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 |

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

1. Background

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

1. View the Routing Table of a Converged Network
	1. Use show commands and interpret the output.
		1. Show the directly connected networks of **R1**. How many routes are connected to **R1**? \_\_\_\_\_\_\_\_\_\_\_\_

R1# **show ip route connected**

* + 1. Show the running configuration of **R1**. What routing protocol is in use? \_\_\_\_\_\_\_\_\_\_\_\_
		2. Are the IP addresses in the configuration advertised by RIP the same as those that are connected? \_\_\_\_
		3. Are these IP addresses assignable, network, or broadcast? \_\_\_\_\_\_\_\_\_\_\_\_
		4. Show the networks of **R1** learned through RIP. How many routes are there? \_\_\_\_\_\_\_\_\_\_\_\_

R1# **show ip route rip**

* + 1. Show all of the networks that **R1** has in its routing table. What do the leading letters represent?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

R1# **show ip route**

* + 1. Repeat step 1, a to f on **R2**. Compare the output of the two routers.
	1. Verify the state of the topology.
		1. Ping **PC3** from **PC2**. The ping should be successful.
		2. Show the interface status on **R2**. Two interfaces should have assigned addresses. Each address corresponds to a connected network.

R2# **show ip interface brief**

* + 1. Show the interface status on **R1**. How many interfaces have assigned addresses? \_\_\_\_\_\_\_\_\_\_\_\_

R1# **show ip interface brief**

1. Add a New LAN to the Topology
	1. Add an Ethernet cable.
		1. Connect the correct Ethernet cable from **S1** to the appropriate port on **R1**.
		2. Ping from **PC1** to **PC2** after the affected **S1** port turns green. Was the ping successful? \_\_\_\_\_\_\_\_\_\_\_\_
		3. Ping from **PC1** to **PC3**. Was the ping successful? Why?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Configure a route.
		1. Switch from Realtime mode to Simulation mode.
		2. 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**

* + 1. Examine the PDUs leaving **R1**. What type are they? \_\_\_\_\_\_\_\_\_\_\_\_
1. Watch the Network Converge
	1. Use debug commands.
		1. Enable debugging on **R2**.

R2# **debug ip rip**

R2# **debug ip routing**

* + 1. For reference, show the routing table of **R2** as in step 1f.
		2. Click **Capture / Forward** from simulation mode. What notification appeared in the terminal of **R2**?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. According to the debugging output, how many hops away from R2 is 64.0.0.0? \_\_\_\_\_\_\_\_\_\_\_\_
		2. What interface does **R2** send packets destined for the 64.0.0.0network? \_\_\_\_\_\_\_\_\_\_\_\_
		3. Show the routing table of **R2**. Record the new entry.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Verify the state of the topology.

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

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 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 |  |
| **Part 1 Total** | **42** |  |
| Part 2: Add a New LAN to the Topology | Step 1-b | 6 |  |
| Step 1-c | 6 |  |
| Step 2-c | 6 |  |
| **Part 2 Total** | **18** |  |
| 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 |  |
| **Part 3 Total** | **30** |  |
| **Packet Tracer Score** | **10** |  |
| **Total Score** | **100** |  |