

DIPLOMADO DE PROFUNDIZACIÓN CISCO (DISEÑO E IMPLEMENTACIÓN DE SOLUCIONES INTEGRADAS LAN / WAN) EVALUACIÓN – PRUEBA DE HABILIDADES PRÁCTICAS CCNA

Presentado por: ERWIN MANUEL ARTUNDUAGA CRUZ

Grupo 203092_

Presentado a Tutor: JOSE IGNACIO CARDONA

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA ESCUELA DE CIENCIAS BASICAS TECNOLOGIA E INGENIERIA PROGRAMA INGENIERIA DE SISTEMAS PITALITO – HUILA JULIO DE 2019

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INTRODUCCIÒN

Con el desarrollo del trabajo final se pretende dar a conocer de manera práctica las habilidades y conocimientos adquiridos por los estudiantes durante el desarrollo o etapa lectiva del curso. Así poner en conocimiento y evidencia por parte de los tutores encargados del proceso educativo y formativo de manera correcta todos los principios y fundamentos teóricos en las configuraciones, características, conexiones y principios que hace posible las conexión de diferentes protocolos y equipos en una red de telecomunicaciones, además de aplicar el manejo de las herramientas de software como lo es el Packet Tracer para el desarrollo de la actividad solicitada.

Descripción de escenarios propuestos para la prueba de habilidades

Escenario 1

Una empresa posee sucursales distribuidas en las ciudades de Bogotá y Medellín, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.



Topología de red

Este escenario plantea el uso de RIP como protocolo de enrutamiento, considerando que se tendran rutas por defecto redistribuidas; asimismo, habilitar el encapsulamiento PPP y su autenticación.

Los routers Bogota2 y medellin2 proporcionan el servicio DHCP a su propia red LAN y a los routers 3 de cada ciudad.

Debe configurar PPP en los enlaces hacia el ISP, con autenticación.

Debe habilitar NAT de sobrecarga en los routers Bogota1 y medellin1.

DESARROLLO

Como trabajo inicial se debe realizar lo siguiente.

Realizar las rutinas de diagnóstico y dejar los equipos listos para su configuración (asignar nombres de equipos, asignar claves de seguridad, etc).

MEDELLIN2(config)#hostname MEDELLIN2 MEDELLIN2(config)#no ip domain-lookup MEDELLIN2(config)#service password-encryption MEDELLIN2(config)#enable secret class MEDELLIN2(config)#line console 0 MEDELLIN2(config-line)#password cisco MEDELLIN2(config-line)#login MEDELLIN2(config-line)#LINE VTY 0 15 MEDELLIN2(config-line)#password cisco MEDELLIN2(config-line)#login MEDELLIN3(config)#hostname MEDELLIN3 MEDELLIN3(config)#no ip domain-lookup MEDELLIN3(config)#service password-encryption MEDELLIN3(config)#enable secret class MEDELLIN3(config)#line console 0 MEDELLIN3(config-line)#password cisco MEDELLIN3(config-line)#login MEDELLIN3(config-line)#LINE VTY 0 15 MEDELLIN3(config-line)#password cisco MEDELLIN3(config-line)#login

ISP(config)#no ip domain-lookup ISP(config)#service password-encryption ISP(config)#enable secret class ISP(config)#line console 0 ISP(config-line)#password cisco ISP(config-line)#login ISP(config-line)#LINE VTY 0 15 ISP(config-line)#password cisco ISP(config-line)#password cisco

MEDELLIN1>ENABLE MEDELLIN1#CONF T Enter configuration commands, one per line. End with CNTL/Z. MEDELLIN(config)#hostname MEDELLIN1 MEDELLIN1(config)#no ip domain-lookup MEDELLIN1(config)#service password-encryption MEDELLIN1(config)#enable secret class MEDELLIN1(config)#line console 0 MEDELLIN1(config-line)#password cisco MEDELLIN1(config-line)#login MEDELLIN1(config-line)#LINE VTY 0 15 MEDELLIN1(config-line)#password cisco MEDELLIN1(config-line)#login

BOGOTA1>ENABLE BOGOTA1#conf t Enter configuration commands, one per line. End with CNTL/Z. BOGOTA1(config)#no ip domain-lookup BOGOTA1(config)#service password-encryption BOGOTA1(config)#enable secret class BOGOTA1(config)#line console 0 BOGOTA1(config-line)#password cisco BOGOTA1(config-line)#login BOGOTA1(config-line)#login BOGOTA1(config-line)#LINE VTY 0 15 BOGOTA1(config-line)#password cisco BOGOTA1(config-line)#password cisco

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname BOGOTA2 BOGOTA2(config)#no ip domain-lookup BOGOTA2(config)#service password-encryption BOGOTA2(config)#enable secret class BOGOTA2(config)#line console 0 BOGOTA2(config)#line console 0 BOGOTA2(config-line)#password cisco BOGOTA2(config-line)#login BOGOTA2(config-line)#login BOGOTA2(config-line)#password cisco BOGOTA2(config-line)#password cisco BOGOTA2(config-line)#password cisco

Mind Wide Open[™]

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname BOGOTA3 BOGOTA3(config)#no ip domain-lookup BOGOTA3(config)#service password-encryption BOGOTA3(config)#enable secret class BOGOTA3(config)#line console 0 BOGOTA3(config)#line console 0 BOGOTA3(config-line)#password cisco BOGOTA3(config-line)#login BOGOTA3(config-line)#login BOGOTA3(config-line)#login

Parte 1: Configuración del enrutamiento

Configurar el enrutamiento en la red usando el protocolo RIP versión 2, declare la red principal, desactive la sumarización automática.

Router ISP

Router>ENABLE Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int s0/0/0 Router(config-if)#ip address 209.17.220.1 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/0, c hanged state to down Router(config-if)#int s0/0/1 Router(config-if)#int s0/0/1 Router(config-if)#ip address 209.17.220.5 255.255.255.252 Router(config-if)#ip address 209.17.220.5 255.255.255.252 Router(config-if)#ip address 209.17.220.5 255.255.255.252 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

ROUTER_MEDELLIN1

Router>ENABLE Router#CONF T Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int s0/0/0 Router(config-if)#ip address 209.17.220.2 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router(config-if)#int s0/0/1 Router(config-if)#ip address 172.29.6.1 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down Router(config-if)#int s0/1/0 Router(config-if)#ip address 172.29.6.9 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/1/0, changed state to down Router(config-if)#int s0/1/1 Router(config-if)#ip address 172.29.6.13 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/1/1, changed state to down

ROUTER MEDELLIN_2

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int s0/0/0 Router(config-if)#ip address 172.29.6.2 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router(config-if)#int s0/0/1 Router(config-if)#ip address 172.29.6.5 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down Router(config-if)#int g0/0 Router(config-if)#ip address 172.29.4.1 255.255.255.128 Router(config-if)#no shut Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

ROUTER MEDELLIN_3

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)# Router(config)#int s0/0/0 Router(config-if)#ip address 172.29.6.10 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)#int s0/0/1 %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed st Router(config-if)#int s0/0/1 Router(config-if)#ip address 172.29.6.14 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up Router(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up Router(config-if)#int s0/1/0 Router(config-if)#ip address 172.29.6.6 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/1/0, changed state to up Router(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up Router(config-if)#int g0/0 Router(config-if)#ip address 172.29.4.129 255.255.255.128 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up Router(config-if)#

ROUTER BOGOTA_1

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int s0/0/0 Router(config-if)#ip address 209.17.220.6 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router(config-if)#int s0/0/1 Router(config-if)#ip address 172.29.3.9 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down Router(config-if)#int s0/1/0 Router(config-if)#ip address 172.29.3.1 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/1/0, changed state to down Router(config-if)#int s0/1/1 Router(config-if)#ip address 172.29.3.5 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/1/1, changed state to down Router(config-if)#

ROUTER BOGOTA_2

Router(config-if)#int g0/0 Router(config-if)#ip address 172.29.1.1 255.255.255.0 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up Router(config-if)#int s0/0/0 Router(config-if)#ip address 172.29.3.10 255.255.255.252 Router(config-if)#no shut Router(config-if)#int s0/0/1 Router(config-if)#ip address 172.29.3.13 255.255.255.252 Router(config-if)#clock rate 4000000 Router(config-if)#no shut Router(config-if)#

ROUTER BOGOTA_3

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int s0/0/0 Router(config-if)#ip address 172.29.3.2 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)#int %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router(config-if)#int s0/0/1 Router(config-if)#ip address 172.29.3.6 255.255.255.252 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up Router(config-if)#int g0/0 Router(config-if)#ip address 172.29.3.6 255.255.255.252 %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up % 172.29.3.4 overlaps with Serial0/0/1

Router(config-if)#int g0/0 Router(config-if)#ip address 172.29.0.1 255.255.255.0 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up Router(config-if

AHORA CONFIGURAMOS RIP

MEDELLIN_1

Router> **ENABLE** Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#router rip Router(config-router)#version 2 Router(config-router)#no auto-summary Router(config-router)#do show ip route connected C 172.29.6.0/30 is directly connected, Serial0/0/1 C 172.29.6.8/30 is directly connected, Serial0/1/0 C 172.29.6.12/30 is directly connected, Serial0/1/1 C 209.17.220.0/30 is directly connected, Serial0/0/0 Router(config-router)#network 172.29.6.0 Router(config-router)#network 172.29.6.8 Router(config-router)#network 172.29.6.12 Router(config-router)#passive-interface s0/0/0 Router(config-router)#

MEDELLIN_2

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#router rip Router(config-router)#version 2 Router(config-router)#no auto-summary Router(config-router)#do show ip route connected C 172.29.4.0/25 is directly connected, GigabitEthernet0/0 C 172.29.6.0/30 is directly connected, Serial0/0/0 C 172.29.6.4/30 is directly connected, Serial0/0/1 Router(config-router)#network 172.29.4.0 Router(config-router)#network 172.29.6.0 Router(config-router)#network 172.29.6.4 Router(config-router)#passive-interface g0/0 Router(config-router)#

MEDELLIN_3

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#router rip Router(config-router)#version 2 Router(config-router)#no auto-summary Router(config-router)#do show ip route connected C 172.29.4.128/25 is directly connected, GigabitEthernet0/0 C 172.29.6.4/30 is directly connected, Serial0/1/0 C 172.29.6.8/30 is directly connected, Serial0/0/0 C 172.29.6.12/30 is directly connected, Serial0/0/1 Router(config-router)#network 172.29.4.128 Router(config-router)#network 172.29.6.4 Router(config-router)#network 172.29.6.8 Router(config-router)#network 172.29.6.12 Router(config-router)#passive-interface g0/0 Router(config-router)#

BOGOTA_1

Router> Router>ENABLE Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#router rip Router(config-router)#version 2 Router(config-router)#no auto-summary Router(config-router)#do show ip route connected C 172.29.3.0/30 is directly connected, Serial0/1/0 C 172.29.3.4/30 is directly connected, Serial0/1/1 C 172.29.3.8/30 is directly connected, Serial0/0/1 C 209.17.220.4/30 is directly connected, Serial0/0/0 Router(config-router)#network 172.29.3.0 Router(config-router)#network 172.29.3.4 Router(config-router)#network 172.29.3.8 Router(config-router)#network 172.29.3.8 Router(config-router)#passive-interface s0/0/0 Router(config-router)#

BOGOTA_2

Router(config-router)# Router(config-router)# Router(config-router)#do show ip route connected C 172.29.1.0/24 is directly connected, GigabitEthernet0/0 C 172.29.3.8/30 is directly connected, Serial0/0/0 C 172.29.3.12/30 is directly connected, Serial0/0/1 Router(config-router)#exit Router(config)#router rip Router(config-router)#version 2 Router(config-router)#no auto-summary Router(config-router)#do show ip route connected C 172.29.1.0/24 is directly connected, GigabitEthernet0/0 C 172.29.3.8/30 is directly connected, Serial0/0/0 C 172.29.3.12/30 is directly connected, Serial0/0/1 Router(config-router)#network 172.29.1.0 Router(config-router)#network 172.29.3.8 Router(config-router)#network 172.29.3.12 Router(config-router)#passive-interface g0/0 Router(config-router)#

BOGOTA_3

Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#router rip Router(config-router)#version 2 Router(config-router)#no auto-summary Router(config-router)#do show ip route connected C 172.29.0.0/24 is directly connected, GigabitEthernet0/0 C 172.29.3.0/30 is directly connected, Serial0/0/0 C 172.29.3.4/30 is directly connected, Serial0/0/1 C 172.29.3.12/30 is directly connected, Serial0/1/0 Router(config-router)#network 172.29.0.0 Router(config-router)#network 172.29.3.0 Router(config-router)#network 172.29.3.4 Router(config-router)#passive-interface g0/0 Router(config-router)#

- Los routers Bogota1 y Medellín deberán añadir a su configuración de enrutamiento una ruta por defecto hacia el ISP y, a su vez, redistribuirla dentro de las publicaciones de RIP.

ROUTER MEDELLIN_1

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#ip route 0.0.0.0 0.0.0.0 209.17.220.1 Router(config)#router rip Router(config-router)#default-information originate Router(config-router)#

ROUTER BOGOTA_1

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#ip route 0.0.0.0 0.0.0.0 209.17.220.5 Router(config)#route rip Router(config-router)#default-information origina Router(config-router)# -El router ISP deberá tener una ruta estática dirigida hacia cada red interna de Bogotá y Medellín para el caso se sumarizan las subredes de cada uno a /22.

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#ip route 172.29.4.0 255.255.252.0 209.17.220.2 Router(config)#ip route 172.29.0.0 255.255.252.0 209.17.220.6 Router(config)#

Parte 2: Tabla de Enrutamiento.

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Verificar la tabla de enrutamiento en cada uno de los routers para comprobar las redes y sus rutas.

Imagen 1		lmagen 2
💐 Bogota1 —	□ ×	
Physical Config CLI		Redellin1 - 🗆 🗙
IOS Command Line Interface		Physical Config CLI
<pre>User Access Verification Password: Bogotal>show ip route Codes: L = local, C = connected, S = static, R = RIP, M = mobile, B = BGP D = LIGAP, SX = ZIGAP external, 0 = OSPF, IA = OSPF inter area N1 = OSPF NSSA external type 1, N2 = OSPF external type 2 E1 = OSPF external type 1, 22 = OSPF external type 2, I = SOP i = IS-IS, LI = IS-IS level-1, L2 = IS-IS level-2, ia = IS-IS inter a ' = candidate default, U = per-user static route, o = ODR P = periodic downloaded static route Gateway of last resort is 205.17.220.5 to network 0.0.0.0 I72.25.0.0/16 is variably subnetted, 9 subnets, 3 masks R I72.25.0.0/24 (120/1) via 172.25.3.2, 00:00:24, Serial0/1/0 R I72.25.3.0/30 is directly connected, Serial0/1/1 C I72.25.3.0/30 is directly connected, Serial0/1/1 C I72.25.3.0/30 is directly connected, Serial0/1/1 L I72.25.3.0/30 is directly connected, Serial0/1/1 L I72.25.3.0/30 is directly connected, Serial0/1/1 R I72.25.3.0/30 is directly connected, Serial0/1/1 R I72.25.3.0/30 is directly connected, Serial0/1/1 R I72.25.3.0/30 is directly connected, Serial0/0/1 R I72.25.</pre>	Area V Paste	Ver Access Verification Ver Access Verification Password: Medellin1>show ip route Codes: L = local, C = connected, S = static, R = RIP, H = mobile, B = BGP D = EIGRP, EX = FIGRP external, O = OSFF, IA = OSFF inter area N = OSFF NSSA external type 1, R2 = OSFF NSSA external type 2 EI = OSFF external type 1, R2 = OSFF external type 2, S = EGG I = ISFS, L1 = IS-IS level 1, L2 = ISF1 level 2, is = ISF3 I = ISFS, L1 = ISFS level 1, L2 = OSFF external type 2, S = EGG P = periodic downloaded static route Cateway of last resort is 209.17.220.1 to network 0.0.0.0 172.29.0.0/16 is variably submetted, Serial0/10/1 C = 172.29.6.1/32 is directly connected, Serial0/10/1 C = 0.00.10/10 is directly connected, Serial0/10/1 C = 0.00.17.220.0/34 is directly connected, Serial0/10/1 C = 0.00.000 (1/0) via 205.17.220.0/4

. 2

💐 Bogota3 σx Redellin3 - 🗆 🗙 Physical Config CLI Physical Config CLI IOS Command Line Interface IOS Command Line Interface %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up User Access Verification User Access Verification Password: S>show ip route L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP D - SICOR, EX - SIGRP external, O - OSF7, IA - OSF7 inter area NL - OSF7 NSSA external type 1, N2 - OSF7 NSSA external type 2 EL - OSF7 external type 1, 22 - OSF7 external type 2, E - SGCP i - IS-IS, Li - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area * - candidate default, U - peruser static route, o - ODR P - periodic downloaded static route Password: dellin3>show ip route odes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP D - RIGRP, EX - RIGRP external, O - OSFF, IA - OSFF inter area N1 - OSFF NSSA enternal type 1, N2 - OSFF NSSA external type 2 El - OSFF external type 1, E2 - OSFF external type 2, Z - BGP 1 - IS-IS, L1 - IS-IS evel-1, L2 - IS-IS level-2, Iz - IS-IS inter area * - candidate defailt, U - per-user static route, o - ODR P - periodic downloaded static route ay of last resort is 172.29.3.1 to network 0.0.0.0 172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks 172.29.0.0/14 is directly connected, GigabitTherme0/0 173.25.0.0/12 is directly connected, GigabitTherme0/0 173.25.1.0/12 is directly connected, Serial0/0/0 173.25.3.0/30 is directly connected, Serial0/0/0 173.25.3.4/30 li20/11 via 172.25.3.1, 00:00:123, Serial0/0/0 173.25.3.4/30 li20/11 via 172.25.3.1, 00:00:23, Serial0/0/0 173.25.3.4/30 li20/11 via 172.25.3.1, 00:00:23, Serial0/0/0 173.25.3.4/30 li20/11 via 172.25.3.1, 00:00:23, Serial0/0/0 0.0.0.0/0/0 li20/1] via 172.25.3.1, 00:00:22, Serial0/0/0 way of last resort is not set 172.29.0.0/16 is variably subnetted. 8 subnets. 3 masks 2.35.0.0/16 is variably subnetted, 8 subnets, 3 masks 172.35.4.139/35 is directly connected, GigabitEthernet0/0 172.35.4.139/32 is directly connected, GigabitEthernet0/0 172.35.6.4/33 is directly connected, Serial0/1/0 172.35.6.4/33 is directly connected, Serial0/1/0 172.35.6.10/35 is directly connected, Serial0/1/0 172.35.6.10/35 is directly connected, Serial0/0/0 172.35.6.10/35 is directly connected, Serial0/0/0 172.35.6.10/32 is directly connected, Serial0/0/1 173.35.6.10/32 is directly connected, Serial0/0/1 Bogota3> Copy Paste Copy Paste

Verificar el balanceo de carga que presentan los routers.

Imagen 3

I	m	а	a	е	n	4
•		u	Э	C	••	

Obsérvese en los routers Bogotá1 y Medellín1 cierta similitud por su ubicación, por tener dos enlaces de conexión hacia otro router y por la ruta por defecto que manejan.

Los routers Medellín2 y Bogotá2 también presentan redes conectadas directamente y recibidas mediante RIP.

Las tablas de los routers restantes deben permitir visualizar rutas redundantes para el caso de la ruta por defecto.

El router ISP solo debe indicar sus rutas estáticas adicionales a las directamente conectadas.

Respuesta a los puntos antteriores:

Imagen 5



Parte 3: Deshabilitar la propagación del protocolo RIP.

Para no propagar las publicaciones por interfaces que no lo requieran se debe deshabilitar la propagación del protocolo RIP, en la siguiente tabla se indican las interfaces de cada router que no necesitan desactivación.

ROUTER	INTERFAZ
Bogota1	SERIAL0/0/1; SERIAL0/1/0;
	SERIAL0/1/1
Bogota2	SERIAL0/0/0; SERIAL0/0/1
Bogota3	SERIAL0/0/0; SERIAL0/0/1;
	SERIAL0/1/0
Medellín1	SERIAL0/0/0; SERIAL0/0/1;
	SERIAL0/1/1
Medellín2	SERIAL0/0/0; SERIAL0/0/1
Medellín3	SERIAL0/0/0; SERIAL0/0/1;
	SERIAL0/1/0
ISP	No lo requiere

Respuesta: Este paso se realiza cuando se configura la sección del RIP.

Parte 4: Verificación del protocolo RIP.

Verificar y documentar las opciones de enrutamiento configuradas en los routers, como el passive interface para la conexión hacia el ISP, la versión de RIP y las interfaces que participan de la publicación entre otros datos.

Imagen 6

Imagen 7

(Medellin I	- U ^	paota2	- 0
hysical Config CLI	Dh	int confe CII	_
IOS Command Line Interface	Phy	sical Config CLI	
Passive Invertace(s).		IOS Command Line Interface	
Serial0/0/0	^		
Routing Information Sources:			
Gateway Distance Last Update			
Distance: (default is 120)		r Janess Verification	
Medellinl>	05	i Access Velification	
Medellinl>enable		erroad -	
Password:			
Medellinl\$show ip protocols	Bo	nota2>show in protocols	
Routing Protocol is "rip"	20	ting Protocol is "rip"	
Sending updates every 30 seconds, next due in 13 seconds	Se	ding undates every 30 seconds next due in 13 seconds	
Invalid after 180 seconds, hold down 180, flushed after 240	In	alid after 180 seconds, hold down 180, flushed after 240	
Outgoing update filter list for all interfaces is not set	Ou	going update filter list for all interfaces is not set	
Incoming update filter list for all interfaces is not set	In	oming update filter list for all interfaces is not set	
Redistributing: rip	Re	listributing: rip	
Default version control: send version 2, receive 2	De	ault version control: send version 2, receive 2	
Interface Send Recv Triggered RIP Key-chain		nterface Send Recy Triggered RIP Key-chain	
Serial0/0/1 2 2		eria10/0/0 2 2	
Serial0/1/0 2 2		eria10/0/1 2 2	
Serial0/1/1 2 2	Au	omatic network summarization is not in effect	
Automatic network summarization is not in effect	Ma	imum path: 4	
Maximum path: 4	Ro	ting for Networks:	
Routing for Networks:		172.29.0.0	
172.29.0.0	Pa	sive Interface(s):	
Passive Interface(s):		GigabitEthernet0/0	
Serial0/0/0	Ro	ting Information Sources:	
Routing Information Sources:		Gateway Distance Last Update	
Gateway Distance Last Update		172.29.3.9 120 00:00:27	
Distance: (default is 120)	Di	tance: (default is 120)	
Medellin1#	v Bo	ota2>	
	Copy Paste	Co	py Paste

Imagen 8

Redellin2

Password:

ximum path: 4

Imagen 9



Imagen 10

💐 Bogota1 Physical Config CLI User Access Verification Password: Boptal-show ip protocols Bouting Protocol is "tip" Sending updates every 30 seconds, next due in 14 seconds Invalid after 100 seconds, hold down 100, flushed after 240 durphing update filter list for all interfaces is not set Incoming update filter list for all interfaces is not set Bedistributing: rip Default version controls send version 2, seesive 2 Turations Bogota3-show ip protocols Routing Protocol is "tip" Routing Protocol is "tip" Routing updates every 30 seconds, next due in 1 seconds Invalid after 100 seconds, hold down 100, flushed after 140 Orophing update filter 11s for all interfaces is not set Incoming update filter 11s for all interfaces is not set Redistributing; rip) Interface Send Recv Triggered RIP Key-chain Serial0/0/1 2 2 Serial0/1/0 2 2 xeaistributing: rip Defailt version control: send version 3, receive 2 Interface Send Recv Triggered RIF Key-chain Serial0/0/0 2 2 Serial0/1/0 Serial0/1/1 tomatic network summarization is not in effect Automatic network summarization is not in effect Maximum path. 4 Routing for Networks: 172.25.0.0 Passive Interface(s): Serial/0/0/0 Routing Information Sources: Getway Distance 172.25.3.2 100:00:01 Distance: (default is 120) Bostanl? Series. Maximum path: 4 Maximum path: 4 172.25.0.0 Restrim Interface(s): GigabitEtherest/0 Routing Information Sources: Gateway Distance Last Update ~~ 94.3.1 120 00:00:21 erial0/0/0 2 2 omatic network summarization is not in effect Bogotal> Bogota3> Copy Paste Copy Paste

Verificar y documentar la base de datos de RIP de cada router, donde se informa de manera detallada de todas las rutas hacia cada red.

MEDELLIN_1

Router(config-router)#do show ip route connected C 172.29.6.0/30 is directly connected, Serial0/0/1 C 172.29.6.8/30 is directly connected, Serial0/1/0 C 172.29.6.12/30 is directly connected, Serial0/1/1 C 209.17.220.0/30 is directly connected, Serial0/0/0

BOGOTA_1

Router(config-router)#do show ip route connected C 172.29.3.0/30 is directly connected, Serial0/1/0 C 172.29.3.4/30 is directly connected, Serial0/1/1 C 172.29.3.8/30 is directly connected, Serial0/0/1 C 209.17.220.4/30 is directly connected, Serial0/0/0

Parte 5: Configurar encapsulamiento y autenticación PPP

Según la topología se requiere que el enlace Medellín1 con ISP sea configurado con autenticación PAT.

El enlace Bogotá1 con ISP se debe configurar con autenticación CHAT.

ISP

Router>ENABLE Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname ISP ISP(config)#username MEDELLIN password cisco ISP(config)#int s0/0/0 ISP(config-if)#encapsulation ppp ISP(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down ISP(config-if)#ppp authentication pap ISP(config-if)#ppp pap sent-username ISP password cisco ISP(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up ISP(config-if)#EXIT ISP(config)#username BOGOTA password cisco ISP(config)#int s0/0/1 ISP(config-if)#encapsulation ppp ISP(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down ISP(config-if)#ppp authentication chap

MEDELLIN1

Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname MEDELLIN1 MEDELLIN1(config)#username ISP password cisco MEDELLIN1(config)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, cchanged state to down MEDELLIN1(config)#int s0/0/0 MEDELLIN1(config-if)#encapsulation ppp MEDELLIN1(config-if)#ppp authentication pap MEDELLIN1(config-if)#ppp pap sent-username MEDELLIN password cisco MEDELLIN1(config-if)#end MEDELLIN4# %SYS-5-CONFIG_I: Configured from console by console MEDELLIN1#ping 209.17.220.1 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 209.17.220.1, timeout is 2 seconds:!!!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 3/4/9 ms

BOGOTA1

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname BOGOTA BOGOTA1(config)#username ISP password cisco BOGOTA1(config)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down BOGOTA1(config)#int s0/0/0 BOGOTA1(config)if)#encapsulation ppp BOGOTA1(config-if)#ppp authentication chap BOGOTA1(config-if)# BOGOTA1(config-if)#

Parte 6: Configuración de PAT.

En la topología, si se activa NAT en cada equipo de salida (Bogotá1 y Medellín1), los routers internos de una ciudad no podrán llegar hasta los routers internos en el otro extremo, sólo existirá comunicación hasta los routers Bogotá1, ISP y Medellín1.

Después de verificar lo indicado en el paso anterior proceda a configurar el NAT en el router Medellín1. Compruebe que la traducción de direcciones indique las interfaces de entrada y de salida. Al realizar una prueba de ping, la dirección debe ser traducida automáticamente a la dirección de la interfaz serial 0/1/0 del router Medellín1, cómo diferente puerto.

Proceda a configurar el NAT en el router Bogotá1. Compruebe que la traducción de direcciones indique las interfaces de entrada y de salida. Al realizar una prueba de ping, la dirección debe ser traducida automáticamente a la dirección de la interfaz serial 0/1/0 del router Bogotá1, cómo diferente puerto.

MEDELLIN_1

MEDELLIN1>enable MEDELLIN1#conf t Enter configuration commands, one per line. End with CNTL/Z. MEDELLIN1(config)#ip nat inside source list 1 interface s0/0/0 ovserload MEDELLIN(config)# MEDELLIN1(config)#ip nat inside source list 1 interface s0/0/0 overload MEDELLIN1(config)#access-list 1 permit 172.29.4.0 0.0.3.255 MEDELLIN(config)# MEDELLIN1(config)# INT S0/0/0 MEDELLIN(config-if)#ip nat outside MEDELLIN(config-if)# INT S0/0/1 MEDELLIN(config-if)#ip nat intside MEDELLIN(config-if)#ip nat inside MEDELLIN(config-if)# INT S0/1/1 MEDELLIN(config-if)#ip nat inside MEDELLIN(config-if)#INT S0/1/0 MEDELLIN(config-if)#ip nat inside MEDELLIN(config-if)#

BOGOTA_1

BOGOTA>ENABLE BOGOTA#conf t Enter configuration commands, one per line. End with CNTL/Z. BOGOTA(config)#ip nat inside source list 1 interface s0/0/0 overload BOGOTA(config)#access-list 1 permit 172.29.0.0 0.0.3.255 BOGOTA(config)#int s0/0/0 BOGOTA(config-if)#ip nat outside BOGOTA(config-if)#ip nat outside BOGOTA(config-if)#ip nat inside BOGOTA(config-if)#ip nat inside BOGOTA(config-if)#ip nat inside BOGOTA(config-if)#ip nat inside BOGOTA(config-if)#ip nat inside

Parte 7: Configuración del servicio DHCP.

Configurar la red Medellín2 y Medellín3 donde el router Medellín 2 debe ser el servidor DHCP para ambas redes LAN.

MEDELLIN_2

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#ip dhcp excluded-address 172.29.4.1 172.29.4.5 Router(config)#ip dhcp excluded-address 172.29.4.129 172.29.4.133 Router(config)#ip dhcp pool MEDELLIN2 Router(dhcp-config)#network 172.29.4.0 255.255.255.128 Router(dhcp-config)#default-router 172.29.4.1 Router(dhcp-config)#default-router 172.29.4.1 Router(dhcp-config)#default-router 172.29.4.1 Router(dhcp-config)#exit Router(config)#ip dhcp pool MEDELLIN3 Router(config)#ip dhcp pool MEDELLIN3 Router(dhcp-config)#network 172.29.4.128 255.255.128 Router(dhcp-config)#default-router 172.29.4.129 Router(dhcp-config)#default-router 172.29.4.129 Router(dhcp-config)#default-router 172.29.4.129 Router(dhcp-config)#default-router 172.29.4.129 Router(dhcp-config)#default-router 172.29.4.129 Router(dhcp-config)#default-router 172.29.4.129

MEDELLIN_3

Router>ENABLE Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int g0/0 Router(config-if)#ip helper-address 172.29.6.5 Router(config-if)#

El router Medellín3 deberá habilitar el paso de los mensajes broadcast hacia la IP del router Medellín2.

Configurar la red Bogotá2 y Bogotá3 donde el router Medellín2 debe ser el servidor DHCP para ambas redes LAN.

Configure el router Bogotá1 para que habilite el paso de los mensajes Broadcast hacia la IP del router Bogotá2.

BOGOTA_3

Router>enable Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#ip dhcp excluded-address 172.29.1.1 172.29.1.5 Router(config)#ip dhcp excluded-address 172.29.0.1 172.29.0.5 Router(config)#ip dhcp pool BOGOTA2 Router(dhcp-config)#NETWORK 172.29.1.0 255.255.255.0 Router(dhcp-config)#DEFAULT-ROUTER 172.29.1.1 Router(dhcp-config)#DEFAULT-ROUTER 172.29.1.1 Router(dhcp-config)#DEFAULT-ROUTER 172.29.1.1 Router(dhcp-config)#DEFAULT-ROUTER 172.29.1.1 Router(dhcp-config)#IDEFAULT-ROUTER 172.29.0.0 Router(dhcp-config)#IDEFAULT-ROUTER 172.29.0.0 Router(dhcp-config)#IDEFAULT-ROUTER 172.29.0.1 Router(dhcp-config)#DEFAULT-ROUTER 172.29.0.1 Router(dhcp-config)#DEFAULT-ROUTER 172.29.0.1

BOGOTA_3

Router>ENABLE Router#conf t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#int g0/0 Router(config-if)#ip helper-address 172.29.3.13 Router(config-if)#

ESCENARIO 2

Escenario: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.



- Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario

			Máscara de	Gateway
Dispositivo	Interfaz	Dirección IP	subred	predeterminado
R1 (Bogota)	S0/0/0 (DCE)	172.31.21.1	255.255.255.25 2	N/A
	G0/0	192.168.13.1	255.255.255.25 2	N/A
R2 (Miami)	G0/0	209.165.200.225	255.255.255.24 8	N/A
	G0/1	10.10.10.1	255.255.255.0	N/A
	S0/0/0 (DCE)	172.31.23.1	255.255.255.25 2	N/A
	S0/0/1	172.31.21.2	255.255.255.25 2	N/A
R3 (Buenos Aires)	S0/0/1	172.31.23.2	255.255.255.25 2	N/A
	Lo4	192.168.4.1	255.255.255.0	N/A
	Lo5	192.168.5.1	255.255.255.0	N/A
	Lo6	192.168.6.1	255.255.255.0	N/A
Internet PC	NIC	209.165.200.230	255.255.255.24 8	209.165.200.225
Web Server	Fa0	10.10.10.10	255.255.255.0	10.10.10.1
PCA	F0/1	DHCP	DHCP	DHCP
РСВ	F0/1	DHCP	DHCP	DHCP

Router_R1

Router>enable Router#config t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#hostname R1 R1(config)#enable secret class R1(config)#line con 0 R1(config-line)#pass cisco R1(config-line)#login R1(config-line)#line vty 0 15 R1(config-line)#pass cisco R1(config-line)#login R1(config-line)#exit R1(config)#service password-encryption R1(config)#banner motd #Acceso solo a personal autorizado# R1(config)#int s0/0/0 R1(config-if)#ip address 172.31.21.1 255.255.255.252 R1(config-if)#clock rate 128000 R1(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/0, changed state to down R1(config-if)#

Router_R2

Router#config t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#hostname R2 R2(config)#enable secret class R2(config)#line con 0 R2(config-line)#pass cisco R2(config-line)#login R2(config-line)#line vty 0 15 R2(config-line)#pass cisco R2(config-line)#login R2(config-line)#exit R2(config)#service password- encryption R2(config)#banner motd #Acceso solo a personal autorizado# R2(config)#int s0/0/0 R2(config-if)#ip address 172.31.23.1 255.255.255.252 R2(config- if)#clock rate 128000 R2(config-if)#no shut %LINK-5-CHANGED: Interface Serial0/0/0, changed state to down R2(config- if)#int s0/0/1 R2(config-if)#ip address 172.31.21.2 255.255.255.252 R2(config- if)#no shut R2(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up R2(config-if)#int f0/0 R2(config-if)#description conexion a ISP R2(config-if)#description conexion a ISP R2(config-if)#ip address 209.165.200.225 255.255.255.248 R2(config- if)#no shut R2(config- if)#no shut R2(config- if)# %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router_R3

Router>enable Router#config t Configuring from terminal, memory, or network [terminal]? Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#hostname R3 R3(config)#enable secret class R3(config)#line con 0 R3(config-line)#pass cisco R3(config-line)#login R3(config-line)#line vty 0 15 R3(config-line)#pass cisco R3(config-line)#login R3(config-line)#exit R3(config)#banner motd #Acceso solo a personal autorizado# R3(config)#service password-encryption R3(config)#int s0/0/1 R3(config-if)#ip address 172.31.23.2 255.255.255.252 R3(config- if)#no shut R3(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up R3(config)#int lo4 R3(config-if)#

%LINK-5-CHANGED: Interface Loopback4, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up R3(config-if)#ip address 192.168.4.1 255.255.255.0 R3(config-if)#no shut R3(config-if)#int lo5

R3(config-if)# %LINK-5-CHANGED: Interface Loopback5, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up R3(config-if)#ip address 192.168.5.1 255.255.255.0 R3(config-if)#no shut R3(config-if)#int lo6 R3(config-if)# %LINK-5-CHANGED: Interface Loopback6, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed state to up R3(config-if)#ip address 192.168.6.1 255.255.255.0 R3(config-if)#ip address 192.168.6.1 255.255.255.0

SWITCH_S1

Switch>enable Switch#config t Enter configuration commands, one per line. End with CNTL/Z. Switch(config)#no ip domain-lookup Switch(config)#hostname S1 S1(config)#enable secret class S1(config)#line con 0 S1(config-line)#pass cisco S1(config-line)#login S1(config-line)#line vty 0 15 S1(config-line)#pass cisco S1(config-line)#login S1(config-line)#exit S1(config)#service password-encryption S1(config)#banner motd #Acceso solo a personal autorizado# S1(config)#exit S1# %SYS-5-CONFIG I: Configured from console by console

S1#copy run startup Destination filename [startup-config]? Building configuration... [OK] S1#

SWITCH_S3

Switch>enable Switch#config t Enter configuration commands, one per line. End with CNTL/Z. Switch(config)#no ip domain-lookup Switch(config)#hostname S3 S3(config)#enable secret class S3(config)#line con 0 S3(config-line)#pass cisco S3(config-line)#login S3(config-line)#line vty 0 15 S3(config-line)#pass cisco S3(config-line)#login S3(config-line)#exit S3(config)#service password-encryption S3(config)#banner motd #Acceso solo a personal autorizado# S3(config)#exit S3# %SYS-5-CONFIG_I: Configured from console by console S3#copy run startup Destination filename [startup-config]? Building configuration... [OK] S3#

 Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 area 0

Configuration Item or Task	Specification
Router ID R1	1.1.1.1
Router ID R2	5.5.5.5
Router ID R3	8.8.8.8
Configurar todas las interfaces LAN como	
pasivas	
Establecer el ancho de banda para enlaces	
seriales en	256 Kb/s
0	9500

- Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.

Router_R1

R1#config t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#router ospf 1 R1(config-router)#router-id 1.1.1.1 R1(config-router)#network172.31.21.0 0.0.0.3 area 0 R1(config-router)#network 192.168.30.0 0.0.0.3 area 0 R1(config-router)#network 192.168.40.0 0.0.0.3 area 0 R1(config-router)#network 192.168.30.0 0.0.0.255 area 0 R1(config-router)#network 192.168.40.00.0.255 area 0 R1(config-router)#network 192.168.200.0 0.0.0.255 area 0 R1(config-router)#passive-interface f0/1.30 R1(config-router)#passive- interface f0/0.30 R1(config- router)#passive-interface f0/0 R1(config-router)#auto-cost reference- bandwidth 9500 % OSPF: Reference bandwidth is changed. Please ensure reference bandwidth is consistent across all routers. R1(config-router)#exit R1(config)#int s0/0/0 R1(config-if)#bandwidth 256 R1(config-if)#ip ospf cost 9500 R1(config-if)#end

Router_R2

R2#config t

Enter configuration commands, one per line. End with CNTL/Z. R2(config)#router ospf 1 R2(config-router)#router-id 5.5.5.5 R2(config-router)#network 172.31.21.0 0.0.0.3 area 0 R2(config-router)#network 172.31.21.0 0.0.0.3 area 0 00:55:46: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/1 from LOADING to FULL, Lding Done^ R2(config-router)#network 172.31.23.0 0.0.0.3 area 0 R2(config-router)#network 10.10.10.0 0.0.255 area 0 R2(config-router)#network 10.10.10.0 0.0.255 area 0 R2(config- router)#auto-cost reference-bandwidth 9500 % OSPF: Reference bandwidth is changed. Please ensure reference bandwidth is consistent across all routers. R2(config-router)#int s0/0/0 R2(config-if)#bandwidth 256 R2(config-if)#bandwidth 256 R2(config-if)#bandwidth 256 R2(config-if)#int s0/0/0 R2(config-if)#int s0/0/0 R2(config-if)#ip ospf cost 9500 R2(config-if)#exit R2(config)#

Router_R3

R3#config

Configuring from terminal, memory, or network [terminal]? Enter configuration commands, one per line. End with CNTL/Z. R3(config)#router ospf 1 R3(config-router)#router-id 8.8.8.8 R3(config-router)#network 172.31.23.0 0.0.0.3 area 0 R3(confia-router)# 01:01:48: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/1 from LOADING to FULL, Loading Done R3(config-router)#network 192.168.4.0 0.0.3.255 area 0 R3(config-router)#passive-interface lo4 R3(config-router)#passive-interface lo5 R3(config-router)#passive- interface lo6 R3(config-router)#auto-cost reference-bandwidth 9500 % OSPF: Reference bandwidth is changed. Please ensure reference bandwidth is consistent across all routers. R3(config-router)#exit R3(config)#int s0/0/1 R3(config-if)#bandwidth 256 R3(config-if)#exit

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- Verificar información de OSPF

Visualizar tablas de enrutamiento y routers conectados por OSPFv2

Imagen 12



- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface

Imagen 13		
🥐 R2	- 0	>
Physical Config CLI		
IOS Command Line Inter	face	
R2#show ip ospf interface		^
Serial/0/1 is up, line protocol is up Internet address is 17.31.31.21.230, Area 0 Process ID 1, Router ID 5.5.5.5, Network Typ Cost: 6182 Transmit Delay is 1 sec, State DOINT-TO-DOIN No designated router on this network No backup designated router on this network Timer intervals configured, Hello 10, Dead 4	e POINT-TO-POINT, T, Priority 0 0, Wait 40,	
Hello due in 00:00:05 Index 1/1, flood queue length 0 Next 0x0 (0)/00x(0) Last flood scan length is 1, maximum is 1 Last flood scan time is 0 msc, maximum is 0 Neighbor Count is 1, Adjacent neighbor coun adjacent with neighbor 1.1.1.	msec t is l	
Suppress hello for 0 neighbor(s) Serial/0/0 is up, line protocol is up Internet address is 172.31.23.1/30, Area 0 Process ID 1, Router ID 5.5.5.5, Network Typ Cost: 9500	e POINT-TO-POINT,	
Transmit Delay is 1 sec, State POINT-TO-POIN No designated router on this network No backup designated router on this network Timer intervals configured, Hello 10, Dead 4	T, Priority O O, Wait 40,	
Retransmit 5 Hello due in 00:00:08 Index 2/2, flood queue length 0 Last flood scan length i 1, maximum is 1 Last flood scan time i 0 msec, maximum is 0 Neighbor Count is 1, Adjacent neighbor coun Adjacent with neighbor 0.0.0 Suppress hello for 0 neighbor (s)	msec t is l	~
LD24	Copy Paste	

Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.

Switch_1

S1#config t Enter configuration commands, one per line. End with CNTL/Z. S1(config)#vlan 30 S1(config-vlan)#name Administracion S1(config-vlan)#vlan 40 S1(config-vlan)#name Mercadeo S1(config-vlan)#vlan 200 S1(config-vlan)#name Mantenimiento S1(config-vlan)#exit S1(config)# S1(config-if)#ip add 192.168.99.2 255.255.255.0 S1(config-if)#no shutdown S1(config-if)#exit S1(config)#ip default-gateway 192.168.99.1 S1(config)#int f0/3 S1(config-if)#switchport mode trunk S1(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed state to up S1(config-if)#switchport trunk native vlan 1 S1(config-if)#int f0/24 S1(config-if)#switchport mode trunk S1(config-if)#switchport trunk native vlan 1 S1(config- if)#int range f0/2, f0/4-23 S1(config-if-range)#switch mode access S1(config-if-range)#int f0/1 S1(config-if)#switch mode access S1(config-if)#switch access vlan 30 S1(config-if)#int range f0/2, f0/4-23 S1(config-if-range)#shutdown

Router_1

R1#config t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#int f0/1.30 R1(config-subif)#encapsulation dot1g 30 R1(config-subif)#ip add 192.168.30.1 255.255.255.0 R1(config- subif)#int f0/1.40 R1(config-subif)#ip add 192.168.40.1 255.255.255.0 % Configuring IP routing on a LAN subinterface is only allowed if that subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q, or ISL vLAN. R1(config-subif)# R1(config-subif)#int f0/1.40 R1(config-subif)#encapsulation dot1q 40 R1(config-subif)#ip add 192.168.40.1 255.255.255.0 R1(config-subif)#int f0/1.200 R1(config-subif)#encapsulation dot1g 200 R1(config-subif)#ip add 192.168.200.1 255.255.255.0 R1(config-subif)#exit R1(config)#

En el Switch 3 deshabilitar DNS lookup

Imagen 14

🢐 S3			-	- 🗆	×
Physical Config	CLI				
	IOS C	ommand Line I	nterface		
Version ID CLEI Code Number Hardware Board Revi	: : .sion Number :	V02 COM3K00BRA 0x01			~
Switch Ports Mod	iel	SW Version	SW Image		
* 1 26 WS-	-C2960-24TT	12.2	C2960-LANBASE	-м	
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEASE SOFTWARE (cl) Copyright (c) 1996-2005 by Cisco Systems, Inc. Compiled Wed 12-Oct-05 22:05 by pt_team Press RETURN to get started! \$LINE-5-CHANGED: Interface FastEthernet0/3, changed state to up \$LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to					
** %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up					
<pre>%LINEPROTO-5-UPDOWN up</pre>	I: Line protoco	ol on Interface Fa	stEthernet0/1, changed	state to	
Switch>enable Switch#conf t Enter configuration Switch(config)# Switch(config)#	1 commands, one p domain-looku	: per line. End w up	ith CNTL/Z.	Past	v

Asignar direcciones IP a los Switches acorde a los lineamientos.

Desactivar todas las interfaces que no sean utilizadas en el esquema de red.

Implement DHCP and NAT for IPv4

Configurar R1 como servidor DHCP para las VLANs 30 y 40.

Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

Configurar DHCP pool para VLAN 30	Name: ADMINISTRACION DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.
Configurar DHCP pool para VLAN 40	Name: MERCADEO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.

Router_1

R1(config)#

R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30

R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30

R1(config)#ip dhcp pool Administracion

R1(dhcp-config)#dns-server 10.10.10.11

R1(dhcp-config)#default- router 192.168.30.1

R1(dhcp-config)#network 192.168.30.0 255.255.255.0

R1(dhcp-config)#ip dhcp pool Mercadeo

R1(dhcp-config)#dns-server 10.10.10.11

R1(dhcp-config)#default-router 192.168.40.1

R1(dhcp-config)#network 192.168.40.0 255.255.255.0

R1(dhcp-config)#exit

R1(config)#

Configurar NAT en R2 para permitir que los host puedan salir a internet

Router_2

R2#config t Enter configuration commands, one per line. End with CNTL/Z. R2(config)#user webuser privilege 15 secret cisco12345 R2(config)#ip http server^ % Invalid input detected at '^' marker. R2(config)#

En este caso no se puede utilizar los comandos ip http server se emplea un servidor dentro de la topología

Router_2

R2(config)# R2(config)#ip nat inside source static 10.10.10.10 209.165.200.229 R2(config)#int f0/0 R2(config-if)#ip nat outside R2(config-if)#int f0/1 R2(config-if)#ip nat inside R2(config-if)#

 Configurar al menos dos listas de acceso de tipo estándar a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

R2(config)#access-list 1 permit 192.168.30.0 0.0.0.255 R2(config)#access-list 1 permit 192.168.40.0 0.0.0.255 R2(config)#ip nat pool INTERNET 209.165.200.225 209.165.200.228 netmask 255.255.255.248 R2(config)#ip nat inside source list 1 pool INTERNET R2(config)#exit %SYS-5-CONFIG_I: Configured from console by console R2(config)#ip access-list standard ADMIN_S R2(config-std-nacl)#permit host 172.31.21.1 R2(config- std-nacl)#exit R2(config- std-nacl)#exit R2(config- line)#access-class ADMIN_S in R2(config-line)# - Configurar al menos dos listas de acceso de tipo extendido o nombradas a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

R2(config)#access-list 101 permit tcp any host 209.165.200.229 eq www R2(config)#access-list 101 permit icmp any any echo-reply R2(config)#int f0/0 R2(config-if)#ip access-group 101 in R2(config-if)#ip access-group 101 out R2(config-if)#ip access-group 101 out

CONCLUSIONES

- Al aplicar los protocolos de conexión en dicha actividad, podemos identificar la conceptualización teórica adquirida en el desarrollo del curso.
- Podemos identificar las características de configuración permitidas por cada uno de los equipos en un ambiente virtual que se simula de la mejor manera en las herramientas facilitadas para el curso.
- Se usaron los atajos propuestos por el modulo a la hora de realizar configuraciones desde la consola como parte de la práctica.
- Se consultaron diversos medios como videos y páginas de internet con el fin de reforzar los conocimientos y despejar dudas al momento de adelantar configuraciones en los routers de dicha actividad solicitada.
- Es muy necesario una excelente configuración de una red (cableado estructurado) para que los equipos donde quiera que se encuentren funcionen correctamente, y protegerlos de ataques a los cuales están expuestos continuamente.

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