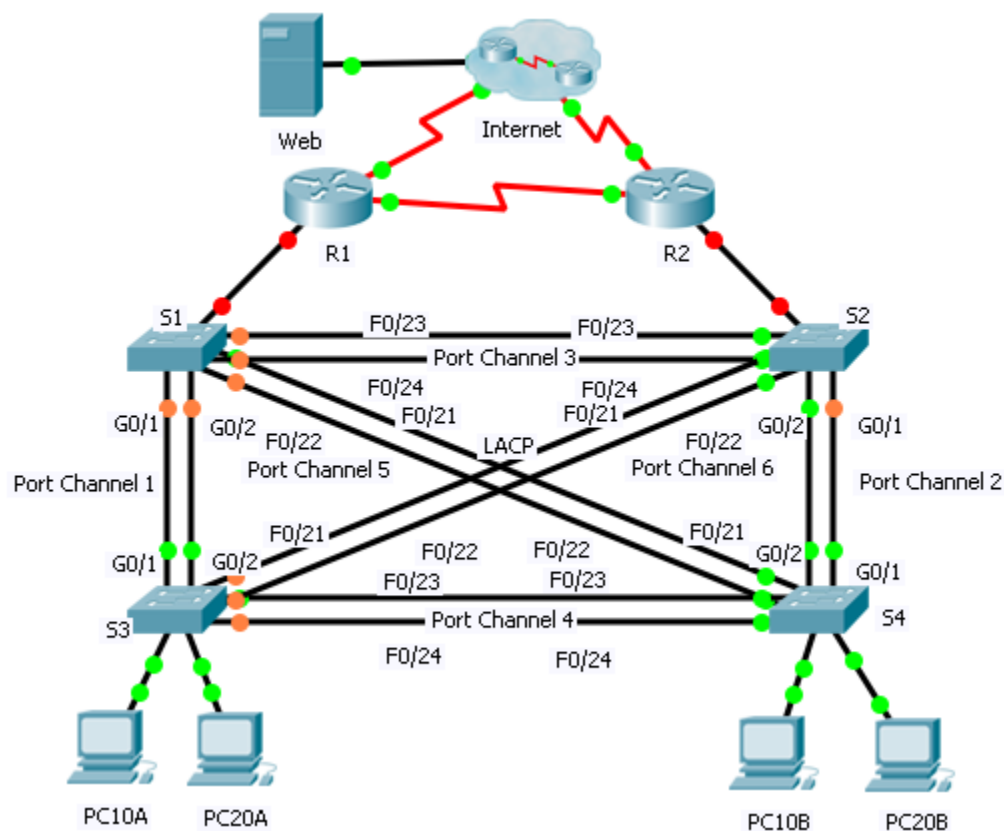


## Packet Tracer – Skills Integration Challenge (Instructor Version)

**Instructor Note:** Red font color or Gray highlights indicate text that appears in the instructor copy only.

### 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 G0/1 – 0/2 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 G0/1 – 0/2 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: G0/1 – 2	S3: G0/1 – 2
2	S2: G0/1 – 2	S4: G0/1 – 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

**Instructor Note:** Packet Tracer 6.0.1 does not grade the **switchport mode trunk** command or the **switchport trunk native vlan** command in port-channel interfaces.

### Connectivity

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

### Scripts

#### Router R1

```
!R1
enable
configure 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
!
router ospf 1
  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 192.168.10.0 0.0.0.255 area 0
  network 192.168.20.0 0.0.0.255 area 0
end
copy run start
```

#### Router R2

```
!R2
enable
configure 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  
!  
router ospf 1  
  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 192.168.10.0 0.0.0.255 area 0  
  network 192.168.20.0 0.0.0.255 area 0  
end  
copy run start
```

### Switch S1

```
!S1  
enable  
configure t  
vlan 10  
vlan 20  
vlan 99  
interface range f0/1 - 9  
  switchport mode access  
  switchport access vlan 10  
inte range f0/10 - 19  
  switchport mode access  
  switchport access vlan 20  
interface range f0/20 - 24, g0/1-2  
  switchport mode trunk  
  switchport trunk native vlan 99  
!  
interface range g0/1 - 2  
  channel-group 1 mode active  
interface range f0/21 - 22  
  channel-group 5 mode active  
interface range f0/23 - 24  
  channel-group 3 mode active  
!  
interface po 1  
  switchport mode trunk  
  switchport trunk native vlan 99  
interface po 3  
  switchport mode trunk  
  switchport trunk native vlan 99  
interface po 5  
  switchport mode trunk  
  switchport trunk native vlan 99  
!
```

```
spanning-tree mode rapid-pvst
spanning-tree vlan 10 priority 4096
spanning-tree vlan 20 priority 8192
end
copy run start
```

### Switch S2

```
!S2
enable
configure t
vlan 10
vlan 20
vlan 99
interface range f0/1 - 9
    switchport mode access
    switchport access vlan 10
inte range f0/10 - 19
    switchport mode access
    switchport access vlan 20
inte range f0/20 - 24, g0/1-2
    switchport mode trunk
    switchport trunk native vlan 99
!
interface range g0/1 - 2
    channel-group 2 mode active
interface range f0/21 - 22
    channel-group 6 mode active
interface range f0/23 - 24
    channel-group 3 mode active
!
interface po 2
    switchport mode trunk
    switchport trunk native vlan 99
interface po 3
    switchport mode trunk
    switchport trunk native vlan 99
interface po 6
    switchport mode trunk
    switchport trunk native vlan 99
!
spanning-tree mode rapid-pvst
spanning-tree vlan 10 priority 8192
spanning-tree vlan 20 priority 4096
end
copy run start
```

### Switch S3

```
!S3
```

```
enable
configure t
vlan 10
vlan 20
vlan 99
interface range f0/1 - 9
    switchport mode access
    switchport access vlan 10
inte range f0/10 - 20
    switchport mode access
    switchport access vlan 20
inte range f0/21 - 24, g0/1-2
    switchport mode trunk
    switchport trunk native vlan 99
!
interface range g0/1 - 2
    channel-group 1 mode active
interface range f0/21 - 22
    channel-group 6 mode active
interface range f0/23 - 24
    channel-group 4 mode active
!
interface po 1
    switchport mode trunk
    switchport trunk native vlan 99
interface po 4
    switchport mode trunk
    switchport trunk native vlan 99
interface po 6
    switchport mode trunk
    switchport trunk native vlan 99
!
spanning-tree mode rapid-pvst
spanning-tree vlan 10 priority 32768
spanning-tree vlan 20 priority 32768
end
copy run start
```

### Switch S4

```
!S4
enable
configure t
vlan 10
vlan 20
vlan 99
interface range f0/1 - 9
    switchport mode access
    switchport access vlan 10
inte range f0/10 - 20
```

```
switchport mode access
switchport access vlan 20
inte range f0/21 - 24, g0/1-2
switchport mode trunk
switchport trunk native vlan 99
!
interface range g0/1 - 2
channel-group 2 mode active
interface range f0/21 - 22
channel-group 5 mode active
interface range f0/23 - 24
channel-group 4 mode active
interface po 2
switchport mode trunk
switchport trunk native vlan 99
interface po 4
switchport mode trunk
switchport trunk native vlan 99
interface po 5
switchport mode trunk
switchport trunk native vlan 99
!
spanning-tree mode rapid-pvst
spanning-tree vlan 10 priority 32768
spanning-tree vlan 20 priority 32768
end
copy run start
```