)#interface port-channel 1
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#interface port-channel 2
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#interface port-channel 1
SW-1(config-if)#switchport mode trunk
SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#interface port-channel 3
SW-1(config-if)#switchport mode trunk

SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#interface port-channel 2
SW-2(config-if)#switchport mode trunk
SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#interface port-channel 3
SW-2(config-if)#switchport mode trunk

SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the SW-3 switch, configure the port that is connected to RTR-1 G0/0/0 as a static trunk.
b. Configure the NetAdmin VLAN as the native VLAN.
c. Disable DTP on the port.

SW-3

```
SW-3(config)#interface g0/1
SW-3(config-if)#switchport mode trunk
SW-3(config-if)#switchport nonegotiate
SW-3(config-if)#switchport trunk native vlan 99
SW-3(config-if)#switchport trunk allowed vlan 40,50,60,99
SW-3(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the MSW-1 Layer 3 switch for all VLANs in the VLAN Table that are configured on MSW-1.
b. Configure the switchport on MSW-1 that is connected to RTR-1 with an IP address as shown in the Addressing Table.

MSW-1

```
MSW-1(config)#ip routing
MSW-1(config)#interface g1/1/1
MSW-1(config-if)#no switchport
MSW-1(config-if)#ip address 172.31.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on RTR-1 for all the VLANs that are configured on the SW-3 switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

RTR-1

```
RTR-1(config)#interface g0/0/1
RTR-1(config-if)#no shutdown
RTR-1(config)#interface g0/0/1.40
RTR-1(config-subif)#description "Gateway for VLAN40"
RTR-1(config-subif)#encapsulation dot1q 40
RTR-1(config-subif)#ip address 172.31.40.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.50
RTR-1(config-subif)#description "Gateway for VLAN50"
RTR-1(config-subif)#encapsulation dot1q 50
RTR-1(config-subif)#ip address 172.31.50.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.60
RTR-1(config-subif)#description "Gateway for VLAN60"
RTR-1(config-subif)#encapsulation dot1q 60
RTR-1(config-subif)#ip address 172.31.60.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.99
RTR-1(config-subif)#description "Gateway for VLAN99"
RTR-1(config-subif)#encapsulation dot1q 99 native
RTR-1(config-subif)#ip address 172.31.99.17 255.255.255.240
RTR-1(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **172.31.10.1**
Default gateway on **PC2** and **PC5**: **172.31.20.1**
Default gateway on **PC3** and **PC6**: **172.31.30.1**

Default gateway on **PC7**: **172.31.40.1**
Default gateway on **PC8**: **172.31.50.1**
Default gateway on **PC9**: **172.31.60.1**
Default gateway on **PC99**: **172.31.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Internet Server server.
c. Verify that a host can connect to the SVI of switch SW-3 over SSH.
Last Updated: January 2021

ID 021

Intructions – Answers

Router RTR-1

```
en
conf t
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname RTR-1
service password-encryption
interface g0/0/0
ip address 172.31.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 172.31.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 172.31.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 172.31.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 172.31.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch SW-3

```
en
config t
interface vlan 99
ip address 172.31.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 172.31.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name B3
exit
interface vlan 40
ip address 172.31.40.1 255.255.255.0
description B3
exit
vlan 50
name B4
exit
interface vlan 50
ip address 172.31.50.1 255.255.255.0
description B4
exit
vlan 60
name B5
exit
interface vlan 60
ip address 172.31.60.1 255.255.255.0
description B5
exit
vlan 99
name NetAdmin
exit
interface vlan 99
ip address 172.31.99.18 255.255.255.240
description NetAdmin
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch MSW-1

```
en
config t
vlan 10
name B1F1
interface vlan 10
description B1F1
ip address 172.31.10.1 255.255.255.0
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
ip address 172.31.20.1 255.255.255.0
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
ip address 172.31.30.1 255.255.255.0
exit
vlan 99
name NetAdmin
interface vlan 99
description NetAdmin
ip address 172.31.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 172.31.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch SW-1

```
enable
config terminal
vlan 10
name B1F1
interface vlan 10
description B1F1
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch SW-2

```
en
config t
vlan 10
name B1F1
interface vlan 10
description B1F1
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

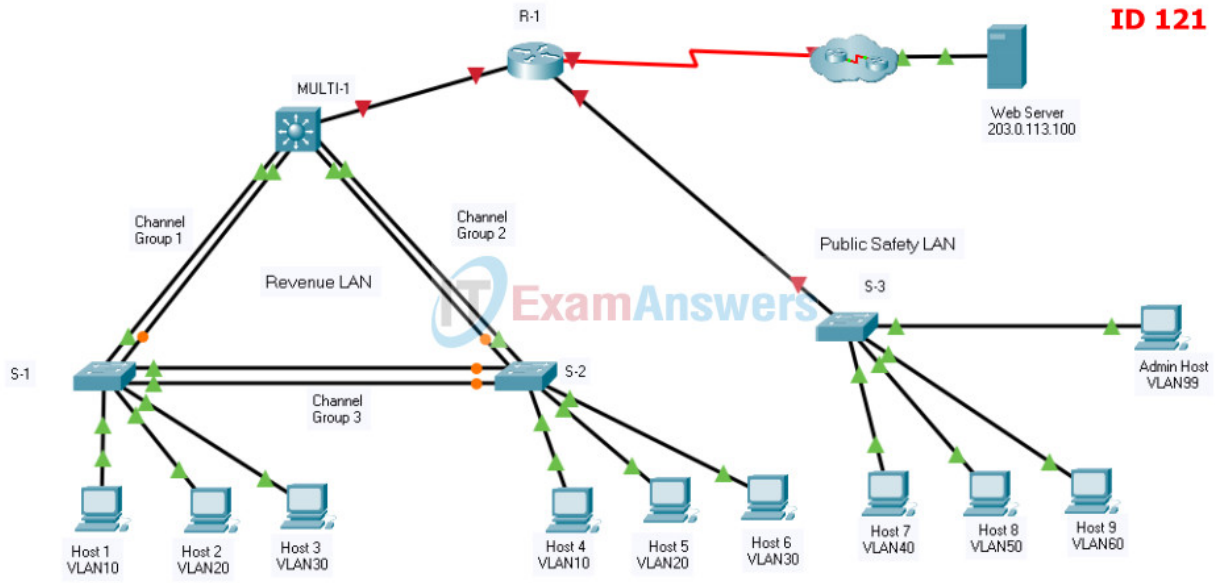
Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **172.31.10.1**
Default gateway on **PC2** and **PC5**: **172.31.20.1**
Default gateway on **PC3** and **PC6**: **172.31.30.1**

Default gateway on **PC7**: **172.31.40.1**
Default gateway on **PC8**: **172.31.50.1**
Default gateway on **PC9**: **172.31.60.1**

Default gateway on **PC99**: **172.31.99.17**

CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers



SRWE PT Practice Skills Assessment (PTSA) Part 1 - ID 121

SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
R-1	G0/0/0	172.31.0.1	255.255.255. 0
	G0/0/1.40	172.31.40.1	255.255.255.0
	G0/0/1.50	172.31.50.1	255.255.255.0
	G0/0/1.60	172.31.60.1	255.255.255.0

Device	Interface	IP Address	Subnet Mask
	G0/0/1.99	172.31.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
MULTI-1	G1/1/1	172.31.0.2	255.255.255.0
	VLAN10	172.31.10.1	255.255.255.0
	VLAN20	172.31.20.1	255.255.255.0
	VLAN30	172.31.30.1	255.255.255.0
	VLAN99	172.31.99.2	255..255.255.240
S-3	VLAN99	172.31.99.18	255.255.255.240
Host 1	NIC	172.31.10.10	255.255.255.0
Host 2	NIC	172.31.20.20	255.255.255.0
Host 3	NIC	172.31.30.30	255.255.255.0
Host 4	NIC	172.31.10.11	255.255.255.0
Host 5	NIC	172.31.20.21	255.255.255.0
Host 6	NIC	172.31.30.31	255.255.255.0
Host 7	NIC	172.31.40.40	255.255.255.0
Host 8	NIC	172.31.50.50	255.255.255.0
Host 9	NIC	172.31.60.60	255.255.255.0
Admin Host	NIC	172.31.99.19	255.255.255.0
Web Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router R-1 with required settings.

a. Open a command window on router **R-1** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the R-1 router CLI.

```
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.

- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname R-1

R-1(config)#service password-encryption

R-1(config)#interface g0/0/0
R-1(config-if)#ip address 172.31.0.1 255.255.255.0
R-1(config-if)#no shutdown
R-1(config-if)#description Link to Revenue LAN
R-1(config-if)#exit

R-1(config)#interface s0/1/0
R-1(config-if)#ip address 209.165.201.2 255.255.255.252
R-1(config-if)#no shutdown
R-1(config-if)#description Link to Internet
R-1(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch S-3 with IP addressing according to the Addressing Table.

b. The S-3 switch SVI should be reachable from other networks.

```
S-3(config)#interface vlan 99
S-3(config-if)#ip address 172.31.99.18 255.255.255.240
S-3(config-if)#no shutdown
S-3(config-if)#exit
S-3(config)#
S-3(config)#ip default-gateway 172.31.99.17
```

Step 2: Configure Secure Remote Access

On switch S-3, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
S-3(config)#ip domain-name acad.pt
S-3(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

S-3(config)#username admin privilege 15 secret C1sco123!
S-3(config)#enable secret C1sco123!
S-3(config)#line vty 0 15
S-3(config-line)#transport input ssh
S-3(config-line)#login local
S-3(config-line)#exit
S-3(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	B1F1	172.31.10.0	255.255.255.0	MULTI-1, S-1, S-2
20	B1F2	172.31.20.0	255.255.255.0	MULTI-1, S-1, S-2
30	B1F4	172.31.30.0	255.255.255.0	MULTI-1, S-1, S-2
40	B3	172.31.40.0	255.255.255.0	S-3
50	B4	172.31.50.0	255.255.255.0	S-3
60	B5	172.31.60.0	255.255.255.0	S-3
99	NetAdmin	172.31.99.16	255.255.255.240	S-3, MULTI-1

MULTI-1

```
MULTI-1(config)#vlan 10
MULTI-1(config-vlan)#name B1F1
MULTI-1(config-vlan)#interface vlan 10
MULTI-1(config-if)#description B1F1
MULTI-1(config-if)#ip address 172.31.10.1 255.255.255.0
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#vlan 20
MULTI-1(config-vlan)#name B1F2
MULTI-1(config-vlan)#interface vlan 20
MULTI-1(config-if)#description B1F2
MULTI-1(config-if)#ip address 172.31.20.1 255.255.255.0
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#vlan 30
MULTI-1(config-vlan)#name B1F4
MULTI-1(config-vlan)#interface vlan 30
MULTI-1(config-if)#description B1F4
MULTI-1(config-if)#ip address 172.31.30.1 255.255.255.0
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#vlan 99
MULTI-1(config-vlan)#name NetAdmin
MULTI-1(config-vlan)#interface vlan 99
MULTI-1(config-if)#description NetAdmin
MULTI-1(config-if)#ip address 172.31.99.2 255.255.255.240
MULTI-1(config-if)#exit
```

S-1

```
S-1(config)#vlan 10
S-1(config-vlan)#name B1F1
S-1(config-vlan)#interface vlan 10
S-1(config-if)#description B1F1
S-1(config-if)#exit
S-1(config)#
S-1(config)#vlan 20
S-1(config-vlan)#name B1F2
S-1(config-vlan)#interface vlan 20
S-1(config-if)#description B1F2
S-1(config-if)#exit
S-1(config)#
S-1(config)#vlan 30
S-1(config-vlan)#name B1F4
S-1(config-vlan)#interface vlan 30
S-1(config-if)#description B1F4
S-1(config-if)#exit
```

S-2

```
S-2(config)#vlan 10
S-2(config-vlan)#name B1F1
S-2(config-vlan)#interface vlan 10
S-2(config-if)#description B1F1
S-2(config-if)#exit
S-2(config)#
S-2(config)#vlan 20
S-2(config-vlan)#name B1F2
S-2(config-vlan)#interface vlan 20
S-2(config-if)#description B1F2
S-2(config-if)#exit
S-2(config)#
S-2(config)#vlan 30
S-2(config-vlan)#name B1F4
S-2(config-vlan)#interface vlan 30
S-2(config-if)#description B1F4
S-2(config-if)#exit
```

S-3

```
S-3(config)#vlan 40
S-3(config-vlan)#name B3
S-3(config-vlan)#interface vlan 40
S-3(config-if)#ip address 172.31.40.1 255.255.255.0
S-3(config-if)#description B3
S-3(config-if)#exit
S-3(config)#
S-3(config)#vlan 50
S-3(config-vlan)#name B4
S-3(config-vlan)#interface vlan 50
S-3(config-if)#ip address 172.31.50.1 255.255.255.0
S-3(config-if)#description B4
S-3(config-if)#exit
S-3(config)#
S-3(config)#vlan 60
S-3(config-vlan)#name B5
S-3(config-vlan)#interface vlan 60
S-3(config-if)#ip address 172.31.60.1 255.255.255.0
S-3(config-if)#description B5
S-3(config-if)#exit
S-3(config)#
S-3(config)#vlan 99
S-3(config-vlan)#name NetAdmin
S-3(config-vlan)#interface vlan 99
S-3(config-if)#ip address 172.31.99.18 255.255.255.240
S-3(config-if)#description NetAdmin
S-3(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments

Device	VLAN	VLAN Name	Port Assignments
S-1	10	B1F1	F0/7-10
	20	B1F2	F0/11-15
	30	B1F4	F0/16-24
S-2	10	B1F1	F0/7-10
	20	B1F2	F0/11-15
	30	B1F4	F0/16-24
S-3	40	B3	F0/1-5
	50	B4	F0/6-10
	60	B5	F0/11-15
	99	NetAdmin Native	F0/24

S-1

```
S-1(config)#interface range f0/7-10
S-1(config-if-range)#switchport mode access
S-1(config-if-range)#switchport access vlan 10
S-1(config-if-range)#exit
S-1(config)#interface range f0/11-15
S-1(config-if-range)#switchport mode access
S-1(config-if-range)#switchport access vlan 20
S-1(config-if-range)#exit
S-1(config)#interface range f0/16-24
S-1(config-if-range)#switchport mode access
S-1(config-if-range)#switchport access vlan 30
S-1(config-if-range)#exit
```

S-2

```
S-2(config)#interface range f0/7-10
S-2(config-if-range)#switchport mode access
S-2(config-if-range)#switchport access vlan 10
S-2(config-if-range)#exit
S-2(config)#interface range f0/11-15
S-2(config-if-range)#switchport mode access
S-2(config-if-range)#switchport access vlan 20
S-2(config-if-range)#exit
S-2(config)#interface range f0/16-24
S-2(config-if-range)#switchport mode access
S-2(config-if-range)#switchport access vlan 30
S-2(config-if-range)#exit
```

S-3

```
S-3(config)#interface range f0/1-5
S-3(config-if-range)#switchport mode access
S-3(config-if-range)#switchport access vlan 40
S-3(config-if-range)#exit
S-3(config)#interface range f0/6-10
S-3(config-if-range)#switchport mode access
S-3(config-if-range)#switchport access vlan 50
S-3(config-if-range)#exit
S-3(config)#interface range f0/11-15
S-3(config-if-range)#switchport mode access
S-3(config-if-range)#switchport access vlan 60
S-3(config-if-range)#exit
S-3(config)#interface f0/24
S-3(config-if)#switchport mode access
S-3(config-if)#switchport access vlan 99
S-3(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	MULTI-1	G1/0/1, G1/0/2
	S-1	G0/1, G0/2
2	MULTI-1	G1/0/3, G1/0/4
	S-2	G0/1, G0/2
3	S-1	F0/5, F0/6
	S-2	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

MULTI-1

```
MULTI-1(config)#interface range g1/0/1-2
MULTI-1(config-if-range)#channel-group 1 mode active
MULTI-1(config-if-range)#exit
MULTI-1(config)#
MULTI-1(config)#interface range g1/0/3-4
MULTI-1(config-if-range)#channel-group 2 mode active
MULTI-1(config-if-range)#exit
```

S-1

```
S-1(config)#interface range g0/1-2
S-1(config-if-range)#channel-group 1 mode active
S-1(config-if-range)#exit
S-1(config)#
S-1(config)#interface range f0/5-6
S-1(config-if-range)#channel-group 3 mode active
S-1(config-if-range)#exit
```

S-2

```
S-2(config)#interface range g0/1-2
S-2(config-if-range)#channel-group 2 mode active
S-2(config-if-range)#exit
S-2(config)#
S-2(config)#interface range f0/5-6
S-2(config-if-range)#channel-group 3 mode active
S-2(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

MULTI-1

```
MULTI-1(config)#interface port-channel 1
MULTI-1(config-if)#switchport mode trunk
MULTI-1(config-if)#switchport trunk allowed vlan 10,20,30
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#interface port-channel 2
MULTI-1(config-if)#switchport mode trunk
MULTI-1(config-if)#switchport trunk allowed vlan 10,20,30
MULTI-1(config-if)#exit
```

S-1

```
S-1(config)#interface port-channel 1
S-1(config-if)#switchport mode trunk
S-1(config-if)#switchport nonegotiate
S-1(config-if)#exit
S-1(config)#
S-1(config)#interface port-channel 3
S-1(config-if)#switchport mode trunk

S-1(config-if)#switchport nonegotiate
S-1(config-if)#exit
```

S-2

```
S-2(config)#interface port-channel 2
S-2(config-if)#switchport mode trunk
S-2(config-if)#switchport nonegotiate
S-2(config-if)#exit
S-2(config)#
S-2(config)#interface port-channel 3
S-2(config-if)#switchport mode trunk

S-2(config-if)#switchport nonegotiate
S-2(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the S-3 switch, configure the port that is connected to R-1 G0/0/0 as a static trunk.
b. Configure the NetAdmin VLAN as the native VLAN.
c. Disable DTP on the port.

S-3

```
S-3(config)#interface g0/1
S-3(config-if)#switchport mode trunk
S-3(config-if)#switchport nonegotiate
S-3(config-if)#switchport trunk native vlan 99
S-3(config-if)#switchport trunk allowed vlan 40,50,60,99
S-3(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the MULTI-1 Layer 3 switch for all VLANs in the VLAN Table that are configured on MULTI-1.
b. Configure the switchport on MULTI-1 that is connected to R-1 with an IP address as shown in the Addressing Table.

MULTI-1

```
MULTI-1(config)#ip routing
MULTI-1(config)#interface g1/1/1
MULTI-1(config-if)#no switchport
MULTI-1(config-if)#ip address 172.31.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on R-1 for all the VLANs that are configured on the S-3 switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

R-1

```
R-1(config)#interface g0/0/1
R-1(config-if)#no shutdown
R-1(config)#interface g0/0/1.40
R-1(config-subif)#description "Gateway for VLAN40"
R-1(config-subif)#encapsulation dot1q 40
R-1(config-subif)#ip address 172.31.40.1 255.255.255.0
R-1(config-subif)#exit
R-1(config)#interface g0/0/1.50
R-1(config-subif)#description "Gateway for VLAN50"
R-1(config-subif)#encapsulation dot1q 50
R-1(config-subif)#ip address 172.31.50.1 255.255.255.0
R-1(config-subif)#exit
R-1(config)#interface g0/0/1.60
R-1(config-subif)#description "Gateway for VLAN60"
R-1(config-subif)#encapsulation dot1q 60
R-1(config-subif)#ip address 172.31.60.1 255.255.255.0
R-1(config-subif)#exit
R-1(config)#interface g0/0/1.99
R-1(config-subif)#description "Gateway for VLAN99"
R-1(config-subif)#encapsulation dot1q 99 native
R-1(config-subif)#ip address 172.31.99.17 255.255.255.240
R-1(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **Host 1** and **Host 4**: **172.31.10.1**
Default gateway on **Host 2** and **Host 5**: **172.31.20.1**
Default gateway on **Host 3** and **Host 6**: **172.31.30.1**

Default gateway on **Host 7**: **172.31.40.1**
Default gateway on **Host 8**: **172.31.50.1**
Default gateway on **Host 9**: **172.31.60.1**
Default gateway on **Admin Host**: **172.31.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Web Server server.
c. Verify that a host can connect to the SVI of switch S-3 over SSH.
Last Updated: January 2021

ID 121

Intructions – Answers

Router R-1

```
en
conf t
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname R-1
service password-encryption
interface g0/0/0
ip address 172.31.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 172.31.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 172.31.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 172.31.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 172.31.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch S-3

```
en
config t
interface vlan 99
ip address 172.31.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 172.31.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name B3
exit
interface vlan 40
ip address 172.31.40.1 255.255.255.0
description B3
exit
vlan 50
name B4
exit
interface vlan 50
ip address 172.31.50.1 255.255.255.0
description B4
exit
vlan 60
name B5
exit
interface vlan 60
ip address 172.31.60.1 255.255.255.0
description B5
exit
vlan 99
name NetAdmin
exit
interface vlan 99
ip address 172.31.99.18 255.255.255.240
description NetAdmin
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch MULTI-1

```
en
config t
vlan 10
name B1F1
interface vlan 10
description B1F1
ip address 172.31.10.1 255.255.255.0
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
ip address 172.31.20.1 255.255.255.0
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
ip address 172.31.30.1 255.255.255.0
exit
vlan 99
name NetAdmin
interface vlan 99
description NetAdmin
ip address 172.31.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 172.31.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch S-1

```
enable
config terminal
vlan 10
name B1F1
interface vlan 10
description B1F1
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch S-2

```
en
config t
vlan 10
name B1F1
interface vlan 10
description B1F1
exit
vlan 20
name B1F2
interface vlan 20
description B1F2
exit
vlan 30
name B1F4
interface vlan 30
description B1F4
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

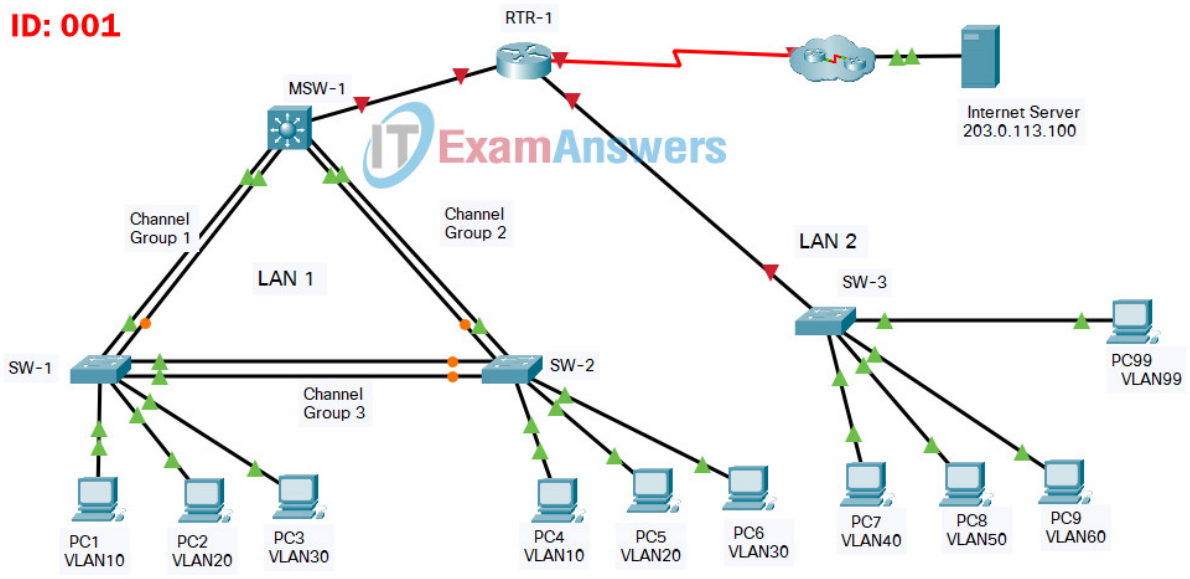
Configure default gateway addresses on all hosts on the LANs.

Default gateway on **Host 1** and **Host 4**: **172.31.10.1**
Default gateway on **Host 2** and **Host 5**: **172.31.20.1**
Default gateway on **Host 3** and **Host 6**: **172.31.30.1**

Default gateway on **Host 7**: **172.31.40.1**
Default gateway on **Host 8**: **172.31.50.1**
Default gateway on **Host 9**: **172.31.60.1**

Default gateway on **Admin Host**: **172.31.99.17**

CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers



SRWE PT Practice Skills Assessment (PTSA) Part 1 ID 001

SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
RTR-1	G0/0/0	172.31.0.1	255.255.255. 0
	G0/0/1.40	172.31.40.1	255.255.255.0
	G0/0/1.50	172.31.50.1	255.255.255.0
	G0/0/1.60	172.31.60.1	255.255.255.0

Device	Interface	IP Address	Subnet Mask
	G0/0/1.99	172.31.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
MSW-1	G1/1/1	172.31.0.2	255.255.255.0
	VLAN10	172.31.10.1	255.255.255.0
	VLAN20	172.31.20.1	255.255.255.0
	VLAN30	172.31.30.1	255.255.255.0
	VLAN99	172.31.99.2	255..255.255.240
SW-3	VLAN99	172.31.99.18	255.255.255.240
PC1	NIC	172.31.10.10	255.255.255.0
PC2	NIC	172.31.20.20	255.255.255.0
PC3	NIC	172.31.30.30	255.255.255.0
PC4	NIC	172.31.10.11	255.255.255.0
PC5	NIC	172.31.20.21	255.255.255.0
PC6	NIC	172.31.30.31	255.255.255.0
PC7	NIC	172.31.40.40	255.255.255.0
PC8	NIC	172.31.50.50	255.255.255.0
PC9	NIC	172.31.60.60	255.255.255.0
PC99	NIC	172.31.99.19	255.255.255.0
Internet Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router RTR-1 with required settings.

a. Open a command window on router **RTR-1** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the RTR-1 router CLI.

```
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.

- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname RTR-1

RTR-1(config)#service password-encryption

RTR-1(config)#interface g0/0/0
RTR-1(config-if)#ip address 172.31.0.1 255.255.255.0
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to LAN 1
RTR-1(config-if)#exit

RTR-1(config)#interface s0/1/0
RTR-1(config-if)#ip address 209.165.201.2 255.255.255.252
RTR-1(config-if)#no shutdown
RTR-1(config-if)#description Link to Internet
RTR-1(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch SW-3 with IP addressing according to the Addressing Table.

b. The SW-3 switch SVI should be reachable from other networks.

```
SW-3(config)#interface vlan 99
SW-3(config-if)#ip address 172.31.99.18 255.255.255.240
SW-3(config-if)#no shutdown
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#ip default-gateway 172.31.99.17
```

Step 2: Configure Secure Remote Access

On switch SW-3, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
SW-3(config)#ip domain-name acad.pt
SW-3(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

SW-3(config)#username admin privilege 15 secret C1sco123!
SW-3(config)#enable secret C1sco123!
SW-3(config)#line vty 0 15
SW-3(config-line)#transport input ssh
SW-3(config-line)#login local
SW-3(config-line)#exit
SW-3(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	FL1	172.31.10.0	255.255.255.0	MSW-1, SW-1, SW-2
20	FL2	172.31.20.0	255.255.255.0	MSW-1, SW-1, SW-2
30	FL3	172.31.30.0	255.255.255.0	MSW-1, SW-1, SW-2
40	BDG4	172.31.40.0	255.255.255.0	SW-3
50	BDG5	172.31.50.0	255.255.255.0	SW-3
60	BDG6	172.31.60.0	255.255.255.0	SW-3
99	Management	172.31.99.16	255.255.255.240	SW-3, MSW-1

MSW-1

```
MSW-1(config)#vlan 10
MSW-1(config-vlan)#name FL1
MSW-1(config-vlan)#interface vlan 10
MSW-1(config-if)#description FL1
MSW-1(config-if)#ip address 172.31.10.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 20
MSW-1(config-vlan)#name FL2
MSW-1(config-vlan)#interface vlan 20
MSW-1(config-if)#description FL2
MSW-1(config-if)#ip address 172.31.20.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 30
MSW-1(config-vlan)#name FL3
MSW-1(config-vlan)#interface vlan 30
MSW-1(config-if)#description FL3
MSW-1(config-if)#ip address 172.31.30.1 255.255.255.0
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#vlan 99
MSW-1(config-vlan)#name Management
MSW-1(config-vlan)#interface vlan 99
MSW-1(config-if)#description Management
MSW-1(config-if)#ip address 172.31.99.2 255.255.255.240
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#vlan 10
SW-1(config-vlan)#name FL1
SW-1(config-vlan)#interface vlan 10
SW-1(config-if)#description FL1
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 20
SW-1(config-vlan)#name FL2
SW-1(config-vlan)#interface vlan 20
SW-1(config-if)#description FL2
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#vlan 30
SW-1(config-vlan)#name FL3
SW-1(config-vlan)#interface vlan 30
SW-1(config-if)#description FL3
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#vlan 10
SW-2(config-vlan)#name FL1
SW-2(config-vlan)#interface vlan 10
SW-2(config-if)#description FL1
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 20
SW-2(config-vlan)#name FL2
SW-2(config-vlan)#interface vlan 20
SW-2(config-if)#description FL2
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#vlan 30
SW-2(config-vlan)#name FL3
SW-2(config-vlan)#interface vlan 30
SW-2(config-if)#description FL3
SW-2(config-if)#exit
```

SW-3

```
SW-3(config)#vlan 40
SW-3(config-vlan)#name BDG4
SW-3(config-vlan)#interface vlan 40
SW-3(config-if)#ip address 172.31.40.1 255.255.255.0
SW-3(config-if)#description BDG4
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 50
SW-3(config-vlan)#name BDG5
SW-3(config-vlan)#interface vlan 50
SW-3(config-if)#ip address 172.31.50.1 255.255.255.0
SW-3(config-if)#description BDG5
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 60
SW-3(config-vlan)#name BDG6
SW-3(config-vlan)#interface vlan 60
SW-3(config-if)#ip address 172.31.60.1 255.255.255.0
SW-3(config-if)#description BDG6
SW-3(config-if)#exit
SW-3(config)#
SW-3(config)#vlan 99
SW-3(config-vlan)#name Management
SW-3(config-vlan)#interface vlan 99
SW-3(config-if)#ip address 172.31.99.18 255.255.255.240
SW-3(config-if)#description Management
SW-3(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments

Device	VLAN	VLAN Name	Port Assignments
SW-1	10	FL1	F0/7-10
	20	FL2	F0/11-15
	30	FL3	F0/16-24
SW-2	10	FL1	F0/7-10
	20	FL2	F0/11-15
	30	FL3	F0/16-24
SW-3	40	FAC	F0/1-5
	50	BDG5	F0/6-10
	60	BDG6	F0/11-15
	99	ADMIN Native	F0/24

SW-1

```
SW-1(config)#interface range f0/7-10
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 10
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/11-15
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 20
SW-1(config-if-range)#exit
SW-1(config)#interface range f0/16-24
SW-1(config-if-range)#switchport mode access
SW-1(config-if-range)#switchport access vlan 30
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range f0/7-10
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 10
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/11-15
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 20
SW-2(config-if-range)#exit
SW-2(config)#interface range f0/16-24
SW-2(config-if-range)#switchport mode access
SW-2(config-if-range)#switchport access vlan 30
SW-2(config-if-range)#exit
```

SW-3

```
SW-3(config)#interface range f0/1-5
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 40
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/6-10
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 50
SW-3(config-if-range)#exit
SW-3(config)#interface range f0/11-15
SW-3(config-if-range)#switchport mode access
SW-3(config-if-range)#switchport access vlan 60
SW-3(config-if-range)#exit
SW-3(config)#interface f0/24
SW-3(config-if)#switchport mode access
SW-3(config-if)#switchport access vlan 99
SW-3(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	MSW-1	G1/0/1, G1/0/2
	SW-1	G0/1, G0/2
2	MSW-1	G1/0/3, G1/0/4
	SW-2	G0/1, G0/2
3	SW-1	F0/5, F0/6
	SW-2	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

MSW-1

```
MSW-1(config)#interface range g1/0/1-2
MSW-1(config-if-range)#channel-group 1 mode active
MSW-1(config-if-range)#exit
MSW-1(config)#
MSW-1(config)#interface range g1/0/3-4
MSW-1(config-if-range)#channel-group 2 mode active
MSW-1(config-if-range)#exit
```

SW-1

```
SW-1(config)#interface range g0/1-2
SW-1(config-if-range)#channel-group 1 mode active
SW-1(config-if-range)#exit
SW-1(config)#
SW-1(config)#interface range f0/5-6
SW-1(config-if-range)#channel-group 3 mode active
SW-1(config-if-range)#exit
```

SW-2

```
SW-2(config)#interface range g0/1-2
SW-2(config-if-range)#channel-group 2 mode active
SW-2(config-if-range)#exit
SW-2(config)#
SW-2(config)#interface range f0/5-6
SW-2(config-if-range)#channel-group 3 mode active
SW-2(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

MSW-1

```
MSW-1(config)#interface port-channel 1
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
MSW-1(config)#
MSW-1(config)#interface port-channel 2
MSW-1(config-if)#switchport mode trunk
MSW-1(config-if)#switchport trunk allowed vlan 10,20,30
MSW-1(config-if)#exit
```

SW-1

```
SW-1(config)#interface port-channel 1
SW-1(config-if)#switchport mode trunk
SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
SW-1(config)#
SW-1(config)#interface port-channel 3
SW-1(config-if)#switchport mode trunk

SW-1(config-if)#switchport nonegotiate
SW-1(config-if)#exit
```

SW-2

```
SW-2(config)#interface port-channel 2
SW-2(config-if)#switchport mode trunk
SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
SW-2(config)#
SW-2(config)#interface port-channel 3
SW-2(config-if)#switchport mode trunk

SW-2(config-if)#switchport nonegotiate
SW-2(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the SW-3 switch, configure the port that is connected to RTR-1 G0/0/0 as a static trunk.
b. Configure the Management VLAN as the native VLAN.
c. Disable DTP on the port.

SW-3

```
SW-3(config)#interface g0/1
SW-3(config-if)#switchport mode trunk
SW-3(config-if)#switchport nonegotiate
SW-3(config-if)#switchport trunk native vlan 99
SW-3(config-if)#switchport trunk allowed vlan 40,50,60,99
SW-3(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the MSW-1 Layer 3 switch for all VLANs in the VLAN Table that are configured on MSW-1.
b. Configure the switchport on MSW-1 that is connected to RTR-1 with an IP address as shown in the Addressing Table.

MSW-1

```
MSW-1(config)#ip routing
MSW-1(config)#interface g1/1/1
MSW-1(config-if)#no switchport
MSW-1(config-if)#ip address 172.31.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on RTR-1 for all the VLANs that are configured on the SW-3 switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

RTR-1

```
RTR-1(config)#interface g0/0/1
RTR-1(config-if)#no shutdown
RTR-1(config)#interface g0/0/1.40
RTR-1(config-subif)#description "Gateway for VLAN40"
RTR-1(config-subif)#encapsulation dot1q 40
RTR-1(config-subif)#ip address 172.31.40.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.50
RTR-1(config-subif)#description "Gateway for VLAN50"
RTR-1(config-subif)#encapsulation dot1q 50
RTR-1(config-subif)#ip address 172.31.50.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.60
RTR-1(config-subif)#description "Gateway for VLAN60"
RTR-1(config-subif)#encapsulation dot1q 60
RTR-1(config-subif)#ip address 172.31.60.1 255.255.255.0
RTR-1(config-subif)#exit
RTR-1(config)#interface g0/0/1.99
RTR-1(config-subif)#description "Gateway for VLAN99"
RTR-1(config-subif)#encapsulation dot1q 99 native
RTR-1(config-subif)#ip address 172.31.99.17 255.255.255.240
RTR-1(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **172.31.10.1**
Default gateway on **PC2** and **PC5**: **172.31.20.1**
Default gateway on **PC3** and **PC6**: **172.31.30.1**

Default gateway on **PC7**: **172.31.40.1**
Default gateway on **PC8**: **172.31.50.1**
Default gateway on **PC9**: **172.31.60.1**
Default gateway on **PC99**: **172.31.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Internet Server server.
c. Verify that a host can connect to the SVI of switch SW-3 over SSH.
Last Updated: January 2021

ID 001

Intructions – Answers

Router RTR-1

```
en
conf t
ip route 172.31.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 172.31.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname RTR-1
service password-encryption
interface g0/0/0
ip address 172.31.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 172.31.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 172.31.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 172.31.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 172.31.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch SW-3

```
en
config t
interface vlan 99
ip address 172.31.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 172.31.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name BDG4
exit
interface vlan 40
ip address 172.31.40.1 255.255.255.0
description BDG4
exit
vlan 50
name BDG5
exit
interface vlan 50
ip address 172.31.50.1 255.255.255.0
description BDG5
exit
vlan 60
name BDG6
exit
interface vlan 60
ip address 172.31.60.1 255.255.255.0
description BDG6
exit
vlan 99
name Management
exit
interface vlan 99
ip address 172.31.99.18 255.255.255.240
description Management
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch MSW-1

```
en
config t
vlan 10
name FL1
interface vlan 10
description FL1
ip address 172.31.10.1 255.255.255.0
exit
vlan 20
name FL2
interface vlan 20
description FL2
ip address 172.31.20.1 255.255.255.0
exit
vlan 30
name FL3
interface vlan 30
description FL3
ip address 172.31.30.1 255.255.255.0
exit
vlan 99
name Management
interface vlan 99
description Management
ip address 172.31.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 172.31.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch SW-1

```
enable
config terminal
vlan 10
name FL1
interface vlan 10
description FL1
exit
vlan 20
name FL2
interface vlan 20
description FL2
exit
vlan 30
name FL3
interface vlan 30
description FL3
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch SW-2

```
en
config t
vlan 10
name FL1
interface vlan 10
description FL1
exit
vlan 20
name FL2
interface vlan 20
description FL2
exit
vlan 30
name FL3
interface vlan 30
description FL3
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

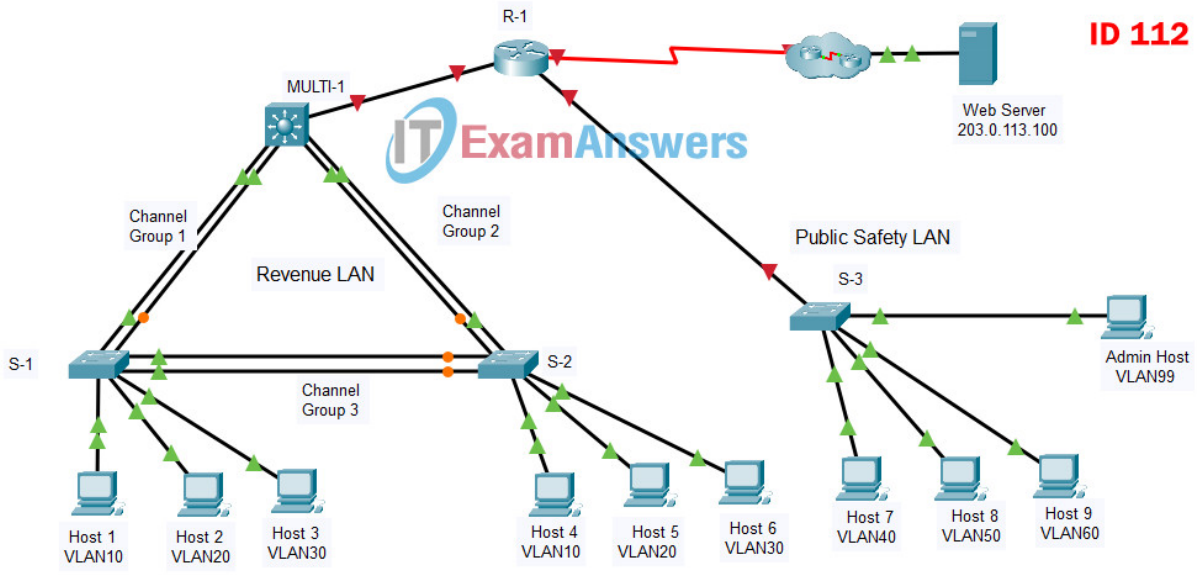
Configure default gateway addresses on all hosts on the LANs.

Default gateway on **PC1** and **PC4**: **172.31.10.1**
Default gateway on **PC2** and **PC5**: **172.31.20.1**
Default gateway on **PC3** and **PC6**: **172.31.30.1**

Default gateway on **PC7**: **172.31.40.1**
Default gateway on **PC8**: **172.31.50.1**
Default gateway on **PC9**: **172.31.60.1**

Default gateway on **PC99**: **172.31.99.17**

CCNAv7 Switching, Routing, and Wireless Essentials v7.0 (SRWE) Answers



SRWE PT Practice Skills Assessment (PTSA) Part 1 - ID 112

SRWE PT Practice Skills Assessment (PTSA) Part 1

A few things to keep in mind while completing this activity:

1. Do not use the browser Back button or close or reload any exam windows during the exam.
2. Do not close Packet Tracer when you are done. It will close automatically.
3. Click the Submit Assessment button in the browser window to submit your work.

Introduction

In this assessment you are configuring a network that is using EtherChannel and routing between VLANs. For the sake of time, you will not be asked to perform all configurations on all network devices as you may be required to do in a real network or other assessment. Instead, you will use the skills and knowledge that you have learned in the labs in this course to configure the router and switches in the topology. In addition to EtherChannel and inter-VLAN routing, this task involves creating VLANs and trunks, and performing basic router and switch configuration.

You are required to configure host default gateways; however host addresses are preconfigured.

You will practice and be assessed on the following skills:

- Configuration of initial settings on a router.
- Configuration of initial settings on a switch, including SVI and SSH.
- Configuration of VLANs.
- Configuration of switchport VLAN membership.
- EtherChannel configuration.
- Troubleshooting VLANs.
- Configuration of static trunking and DTP.
- Configuration of routing between VLANs on a Layer 3 switch.
- Configuration of router-on-a-stick inter- VLAN routing on a router.
- Configure default gateways on hosts.

Addressing Table

Device	Interface	IP Address	Subnet Mask
R-1	G0/0/0	10.0.0.1	255.255.255. 0
	G0/0/1.40	10.0.40.1	255.255.255.0
	G0/0/1.50	10.0.50.1	255.255.255.0
	G0/0/1.60	10.0.60.1	255.255.255.0

Device	Interface	IP Address	Subnet Mask
	G0/0/1.99	10.0.99.17	255.255.255.240
	S0/1/0	209.165.201.2	255.255.255.252
MULTI-1	G1/1/1	10.0.0.2	255.255.255.0
	VLAN10	10.0.10.1	255.255.255.0
	VLAN20	10.0.20.1	255.255.255.0
	VLAN30	10.0.30.1	255.255.255.0
	VLAN99	10.0.99.2	255..255.255.240
S-3	VLAN99	10.0.99.18	255.255.255.240
Host 1	NIC	10.0.10.10	255.255.255.0
Host 2	NIC	10.0.20.20	255.255.255.0
Host 3	NIC	10.0.30.30	255.255.255.0
Host 4	NIC	10.0.10.11	255.255.255.0
Host 5	NIC	10.0.20.21	255.255.255.0
Host 6	NIC	10.0.30.31	255.255.255.0
Host 7	NIC	10.0.40.41	255.255.255.0
Host 8	NIC	10.0.50.51	255.255.255.0
Host 9	NIC	10.0.60.61	255.255.255.0
Admin Host	NIC	10.0.99.19	255.255.255.0
Web Server	NIC	203.0.113.100	255.255.255.0

Background / Scenario

A corporation is planning to implement EtherChannel and a new VLAN design in order to make the network more efficient. You have been asked to work on a design and prototype of the new network. You have created the logical topology and now need to configure the devices in order to evaluate the design. You will configure VLANs and access port VLAN membership on access layer switches. You will also configure EtherChannel and trunking. Finally, you will configure a router and a Layer 3 switch to route between VLANs. Some addressing had already been configured.

Instructions

Part 1: Basic Router Configuration

Step 1: Configure router R-1 with required settings.

a. Open a command window on router **R-1** and move to privileged EXEC mode.

b. Copy and paste the following configuration into the R-1 router CLI.

```
ip route 10.0.10.0 255.255.255.0 GigabitEthernet0/0/0

ip route 10.0.20.0 255.255.255.0 GigabitEthernet0/0/0

ip route 10.0.30.0 255.255.255.0 GigabitEthernet0/0/0

ip route 10.0.99.0 255.255.255.240 GigabitEthernet0/0/0
```

Be sure to press the <Enter> key after the last line to return to privileged EXEC mode prompt.

c. Configure the following settings on the router:

- The enable secret password.
- A console password
- Remote access to the VTY lines.

- A banner MOTD message.
- The device hostname according to the value in the addressing table.
- All clear text passwords should be encrypted.
- Interface addressing on G0/0/0 and S0/1/0.
- Interface descriptions on G0/0/0 and S0/1/0.

```
Router(config)#no ip domain lookup
Router(config)#enable secret class

Router(config)#line console 0
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#line vty 0 4
Router(config-line)#password cisco
Router(config-line)#login
Router(config-line)#exit

Router(config)#banner motd #Authorized Access Only!#

Router(config)#hostname R-1

R-1(config)#service password-encryption

R-1(config)#interface g0/0/0
R-1(config-if)#ip address 10.0.0.1 255.255.255.0
R-1(config-if)#no shutdown
R-1(config-if)#description Link to Revenue LAN
R-1(config-if)#exit

R-1(config)#interface s0/1/0
R-1(config-if)#ip address 209.165.201.2 255.255.255.252
R-1(config-if)#no shutdown
R-1(config-if)#description Link to Internet
R-1(config-if)#exit
```

Note: Be sure to make a record of the passwords that you create.

Part 2: Basic Switch Configuration

Step 1: Configure Remote Management Addressing

a. Configure SVI 99 on switch S-3 with IP addressing according to the Addressing Table.

b. The S-3 switch SVI should be reachable from other networks.

```
S-3(config)#interface vlan 99
S-3(config-if)#ip address 10.0.99.18 255.255.255.240
S-3(config-if)#no shutdown
S-3(config-if)#exit
S-3(config)#
S-3(config)#ip default-gateway 10.0.99.17
```

Step 2: Configure Secure Remote Access

On switch S-3, configure SSH as follows:

- Username: **admin** password: **C1sco123!**
- Modulus bits **1024**
- All VTY lines should accept SSH connections only
- Connections should require the previously configured username and password.
- IP domain name: **acad.pt**

```
S-3(config)#ip domain-name acad.pt
S-3(config)#crypto key generate rsa
How many bits in the modulus [512]: 1024

S-3(config)#username admin privilege 15 secret C1sco123!
S-3(config)#enable secret C1sco123!
S-3(config)#line vty 0 15
S-3(config-line)#transport input ssh
S-3(config-line)#login local
S-3(config-line)#exit
S-3(config)#ip ssh version 2
```

Part 3: VLAN Configuration

Step 1: Configure VLANs according to the VLAN table.

Use the VLAN Table to create and name the VLANs on the appropriate switches.

VLAN Table

VLAN	Name	IP Network	Subnet Mask	Devices
10	SALES	10.0.10.0	255.255.255.0	MULTI-1, S-1,
				S-2
20	ACCT	10.0.20.0	255.255.255.0	MULTI-1, S-1,
				S-2
30	EXEC	10.0.30.0	255.255.255.0	MULTI-1, S-1,
				S-2
40	FAC	10.0.40.0	255.255.255.0	S-3
50	FAB1	10.0.50.0	255.255.255.0	S-3
60	FAB2	10.0.60.0	255.255.255.0	S-3
99	ADMIN	10.0.60.16	255.255.255.240	S-3, MULTI-1

MULTI-1

```
MULTI-1(config)#vlan 10
MULTI-1(config-vlan)#name SALES
MULTI-1(config-vlan)#interface vlan 10
MULTI-1(config-if)#description SALES
MULTI-1(config-if)#ip address 10.0.10.1 255.255.255.0
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#vlan 20
MULTI-1(config-vlan)#name ACCT
MULTI-1(config-vlan)#interface vlan 20
MULTI-1(config-if)#description ACCT
MULTI-1(config-if)#ip address 10.0.20.1 255.255.255.0
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#vlan 30
MULTI-1(config-vlan)#name EXEC
MULTI-1(config-vlan)#interface vlan 30
MULTI-1(config-if)#description EXEC
MULTI-1(config-if)#ip address 10.0.30.1 255.255.255.0
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#vlan 99
MULTI-1(config-vlan)#name ADMIN
MULTI-1(config-vlan)#interface vlan 99
MULTI-1(config-if)#description ADMIN
MULTI-1(config-if)#ip address 10.0.99.2 255.255.255.240
MULTI-1(config-if)#exit
```

S-1

```
S-1(config)#vlan 10
S-1(config-vlan)#name SALES
S-1(config-vlan)#interface vlan 10
S-1(config-if)#description SALES
S-1(config-if)#exit
S-1(config)#
S-1(config)#vlan 20
S-1(config-vlan)#name ACCT
S-1(config-vlan)#interface vlan 20
S-1(config-if)#description ACCT
S-1(config-if)#exit
S-1(config)#
S-1(config)#vlan 30
S-1(config-vlan)#name EXEC
S-1(config-vlan)#interface vlan 30
S-1(config-if)#description EXEC
S-1(config-if)#exit
```

S-2

```
S-2(config)#vlan 10
S-2(config-vlan)#name SALES
S-2(config-vlan)#interface vlan 10
S-2(config-if)#description SALES
S-2(config-if)#exit
S-2(config)#
S-2(config)#vlan 20
S-2(config-vlan)#name ACCT
S-2(config-vlan)#interface vlan 20
S-2(config-if)#description ACCT
S-2(config-if)#exit
S-2(config)#
S-2(config)#vlan 30
S-2(config-vlan)#name EXEC
S-2(config-vlan)#interface vlan 30
S-2(config-if)#description EXEC
S-2(config-if)#exit
```

S-3

```
S-3(config)#vlan 40
S-3(config-vlan)#name FAC
S-3(config-vlan)#interface vlan 40
S-3(config-if)#ip address 10.0.40.1 255.255.255.0
S-3(config-if)#description FAC
S-3(config-if)#exit
S-3(config)#
S-3(config)#vlan 50
S-3(config-vlan)#name FAB1
S-3(config-vlan)#interface vlan 50
S-3(config-if)#ip address 10.0.50.1 255.255.255.0
S-3(config-if)#description FAB1
S-3(config-if)#exit
S-3(config)#
S-3(config)#vlan 60
S-3(config-vlan)#name FAB2
S-3(config-vlan)#interface vlan 60
S-3(config-if)#ip address 10.0.60.1 255.255.255.0
S-3(config-if)#description FAB2
S-3(config-if)#exit
S-3(config)#
S-3(config)#vlan 99
S-3(config-vlan)#name ADMIN
S-3(config-vlan)#interface vlan 99
S-3(config-if)#ip address 10.0.99.18 255.255.255.240
S-3(config-if)#description ADMIN
S-3(config-if)#exit
```

Step 2: Assign switch ports to VLANs.

Assign VLAN membership to static access switchports according to the Port to VLAN Assignment table.

Port to VLAN Assignment Table

Device	VLAN	VLAN Name	Port Assignments

Device	VLAN	VLAN Name	Port Assignments
S-1	10	SALES	F0/7-10
	20	ACCT	F0/11-15
	30	EXEC	F0/16-24
S-2	10	SALES	F0/7-10
	20	ACCT	F0/11-15
	30	EXEC	F0/16-24
S-3	40	FAC	F0/1-5
	50	FAB1	F0/6-10
	60	FAB2	F0/11-15
	99	ADMIN Native	F0/24

S-1

```
S-1(config)#interface range f0/7-10
S-1(config-if-range)#switchport mode access
S-1(config-if-range)#switchport access vlan 10
S-1(config-if-range)#exit
S-1(config)#interface range f0/11-15
S-1(config-if-range)#switchport mode access
S-1(config-if-range)#switchport access vlan 20
S-1(config-if-range)#exit
S-1(config)#interface range f0/16-24
S-1(config-if-range)#switchport mode access
S-1(config-if-range)#switchport access vlan 30
S-1(config-if-range)#exit
```

S-2

```
S-2(config)#interface range f0/7-10
S-2(config-if-range)#switchport mode access
S-2(config-if-range)#switchport access vlan 10
S-2(config-if-range)#exit
S-2(config)#interface range f0/11-15
S-2(config-if-range)#switchport mode access
S-2(config-if-range)#switchport access vlan 20
S-2(config-if-range)#exit
S-2(config)#interface range f0/16-24
S-2(config-if-range)#switchport mode access
S-2(config-if-range)#switchport access vlan 30
S-2(config-if-range)#exit
```

S-3

```
S-3(config)#interface range f0/1-5
S-3(config-if-range)#switchport mode access
S-3(config-if-range)#switchport access vlan 40
S-3(config-if-range)#exit
S-3(config)#interface range f0/6-10
S-3(config-if-range)#switchport mode access
S-3(config-if-range)#switchport access vlan 50
S-3(config-if-range)#exit
S-3(config)#interface range f0/11-15
S-3(config-if-range)#switchport mode access
S-3(config-if-range)#switchport access vlan 60
S-3(config-if-range)#exit
S-3(config)#interface f0/24
S-3(config-if)#switchport mode access
S-3(config-if)#switchport access vlan 99
S-3(config-if)#exit
```

Part 4: EtherChannel and Trunking Configuration

EtherChannel Port Assignments Table

Channel Group	Devices in Groups	Ports in Group
1	MULTI-1	G1/0/1, G1/0/2
	S-1	G0/1, G0/2
2	MULTI-1	G1/0/3, G1/0/4
	S-2	G0/1, G0/2
3	S-1	F0/5, F0/6
	S-2	F0/5, F0/6

Step 1: Configure EtherChannels

Create EtherChannels according to the EtherChannel Port Assignments Table. Use the Cisco LACP protocol. Both sides of the channel should attempt to negotiate the link protocol.

MULTI-1

```
MULTI-1(config)#interface range g1/0/1-2
MULTI-1(config-if-range)#channel-group 1 mode active
MULTI-1(config-if-range)#exit
MULTI-1(config)#
MULTI-1(config)#interface range g1/0/3-4
MULTI-1(config-if-range)#channel-group 2 mode active
MULTI-1(config-if-range)#exit
```

S-1

```
S-1(config)#interface range g0/1-2
S-1(config-if-range)#channel-group 1 mode active
S-1(config-if-range)#exit
S-1(config)#
S-1(config)#interface range f0/5-6
S-1(config-if-range)#channel-group 3 mode active
S-1(config-if-range)#exit
```

S-2

```
S-2(config)#interface range g0/1-2
S-2(config-if-range)#channel-group 2 mode active
S-2(config-if-range)#exit
S-2(config)#
S-2(config)#interface range f0/5-6
S-2(config-if-range)#channel-group 3 mode active
S-2(config-if-range)#exit
```

Step 2: Configure Trunking on the EtherChannels

a. Configure the port channel interfaces as static trunks. Disable DTP negotiation on all trunks.
b. Troubleshoot any issues that prevent the formation of the EtherChannels.

MULTI-1

```
MULTI-1(config)#interface port-channel 1
MULTI-1(config-if)#switchport mode trunk
MULTI-1(config-if)#switchport trunk allowed vlan 10,20,30
MULTI-1(config-if)#exit
MULTI-1(config)#
MULTI-1(config)#interface port-channel 2
MULTI-1(config-if)#switchport mode trunk
MULTI-1(config-if)#switchport trunk allowed vlan 10,20,30
MULTI-1(config-if)#exit
```

S-1

```
S-1(config)#interface port-channel 1
S-1(config-if)#switchport mode trunk
S-1(config-if)#switchport nonegotiate
S-1(config-if)#exit
S-1(config)#
S-1(config)#interface port-channel 3
S-1(config-if)#switchport mode trunk

S-1(config-if)#switchport nonegotiate
S-1(config-if)#exit
```

S-2

```
S-2(config)#interface port-channel 2
S-2(config-if)#switchport mode trunk
S-2(config-if)#switchport nonegotiate
S-2(config-if)#exit
S-2(config)#
S-2(config)#interface port-channel 3
S-2(config-if)#switchport mode trunk

S-2(config-if)#switchport nonegotiate
S-2(config-if)#exit
```

Note: Packet Tracer requires configuration of trunking and DTP mode on both portchannel interfaces and the component physical interfaces.

Step 3: Configure a static trunk uplink

a. On the S-3 switch, configure the port that is connected to R-1 G0/0/0 as a static trunk.
b. Configure the ADMIN VLAN as the native VLAN.
c. Disable DTP on the port.

S-3

```
S-3(config)#interface g0/1
S-3(config-if)#switchport mode trunk
S-3(config-if)#switchport nonegotiate
S-3(config-if)#switchport trunk native vlan 99
S-3(config-if)#switchport trunk allowed vlan 40,50,60,99
S-3(config-if)#exit
```

Part 5: Configure Inter-VLAN Routing

Step 1: Configure inter-VLAN routing on the Layer 3 switch.

a. Configure Inter-VLAN routing on the MULTI-1 Layer 3 switch for all VLANs in the VLAN Table that are configured on MULTI-1.
b. Configure the switchport on MULTI-1 that is connected to R-1 with an IP address as shown in the Addressing Table.

MULTI-1

```
MULTI-1(config)#ip routing
MULTI-1(config)#interface g1/1/1
MULTI-1(config-if)#no switchport
MULTI-1(config-if)#ip address 10.0.0.2 255.255.255.0
```

Step 2: Configure router-on-a-stick inter-VLAN routing on a router.

a. Configure inter-VLAN routing on R-1 for all the VLANs that are configured on the S-3 switch. Use the information in the Addressing Table.
b. Be sure to configure descriptions of all interfaces.

R-1

```
R-1(config)#interface g0/0/1
R-1(config-if)#no shutdown
R-1(config)#interface g0/0/1.40
R-1(config-subif)#description "Gateway for VLAN40"
R-1(config-subif)#encapsulation dot1q 40
R-1(config-subif)#ip address 10.0.40.1 255.255.255.0
R-1(config-subif)#exit
R-1(config)#interface g0/0/1.50
R-1(config-subif)#description "Gateway for VLAN50"
R-1(config-subif)#encapsulation dot1q 50
R-1(config-subif)#ip address 10.0.50.1 255.255.255.0
R-1(config-subif)#exit
R-1(config)#interface g0/0/1.60
R-1(config-subif)#description "Gateway for VLAN60"
R-1(config-subif)#encapsulation dot1q 60
R-1(config-subif)#ip address 10.0.60.1 255.255.255.0
R-1(config-subif)#exit
R-1(config)#interface g0/0/1.99
R-1(config-subif)#description "Gateway for VLAN99"
R-1(config-subif)#encapsulation dot1q 99 native
R-1(config-subif)#ip address 10.0.99.17 255.255.255.240
R-1(config-subif)#exit
```

Step 3: Configure default gateways on hosts.

a. Configure default gateway addresses on all hosts on the LANs.

Default gateway on **Host 1** and **Host 4**: **10.0.10.1**
Default gateway on **Host 2** and **Host 5**: **10.0.20.1**
Default gateway on **Host 3** and **Host 6**: **10.0.30.1**

Default gateway on **Host 7**: **10.0.40.1**
Default gateway on **Host 8**: **10.0.50.1**
Default gateway on **Host 9**: **10.0.60.1**
Default gateway on **Admin Host**: **10.0.99.17**

b. Verify connectivity between all hosts on both LANs with each other and the Web Server server.
c. Verify that a host can connect to the SVI of switch S-3 over SSH.
Last Updated: January 2021

ID 112

Intructions – Answers

Router R-1

```
en
conf t
ip route 10.0.10.0 255.255.255.0 GigabitEthernet0/0/0
ip route 10.0.20.0 255.255.255.0 GigabitEthernet0/0/0
ip route 10.0.30.0 255.255.255.0 GigabitEthernet0/0/0
ip route 10.0.99.0 255.255.255.240 GigabitEthernet0/0/0
no ip domain lookup

enable secret class
line console 0
password cisco
login
exit
line vty 0 4
password cisco
login
exit
banner motd #Authorized Access Only!#
hostname R-1
service password-encryption
interface g0/0/0
ip address 10.0.0.1 255.255.255.0
no shutdown
description "R1 G0/0/0"
exit
interface s0/1/0
ip address 209.165.201.2 255.255.255.252
no shutdown
description "R1 S0/1/0"
exit

interface g0/0/1
no shutdown

interface g0/0/1.40
description "Gateway for VLAN40"
encapsulation dot1q 40
ip address 10.0.40.1 255.255.255.0
exit
interface g0/0/1.50
description "Gateway for VLAN50"
encapsulation dot1q 50
ip address 10.0.50.1 255.255.255.0
exit
interface g0/0/1.60
description "Gateway for VLAN60"
encapsulation dot1q 60
ip address 10.0.60.1 255.255.255.0
exit
interface g0/0/1.99
description "Gateway for VLAN99"
encapsulation dot1q 99 native
ip address 10.0.99.17 255.255.255.240
end
copy running-config startup-config
```

Switch S-3

```
en
config t
interface vlan 99
ip address 10.0.99.18 255.255.255.240
no shutdown
exit
ip default-gateway 10.0.99.17
ip domain-name acad.pt
crypto key generate rsa
1024

username admin privilege 15 secret C1sco123!
enable secret C1sco123!
line vty 0 15
transport input ssh
login local
exit
ip ssh version 2

vlan 40
name FAC
exit
interface vlan 40
ip address 10.0.40.1 255.255.255.0
description FAC
exit
vlan 50
name FAB1
exit
interface vlan 50
ip address 10.0.50.1 255.255.255.0
description FAB1
exit
vlan 60
name FAB2
exit
interface vlan 60
ip address 10.0.60.1 255.255.255.0
description FAB2
exit
vlan 99
name ADMIN
exit
interface vlan 99
ip address 10.0.99.18 255.255.255.240
description ADMIN
exit

interface range f0/1-5
switchport mode access
switchport access vlan 40
exit
interface range f0/6-10
switchport mode access
switchport access vlan 50
exit
interface range f0/11-15
switchport mode access
switchport access vlan 60
exit
interface f0/24
switchport mode access
switchport access vlan 99
exit
interface g0/1
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 40,50,60,99
switchport trunk native vlan 99
end
copy running-config startup-config
```

Switch MULTI-1

```
en
config t
vlan 10
name SALES
interface vlan 10
description SALES
ip address 10.0.10.1 255.255.255.0
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
ip address 10.0.20.1 255.255.255.0
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
ip address 10.0.30.1 255.255.255.0
exit
vlan 99
name ADMIN
interface vlan 99
description ADMIN
ip address 10.0.99.2 255.255.255.240
exit

ip routing
interface g1/1/1
no switchport
ip address 10.0.0.2 255.255.255.0
exit

interface range g1/0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport trunk allowed vlan 10,20,30
exit
interface range g1/0/3-4
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport trunk allowed vlan 10,20,30
end
copy running-config startup-config
```

Switch S-1

```
enable
config terminal
vlan 10
name SALES
interface vlan 10
description SALES
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 1 mode active
exit
interface port-channel 1
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Switch S-2

```
en
config t
vlan 10
name SALES
interface vlan 10
description SALES
exit
vlan 20
name ACCT
interface vlan 20
description ACCT
exit
vlan 30
name EXEC
interface vlan 30
description EXEC
exit

interface range f0/7-10
switchport mode access
switchport access vlan 10
exit
interface range f0/11-15
switchport mode access
switchport access vlan 20
exit
interface range f0/16-24
switchport mode access
switchport access vlan 30
exit

interface range g0/1-2
channel-group 2 mode active
exit
interface port-channel 2
switchport mode trunk
switchport nonegotiate
exit
interface range f0/5-6
channel-group 3 mode active
exit
interface port-channel 3
switchport mode trunk
switchport nonegotiate
end
copy running-config startup-config
```

Configure default gateway addresses on all hosts on the LANs.

Default gateway on **Host 1** and **Host 4**: **10.0.10.1**
Default gateway on **Host 2** and **Host 5**: **10.0.20.1**
Default gateway on **Host 3** and **Host 6**: **10.0.30.1**

Default gateway on **Host 7**: **10.0.40.1**
Default gateway on **Host 8**: **10.0.50.1**
Default gateway on **Host 9**: **10.0.60.1**

Default gateway on **Admin Host**: **10.0.99.17**

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