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BTECH CSE C

1. Overview of Lab Objectives

This lab aims to configure RIP version 1 (RIPv1) on Cisco routers using Cisco Packet Tracer. The goal is to establish communication between two local area networks (LAN1 and LAN2) using routers R1 and R2. The routing protocol used is RIP to exchange route information between the two routers dynamically.

2. Steps to Set Up the Network

Network Setup and Device Connections

- **Devices Used:**
  - 2 Cisco Router 1941
  - 2 Cisco Switch 2960
  - 4 PC-PTs
- **Cabling:**
  - Routers R1 and R2 are connected with a **Serial DCE-DTE** cable.
  - R1 and R2 are connected to Switch SW1 and SW2 using **straight-through** cables to the **GigabitEthernet** ports.
  - PC1 and PC2 are connected to SW1, PC3 and PC4 are connected to SW2, using **straight-through** cables.

IP Configuration on Routers

R1 Configuration:

R1#conf t

R1(config)#interface serial 0/1/0

R1(config-if)#ip address 10.1.1.1 255.255.255.0

R1(config-if)#no shutdown

R1#conf t

R1(config)#interface gigabitethernet 0/1

R1(config-if)#ip address 192.168.5.1 255.255.255.0

R1(config-if)#no shutdown

R2 Configuration:

 R2#conf t

R2(config)#interface serial 0/1/1

R2(config-if)#ip address 10.1.1.2 255.255.255.0

R2(config-if)#no shutdown

R2#conf t

R2(config)#interface gigabitethernet 0/1

R2(config-if)#ip address 192.168.10.1 255.255.255.0

R2(config-if)#no shutdown

Testing Connection (Before Enabling RIP)

- **Ping Test:** Pinging from **PC1** to **R1's GigabitEthernet** interface (192.168.5.1) and **R2's Serial interface** (10.1.1.2) results in successful pings within LAN1, but fails when pinging devices on LAN2, indicating a need for routing between the networks.

3. Enabling RIP Configuration

R1 Configuration:

R1#conf t

R1(config)#router rip

R1(config-router)#network 192.168.5.0

R1(config-router)#network 10.1.1.0

R1(config-router)#exit

R1#wr

R2 Configuration:

R2#conf t

R2(config)#router rip

R2(config-router)#network 192.168.10.0

R2(config-router)#network 10.1.1.0

R2(config-router)#exit

R2#wr

Timer Adjustment for RIP

4. Verifying RIP Configuration and Testing Connectivity

a) Show IP Route

After configuring RIP, routers will exchange routes, enabling LAN1 to communicate with LAN2. To verify RIP routes:

5. Cables and Color Codes

- **Serial DCE-DTE Cable:**

   Ø Used to connect **R1** and **R2** on their **Serial interfaces**.

   Ø DCE side sets the clock rate for serial communication.

- **Straight-Through Cable:**

Ø Used for connecting devices like PCs to switches or routers to switches.

Ø **Color Code:** Green/White, Green, Orange/White, Blue, Blue/White, Orange, Brown/White, Brown.

6. Summary of Lessons Learned

- **RIPv1 Configuration:** Understanding the process of enabling and configuring RIPv1 on Cisco routers to enable dynamic routing between networks.
- **IP Addressing and Testing:** Assigning IP addresses to GigabitEthernet and Serial interfaces on routers and ensuring connectivity between devices using ping.
- **Routing Protocols:** Learned how to enable RIP and exchange routing information dynamically, and tested it by using CLI commands like show ip route and show ip protocols.
- **Cable Types and Use Cases:** Familiar with different cable types, such as DCE-DTE and straight-through cables, and their specific functions in a network.

7. Screenshots and Packet Tracer Project