**Actividad y practica “Desafío del comando Show IP Route “**

**Escenario**

En esta actividad, determinará la topología de una red utilizando los resultados del comando **show ip route**. Debe dibujar un diagrama de topología y determinar el direccionamiento de interfaz de cada router. Luego, debe crear y configurar la red con base a los resultados. Las asignaciones de DTE y DCE quedan a su criterio. Una vez finalizado, los resultados de la red deben coincidir con los que se detallan a continuación.

**Tarea 1: Examinar los resultados del router.**

**Paso 1: Examine el resultado del router R1.**

R1**#show ip route**

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o – ODR

P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/30 is subnetted, 4 subnets

R 10.10.10.0 [120/1] via 10.10.10.6, 00:00:09, Serial0/0/0

C 10.10.10.4 is directly connected, Serial0/0/0

C 10.10.10.8 is directly connected, Serial0/0/1

R 10.10.10.12 [120/1] via 10.10.10.10, 00:00:09, Serial0/0/1

172.16.0.0/16 is variably subnetted, 10 subnets, 5 masks

C 172.16.1.0/27 is directly connected, FastEthernet0/0

R 172.16.1.32/28 [120/2] via 10.10.10.10, 00:00:09, Serial0/0/1

R 172.16.1.192/26 [120/1] via 10.10.10.6, 00:00:09, Serial0/0/0

R 172.16.2.0/26 [120/2] via 10.10.10.6, 00:00:09, Serial0/0/0

R 172.16.2.64/27 [120/1] via 10.10.10.10, 00:00:09, Serial0/0/1

C 172.16.3.0/25 is directly connected, FastEthernet0/1

R 172.16.3.128/26 [120/1] via 10.10.10.6, 00:00:09, Serial0/0/0

R 172.16.3.192/29 [120/2] via 10.10.10.6, 00:00:09, Serial0/0/0

R 172.16.4.0/27 [120/1] via 10.10.10.10, 00:00:09, Serial0/0/1

R 172.16.4.128/25 [120/2] via 10.10.10.10, 00:00:09, Serial0/0/1

C 192.168.1.0/24 is directly connected, Loopback0

S\* 0.0.0.0/0 is directly connected, Loopback0

**Paso 2: Examine el resultado del router R2.**

R2**#show ip route**

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o – ODR

P - periodic downloaded static route

Gateway of last resort is 10.10.10.2 to network 0.0.0.0

10.0.0.0/30 is subnetted, 4 subnets

C 10.10.10.0 is directly connected, Serial0/0/0

R 10.10.10.4 [120/1] via 10.10.10.2, 00:00:04, Serial0/0/0

R 10.10.10.8 [120/2] via 10.10.10.2, 00:00:04, Serial0/0/0

R 10.10.10.12 [120/3] via 10.10.10.2, 00:00:04, Serial0/0/0

172.16.0.0/16 is variably subnetted, 10 subnets, 5 masks

R 172.16.1.0/27 [120/2] via 10.10.10.2, 00:00:04, Serial0/0/0

R 172.16.1.32/28 [120/4] via 10.10.10.2, 00:00:04, Serial0/0/0

R 172.16.1.192/26 [120/1] via 10.10.10.2, 00:00:04, Serial0/0/0

C 172.16.2.0/26 is directly connected, FastEthernet0/0

R 172.16.2.64/27 [120/3] via 10.10.10.2, 00:00:04, Serial0/0/0

R 172.16.3.0/25 [120/2] via 10.10.10.2, 00:00:04, Serial0/0/0

R 172.16.3.128/26 [120/1] via 10.10.10.2, 00:00:04, Serial0/0/0

C 172.16.3.192/29 is directly connected, FastEthernet0/1

R 172.16.4.0/27 [120/3] via 10.10.10.2, 00:00:04, Serial0/0/0

R 172.16.4.128/25 [120/4] via 10.10.10.2, 00:00:04, Serial0/0/0

R 192.168.1.0/24 [120/2] via 10.10.10.2, 00:00:04, Serial0/0/0

R\* 0.0.0.0/0 [120/2] via 10.10.10.2, 00:00:04, Serial0/0/0

**Paso 3: Examine el resultado del router R3.**

R3#**show ip route**

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o – ODR

P - periodic downloaded static route

Gateway of last resort is 10.10.10.5 to network 0.0.0.0

10.0.0.0/30 is subnetted, 4 subnets

C 10.10.10.0 is directly connected, Serial0/0/1

C 10.10.10.4 is directly connected, Serial0/0/0

R 10.10.10.8 [120/1] via 10.10.10.5, 00:00:04, Serial0/0/0

R 10.10.10.12 [120/2] via 10.10.10.5, 00:00:04, Serial0/0/0

172.16.0.0/16 is variably subnetted, 10 subnets, 5 masks

R 172.16.1.0/27 [120/1] via 10.10.10.5, 00:00:04, Serial0/0/0

R 172.16.1.32/28 [120/3] via 10.10.10.5, 00:00:04, Serial0/0/0

C 172.16.1.192/26 is directly connected, FastEthernet0/1

R 172.16.2.0/26 [120/1] via 10.10.10.1, 00:00:03, Serial0/0/1

R 172.16.2.64/27 [120/2] via 10.10.10.5, 00:00:04, Serial0/0/0

R 172.16.3.0/25 [120/1] via 10.10.10.5, 00:00:04, Serial0/0/0

C 172.16.3.128/26 is directly connected, FastEthernet0/0

R 172.16.3.192/29 [120/1] via 10.10.10.1, 00:00:03, Serial0/0/1

R 172.16.4.0/27 [120/2] via 10.10.10.5, 00:00:04, Serial0/0/0

R 172.16.4.128/25 [120/3] via 10.10.10.5, 00:00:04, Serial0/0/0

R 192.168.1.0/24 [120/1] via 10.10.10.5, 00:00:04, Serial0/0/0

R\* 0.0.0.0/0 [120/1] via 10.10.10.5, 00:00:04, Serial0/0/0

**Paso 4: Examine el resultado del router R4.**

R4#**show ip route**

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o – ODR

P - periodic downloaded static route

Gateway of last resort is 10.10.10.9 to network 0.0.0.0

10.0.0.0/30 is subnetted, 4 subnets

R 10.10.10.0 [120/2] via 10.10.10.9, 00:00:14, Serial0/0/0

R 10.10.10.4 [120/1] via 10.10.10.9, 00:00:14, Serial0/0/0

C 10.10.10.8 is directly connected, Serial0/0/0

C 10.10.10.12 is directly connected, Serial0/0/1

172.16.0.0/16 is variably subnetted, 10 subnets, 5 masks

R 172.16.1.0/27 [120/1] via 10.10.10.9, 00:00:14, Serial0/0/0

R 172.16.1.32/28 [120/1] via 10.10.10.14, 00:00:17, Serial0/0/1

R 172.16.1.192/26 [120/2] via 10.10.10.9, 00:00:14, Serial0/0/0

R 172.16.2.0/26 [120/3] via 10.10.10.9, 00:00:14, Serial0/0/0

C 172.16.2.64/27 is directly connected, FastEthernet0/1

R 172.16.3.0/25 [120/1] via 10.10.10.9, 00:00:14, Serial0/0/0

R 172.16.3.128/26 [120/2] via 10.10.10.9, 00:00:14, Serial0/0/0

R 172.16.3.192/29 [120/3] via 10.10.10.9, 00:00:14, Serial0/0/0

C 172.16.4.0/27 is directly connected, FastEthernet0/0

R 172.16.4.128/25 [120/1] via 10.10.10.14, 00:00:17, Serial0/0/1

R 192.168.1.0/24 [120/1] via 10.10.10.9, 00:00:14, Serial0/0/0

R\* 0.0.0.0/0 [120/1] via 10.10.10.9, 00:00:14, Serial0/0/0

**Paso 5: Examine el resultado del router R5.**

R5#**show ip route**

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B – BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E – EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

\* - candidate default, U - per-user static route, o – ODR

P - periodic downloaded static route

Gateway of last resort is 10.10.10.13 to network 0.0.0.0

R 10.10.10.0 [120/3] via 10.10.10.13, 00:00:21, Serial0/0/0

R 10.10.10.4 [120/2] via 10.10.10.13, 00:00:21, Serial0/0/0

R 10.10.10.8 [120/1] via 10.10.10.13, 00:00:21, Serial0/0/0

C 10.10.10.12 is directly connected, Serial0/0/0

172.16.0.0/16 is variably subnetted, 10 subnets, 5 masks

R 172.16.1.0/27 [120/2] via 10.10.10.13, 00:00:21, Serial0/0/0

C 172.16.1.32/28 is directly connected, FastEthernet0/1

R 172.16.1.192/26 [120/3] via 10.10.10.13, 00:00:21, Serial0/0/0

R 172.16.2.0/26 [120/4] via 10.10.10.13, 00:00:21, Serial0/0/0

R 172.16.2.64/27 [120/1] via 10.10.10.13, 00:00:21, Serial0/0/0

R 172.16.3.0/25 [120/2] via 10.10.10.13, 00:00:21, Serial0/0/0

R 172.16.3.128/26 [120/3] via 10.10.10.13, 00:00:21, Serial0/0/0

R 172.16.3.192/29 [120/4] via 10.10.10.13, 00:00:21, Serial0/0/0

R 172.16.4.0/27 [120/1] via 10.10.10.13, 00:00:21, Serial0/0/0

C 172.16.4.128/25 is directly connected, FastEthernet0/0

R 192.168.1.0/24 [120/2] via 10.10.10.13, 00:00:21, Serial0/0/0

R\* 0.0.0.0/0 [120/2] via 10.10.10.13, 00:00:21, Serial0/0/0

**Tarea 2: Crear un diagrama de la red con base a los resultados del router.**

Paso 1: Dibuje en el siguiente espacio un diagrama de la red con base a su interpretación de los resultados del router.

Paso 2: Documente las direcciones de interfaz en la tabla de direccionamiento.

**Tabla de direccionamiento (incluir una tabla)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Dispositivo** | **Interfaz** | **Dirección IP** | **Máscara de subred** | **Gateway por defecto** |
| **Router 1** | Serial 0/0 | 10.10.10.5 | 255.255.255.252 | **10.10.10.0** |
|  | Serial 0/1 | 10.10.10.9 | 255.255.255.252 |  |
|  | Fast e 0/0 | 172.16.1.2 | 255.255.255.244 |  |
|  | Fast e 0/1 | 172.16.3.2 | 255.255.255.128 |  |
| **Router 2** | Serial 0/0 | 10.10.10.1 | 255.255.255.252 |  |
|  | Fast e 0/0 | 172.16.2.2 | 255.255.255.192 |  |
|  | Fast e 0/1 | 172.16.3.194 | 255.255.255.248 |  |
| **Router 3** | Serial 0/0 | 10.10.10.6 | 255.255.255.252 |  |
|  | Serial 0/1 | 10.10.10.2 | 255.255.255.252 |  |
|  | Fast e 0/0 | 172.16.3.130 | 255.255.255.192 |  |
|  | Fast e 0/1 | 172.16.1.194 | 255.255.255.192 |  |
| **Router 4** | Serial 0/0 | 10.10.10.10 | 255.255.255.252 |  |
|  | Serial 0/1 | 10.10.10.13 | 255.255.255.252 |  |
|  | Fast e 0/0 | 172.16.4.2 | 255.255.255.224 |  |
|  | Fast e 0/1 | 172.16.2.66 | 255.255.255.224 |  |
| **Router 5** | Serial 0/0 | 10.10.10.14 | 255.255.255.252 |  |
|  | Fast e 0/0 | 172.16.4.130 | 255.255.255.128 |  |
|  | Fast e 0/1 | 172.16.1.34 | 255.255.255.240 |  |

**Tarea 3: Crear y configurar el diagrama con Packet Tracer.**

Paso 1: Cree el diagrama de topología en Packet Tracer, utilizar el router modelo 2621.

Paso 2: Configure las interfaces con la dirección IP y máscara de subred correspondientes.

Paso 3: Configure el protocolo de enrutamiento correspondiente para cada router y notifique a todas las redes conectadas directamente.

Paso 4: Verifique que las configuraciones coincidan con los resultados de la Tarea 1.

**Tarea 4: Identificar los procesos de enrutamiento.**

Paso 1: Examine la tabla de enrutamiento de R1.

¿Cuáles son las direcciones IP de los vecinos del router R1 conectados directamente?

10.10.10.8

10.10.10.4

172.16.1.0 / 27

172.16.3.0 / 25

192.168.1.0 / 24 (Loopback)

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¿Qué rutas tomó R1 de los vecinos conectados directamente?

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**Paso 2: Examine la tabla de enrutamiento de R2.**

¿Cuántas redes o subredes totales tomó R2 de sus vecinos?

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¿Dónde enviaría R2 los paquetes para las redes que no están actualmente en su tabla de enrutamiento?

¿Por qué?

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¿Qué significa el extracto “**R\* 0.0.0.0/0 [120/2] via 10.10.10.2, 00:00:04, Serial0/0/0**” al final de la tabla de enrutamiento R2?

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**Paso 3: Examine la tabla de enrutamiento de R3.**

¿Qué rutas de Nivel 2 tomó R3 de sus vecinos?

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¿Qué redes están conectadas directamente a R3?

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**Paso 4: Examine la tabla de enrutamiento de R4.**

¿Cuál es la red que se encuentra más lejos de R4 y a cuántos saltos se encuentra?

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¿Cuántas direcciones de host disponibles hay en la red más alejada de R4?

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**Paso 5: Examine la tabla de enrutamiento de R5.**

¿Cuántos router debe atravesar un paquete para llegar desde R5 a la red 172.16.2.0/26? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

¿Cuál es el “Gateway de último recurso” para R5 identificado como 10.10.10.13?

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