Packet Tracer – Configuring Frame Relay Point-to-Point Subinterfaces

Topology

Addressing Table

<table>
<thead>
<tr>
<th>Device</th>
<th>Interface</th>
<th>IP Address</th>
<th>Subnet Mask</th>
<th>Default Gateway</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>G0/0</td>
<td>192.168.10.1</td>
<td>255.255.255.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>S0/0/0.2</td>
<td>10.1.1.1</td>
<td>255.255.255.252</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>S0/0/0.3</td>
<td>10.1.3.2</td>
<td>255.255.255.252</td>
<td>N/A</td>
</tr>
<tr>
<td>R2</td>
<td>G0/0</td>
<td>192.168.30.1</td>
<td>255.255.255.0</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>S0/0/0.1</td>
<td>10.1.1.2</td>
<td>255.255.255.252</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>S0/0/0.3</td>
<td>10.1.2.1</td>
<td>255.255.255.252</td>
<td>N/A</td>
</tr>
<tr>
<td>R3</td>
<td>S0/0/0.1</td>
<td>10.1.3.1</td>
<td>255.255.255.252</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>S0/0/0.2</td>
<td>10.1.2.2</td>
<td>255.255.255.252</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>S0/1/0</td>
<td>209.165.200.225</td>
<td>255.255.255.224</td>
<td>N/A</td>
</tr>
<tr>
<td>ISP</td>
<td>S0/0/0</td>
<td>209.165.200.226</td>
<td>255.255.255.224</td>
<td>N/A</td>
</tr>
<tr>
<td>Web</td>
<td>NIC</td>
<td>209.165.200.2</td>
<td>255.255.255.252</td>
<td>209.165.200.1</td>
</tr>
<tr>
<td>PC</td>
<td>NIC</td>
<td>192.168.10.10</td>
<td>255.255.255.0</td>
<td>192.168.10.1</td>
</tr>
<tr>
<td>Laptop</td>
<td>NIC</td>
<td>192.168.30.10</td>
<td>255.255.255.0</td>
<td>192.168.30.1</td>
</tr>
</tbody>
</table>

Objectives

Part 1: Configure Frame Relay
Part 2: Configure Frame Relay Point-to-Point Subinterfaces
Part 3: Verify Configuration and Connectivity
Scenario

In this activity, you will configure Frame Relay with two subinterfaces on each router to reach the other two routers. You will also configure EIGRP and verify end-to-end connectivity.

Part 1: Configure Frame Relay

Step 1: Configure Frame Relay encapsulation on the S0/0/0 interface of R1.

```
R1(config)# interface s0/0/0
R1(config-if)# encapsulation frame-relay
R1(config-if)# no shutdown
```

Step 2: Configure Frame Relay encapsulation on the S0/0/0 interfaces of R2 and R3.

Step 3: Test connectivity.

From the command prompt on PC, verify connectivity to the Laptop, located at 192.168.30.10, using the ping command.

The ping from PC to Laptop should fail because the R1 router does not have to route to reach the 192.168.30.0 network. R1 must be configured with a Frame Relay on subinterfaces so that it can find the next hop destination to reach that network.

Part 2: Configure Frame Relay Point-to-Point Subinterfaces

Each router requires two subinterfaces to reach the other routers. The DLCIs to reach these routers are provided below.

Step 1: Configure subinterfaces on R1, R2, and R3.

a. Configure R1 to use subinterfaces. DLCI 102 is used to communicate from R1 to R2, while DLCI 103 is used to communicate from R1 to R3.

```
R1(config)# interface s0/0/0.2 point-to-point
R1(config-subif)# ip address 10.1.1.1 255.255.255.252
R1(config-subif)# frame-relay interface-dlci 102
R1(config-subif)# interface s0/0/0.3 point-to-point
R1(config-subif)# ip address 10.1.3.2 255.255.255.252
R1(config-subif)# frame-relay interface-dlci 103
```

b. Add network entries to EIGRP autonomous system 1 to reflect the IP addresses above.

```
R1(config)# router eigrp 1
R1(config-router)# network 10.1.1.0 0.0.0.3
R1(config-router)# network 10.1.3.0 0.0.0.3
```

c. Configure R2 to use subinterfaces. DLCI 201 is used to communicate from R2 to R1, while DLCI 203 is used to communicate from R2 to R3. Use the correct IP address in the Address Table for each subinterface.

d. Add the appropriate EIGRP entries to R2 for autonomous system of 1.

e. Configure R3 to use subinterfaces. DLCI 301 is used to communicate from R3 to R1, while DLCI 302 is used to communicate from R3 to R2. Use the correct IP address for each subinterface.

f. Add the appropriate EIGRP entries to R3 for autonomous system of 1.
Part 3: Verify Configuration and Connectivity

Step 1: Verify the Frame Relay configuration.

Show information about Frame Relay and the connections that have been made. Note the fields for BECN, FECN, DE, DLCI, and LMI TYPE.

R1# show frame-relay map
R1# show frame-relay pvc
R1# show frame-relay lmi

Step 2: Verify end-to-end connectivity.

The PC and Laptop should be able to ping each other and the Web Server.