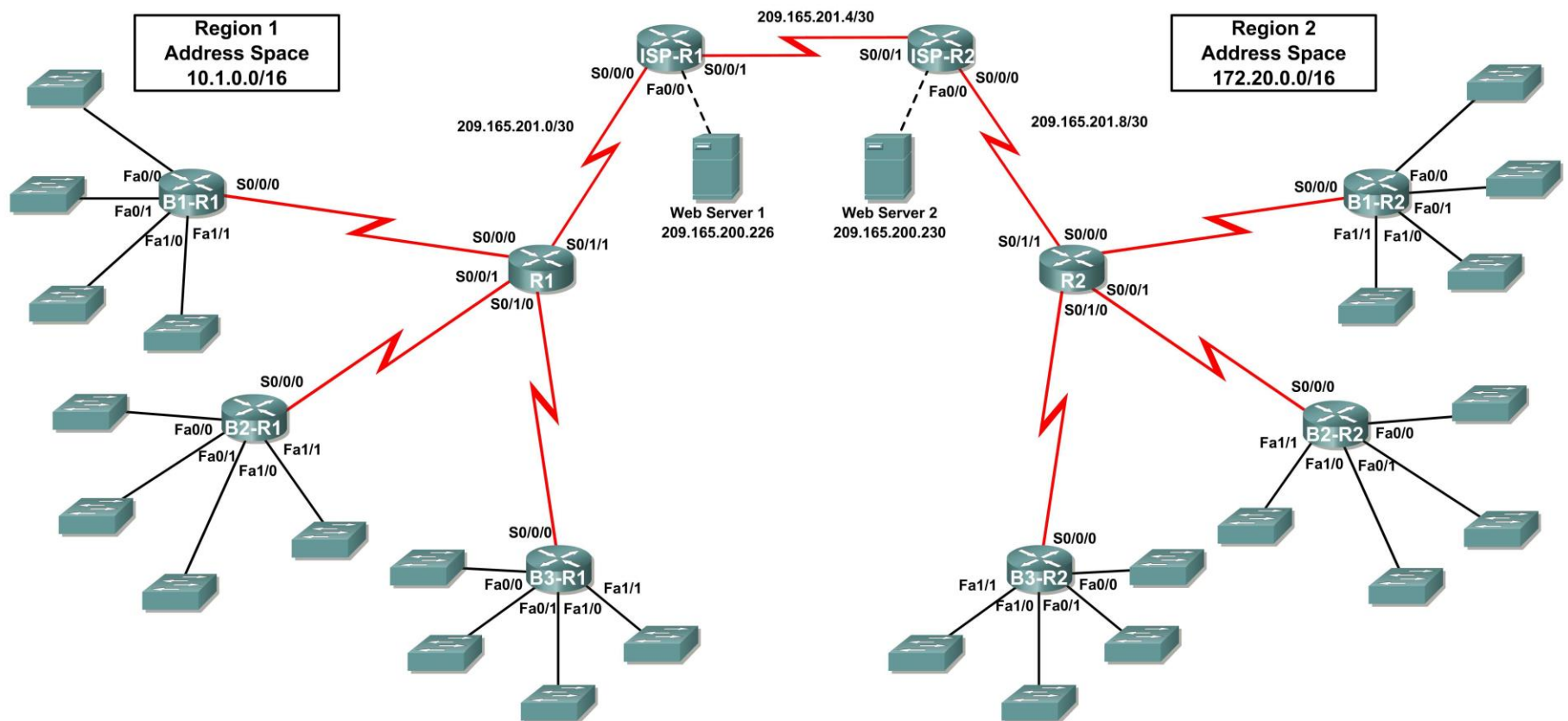


5.7.1: Packet Tracer Skills Integration Challenge Activity

Topology Diagram



Addressing Table for R1

| Device | Interface | IP Address | Subnet Mask |
|--------------|-----------|-----------------|-----------------|
| R1 | S0/0/0 | 10.1.244.1 | 255.255.252.0 |
| | S0/0/1 | 10.1.248.1 | 255.255.252.0 |
| | S0/1/0 | 10.1.252.1 | 255.255.252.0 |
| | S0/1/1 | 209.165.201.2 | 255.255.255.252 |
| B1-R1 | Fa0/0 | 10.1.0.1 | 255.255.252.0 |
| | Fa0/1 | 10.1.4.1 | 255.255.252.0 |
| | Fa1/0 | 10.1.8.1 | 255.255.252.0 |
| | Fa1/1 | 10.1.12.1 | 255.255.252.0 |
| | S0/0/0 | 10.1.244.2 | 255.255.252.0 |
| B2-R1 | Fa0/0 | 10.1.16.1 | 255.255.252.0 |
| | Fa0/1 | 10.1.20.1 | 255.255.252.0 |
| | Fa1/0 | 10.1.24.1 | 255.255.252.0 |
| | Fa1/1 | 10.1.28.1 | 255.255.252.0 |
| | S0/0/0 | 10.1.248.2 | 255.255.252.0 |
| B3-R1 | Fa0/0 | 10.1.32.1 | 255.255.252.0 |
| | Fa0/1 | 10.1.36.1 | 255.255.252.0 |
| | Fa1/0 | 10.1.40.1 | 255.255.252.0 |
| | Fa1/1 | 10.1.44.1 | 255.255.252.0 |
| | S0/0/0 | 10.1.252.2 | 255.255.252.0 |
| ISP-R1 | S0/0/0 | 209.165.201.1 | 255.255.255.252 |
| | S0/0/1 | 209.165.201.5 | 255.255.255.252 |
| | Fa0/0 | 209.165.200.225 | 255.255.255.252 |
| Web Server 1 | NIC | 209.165.200.226 | 255.255.255.252 |

Addressing Table for R2

| Device | Interface | IP Address | Subnet Mask |
|--------------|-----------|-----------------|-----------------|
| R2 | S0/0/0 | 172.20.250.1 | 255.255.254.0 |
| | S0/0/1 | 172.20.252.1 | 255.255.254.0 |
| | S0/1/0 | 172.20.254.1 | 255.255.254.0 |
| | S0/1/1 | 209.165.201.10 | 255.255.255.252 |
| B1-R2 | Fa0/0 | 172.20.0.1 | 255.255.254.0 |
| | Fa0/1 | 172.20.2.1 | 255.255.254.0 |
| | Fa1/0 | 172.20.4.1 | 255.255.254.0 |
| | Fa1/1 | 172.20.6.1 | 255.255.254.0 |
| | S0/0/0 | 172.20.250.2 | 255.255.254.0 |
| B2-R2 | Fa0/0 | 172.20.8.1 | 255.255.254.0 |
| | Fa0/1 | 172.20.10.1 | 255.255.254.0 |
| | Fa1/0 | 172.20.12.1 | 255.255.254.0 |
| | Fa1/1 | 172.20.14.1 | 255.255.254.0 |
| | S0/0/0 | 172.20.252.2 | 255.255.254.0 |
| B3-R2 | Fa0/0 | 172.20.16.1 | 255.255.254.0 |
| | Fa0/1 | 172.20.18.1 | 255.255.254.0 |
| | Fa1/0 | 172.20.20.1 | 255.255.254.0 |
| | Fa1/1 | 172.20.22.1 | 255.255.254.0 |
| | S0/0/0 | 172.20.254.2 | 255.255.254.0 |
| ISP-R2 | S0/0/0 | 209.165.201.6 | 255.255.255.252 |
| | S0/0/1 | 209.165.201.9 | 255.255.255.252 |
| | Fa0/0 | 209.165.200.229 | 255.255.255.252 |
| Web Server 2 | NIC | 209.165.200.230 | 255.255.255.252 |

Objectives

- Design and document an addressing scheme based on requirements.
- Apply a basic configuration to the devices.
- Configure static routing between ISP routers.
- Configure RIPv1 routing in Region 1 and Region 2
- Disable RIP updates on appropriate interfaces
- Configure default routes and redistribute through RIP
- Verify full connectivity between all devices in the topology.

Task 1: Design and document an addressing scheme.

Step 1: Design an addressing scheme.

Using the topology and the following requirements, design an addressing scheme:

- The WAN links between R1 and R2 and their respective ISP routers are already configured. Also, the links between the ISPs and the Web Servers are already configured.
- Since RIPv1 is a classful routing protocol, you cannot implement Variable Length Subnet Masks (VLSM). Subnet each region's address space using the following guidelines:
 - The largest subnet in Region 1's address space is 1,000 hosts. What is the subnet mask you should use for the 10.1.0.0/16 address space? **_255.255.252.0/22_**
 - The largest subnet in Region 2's address space is 500 hosts. What is the subnet mask you should use for the 172.20.0.0/16 address space? **_255.255.254.0/23_**
- For the LANs in Region 1, assign subnet 0 to the LAN attached to FastEthernet 0/0 on B1-R1. Continue to assign LANs in sequence. Subnet 1 is assigned to the LAN attached to FastEthernet 0/1 on B1-R1; Subnet 2 to FastEthernet 1/0; Subnet 3 to FastEthernet 1/1 and so on.
- For the WANs in Region 1, assign the last subnet to the link between R1 and B3-R1, the second to last subnet to the link between R1 and B2-R1 and the third to the last subnet to link between R1 and B1-R1.
- Record the Region 1 subnet assignments in the following table:

| Router | Subnet Number | Subnet Address |
|---------------|-------------------------|----------------|
| B1-R1 Fa0/0 | 0 | 10.1.0.0 |
| B1-R1 Fa0/1 | 1 | 10.1.4.0 |
| B1-R1 Fa1/0 | 2 | 10.1.8.0 |
| B1-R1 Fa1/1 | 3 | 10.1.12.0 |
| B2-R1 Fa0/0 | 4 | 10.1.16.0 |
| B2-R1 Fa0/1 | 5 | 10.1.20.0 |
| B2-R1 Fa1/0 | 6 | 10.1.24.0 |
| B2-R1 Fa1/1 | 7 | 10.1.28.0 |
| B3-R1 Fa0/0 | 8 | 10.1.32.0 |
| B3-R1 Fa0/1 | 9 | 10.1.36.0 |
| B3-R1 Fa1/0 | 10 | 10.1.40.0 |
| B3-R1 Fa1/1 | 11 | 10.1.44.0 |
| B1-R1 <--> R1 | 3 rd to Last | 10.1.244.0 |
| B2-R1 <--> R1 | 2 nd to Last | 10.1.248.0 |
| B3-R1 <--> R1 | Last | 10.1.252.0 |

- For the LANs in Region 2, following the same format for assigning subnets that you used for Region 1: Subnet 0 to the Fa0/0 interface on B1-R2; Subnet 1 to Fa0/1, and so on.
- For the WANs in Region 2, assign the last subnet to the link between R2 and B3-R2, the second to last subnet to the link between R2 and B2-R2 and the third to the last subnet to link between R2 and B1-R2.
- Record the Region 2 subnet assignments in the following table:

| Router | Subnet Number | Subnet Address |
|---------------|-------------------------|----------------|
| B1-R2 Fa0/0 | 0 | 172.20.0.0 |
| B1-R2 Fa0/1 | 1 | 172.20.2.0 |
| B1-R2 Fa1/0 | 2 | 172.20.4.0 |
| B1-R2 Fa1/1 | 3 | 172.20.6.0 |
| B2-R2 Fa0/0 | 4 | 172.20.8.0 |
| B2-R2 Fa0/1 | 5 | 172.20.10.0 |
| B2-R2 Fa1/0 | 6 | 172.20.12.0 |
| B2-R2 Fa1/1 | 7 | 172.20.14.0 |
| B3-R2 Fa0/0 | 8 | 172.20.16.0 |
| B3-R2 Fa0/1 | 9 | 172.20.18.0 |
| B3-R2 Fa1/0 | 10 | 172.20.20.0 |
| B3-R2 Fa1/1 | 11 | 172.20.22.0 |
| B1-R2 <--> R2 | 3 rd to Last | 172.20.250.0 |
| B2-R2 <--> R2 | 2 nd to Last | 172.20.252.0 |
| B3-R2 <--> R2 | Last | 172.20.254.0 |

Step 2: Document the addressing scheme.

- Optional: On the topology, label each subnet. To save space, use only the last two octets since only these octets change.
- Use the table provided in the printed instructions to document the IP addresses and subnet masks. Assign the first IP address to the router interface.
- For the WAN links, assign the first IP address to R1 and R2 for links to each router's respective B1, B2, and B3 routers.

Task 3: Apply a basic configuration. ✓ Done

Using your documentation, configure the routers with basic configurations including addressing. Use **cisco** as the line passwords and **class** as the secret password. Use 64000 as the clock rate.

Task 4: Configure static routing between ISP routers. ✓ Done

Each ISP router already has two static routes to the other ISP router's directly connected WANs. Implement static routing on each ISP router to insure connectivity between the two regions.

Task 5: Configure RIPv1 routing in Region 1 and Region 2. ✓ Done

Configure RIP routing on all regional routers. Remember, the ISP routers are only using static routing.

Task 6: Disable RIP updates on appropriate interfaces. ✓ Done

RIP updates do not need to be sent out all the router interfaces. Disable RIP updates on appropriate interfaces.

Task 7: Configure default routes and redistribute through RIP. ✓ Done

Determine which routers need a default route. Then configure that router to redistribute the default route to other routers in the region.

Task 8: Verify full connectivity between all devices in the topology. ✓ Done

Step 1: Test connectivity. ✓ Done

- You should now have end-to-end connectivity. Use ping to test connectivity across the network. Each router should be able to ping all other router interfaces and both Web Servers.
- Troubleshoot until pings are successful.

Step 2: Examine the configuration. ✓ Done

Use verification commands to make sure your configurations are complete.