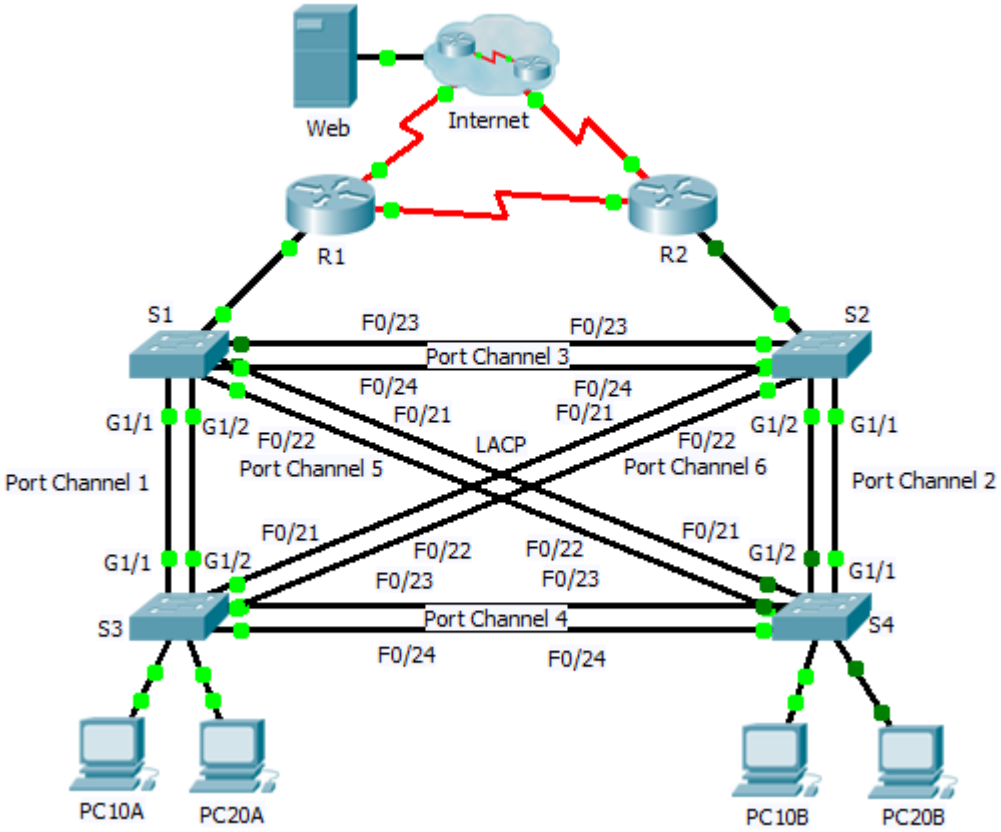
Packet Tracer – Skills Integration Challenge

Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway	VLAN Association
R1	G0/0.1	192.168.99.1	255.255.255.0	N/A	VLAN 99
	G0/0.10	192.168.10.1	255.255.255.0	N/A	VLAN 10
	G0/0.20	192.168.20.1	255.255.255.0	N/A	VLAN 20
	S0/0/0	209.165.22.222	255.255.255.224	N/A	N/A
	S0/0/1	192.168.1.1	255.255.255.0	N/A	N/A
R2	G0/0.1	192.168.99.2	255.255.255.0	N/A	VLAN 99
	G0/0.10	192.168.10.2	255.255.255.0	N/A	VLAN 10
	G0/0.20	192.168.20.2	255.255.255.0	N/A	VLAN 20
	S0/0/0	192.168.1.2	255.255.255.0	N/A	N/A
	S0/0/1	209.165.22.190	255.255.255.224	N/A	N/A
ISP	S0/0/0	209.165.22.193	255.255.255.224	N/A	N/A
	S0/0/1	209.165.22.161	255.255.255.224	N/A	N/A
Web	NIC	64.104.13.130	255.255.255.252	64.104.13.129	N/A
PC10A	NIC	192.168.10.101	255.255.255.0	192.168.10.1	VLAN 10
PC10B	NIC	192.168.10.102	255.255.255.0	192.168.10.1	VLAN 10
PC20A	NIC	192.168.20.101	255.255.255.0	192.168.20.1	VLAN 20
PC20B	NIC	192.168.20.102	255.255.255.0	192.168.20.1	VLAN 20

Scenario

In this activity, two routers are configured to communicate with each other. You are responsible for configuring subinterfaces to communicate with the switches. You will configure VLANs, trunking, and EtherChannel with PVST. The Internet devices are all preconfigured.

Requirements

You are responsible for configuring routers **R1** and **R2** and switches **S1**, **S2**, **S3**, and **S4**.

Note: Packet Tracer does not allow assigning point values less than 1. Since this activity is checking 154 items, not all configurations are assigned a point value. Click **Check Results** > **Assessment Items** to verify you correctly configured all 154 items.

Inter-VLAN Routing

On **R1** and **R2**, enable and configure the subinterfaces with the following requirement:

- Configure the appropriate dot1Q encapsulation.
- Configure VLAN 99 as the native VLAN.
- Configure the IP address for the subinterface according to the Addressing Table.

Routing

Configure OSPFv2 using the following requirements:

- User process ID 1.
- Advertise the network for each subinterface.
- Disable OSPF updates for each subinterface.

VLANs

- For all switches, create VLAN 10, 20, and 99.
- Configure the following static ports for **S1** and **S2**:
  - F0/1 – 9 as access ports in VLAN 10.
  - F0/10 – 19 as access ports in VLAN 20.
  - F0/20 – F24 and G1/1 – 1/2 as the native trunk for VLAN 99.
- Configure the following static ports for **S3** and **S4**:
  - F0/1 – 9 as access ports in VLAN 10.
  - F0/10 – 20 as access ports in VLAN 20.
  - F0/21 – F24 and G1/1 – 1/2 as the native trunk for VLAN 99.

EtherChannels

- All EtherChannels are configured as LACP.
- All EtherChannels are statically configured as the native trunk for VLAN 99.
- Use the following table to configure the appropriate switch ports to form EtherChannels:

Port Channel	Device: Ports	Device: Ports
1	S1: G1/1 – 2	S3: G1/1 – 2
2	S2: G1/1 – 2	S4: G1/1 – 2
3	S1: F0/23 – 24	S2: F0/23 – 24
4	S3: F0/23 – 24	S4: F0/23 – 24
5	S1: F0/21 – 22	S4: F0/21 – 22
6	S2: F0/21 – 22	S3: F0/21 - 22

Spanning Tree

- Configure per-VLAN rapid spanning tree mode for all switches.
- Configure spanning tree priorities according to the table below:

Device	VLAN 10 Priority	VLAN 20 Priority
S1	4096	8192
S2	8192	4096
S3	32768	32768
S4	32768	32768

Connectivity

- All PCs should be able to ping the **Web** and other PCs.

```
R1
enable
config t

interface GigabitEthernet0/0
no shut

interface GigabitEthernet0/0.1
 encapsulation dot1Q 99 native
 ip address 192.168.99.1 255.255.255.0

interface GigabitEthernet0/0.10
 encapsulation dot1Q 10
 ip address 192.168.10.1 255.255.255.0

interface GigabitEthernet0/0.20
 encapsulation dot1Q 20
 ip address 192.168.20.1 255.255.255.0

interface Serial0/0/0
 ip address 209.165.22.222 255.255.255.224

interface Serial0/0/1
 ip address 192.168.1.1 255.255.255.0


router ospf 1

 passive-interface Serial0/0/0
 passive-interface GigabitEthernet0/0.1
 passive-interface GigabitEthernet0/0.10
 passive-interface GigabitEthernet0/0.20

 network 192.168.99.0 0.0.0.255 area 0
 network 192.168.20.0 0.0.0.255 area 0
 network 192.168.10.0 0.0.0.255 area 0



R2

enable
config t

interface GigabitEthernet0/0
no shut

interface GigabitEthernet0/0.1
 encapsulation dot1Q 99 native
 ip address 192.168.99.2 255.255.255.0

interface GigabitEthernet0/0.10
 encapsulation dot1Q 10
 ip address 192.168.10.2 255.255.255.0

interface GigabitEthernet0/0.20
 encapsulation dot1Q 20
 ip address 192.168.20.2 255.255.255.0

interface Serial0/0/0
```

```
ip address 192.168.1.2 255.255.255.0

interface Serial0/0/1
ip address 209.165.22.190 255.255.255.224



router ospf 1

 passive-interface Serial0/0/0
 passive-interface GigabitEthernet0/0.1
 passive-interface GigabitEthernet0/0.10
 passive-interface GigabitEthernet0/0.20

 network 192.168.99.0 0.0.0.255 area 0
 network 192.168.20.0 0.0.0.255 area 0
 network 192.168.10.0 0.0.0.255 area 0


S1

enable
conf t

spanning-tree mode rapid-pvst
spanning-tree vlan 10 priority 4096
spanning-tree vlan 20 priority 8192

interface range FastEthernet0/1-9
 switchport access vlan 10


interface range FastEthernet0/10-19
 switchport access vlan 20


interface FastEthernet0/20
 switchport trunk native vlan 99
 switchport mode trunk

interface range FastEthernet0/21-22
 switchport trunk native vlan 99
 channel-group 5 mode active
 switchport mode trunk


interface range FastEthernet0/23-24
 switchport trunk native vlan 99
 channel-group 3 mode active
 switchport mode trunk

interface range GigabitEthernet0/1-2
 switchport trunk native vlan 99
 channel-group 1 mode active
 switchport mode trunk

interface Port-channel 1
 switchport mode trunk

interface Port-channel 2
```

```
 switchport mode trunk

interface Port-channel 3
 switchport mode trunk

interface Port-channel 5
 switchport mode trunk

s2
enable
config

spanning-tree mode rapid-pvst
spanning-tree vlan 20 priority 4096
spanning-tree vlan 10 priority 8192
!
interface range FastEthernet0/1-9
 switchport access vlan 10

interface FastEthernet0/10-19
 switchport access vlan 20
 switchport trunk native vlan 99
!
interface range FastEthernet0/20
 switchport trunk native vlan 99
 switchport mode trunk
!
interface range FastEthernet0/21-22
 switchport trunk native vlan 99
 channel-group 6 mode active
 switchport mode trunk

interface range FastEthernet0/23-24
 switchport trunk native vlan 99
 channel-group 3 mode active
 switchport mode trunk

interface range GigabitEthernet0/1-2
 switchport trunk native vlan 99
 channel-group 2 mode active
 switchport mode trunk

interface Port-channel 1
 switchport mode trunk

interface Port-channel 2
 switchport mode trunk

interface Port-channel 3
 switchport mode trunk

interface Port-channel 6
 switchport mode trunk

s3
enable
config

spanning-tree mode rapid-pvst
```

```
interface range FastEthernet0/1-9
 switchport access vlan 10

!
interface range FastEthernet0/10-20
 switchport access vlan 20

interface range FastEthernet0/21-22
 switchport trunk native vlan 99
 channel-group 6 mode active

!
interface range FastEthernet0/23-24
 switchport trunk native vlan 99
 channel-group 4 mode active

interface range GigabitEthernet0/1-2
 switchport trunk native vlan 99
 channel-group 1 mode active
 switchport mode trunk

interface Port-channel 1
 switchport mode trunk

interface Port-channel 4

interface Port-channel 6


s4
enable
config


spanning-tree mode rapid-pvst

interface range FastEthernet0/1-9
 switchport access vlan 10


interface range FastEthernet0/10-20
 switchport access vlan 20

interface range FastEthernet0/21-22
 switchport trunk native vlan 99
 channel-group 5 mode active
 switchport mode trunk


interface range FastEthernet0/23-24
 switchport trunk native vlan 99
 channel-group 4 mode active
 switchport mode trunk

interface range GigabitEthernet0/1-2
 switchport trunk native vlan 99
 channel-protocol lacp
 channel-group 2 mode active
 switchport mode trunk
```

```
interface Port-channel 1
 switchport mode trunk

interface Port-channel 2
 switchport mode trunk

interface Port-channel 4
 switchport mode trunk

interface Port-channel 5
 switchport mode trunk
```