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Practical 7: Dynamic Routing with RIP

Step-1: Open Cisco Packet Tracer and create a new project.

Step-2: Add two routers, two switches, and two PCs per network onto the workspace.

Step-3: Connect each PC to its respective switch using straight-through Ethernet cables.

Step-4: Connect each switch to its respective router with straight-through Ethernet cables.

Step-5: Use a serial DCE cable to connect Router 1 to Router 2.

Step-6: Configure IP addresses on PCs in Network 1 (e.g., 192.168.1.2 and 192.168.1.3) with a subnet mask of 255.255.255.0.

Step-7: Configure IP addresses on PCs in Network 2 (e.g., 192.168.2.2 and 192.168.2.3) with a subnet mask of 255.255.255.0.

Step-8: On Router 1, assign IP 192.168.1.1 to the interface connected to Network 1 and 10.0.0.1 to the serial interface connecting to Router 2. Enable each interface.

Step-9: On Router 2, assign IP 192.168.2.1 to the interface connected to Network 2 and 10.0.0.2 to the serial interface connecting to Router 1. Enable each interface.

Step-10: Go to the CLI of Router 1, enter `router rip`, then `version 2`, and add networks `192.168.1.0` and `10.0.0.0` using the `network` command.

Step-11: Go to the CLI of Router 2, enter `router rip`, then `version 2`, and add networks `192.168.2.0` and `10.0.0.0` using the `network` command.

Step-12: Verify configurations by using `show ip route` on each router to check that RIP has learned routes for both networks.

Step-13: Test connectivity by pinging from a PC in Network 1 (e.g., 192.168.1.2) to a PC in Network 2 (e.g., 192.168.2.2).

Step-14: Switch to **Simulation Mode** and add a PDU packet from a PC in Network 1 to a PC in Network 2.

Step-15: Click **Auto Capture/Play** to observe packet traversal and confirm dynamic routing between routers.

Practical 9: Configuring Separate DNS and HTTP Servers

Step-1: Assign IP addresses to each device:

- DNS Server: IP address 192.168.1.1, Subnet Mask 255.255.255.0.
- HTTP Server: IP address 192.168.1.2, Subnet Mask 255.255.255.0.
- PC: IP address 192.168.1.3, Subnet Mask 255.255.255.0, Gateway 192.168.1.1.

Step-2: On the DNS Server, go to the **Services** tab, select **DNS**, and enable the DNS service.

Step-3: Add a DNS record:

- Enter the domain name as "www.bharatch.com".
- Set the IP address to 192.168.1.2 (the HTTP server's IP).

Step-4: On the HTTP Server, open the **Services** tab, select **HTTP**, and enable the HTTP service.

Step-5: Under the HTTP service, open the **HTML** editor to create a webpage. Add the following HTML code:

```
<html>
<head><title>Welcome</title></head>
<body><h1>Bharath</h1></body>
</html>
```

- Save this file so that it displays "Bharath" when accessed.

Step-6: On the PC, go to the IP configuration and set the DNS server to 192.168.1.1 (the DNS server's IP address).

Step-7: Open the web browser on the PC and enter `http://www.bharath.com` to test the DNS resolution and access the webpage.

Step-8: Verify that the webpage loads successfully on the PC with "Bharatch" displayed.

Step-9: Switch to **Simulation Mode** in Packet Tracer.

Step-10: Add a **Simple PDU** from the PC to `www.bharath.com` to observe the DNS and HTTP request.

Step-11: Click **Auto Capture/Play** to see the DNS resolution and HTTP request flow between the PC, DNS server, and HTTP server.

Practical 10: Configuring DNS Server for Multiple Domains

Step-1: Open Cisco Packet Tracer and start a new project.

Step-2: Add a DNS server, two HTTP servers, a switch, and a PC to the workspace.

Step-3: Connect all devices to the switch using straight-through Ethernet cables.

Step-4: Configure IP addresses as follows:

- DNS Server: IP address 192.168.1.1, Subnet Mask 255.255.255.0.
- HTTP Server 1: IP address 192.168.1.2, Subnet Mask 255.255.255.0.
- HTTP Server 2: IP address 192.168.1.3, Subnet Mask 255.255.255.0.
- PC: IP address 192.168.1.4, Subnet Mask 255.255.255.0, Gateway 192.168.1.1.

Step-5: On the DNS Server, open the **Services** tab, then select **DNS**.

Step-6: Enable the DNS service by switching it on.

Step-7: Add DNS records for the HTTP servers:

- For HTTP Server 1, add a DNS entry with the name "www.server1.com" and IP address 192.168.1.2.
- For HTTP Server 2, add a DNS entry with the name "www.server2.com" and IP address 192.168.1.3.

Step-8: On HTTP Server 1, open the **Services** tab, select **HTTP**, and enable the HTTP service.

Step-9: Under HTTP settings on Server 1, open the **HTML** editor and create a webpage with the following HTML code:

```
<html>
<head><title>Server 1</title></head>
<body><h1>Welcome to Server 1</h1></body>
</html>
```

- Save this HTML file to display "Welcome to Server 1" when accessed.

Step-10: On HTTP Server 2, go to the **Services** tab, select **HTTP**, and enable the HTTP service.

Step-11: Under HTTP settings on Server 2, open the **HTML** editor and create a webpage with the following HTML code:

```
<html>
<head><title>Server 2</title></head>
<body><h1>Welcome to Server 2</h1></body>
</html>
```

- Save this HTML file to display "Welcome to Server 2" when accessed.

Step-12: On the PC, configure the DNS server in the IP settings to 192.168.1.1 (the DNS server's IP address).

Step-13: Open the web browser on the PC and enter `http://www.server1.com` to verify that the DNS resolves to HTTP Server 1 and displays "Welcome to Server 1".

Step-14: Next, in the browser on the PC, enter `http://www.server2.com` to verify that the DNS resolves to HTTP Server 2 and displays "Welcome to Server 2".

Step-15: Switch to **Simulation Mode** in Packet Tracer, add **Simple PDUs** from the PC to both `www.server1.com` and `www.server2.com`.

Step-16: Click **Auto Capture/Play** to observe the DNS resolution process and HTTP requests between the PC, DNS server, and both HTTP servers.

Practical 11: Configuring DHCP Server

Step-1: Open Cisco Packet Tracer and create a new project.

Step-2: Add a DHCP server, a switch, and two PCs to the workspace.

Step-3: Connect the DHCP server and both PCs to the switch using straight-through Ethernet cables.

Step-4: Open the DHCP server, go to the **Config** tab, and set its IP address:

- IP address: 192.168.1.1
- Subnet Mask: 255.255.255.0

Step-5: On the DHCP server, switch to the **Services** tab, select **DHCP**, and enable the DHCP service.

Step-6: Under DHCP settings, define a new IP pool:

- **Start IP Address**: 192.168.1.10
- **Subnet Mask**: 255.255.255.0
- **Default Gateway**: 192.168.1.1
- **DNS Server**: (Enter a DNS server address if needed, or leave blank if not used in this setup)

Step-7: Save the DHCP settings by clicking **Add** to confirm the IP pool configuration.

Step-8: Go to PC1, open the **Config** tab, and set the **IP Configuration** to **DHCP**.

Step-9: Wait a moment for the PC to receive an IP address from the DHCP server. Verify that PC1 has an IP address in the range you set (e.g., 192.168.1.10 or higher).

Step-10: Repeat Steps 8 and 9 on PC2 to confirm it also receives a dynamic IP address from the DHCP server.

Step-11: Check both PCs' IP configurations to confirm they each have unique IP addresses from the DHCP pool, with a subnet mask of 255.255.255.0 and the gateway set to 192.168.1.1.

Step-12: Test network connectivity by opening the command prompt on PC1 and pinging PC2 to verify they can communicate on the network.

Step-13: Switch to **Simulation Mode** in Packet Tracer, and add **Simple PDUs** from PC1 to PC2 to observe DHCP request and response packets.

Step-14: Click **Auto Capture/Play** to see the DHCP discovery, offer, request, and acknowledgment packets exchanged between the PCs and the DHCP server.

Step-15: Return to **Real-Time Mode** and perform additional ping tests between the devices to confirm continuous network connectivity.

Practical 12: Configuring and Demonstrating FTP Service in a Network

Step 1:

Configure **PC1** with an IP address of `192.168.1.2`, a subnet mask of `255.255.255.0`, and a default gateway of `192.168.1.1`. This will place PC1 on the same network as the router and server, allowing communication between the devices.

Step 2:

Configure **PC2** with an IP address of `192.168.1.3`, a subnet mask of `255.255.255.0`, and the same default gateway `192.168.1.1`. This ensures PC2 is also on the same network and can communicate with the router and server.

Step 3:

Access the **Router CLI**, enter privileged mode with the `enable` command, and then enter global configuration mode with `configure terminal`. Set the router's interface `gigabitEthernet 0/0` to IP address `192.168.1.1` with the subnet

mask `255.255.255.0` by typing `ip address 192.168.1.1 255.255.255.0`. Enable the interface using the `no shutdown` command.

Step 4:

On the **Server**, enable the **FTP Service** in the global settings, and assign the server IP address `192.168.1.10` with the subnet mask `255.255.255.0`. This will place the server on the same network and allow it to interact with PC1 and PC2.

Step 5:

Create a user on the **Server** for FTP access by setting the **username** as `user1` and the **password** as `password123`. This user will be required to authenticate when accessing the FTP service.

Step 6:

On the **Server**, create a text file called `test.txt` with the content "Hello, FTP!" This file will be used for the FTP upload and download demonstration.

Step 7:

Connect **PC1** and **PC2** to the **Switch** using Ethernet cables. Ensure both PCs are connected properly for network communication.

Step 8:

Connect the **Router** to the **Switch** using an Ethernet cable from the Router's gigabitEthernet 0/0 interface to the Switch.

Step 9:

On **PC1**, open the command prompt and run the command `ping 192.168.1.10` to verify the connection between PC1 and the server. Ensure the ping request is successful.

Step 10:

On **PC2**, open the command prompt and run `ping 192.168.1.10` to verify the connection between PC2 and the server. Again, ensure the ping is successful to confirm network connectivity.

Step 11:
On **PC1**, type `ftp 192.168.1.10` to initiate an FTP connection to the server. This will prompt you for the username and password.

Step 12:
Log into the FTP server on **PC1** by entering **username** `user1` and **password** `password123`. You will now have access to the FTP server.

Step 13:
After logging in on **PC1**, type `ls` to list the files on the FTP server. This will show the files available on the server, confirming that the FTP service is active.

Step 14:
On **PC1**, upload the `test.txt` file to the server using the command `put test.txt`. This will transfer the file from **PC1** to the **FTP server**.

Step 15:
Check the **Server's Files** tab to verify that the `test.txt` file has been successfully uploaded.

Step 16:
On **PC2**, open the command prompt and type `ftp 192.168.1.10` to connect to the FTP server.

Step 17:
Log into the FTP server on **PC2** with **username** `user1` and **password** `password123`. This will allow **PC2** to access the files on the FTP server.

Step 18:
On **PC2**, use the `get test.txt` command to download the `test.txt` file from the server to **PC2**.

Step 19:
Verify that the `test.txt` file has been successfully downloaded to **PC2** by checking the files on the local machine.

Step 20:

Once the file has been downloaded, both **PC1** and **PC2** should log out of the FTP session by typing `bye`, ending the FTP connection.