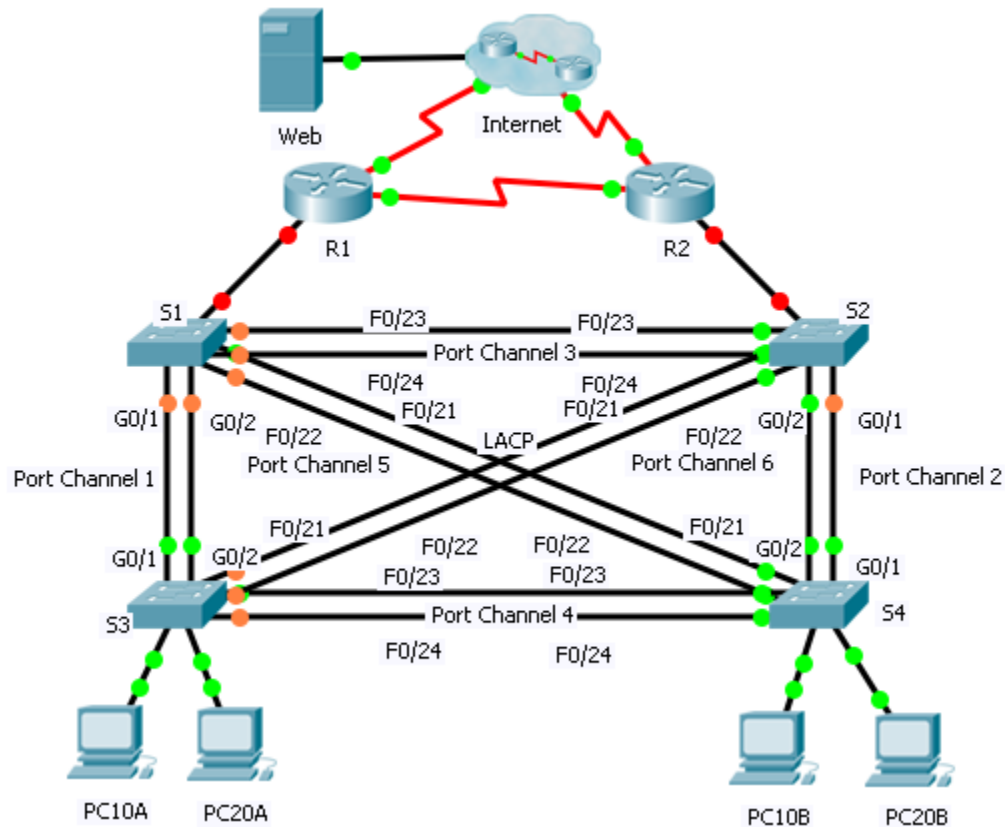


# Packet Tracer – Skills Integration Challenge (Instructor Version)

**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	209.165.200.238	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	209.165.202.158	255.255.255.224	N/A	N/A
ISP	S0/0/0	209.165.200.225	255.255.255.224	N/A	N/A
	S0/0/1	209.165.202.129	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 inter-VLAN routing with RIPv2, VLANs with VTP, trunking, and EtherChannel with PVST. The PCs and 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. Because this activity is checking over 150 items, not all configurations are assigned a point value. Click **Check Results > Assessment Items** to verify you have correctly configured all 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 RIPv2 using the following requirements:

- Do not advertise the network connected to the Internet.
- Disable autosummarization.
- Disable RIP updates for each subinterface.

### VTP and VLANs

- Configure S1 as the VTP server. Configure all other switches as VTP clients. They are not allowed to create VLANs.
  - VTP domain is **CCNA**.
  - VTP password is **cisco123**.
- Create VLAN 10, 20, and 99 on **S1**.
- 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 to trunk all VLANs including VLAN 99 as the native VLAN.
- 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.

## Packet Tracer – Skills Integration Challenge

---

- 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.

## 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 rip
version 2
network 192.168.1.0
network 192.168.10.0
network 192.168.20.0
network 192.168.99.0
passive-interface GigabitEthernet0/0.1
passive-interface GigabitEthernet0/0.10
passive-interface GigabitEthernet0/0.20
no auto-summary
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 rip
version 2
network 192.168.1.0
network 192.168.10.0
network 192.168.20.0
network 192.168.99.0
passive-interface GigabitEthernet0/0.1
passive-interface GigabitEthernet0/0.10
passive-interface GigabitEthernet0/0.20
no auto-summary
end
copy run start
```

### Switch S1

```
!S1
enable
configure t
vtp mode server
vtp domain CCNA
vtp password cisco123
vlan 10
vlan 20
vlan 99
exit
interface range f0/1 - 9
switchport mode access
switchport access vlan 10
inte range f0/10 - 19
```

## Packet Tracer – Skills Integration Challenge

---

```
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
vtp mode client
vtp domain CCNA
vtp password cisco123
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
```

## Packet Tracer – Skills Integration Challenge

---

```
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
vtp mode client
vtp domain CCNA
vtp password cisco123
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
vtp mode client
vtp domain CCNA
vtp password cisco123
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
```