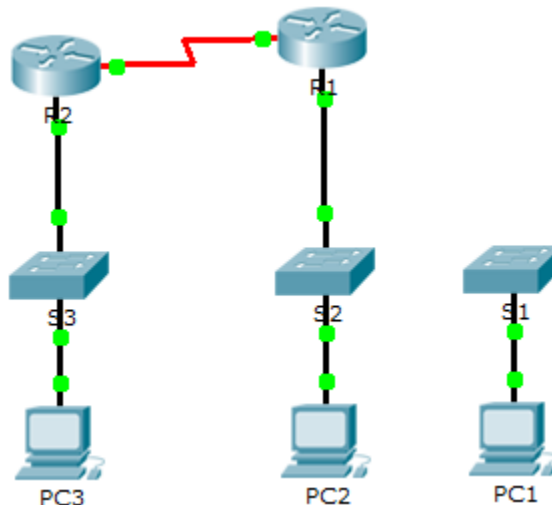


# Packet Tracer – Investigating Convergence

## Topology



## Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/0	209.165.0.1	255.255.255.0	N/A
	G0/1	64.100.0.1	255.0.0.0	N/A
	S0/0/0	192.168.1.2	255.255.255.0	N/A
R2	G0/0	10.0.0.1	255.0.0.0	N/A
	S0/0/0	192.168.1.1	255.255.255.0	N/A
PC1	NIC	64.100.0.2	255.0.0.0	64.100.0.1
PC2	NIC	209.165.0.2	255.255.255.0	209.165.0.1
PC3	NIC	10.0.0.2	255.0.0.0	10.0.0.1

## Objectives

**Part 1: View the Routing Table of a Converged Network**

**Part 2: Add a New LAN to the Topology**

**Part 3: Watch the Network Converge**

## Background

This activity will help you identify important information in routing tables and witness the process of network convergence.

## Part 1: View the Routing Table of a Converged Network

### Step 1: Use show commands and interpret the output.

- Show the directly connected networks of **R1**. How many routes are connected to **R1**?  

```
R1# show ip route connected
```
- Show the running configuration of **R1**. What routing protocol is in use?
- Are the IP addresses in the configuration advertised by RIP the same as those that are connected?
- Are these IP addresses assignable, network, or broadcast?
- Show the networks of **R1** learned through RIP. How many routes are there?  

```
R1# show ip route rip
```
- Show all of the networks that **R1** has in its routing table. What do the leading letters represent?  

```
R1# show ip route
```
- Repeat step 1, a to f on **R2**. Compare the output of the two routers.

### Step 2: Verify the state of the topology.

- Ping **PC3** from **PC2**. The ping should be successful.
- Show the interface status on **R2**. Two interfaces should have assigned addresses. Each address corresponds to a connected network.  

```
R2# show ip interface brief
```
- Show the interface status on **R1**. How many interfaces have assigned addresses?  

```
R1# show ip interface brief
```

## Part 2: Add a New LAN to the Topology

### Step 1: Add an Ethernet cable.

- Connect the correct Ethernet cable from **S1** to the appropriate port on **R1**.
- Ping from **PC1** to **PC2** after the affected **S1** port turns green. Was the ping successful?
- Ping from **PC1** to **PC3**. Was the ping successful? Why?

### Step 2: Configure a route.

- Switch from Realtime mode to Simulation mode.
- Enter a new route on **R1** for the 64.0.0.0 network.  

```
R1(config)# router rip  
R1(config-router)# network 64.0.0.0
```
- Examine the PDUs leaving **R1**. What type are they?

## Part 3: Watch the Network Converge

### Step 1: Use debug commands.

- a. Enable debugging on **R2**.

```
R2# debug ip rip
```

```
R2# debug ip routing
```

- b. For reference, show the routing table of **R2** as in step 1f.
- c. Click **Capture / Forward** from simulation mode. What notification appeared in the terminal of **R2**?
- d. According to the debugging output, how many hops away from R2 is 64.0.0.0?
- e. What interface does **R2** send packets destined for the 64.0.0.0 network?
- f. Show the routing table of **R2**. Record the new entry.

### Step 2: Verify the state of the topology.

Ping from **PC1** to **PC3**. Was the ping successful? Why?

### Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: View the Routing Table of a Converged Network.	Step 1-a	6	
	Step 1-b	6	
	Step 1-c	6	
	Step 1-d	6	
	Step 1-e	6	
	Step 1-f	6	
	Step 2-c	6	
<b>Part 1 Total</b>		<b>42</b>	
Part 2: Add a New LAN to the Topology	Step 1-b	6	
	Step 1-c	6	
	Step 2-c	6	
<b>Part 2 Total</b>		<b>18</b>	
Part 3: Watch the Network Converge	Step 1-c	6	
	Step 1-d	6	
	Step 1-e	6	
	Step 1-f	6	
	Step 2-a	6	
<b>Part 3 Total</b>		<b>30</b>	
<b>Packet Tracer Score</b>		<b>10</b>	
<b>Total Score</b>		<b>100</b>	