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| **Sheridan College** | | |
| **Course** | **TELE33324: Data Network Design and Configuration – Routers and Switches** | |
| **Professor** | **Ida Leung** | |
| **Student Name(s)** | **Kunjan Patel** | |
| **Table number** |  | |
| **Lab3 : Static Route Setup** | | |
| **Performed Date** | **03/06/2019** | |
| **Instructor's Sign** |  | **(marks)** |

**Follow the procedure to configure your topology:**

1. Define two routers and use model 2911
2. Execute basic configuration

Hostname: <student’s initial>\_R1/R2

Enable password: cisco

Secret Password: tele33324

Time zone: EST

1. Connect both routers using copper connections. Make three links from R1 to R2 and use the following address scheme:

|  |  |  |
| --- | --- | --- |
| **A-End Interface Name** | **Z-End Interface Name** | **Subnet for the point-to-point** |
| **R1 G0/0** | **R2 G0/0** | **10.0.0.4/30 (IPv4)** |
| **R1 G0/1** | **R2 G0/1** | **10.0.4.8/30 (IPv4)** |
| **R1 G0/2** | **R2 G0/2** | **10.0.7.16/30 (IPv4)** |
| **R1 G0/0** | **R2 G0/0** | **2607:f798::/127 (IPv6)** |
| **R1 G0/1** | **R2 G0/1** | **2607:f798:ffff:1234::/127 (IPv6)** |
| **R1 G0/2** | **R2 G0/2** | **2607:f798:dddd::/127 (IPv6)** |

1. Configure the following null route in R2:

**R2(config)#**ip route 7.7.7.0 255.255.255.0 null0

**R2(config)#**ip route 7.8.9.0 255.255.255.0 null0

**R2(config)#**ip route 7.9.9.0 255.255.255.0 null0

These routes are called null route.

Do you know the use of null route? (research in Internet)

Null route doesn’t point to any interface or node, thus any packet forwarded on that route will drop by router. That is the reason why it known as null route.

There are two main use of null route

1. Prevent looping in network
2. Drop unnecessary traffic from network
3. Configure the static route on R1 to allow any traffic destinated to 7.7.7.0 to use interface g0/0 first and g0/1 as backup

Show ip route to verify it

Shutdown interface g0/0, then show ip route to verify it

1. Configure the static route on R1 to allow any traffic destinated to 7.8.9.0 to use interface g0/1 first and g0/2 as backup

Show ip route to verify it

Shutdown interface g0/0, then show ip route to verify it

1. Configure the static route on R1 to allow any traffic destinated to 7.9.9.0 to use interface g0/2 first and g0/0 as backup

Show ip route to verify it

Shutdown interface g0/0, then show ip route to verify it

1. Rest of the traffic use all three interfaces to R2 equally

Show ip route to verify it

Shutdown interface g0/0, then show ip route to verify it

1. Bring back all interfaces up and execute the following to verify the routing and capture the output, attach to this document.

R1> show ip route

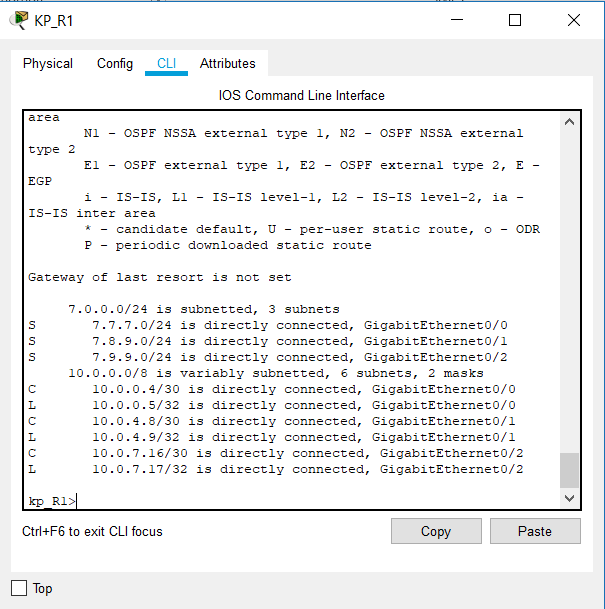
R1> show ipv6 route

R2> show ip route

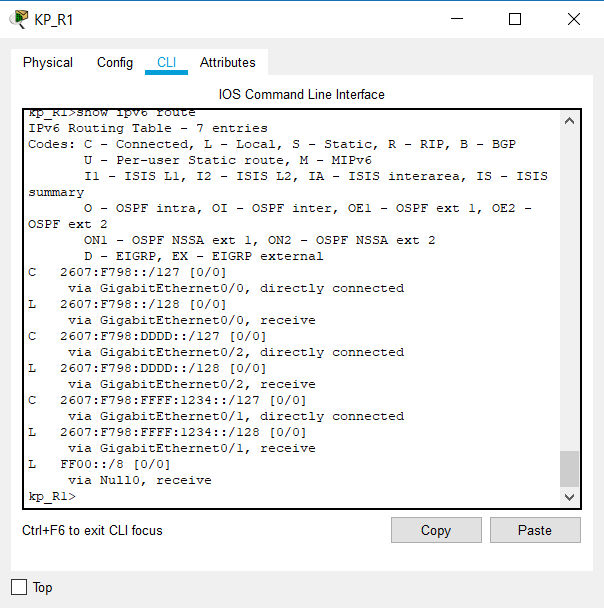
R2> show ipv6 route

Fill in the following table for R1 (add more lines if needed)

|  |  |  |
| --- | --- | --- |
| Type of route (connected/static) | Destination subnet | Next-hop interfaces |
| Static | 255.255.255.0 | GigabitEthernet0/0 |
| Static | 255.255.255.0 | GigabitEthernet0/1 |
| Static | 255.255.255.0 | GigabitEthernet0/2 |
| Connected | 255.255.255.252 | GigabitEthernet0/0 |
| Local | 255.255.255.255 | GigabitEthernet0/0 |
| Connected | 255.255.255.252 | GigabitEthernet0/1 |
| Local | 255.255.255.255 | GigabitEthernet0/1 |
| Connected | 255.255.255.252 | GigabitEthernet0/2 |
| Local | 255.255.255.255 | GigabitEthernet0/2 |



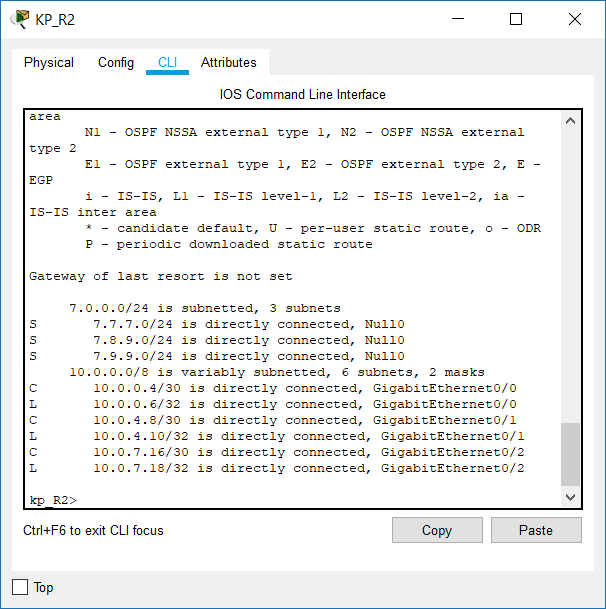
**Fig 1.1 R1 IPv4 Routes**



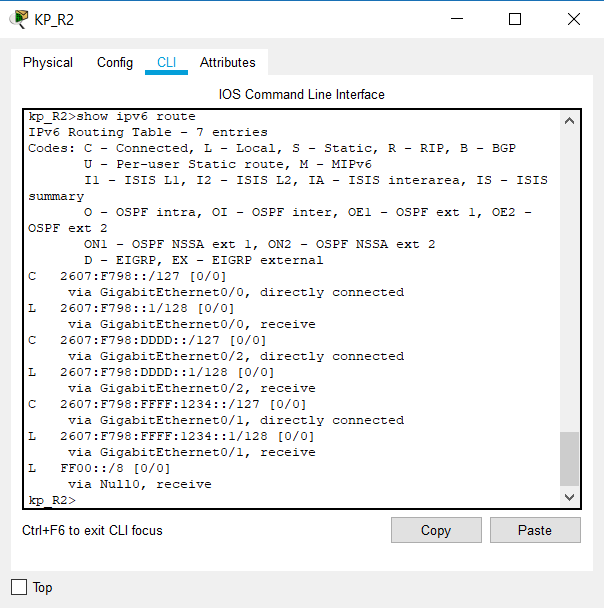
**Fig 1.2 R1 IPv6 Routes**

Fill in the following table for R2 (add more lines if needed)

|  |  |  |
| --- | --- | --- |
| Type of route (connected/static) | Destination subnet | Next-hop interfaces |
| Static | 255.255.255.0 | Null |
| Static | 255.255.255.0 | Null |
| Static | 255.255.255.0 | Null |
| Connected | 255.255.255.252 | GigabitEthernet0/0 |
| Local | 255.255.255.255 | GigabitEthernet0/0 |
| Connected | 255.255.255.252 | GigabitEthernet0/1 |
| Local | 255.255.255.255 | GigabitEthernet0/1 |
| Connected | 255.255.255.252 | GigabitEthernet0/2 |
| Local | 255.255.255.255 | GigabitEthernet0/2 |



**Fig 1.3 R2 IPv4 Routes**

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**Fig 1.4 R2 IPv6 Routes**

And rest of the traffic go to use both interfaces (remind yourself the use of default route)