

Solución Prueba De Habilidades Practicas CCNA1,2

Escenario 1 – Escenario 2

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Prueba De Habilidades Prácticas CCNA 1, 2

Escenario 1 y 2

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INTRODUCCIÓN

Esta actividad evaluativa Escenario 1 y Escenario 2 del Diplomado de Profundización CCNA, busca identificar el grado de desempeño adquirido en esta competencias y demostrar las habilidades o destrezas que se adquirieron durante del desarrollo del Diplomado Cisco en cada una de sus etapas.

Esta prueba de habilidades prácticas la desarrolle en el Software de Simulación de Redes Packet Tracer. Que es la herramienta que utilice para todas las actividades propuestas y desarrolladas en el Diplomado de Profundización Cisco.

Se debe presentar el desarrollo de la actividad funcional junto con el informe de desarrollo paso a paso como lo indica la guía de actividades.



Descripción del escenario propuesto para la prueba de habilidades

Desarrollo 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



Imagen Final del Escenario 1 Desarrollado





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).

Identificación de Router Medellin2

R1>enable password: R1#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R1(config)#hostname Medellin2 Medellin2(config)#enable secret cisco Medellin2(config)#service password-encryption Medellin2(config)#banner motd "solo acceso autorizado" Medellin2(config)#line console 0 Medellin2(config-line)#password class Medellin2(config-line)#login Medellin2(config-line)#exit Medellin2(config)#line vty 0 15 Medellin2(config-line)#password class Medellin2(config-line)#loain Medellin2(config-line)#end Medellin2#

Identificación de Router Medellin3

R2>enable password: R2#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R2(config)#hostname Medellin3 Medellin3(config)#enable secret cisco Medellin3(config)#service password-encryption Medellin3(config)#banner motd "solo acceso autorizado"



Medellin3(config)#line console 0 Medellin3(config-line)#password class Medellin3(config-line)#login Medellin3(config-line)#exit Medellin3(config)#line vty 0 15 Medellin3(config-line)#password class Medellin3(config-line)#login Medellin3(config-line)#login Medellin3(config-line)#end Medellin3#

Identificación de Router Medellin1

R3>enable password: R3#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R3(config)#hostname Medellin1 Medellin1(config)#enable secret cisco Medellin1(config)#service password-encryption Medellin1(config)#banner motd "solo acceso autorizado" Medellin1(config)#line console 0 Medellin1(config-line)#password class Medellin1(config-line)#login Medellin1(config-line)#exit Medellin1(config)#line vty 0 15 Medellin1(config-line)#password class Medellin1(config-line)#login Medellin1(config-line)#end Medellin1#

Identificación de Router ISP

R4>enable password: R4#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R4(config)#hostname ISP ISP(config)#enable secret cisco ISP(config)#service password-encryption ISP(config)#banner motd "solo acceso autorizado" ISP(config)#line console 0 ISP(config-line)#password class ISP(config-line)#login ISP(config-line)#exit ISP(config)#line vty 0 15 ISP(config-line)#password class ISP(config-line)#login ISP(config-line)#end ISP#



Identificación de Router Bogota1

R5>enable password: R5#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R5(config)#hostname Bogota1 Bogota1(config)#enable secret cisco Bogota1 (config)#service password-encryption Bogota1 (config)#banner motd "solo acceso autorizado" Bogota1 (config)#line console 0 Bogota1 (config-line)#password class Bogota1 (config-line)#login Bogota1 (config-line)#exit Bogota1 (config)#line vty 0 15 Bogota1 (config-line)#password class Bogota1 (config-line)#login Bogota1 (config-line)#end Bogota1#

Identificación de Router Bogota2

R6>enable password: R6#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R6(config)#hostname Bogota2 Bogota2(config)#enable secret cisco Bogota2 (config)#service password-encryption Bogota2 (config)#banner motd "solo acceso autorizado" Bogota2 (config)#line console 0 Bogota2 (config-line)#password class Bogota2 (config-line)#login Bogota2 (config-line)#exit Bogota2 (config)#line vty 0 15 Bogota2 (config-line)#password class Bogota2 (config-line)#login Bogota2 (config-line)#end Bogota2#



Identificación de Router Bogota3

R7>enable password: R7#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R7(config)#hostname Bogota3 Bogota3(config)#enable secret cisco Bogota3 (config)#service password-encryption Bogota3 (config)#banner motd "solo acceso autorizado" Bogota3 (config)#line console 0 Bogota3 (config-line)#password class Bogota3 (config-line)#login Bogota3 (config-line)#exit Bogota3 (config)#line vty 0 15 Bogota3 (config-line)#password class Bogota3 (config-line)#login Bogota3 (config-line)#end Bogota3#

 Realizar la conexión física de los equipos con base en la topología de red

Configurar la topología de red, de acuerdo con las siguientes especificaciones.





Tabla de Direcciones - Escenano T

Dispositivo	Interfaz	Dirección IP	Máscara de subred
ISP	S0/0/0	209.17.220.1/30	255.255.255.252
	S0/0/1	209.17.220.5/30	255.255.255.252
MEDELLIN1	S0/0/0	172.29.6.1/30	255.255.255.252
	S0/0/1	172.29.6.9/30	255.255.255.252
	S0/1/0	209.17.220.1/30	255.255.255.252
	S0/1/1	172.29.6.13/30	255.255.255.252
MEDELLIN2	S0/0/0	172.29.6.2/30	255.255.255.252
	S0/1/0	172.29.6.5/30	255.255.255.252
	G0/0	172.29.4.1/25	255.255.255.128
MEDELLIN3	S0/0/1	172.29.6.10/30	255.255.255.252
	S0/1/0	172.29.6.6/30	255.255.255.252
	S0/1/1	172.29.6.14/30	255.255.255.252
	G0/0	172.29.6.129/25	255.255.255.128
BOGOTA1	S0/0/0	172.29.3.1/30	255.255.255.252
	S0/0/1	172.29.3.9/30	255.255.255.252
	S0/1/0	209.17.220.5/30	255.255.255.252
	S0/1/1	172.29.3.5/30	255.255.255.252
BOGOTA2	S0/0/0	172.29.3.2/30	255.255.255.252
	S0/1/0	172.29.3.13/30	255.255.255.252
	S0/1/1	172.29.3.6/30	255.255.255.252
	G0/0	172.29.0.1/24	255.255.255.0
BOGOTA3	S0/0/1	172.29.3.10/30	255.255.255.252
	S0/1/0	172.29.3.14/30	255.255.255.252
	G0/0	172.29.1.1/24	255.255.255.0
PC- 50 HOST	NIC	172.29.4.2 – 172.29.4.51	255.255.255.128
PC- 40 HOST	NIC	172.29.4.130 - 172.29.4.169	255.255.255.128
PC- 150 HOST	NIC	172.29.0.2 – 172.29.0.151	255.255.255.0
PC- 200 HOST	NIC	172.29.1.2 - 172.29.1.201	255.255.255.0



Configuración IP de los Router del Sistema de Red

Configuración IP Router Medellin1 Clave de acceso a programacion – ciscounad2019 – classunad2019

Medellin1>enable Medellin1# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Medellin1(config)#int s0/0/0 Medellin1(config-if)#ip address 179.29.6.1 255.255.255.252 Medellin1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/0. changed state to down Medellin1(config-if)#interface s0/0/1 Medellin1(config-if)#ip address 179.29.6.9 255.255.255.252 Medellin1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/1. changed state to down Medellin1(config-if)# Medellin1(config-if)#interface s0/1/1 Medellin1(config-if)#ip address 179.29.6.13 255.255.255.252 Medellin1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/1. changed state to down Medellin1(config-if)#interface s0/1/0 Medellin1(config-if)#ip address 209.17.220.1 255.255,255.252 Medellin1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/0. changed state to down Medellin1(config-if)#exit Medellin1(config)# Medellin1#

Configuración IP Router Medellin2

Medellin2>enable Medellin2# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Medellin2(config)#no ip domain-lookup Medellin2(config)#security passwords min-length 10 Medellin2(config)#interface s0/0/0 Medellin2(config-if)#ip address 172.29.6.2 255.255.255.252 Medellin2(config-if)#no shutdown Medellin2(config-if)#exit Medellin2(config)#interface g0/0 Medellin2(config-if)# no ip address 172.29.4.1 255.255.255.0 Medellin2(config-if)#no shutdown Medellin2(config-if)#no shutdown Medellin2(config-if)# no ip address 172.29.4.1 255.255.255.0



Configuración IP Router Medellin3

Clave de acceso a programacion – ciscounad2019 – classunad2019 Medellin3>enable Medellin3# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Medellin3(config)#int s0/1/0 Medellin3(config-if)#ip address 172.29.6.6 255.255.255.252 Medellin3(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/0. changed state to down Medellin3(config-if)#interface s0/0/1 Medellin3(config-if)#ip address 179.29.6.10 255.255.255.252 Medellin3(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/1. changed state to up %LINPROTO-5 UPDOWN Line protocol on Interface Serial0/0/1. changed state to up Medellin3(config-if)# Medellin3(config-if)#interface s0/1/1 Medellin3(config-if)#ip address 172.29.6.14 255.255.255.252 Medellin3(config-if)#no shutdown Medellin3(config-if)#exit Medellin3(config)# Medellin3#

Configuracion Router 5 Bogota1 Clave de acceso a programacion – ciscounad2019 – classunad2019

Bogota1>enable Bogota1# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Bogota1(config)#int s0/1/0 Bogota1(config-if)#ip address 209.17.220.5 255.255.255.252 Bogota1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/0. changed state to down Bogota1(config-if)#interface s0/0/0 Bogota1(config-if)#ip address 172.29.3.1 255.255.255.252 Bogota1(config-if)#ip address 172.29.3.1 255.255.252 Bogota1(config-if)#in shutdown %LINK-5CHANGED: Interface Serial0/0/0. changed state to down

Bogota1(config-if)# Bogota1(config-if)#interface s0/1/1 Bogota1(config-if)#ip address 172.29.3.5 255.255.255.252 Bogota1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/1. changed state to down

Bogota1(config-if)#interface s0/0/1 Bogota1(config-if)#ip address 172.29.3.9 255.255.255.252



Bogota1(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/1. changed state to down Bogota1(config-if)#exit Bogota1(config)# Bogota1#

Configuracion IP Router Bogota2

Bogota2>enable Bogota2# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Bogota2(config)#no ip domain-lookup Bogota2(config)#security password min-length 10 Bogota2(config)#int s0/0/0 Bogota2(config-if)#ip address 172.29.3.2 255.255.255.252 Bogota2(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/0. changed state to down Bogota2(config-if)#interface s0/1/1 Bogota2(config-if)#ip address 172.29.3.6 255.255.255.252 Bogota2(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/1. changed state to down Bogota2(config-if)# Bogota2(config-if)#interface s0/1/0 Bogota2(config-if)#ip address 172.29.3.13 255.255.255.252 Bogota2(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/0. changed state to down Bogota2(config-if)#exit Bogota2(config)# Bogota2#

Configuracion Router Bogota 3 Clave de acceso a programacion – ciscounad2019 – classunad2019 Bogota3>enable Bogota3# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Bogota3(config)#no ip domain-lookup Bogota3(config)#security password min-length 10 Bogota3(config)#int s0/0/1 Bogota3(config-if)#ip address 172.29.3.10 255.255.255.252 Bogota3(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/1. changed state to up Bogota3(config-if)#interface s0/1/0 Bogota3(config-if)#ip address 172.29.3.14 255.255.255.252 Bogota3(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/1/0. changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state up



Bogota3(config-if)#exit Bogota3(config)# Bogota3#

Configuracion Router ISP Clave de acceso a programacion – ciscounad2019 – classunad2019

Router4>enable Router4# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Router4(config)#hostname ISP ISP(config)#no ip domain-lookup ISP(config)#security password min-length 10 ISP(config)#int s0/0/0 ISP(config-if)#ip address 209.17.220.1 255.255.255.252 ISP(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/0. changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state up ISP(config-if)#interface s0/0/1 ISP(config-if)#ip address 209.17.220.5 255.255.255.252 ISP(config-if)#no shutdown %LINK-5CHANGED: Interface Serial0/0/1. changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state up ISP(config-if)#exit ISP(config)# ISP#

Rutina de seguridad ingreso a la programación de los router, Clave de ingreso

enable secret ciscounad2019 service password-encryption banner motd "solo acceso autorizado" line console 0 password classunad2019 login exit line vty 0 15 password class login end



Parte 1: Configuración del enrutamiento

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

- 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.

- 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.

Configuración de los Router a la Red rip Versión 2 – Medellin 1

Medellin1# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Medellin1(config)#router rip Medellin1(config)#version 2 Medellin1(config-router)#network 172.29.6.0 Medellin1(config-router)#network 172.29.6.8 Medellin1(config-router)#network 172.29.6.12 Medellin1(config-router)#network 209.17.220.0 Medellin1(config-router)#no auto-summary Medellin1(config-router)#no auto-summary Medellin1(config-router)#exit Medellin1(config)#

MEDEL	LIN1					-		×
hysical	Config	CLI	Attributes					
			IOS Con	nmand Line Inter	face			
Gatew	ay or las	st reso	rt 15 not	set				^
	172.29.0.	0/16 i	s variably	y subnetted,	2 subnet	cs, 2 mas	sks	
С	172.29	.6.0/3	0 is dire	ctly connect	ed, Seria	a10/0/0		
L	172.29	9.6.1/3	2 is dire	ctly connect	ed, Seria	a10/0/0		
5-10-241	179.29.0.	0/16 i	s variably	y subnetted,	4 subnet	ts, 2 mas	sks	
C	179.29	.6.8/3	0 is dire	ctly connect	ed, Seria	a10/0/1		
L	179.29	9.6.9/3	2 is dire	ctly connect	ed, Seria	10/0/1		
C	179.29	9.6.12/	30 is dire	ectly connec	ted, Seri	ia10/1/1		
L	179.29	.6.13/	32 is dire	ectly connec	ted, Seri	ia10/1/1		
1000	209.17.22	0.0/24	is varial	oly subnette	d, 2 subr	nets, 2 m	nasks	
С	209.17	.220.0	/30 is di:	rectly conne	cted, Sei	ria10/1/0	D	
T.	209 17	2 220 1	122 is di.	reatly compo			n .	



Configuración Rip Versión 2 Router Medellín 2

Medellin2# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Medellin2(config)#router rip Medellin2(config)#version 2 Medellin2(config-router)#network 172.29.4.0 Medellin2(config-router)#network 172.29.6.0 Medellin2(config-router)#network 172.29.6.4 Medellin2(config-router)#no auto-summary Medellin2(config-router)#exit Medellin2(config-router)#exit

MEDELL	IN2						-		×
Physical	Config	CLI	Attributes						
			IOS Com	mand L	ine Interfac	e			
IS-IS	inter ar * - can P - per	iodic	default, downloaded	u - p stat	er-user ic route	static	route, o	1a - 0 - ODR	^
Gatewa	y of las	st reso	rt is not	set					
1	72.29.0.	0/16 i	s variably	subn	etted, 6	subnet	s, 3 mas	sks	
C	172.29	.4.0/2	4 is direc	tly c	onnected	l, Gigab	itEther	net0/0	
L	172.29	.4.1/3	2 is direc	tly c	onnected	i, Gigab	itEther	net0/0	
C	172.29	.6.0/3	0 is direc	tly c	onnected	i, Seria	10/0/0		
L	172.29	.6.1/3	2 is direc	tly c	onnected	l, Seria	10/0/0		
C	172.29	6.4/3	0 is dired	tly c	onnected	i, Seria	10/1/0		
L	172.29	.6.5/3	2 is dired	tly c	onnected	i, Seria	10/1/0		

Configuración Rip Versión 2 Router Medellín 3

Medellin3# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Medellin3(config)#router rip Medellin3(config)#version 2 Medellin3(config-router)#network 172.29.6.0 Medellin3(config-router)#network 172.29.6.8 Medellin3(config-router)#network 172.29.6.12 Medellin3(config-router)#network 172.29.6.128 Medellin3(config-router)#no auto-summary Medellin3(config-router)#exit Medellin3(config-router)#exit Medellin3(config)#



MEDELL	IN3							—		>
Physical	Config	CLI	Attributes							
			IOS Com	nand Li	ne Interfa	ce				
	P - per	iodic	downloaded	stat	ic rout	e				^
Gatewa	y of las	t reso	rt is not	set						
1	72 29 0	0/16 1	e variablı	subn	etted	8 611	hnate	3 mack	e	
c	172.29	.6.4/3	0 is direc	tly c	onnecte	d, S	erial	0/1/0	-	
L	172.29	.6.6/3	2 is direc	tly c	onnecte	d, S	erial	0/1/0		
C	172.29	.6.8/3	0 is dired	tly c	onnecte	d, S	erial	0/0/1		
L	172.29	.6.10/	32 is dire	ctly	connect	ed,	Serial	0/0/1		
C	172.29	.6.12/	30 is dire	tly	connect	ed,	Serial	.0/1/1		
L	172.29	.6.14/	32 is dire	ctly	connect	ed,	Serial	0/1/1		
C	172.29	.6.128	/25 is dir	ectly	connec	ted,	Gigal	oitEther	net0/0	
T.	172 29	6 129	/32 is dir	ectly	connec	ted	Gigal	itEther	net0/0	

Configuración Rip Versión 2 Router Bogota1

Bogota1# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Bogota1(config)#router rip Bogota1(config)#version 2 Bogota1(config-router)#network 179.29.3.0 Bogota1(config-router)#network 179.29.3.4 Bogota1(config-router)#network 179.29.3.8 Bogota1(config-router)#network 209.17.220.4 Bogota1(config-router)#no auto-summary Bogota1(config-router)#no auto-summary Bogota1(config-router)#exit Bogota1(config)#

BOGOT	Á1					-		×
Physical	Config	CLI	Attributes					
			IOS Con	nmand Line Interfa	ce			
Gatew	av of las	t resor	rt is not	set				^
Caben	.,							
	172.29.0.	0/16 is	variably	y subnetted,	6 subnets,	2 mask	s	
C	172.29	.3.0/30) is direc	ctly connected	d, SerialO,	/0/0		
L	172.29	.3.1/32	is direc	ctly connected	d, SerialO.	/0/0		
C	172.29	.3.4/30) is dired	ctly connected	d, SerialO.	/1/1		
6								
L	172.29	.3.5/32	l is dired	ctly connected	d, Serial0.	/1/1		
г	172.29	.3.5/32	l is direc) is direc	ctly connecte ctly connecte	d, Serial0, d, Serial0,	/1/1 /0/1		
L C L	172.29 172.29 172.29	.3.5/32	2 is direc) is direc 2 is direc	ctly connecte ctly connecte ctly connecte	d, Serial0, d, Serial0, d, Serial0,	/1/1 /0/1 /0/1		
L C L	172.29 172.29 172.29 209.17.22	.3.5/32 .3.8/30 .3.9/32	l is dired) is dired l is dired is variab	ctly connecte ctly connecte ctly connecte oly subnetted	d, Serial0, d, Serial0, d, Serial0, , 2 subnet	/1/1 /0/1 /0/1 s, 2 ma	sks	
C L C L C L C L C	172.29 172.29 172.29 209.17.22 209.17.22	.3.5/32 .3.8/30 .3.9/32 0.0/24 .220.4/	2 is dired) is dired 2 is dired is varian (30 is dir	ctly connecte ctly connecte ctly connecte oly subnetted rectly connect	d, SerialO, d, SerialO, d, SerialO, , 2 subnet ted, Seria	/1/1 /0/1 /0/1 s, 2 ma 10/1/0	sks	



Configuración Rip Versión 2 Router Bogota2

Bogota2# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Bogota2(config)#router rip Bogota2(config)#version 2 Bogota2(config-router)#network 172.29.0.0 Bogota2(config-router)#network 172.29.3.0 Bogota2(config-router)#network 172.29.3.4 Bogota2(config-router)#network 172.29.3.12 Bogota2(config-router)#no auto-summary Bogota2(config-router)#exit Bogota2(config)#

BOGOT	A2					_		>
hysical	Config	CLI	Attributes					
			IOS Com	mand Line Interface	2			
	P - per	iodic (downloaded	static route				^
Catows	w of las		t is not	cot				
Gatewa	ay of las	t reso	rt is not	set				
Gatewa	ay of las	t reso: 0/16 is	rt is not s variably	set subnetted, 8	subnets,	3 mask	5	
Gatewa 1 C	ay of las 172.29.0. 172.29	0/16 is	rt is not s variably 4 is direc	set subnetted, 8 tly connected	subnets, , Gigabit	3 mask Etherne	s t0/0	
Gatewa 1 C L	ay of las 172.29.0. 172.29 172.29	0/16 is 0.0.0/24	rt is not s variably 4 is direc 2 is direc	set subnetted, 8 tly connected tly connected	subnets, , Gigabit , Gigabit	3 mask Etherne Etherne	s t0/0 t0/0	
Gatewa 1 C L C	ay of las 172.29.0. 172.29 172.29 172.29	0/16 is 0.0.0/24 0.0.1/33	rt is not s variably 4 is direc 2 is direc 0 is direc	set subnetted, 8 tly connected tly connected tly connected	subnets, , Gigabit , Gigabit , Serial0	3 mask Etherne Etherne /0/0	s t0/0 t0/0	
Gatewa C L C L	ay of las 172.29.0. 172.29 172.29 172.29 172.29	0/16 is 0.0.0/24 0.0.1/33 0.3.0/30 0.3.2/33	rt is not s variably 4 is direc 2 is direc 0 is direc 2 is direc	set subnetted, 8 tly connected tly connected tly connected tly connected	subnets, , Gigabit , Gigabit , Serial0 , Serial0	3 mask Etherne Etherne /0/0 /0/0	s t0/0 t0/0	
Gatewa 1 C L C L C	ay of las 172.29.0. 172.29 172.29 172.29 172.29 172.29 172.29	0/16 is 0.0.0/24 0.0.1/33 0.3.0/30 0.3.2/33 0.3.4/30	rt is not s variably 4 is direc 2 is direc 0 is direc 2 is direc 0 is direc	set subnetted, 8 tly connected tly connected tly connected tly connected tly connected	subnets, , Gigabit , Gigabit , Serial0 , Serial0 , Serial0	3 mask Etherne Etherne /0/0 /0/0 /1/1	s t0/0 t0/0	
Gatewa C L C L L C L	ay of las 172.29.0. 172.29 172.29 172.29 172.29 172.29 172.29 172.29	0/16 is 0.0.0/26 0.0.1/33 0.3.0/30 0.3.2/33 0.3.4/30 0.3.6/33	rt is not s variably 4 is direc 2 is direc 0 is direc 2 is direc 2 is direc 2 is direc	set subnetted, 8 tly connected tly connected tly connected tly connected tly connected tly connected	subnets, , Gigabit , Gigabit , Serial0 , Serial0 , Serial0 , Serial0	3 mask Etherne Etherne /0/0 /0/0 /1/1 /1/1	s t0/0 t0/0	
Gatewa L C L C L C L C L C	ay of las 172.29.0. 172.29 172.29 172.29 172.29 172.29 172.29 172.29 172.29	0/16 is 0.0.0/2 0.0.1/3 0.3.0/3 0.3.2/3 0.3.4/3 0.3.6/3 0.3.12/3	rt is not s variably 4 is direc 2 is direc 0 is direc 2 is direc 30 is direc 30 is direc	set subnetted, 8 tly connected tly connected tly connected tly connected tly connected tly connected	subnets, , Gigabit , Gigabit , Serial0 , Serial0 , Serial0 , Serial0 d, Serial	3 mask Etherne Etherne /0/0 /0/0 /1/1 /1/1 0/1/0	s t0/0 t0/0	

Bogota 3

Bogota3# Configure Terminal Enter configuration commands, one per line. End with CNTL/Z Bogota3(config)#router rip Bogota3(config)#version 2 Bogota3(config-router)#network 172.29.1.0 Bogota3(config-router)#network 172.29.3.8 Bogota3(config-router)#network 172.29.3.4 Bogota3(config-router)#network 172.29.3.12 Bogota3(config-router)#no auto-summary Bogota3(config-router)#no auto-summary Bogota3(config-router)#exit Bogota3(config)#



BOGOTA	43									;
Physical	Config	CLI	Attrib	utes						
			IC	OS Command	Line Inter	face				
15-15	* - car P - per	ea didate iodic (defa lownl	ult, U - oaded st	per-use atic rou	er sta ite	tic ro	ute, o	- ODR	
Gatewa	y of las	t reso	t is	not set						
1	.72.29.0.	0/16 1	s var	iably su	onetted	, 6 su	bnets,	3 mask	5	
T.	172.23	1 1/2	i 15	directly	connect	ted, G	igabit	Stherne	+0/0	
c	172.29	3.8/3) is (directly	connect	ted. S	erial0	/0/1	00/0	
L	172.29	.3.10/3	32 is	directl	y conne	cted,	Serial	0/0/1		
C	172.29	.3.12/	30 is	directl	y conne	cted,	Serial	0/1/0		

Parte 2: Tabla de Enrutamiento.

a. Verificar la tabla de enrutamiento en cada uno de los routers para comprobar las redes y sus rutas. Verificación Pin V2 Pouter Medellin 1

MEDI	
Physi	cal Config <u>CLI</u> Attributes
	IOS Command Line Interface
Med	ellin1#show ip route
Cod BGP	es: L - local, C - connected, S - static, R - RIP, M - mobile, B -
	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
int	er area
	 - candidate default, U - per-user static route, o - ODR P - periodic downloaded static route
Gat	eway of last resort is not set
	172.29.0.0/16 is variably subnetted, 2 subnets, 2 masks
С	172.29.6.0/30 is directly connected, Serial0/0/0
L	172.29.6.1/32 is directly connected, Serial0/0/0
	179.29.0.0/16 is variably subnetted, 4 subnets, 2 masks
С	179.29.6.8/30 is directly connected, Serial0/0/1
L	179.29.6.9/32 is directly connected, Serial0/0/1
с -	179.29.6.12/30 is directly connected, Serial0/1/1
1.1	1/9.29.6.13/32 is directly connected, SerialU/1/1
	209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks
6	205.17.220.0730 is directly connected. Seriat0/170
с	200 17 220 1/22 is directly composited Seriel0/1/0
C L	209.17.220.1/32 is directly connected, Serial0/1/0
C L Med	209.17.220.1/32 is directly connected, Serial0/1/0



Imagen 5

Verificación Rip V2 Router Medellin 2

MEDELLIN2					
Physical Cor	nfig CLI	Attributes			
		IOS Co	ommand Line Interface		
medellin2#s Codes: L - BGP	show ip rout local, C -	connected	d, S - static, R	- RIP, M - mob	ile, B -
D - N1 - E1 - i -	EIGRP, EX - OSPF NSSA - OSPF exter IS-IS, L1	- EIGRP ex external rnal type - IS-IS lo	xternal, O - OSPF type 1, N2 - OSP 1, E2 - OSPF ext evel-1, L2 - IS-I	, IA - OSPF in F NSSA externa ernal type 2, S level-2, ia	ter area 1 type 2 E - EGP - IS-IS
inter area * - P -	candidate o periodic do	default, 1 ownloaded	U - per-user stat static route	ic route, o - o	ODR
Gateway of	last resort	t is not :	set		
172.29	9.0.0/16 is	variably	subnetted, 9 sub	nets, 4 masks	
C 172	2.29.4.0/24	is direct	tly connected, Gi	gabitEthernet0	/0
L 172	2 29 6 0/20	is direct	tly connected, Gi	gabitEthernetu	/0
T. 172	2 29 6 1/32	is direc	tly connected, Se	ria10/0/0	
C 172	2.29.6.4/30	is direct	tly connected Se	ria10/1/0	
L 172	2.29.6.5/32	is direc	tly connected. Se	ria10/1/0	
R 172	2.29.6.8/30	[120/1]	via 172.29.6.6. 0	0:00:05, Seria	10/1/0
R 172	2.29.6.12/3	0 [120/1]	via 172.29.6.6,	00:00:05, Seri	a10/1/0 E
R 172	2.29.6.128/	25 [120/1] via 172.29.6.6,	00:00:05, Ser	ia10/1/0
medellin2#					*

Verificación Rip V2 Router Medellín 3

lmagen 6

Physica	I Config CLI Attributes
	IOS Command Line Interface
medel	llin3#show ip route
Codes BGP	s: L - local, C - connected, S - static, R - RIP, M - mobile, B -
	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	r area
	P - periodic downloaded static route
Gatev	vay of last resort is not set
	172.29.0.0/16 is variably subnetted. 10 subnets. 4 masks
R	172.29.4.0/24 [120/1] via 172.29.6.5, 00:00:24, Serial0/1/0
R	172.29.6.0/30 [120/1] via 172.29.6.5, 00:00:24, Serial0/1/0
С	172.29.6.4/30 is directly connected, Serial0/1/0
L	172.29.6.6/32 is directly connected, Serial0/1/0
С	172.29.6.8/30 is directly connected, Serial0/0/1
L	172.29.6.10/32 is directly connected, Serial0/0/1
С	172.29.6.12/30 is directly connected, Serial0/1/1
	172.29.6.14/32 is directly connected, Serial0/1/1
~	170 00 C 100/05 is dimensive second CirclisEthemash0/0



Verificación Rip V2 Router ISP

Imagen 7

P ISP	x
Physical Config CLI Attributes	
IOS Command Line Interface	
ISP>enable ISP#show ip route	^
Codes: L - local, C - connected, S - static, 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	
<pre>inter area * - candidate default, U - per-user static route, o - ODR P - periodic downloaded static route</pre>	
Gateway of last resort is not set	
<pre>209.17.220.0/24 is variably subnetted, 4 subnets, 2 masks C 209.17.220.0/30 is directly connected, Serial0/0/0 L 209.17.220.1/32 is directly connected, Serial0/0/0 C 209.17.220.4/30 is directly connected, Serial0/0/1 L 209.17.220.5/32 is directly connected, Serial0/0/1</pre>	
ISP# ISP#	Ξ

Verificación Rip V2 Router Bogota 1

R BOGOTÁ1	
Physical Config CLI Attributes	
IOS Command Line Interface	
<pre>Bogotal#show ip route Codes: L - local, C - connected, S - static, 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</pre>	•
<pre>Gateway of last resort is not set</pre>	
C 172.29.3.4/30 is directly connected, Serial0/0/0	
L 172.29.3.5/32 is directly connected, Serial0/1/1	
C 172.29.3.8/30 is directly connected, Serial0/0/1	
L 172.29.3.9/32 is directly connected, Serial0/0/1 209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks C 209.17.220.4/30 is directly connected, Serial0/1/0 L 209.17.220.5/32 is directly connected, Serial0/1/0	=
Bogota1#	-



Verificación Rip V2 Router Bogota 2

BOGOTA2	
Physical Config CLI Attributes	Imagen 9
IOS Com	mand Line Interface
bogota2#show ip route Codes: L - local, C - connected, BGP D - EIGRP, EX - EIGRP ext N1 - OSPF NSSA external t E1 - OSPF external type 1 i - IS-IS, L1 - IS-IS lev inter area * - candidate default, U P - periodic downloaded s Gateway of last resort is not se	S - static, R - RIP, M - mobile, B - sernal, O - OSPF, IA - OSPF inter area sype 1, N2 - OSPF NSSA external type 2 , E2 - OSPF external type 2, E - EGP rel-1, L2 - IS-IS level-2, ia - IS-IS - per-user static route, o - ODR static route
172.29.0.0/16 is variably s C 172.29.0.0/24 is directl L 172.29.0.1/32 is directl R 172.29.1.0/24 [120/1] vi C 172.29.3.0/30 is directl L 172.29.3.4/30 is directl C 172.29.3.4/30 is directl R 172.29.3.6/32 is directl R 172.29.3.6/32 is direct C 172.29.3.12/30 [120/1] vi C 172.29.3.12/30 is direct L 172.29.3.13/32 is direct	<pre>ubnetted, 10 subnets, 3 masks yy connected, GigabitEthernet0/0 yy connected, GigabitEthernet0/0 a 172.29.3.14, 00:00:20, Serial0/1/0 yy connected, Serial0/0/0 yy connected, Serial0/1/1 .y connected, Serial0/1/1 a 172.29.3.14, 00:00:20, Serial0/1/0 ly connected, Serial0/1/0 ly connected, Serial0/1/0</pre>

Verificación Rip V2 Router Bogota 3

hysica	al Config CLI Attributes
	IOS Command Line Interface
bogot	ta3#show ip route
Codes	s: L - local, C - connected, S - static, 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 subsured type 1 E2 OSPF subsured type 2 E ESP
	i - TS-TS II - TS-TS level-1 I2 - TS-TS level-2 is - TS-TS
inte	I - 15-15, DI - 15-15 IEVEI-I, DZ - 15-15 IEVEI-Z, IE - 15-15 r area
1	* - candidate default. U - per-user static route. o - ODR
	P - periodic downloaded static route
Gate	way of last resort is not set
	172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks
R	172.29.0.0/24 [120/1] via 172.29.3.13, 00:00:23, Serial0/1/0
С	172.29.1.0/24 is directly connected, GigabitEthernet0/0
L	172.29.1.1/32 is directly connected, GigabitEthernet0/0
R	172.29.3.0/30 [120/1] via 172.29.3.13, 00:00:23, Serial0/1/0
R	172.29.3.4/30 [120/1] via 172.29.3.13, 00:00:23, Serial0/1/0
С	172.29.3.8/30 is directly connected, Serial0/0/1
L	172.29.3.10/32 is directly connected, Serial0/0/1
С	172.29.3.12/30 is directly connected, Serial0/1/0
-	



b. Verificar el balanceo de carga que presentan los routers.

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. Imagen 11



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

Imagen 12



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

medellin3ishow in route	^
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - RCP	
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area	
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 F1 - OSPF external type 1 F2 - OSPF external type 2 F - 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	
172.29.0.0/16 is variably subnetted, 10 subnets, 4 masks	
R 172.29.4.0/24 [120/1] via 172.29.6.5, 00:00:08, Serial0/1/0	
R 172.29.6.0/30 [120/1] via 172.29.6.5, 00:00:08, Serial0/1/0	
C 172.29.6.4/30 is directly connected, Serial0/1/0	
L 172.29.6.6/32 is directly connected, Serial0/1/0	
C 172.29.6.8/30 is directly connected, Serial0/0/1	
L 172.29.6.10/32 is directly connected, Serial0/0/1	
C 172.29.6.12/30 is directly connected, Serial0/1/1	
L 172.29.6.14/32 is directly connected, Serial0/1/1	
C 172.29.6.128/25 is directly connected, GigabitEthernet0/0	
L 172.29.6.129/32 is directly connected, GigabitEthernet0/0	Ε
medellin3#	-

Code	es: L - local, C - connected, S - static, 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	
inte	r area	
	* - candidate default, U - per-user static route, o - ODR	
	P - periodic downloaded static route	
Gate	way of last resort is not set	
Gate	way of last resort is not set	
Gate	way of last resort is not set 172.29.0.0/16 is variably subnetted. 9 subnets. 3 masks	
Gate	Way or last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [120/1] via 172.29.3.13. 00:00:18. Serial0/1/0	
Gate R C	way or last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [120/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected. GiabiEthernet0/0	
Gate R C L	Way or last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabiEthernet0/0 172.29.1.1/32 is directly connected, GigabiEthernet0/0	
Gate R C L R	Way of last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 (120/1) via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabitEthernet0/0 172.29.1.1/32 is directly connected, GigabitEthernet0/0 172.29.3.0/30 (120/1) via 172.29.3.13.00:00:18. Serial0/1/0	
Gate R C L R R	Way of last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [120/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabitEthernet0/0 172.29.1.1/32 is directly connected, GigabitEthernet0/0 172.29.3.0/30 [120/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 [120/1] via 172.93.31, 00:00:18, Serial0/1/0	
Gate R C L R R C	Way of last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabitEthernet0/0 172.29.3.0/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0	
Gate R C L R C L R C L	Way of last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [120/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabitEthernet0/0 172.29.3.0/30 [120/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 [120/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 is directly connected, Serial0/0/1 172.29.3.10/30 is directly connected, Serial0/0/1 172.29.3.10/30 is directly connected, Serial0/0/1	
Gate R C L R C L C L C	Way of last resort is not set 172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks 172.29.0.0/24 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabiEthernet0/0 172.29.3.0/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.8/30 is directly connected, Serial0/2018, Serial0/1/0 172.29.3.8/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.8/30 is directly connected, Serial0/0/1 172.29.3.10/32 is directly connected, Serial0/0/1 172.29.3.10/32 is directly connected, Serial0/0/1	
Gate R C L R C L C L C L C L	Way of last resort is not set 172.29.0.0/16 is variably submetted, 9 submets, 3 masks 172.29.0.0/24 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.1.0/24 is directly connected, GigabitEthernet0/0 172.29.3.0/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 [i20/1] via 172.29.3.13, 00:00:18, Serial0/1/0 172.29.3.4/30 is directly connected, Serial0/0/1 172.29.3.10/32 is directly connected, Serial0/0/1 172.29.3.10/32 is directly connected, Serial0/0/1 172.29.3.10/32 is directly connected, Serial0/1/1 172.29.3.10/32 is directly connected, Serial0/1/1 172.29.3.12/30 is directly connected, Serial0/1/0	



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

Imagen 14

```
ISP#
ISP#
ISP#show ip route
Codes: L - local, C - connected, S - static, 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
     209.17.220.0/24 is variably subnetted, 4 subnets, 2 masks
С
       209.17.220.0/30 is directly connected, Serial0/0/0
        209.17.220.1/32 is directly connected, Serial0/0/0
L
С
       209.17.220.4/30 is directly connected, Serial0/0/1
       209.17.220.5/32 is directly connected, Serial0/0/1
L
ISP#
                                                                       Ξ
ISP#
TSP#
ISP#
```

Parte 3: Deshabilitar la propagación del protocolo RIP.

a. 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	SERIALO/0/1; SERIALO/1/0; SERIALO/1/1
Bogota2	SERIALo/o/o; SERIALo/o/1
Bogota3	SERIALO/0/0; SERIAL0/0/1; SERIAL0/1/0
Medellín1	SERIALO/0/0; SERIAL0/0/1; SERIAL0/1/1
Medellín2	SERIALo/o/o; SERIALo/o/1
Medellín3	SERIALO/0/0; SERIAL0/0/1; SERIAL0/1/0
ISP	No lo requiere



MEDELLIN1 router rip passive-interface Serial0/0/0

MEDELLIN2

router rip passive-interface GigabitEthernet0/0

MEDELLIN3

router rip passive-interface GigabitEthernet0/0

BOGOTA1

router rip passive-interface Serial0/0/0

BOGOTA2

router rip passive-interface GigabitEthernet0/0

BOGOTA3

router rip passive-interface GigabitEthernet0/0

Parte 4: Verificación del protocolo RIP

a. 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.

```
Medellin1#
Medellin1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 6 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
               Send Recv Triggered RIP Key-chain
 Interface
 Serial0/1/0
                      2
                             2
 Serial0/0/0
                      2
                            2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
          172.29.0.0
          209.17.220.0
Passive Interface(s):
Routing Information Sources:
                                       Last Update
          Gateway
                         Distance
Distance: (default is 120)
Medellin1#
Medellin1#
```



Ξ

Ξ

Imagen 16

```
medellin2#
medellin2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 2 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
 Interface
                      Send Recv Triggered RIP Key-chain
 GigabitEthernet0/0
                     2
                            2
                      2
 Serial0/0/0
                             2
 Serial0/1/0
                       2
                             2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
           172.29.0.0
Passive Interface(s):
Routing Information Sources:
                   Distance
          Gateway
                                      Last Update
           172.29.6.6
                           120
                                        00:00:11
Distance: (default is 120)
medellin2#
medellin2#
```

```
medellin3#
medellin3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 2 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
                       Send Recv Triggered RIP Key-chain
 Interface
 GigabitEthernet0/0
                       2
                             2
 Serial0/1/0
                       2
                              2
 Serial0/0/1
                       2
                              2
 Serial0/1/1
                       2
                              2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
           172.29.0.0
Passive Interface(s):
Routing Information Sources:
           Gateway
                       Distance
                                       Last Update
           172.29.6.5
                               120
                                        00:00:10
Distance: (default is 120)
medellin3#
medellin3#
```



```
Bogota1#
Bogota1#
Bogotal#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 1 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
                      Send Recv Triggered RIP Key-chain
 Interface
 Serial0/1/0
                      2
                             2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
           179.29.0.0
           209.17.220.0
Passive Interface(s):
Routing Information Sources:
                          Distance
                                    Last Update
           Gateway
Distance: (default is 120)
Bogota1#
```

```
bogota2#
bogota2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 3 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
                       Send Recv Triggered RIP Key-chain
 Interface
 GigabitEthernet0/0
                      2
                             2
 Serial0/1/0
                      2
                             2
 Serial0/0/0
                      2
                             2
 Seria10/1/1
                       2
                             2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
           172.29.0.0
Passive Interface(s):
Routing Information Sources:
                                       Last Update
          Gateway Distance
           172.29.3.14
                             120
                                        00:00:15
Distance: (default is 120)
bogota2#
```



Ξ

```
bogota3#
bogota3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 5 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
                       Send Recv Triggered RIP Key-chain
 Interface
                       2
 GigabitEthernet0/0
                             2
 Serial0/1/0
                       2
                             2
 Serial0/0/1
                             2
                       2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
           172.29.0.0
Passive Interface(s):
Routing Information Sources:
                    Distance
                                       Last Update
           Gateway
           172.29.3.13
                              120
                                       00:00:04
Distance: (default is 120)
bogota3#
```

b. 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.

```
Imagen 21
Medellin1
Physical Config CLI Attributes
                                           IOS Command Line Interface
        172.29.6.10
                                    120
                                                00:00:18
 Distance: (default is 120)
 MEDELLIN1#show ip route rip
       172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks
           172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:10, Serial0/0/1
172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:21, Serial0/1/1
 R
 R
                                 [120/1] via 172.29.6.10, 00:00:21, Serial0/1/0
           172.29.6.4/30 [120/1] via 172.29.6.2, 00:00:10, Serial0/0/1
[120/1] via 172.29.6.14, 00:00:21, Serial0/1/1
 R
                              [120/1] via 172.29.6.10, 00:00:21, Serial0/1/0
       209.17.220.0/24 is variably subnetted, 3 subnets, 2 masks
 MEDELLIN1#
 Ctrl+F6 to exit CLI focus
                                                                                     Copy Paste
```

Imagen 22

e Me	dellin:2			
Physical	Config CLI Attributes			
			IOS Command Line Interface	
	172.29.6.1 172.29.6.6	120 120	00:00:01 00:00:01	^
Dist	tance: (default is ELLIN2#show ip rout	120) te rip		
	172.29.0.0/16 is	variably su	bnetted, 9 subnets, 3 mask	s
R	172.29.4.128/3	25 [120/1] v	ia 172.29.6.6, 00:00:17, S	erial0/0/1
R	172.29.6.8/30	[120/1] via [120/1] via	172.29.6.1, 00:00:16, Ser 172.29.6.6, 00:00:17, Ser	ial0/0/0 ial0/0/1
R	172.29.6.12/3) [120/1] vi [120/1] vi	a 172.29.6.1, 00:00:16, Se a 172.29.6.6, 00:00:17, Se	rial0/0/0 rial0/0/1
R*	0.0.0/0 [120/1]	via 172.29	.6.1, 00:00:16, Serial0/0/	0
MEDI	ELLIN2#			~



Parte 5: Configurar encapsulamiento y autenticación PPP.

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

ISP

username MEDELLIN password cisco

interface Serial0/0/0 encapsulation ppp ppp authentication pap ppp pap sent-username ISP password cisco

MEDELLIN1

username ISP password cisco

interface Serial0/0/0 encapsulation ppp ppp authentication pap ppp pap sent-username MEDELLIN password cisco

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

username BOGOTA password

cisco interface Serial0/0/1 encapsulation ppp ppp authentication chap

BOGOTA1

username ISP password cisco

interface Serial0/0/0 encapsulation ppp ppp authentication chap



Parte 6: Configuración de PAT.

a. 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.

b. 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.

MEDELLIN1

ip nat inside source list 1 interface Serial0/0/0 overload access-list 1 permit 172.29.4.0 0.0.3.255

interface Serial0/0/0 ip nat outside interface Serial0/0/1 ip nat inside interface Serial0/1/0 ip nat inside interface Serial0/1/1 ip nat inside

Salida de Interfaz

Physical Config DJ Attributes				
,		IOS Command Line Interface		
	The second state of the se			^
MEDELLIN1#show ip nat	translation			
Pro Inside global	Inside local	Outside local	Outside global	
icmp 209.17.220.2:1	172.29.4.6:1	209.17.220.1:1	209.17.220.1:1	
icmp 209.17.220.2:2	172.29.4.6:2	209.17.220.1:2	209.17.220.1:2	
icmp 209.17.220.2:3	172.29.4.6:3	209.17.220.1:3	209.17.220.1:3	
icmp 209.17.220.2:4	172.29.4.6:4	209.17.220.1:4	209.17.220.1:4	
a sup a state a				
MEDELLIN1#				



c. 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.

BOGOTA1

ip nat inside source list 1 interface Serial0/0/0 overload access-list 1 permit 172.29.0.0 0.0.3.255

interface Serial0/0/0 ip nat outside interface Serial0/0/1 ip nat inside interface Serial0/1/0 ip nat inside interface Serial0/1/1 ip nat inside

Imagen 24

hysical Config CU Attributes			
New States and Area March	IOS Comma	nd Line Interface	
BOGOTA1# BOGOTA1#show ip nat t	ranslation		
Pro Inside global	Inside local	Outside local	Outside global
icmp 209.17.220.6:1	172.29.0.6:1	209.17.220.1:1	209.17.220.1:1
icmp 209.17.220.6:2	172.29.0.6:2	209.17.220.1:2	209.17.220.1:2
icmp 209.17.220.6:3	172.29.0.6:3	209.17.220.1:3	209.17.220.1:3
icmp 209 17 220 6.4	172 29 0 5.4	209.17.220.1.4	209.17.220.1.4

Parte 7: Configuración del servicio DHCP.

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

Medellin2

ip dhcp excluded-address 172.29.4.1 172.29.4.5 ip dhcp excluded-address 172.29.4.129 172.29.4.133 ip dhcp pool MED2 network 172.29.4.0 255.255.255.128 default-router 172.29.4.1 dns-server 8.8.8.8 ip dhcp pool MED3 network 172.29.4.128 255.255.255.128 default-router 172.29.4.129 dns-server 8.8.8.8



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

Medellin3 interface GigabitEthernet0/0 ip helper-address 172.29.6.5

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

BOGOTA2

ip dhcp excluded-address 172.29.1.1 172.29.1.5 ip dhcp excluded-address 172.29.0.1 172.29.0.5 ip dhcp pool BOG2 network 172.29.1.0 255.255.255.0 default-router 172.29.1.1 dns-server 8.8.8.8 ip dhcp pool BOG3 network 172.29.0.0 255.255.255.0 default-router 172.29.0.1 dns-server 8.8.8.8

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

interface GigabitEthernet0/0 ip helper-address 172.29.3.13

Verificación de Configuración DHCP de Los PC

50 HOST						
Physical Cor	ifig Desktop	Programming	Attributes			
OHCP			Static		DHCP failed. APIPA is	being used.
IP Address			169.254.8.82			
Subnet Mask			255.255.0.0			
Default Gatewa	ıy		0.0.0.0			
DNS Server			0.0.0.0			
IPv6 Configurat	on					
O DHCP		Auto Co	nfig	Static		
IPv6 Address						1
Link Local Add	ess		FE80::260:3EFF:	FE0E:852		



Imagen 26

40 HOST	1					
Physical	Config	Desktop	Programming	Attributes		
OHCP				Static	DHCP failed. APIPA is being used	i.
IP Address				169.254.22	0.118	
Subnet Mas	k			255.255.0.0)	
Default Gate	eway			0.0.0		
DNS Server	r			0.0.0		
IPv6 Configu	uration					
◎ DHCP			Auto Co	n fig	Static	
IPv6 Addres	s					1
Link Local A	ddress			FE80::20C:	CFFF:FE62:DC76	

Imagen 27

🂐 150 HOST							
Physical	Config	Desktop	Programming	Attributes			
OHCP				Static		DHCP request successful.	
IP Address				172.29.0.6			
Subnet Mas	sk			255.255.255.0			
Default Gate	eway			172.29.0.1			
DNS Server	r			8.8.8			
IPv6 Configu	uration						
OHCP			Auto Col	n fig	Static		
IPv6 Addres	35						1
Link Local A	ddress			FE80::201:97FF:	E6A:EDC0		

N 200 HOST				
Physical Co	nfig Desktop	Programming	Attributes	
OHCP			Static	DHCP request successful.
IP Address			172.29.1.6	
Subnet Mask			255.255.255	5.0
Default Gatew	ay		172.29.1.1	
DNS Server			8.8.8.8	
IPv6 Configura	tion			
O DHCP		Auto Co	nfig	Static
IPv6 Address				1
Link Local Add	iress		FE80::2D0:F	FFF:FEA1:80B3



Desarrollo Escenario 2:

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.



Topología de red - Escenario 2



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



Tabla de Direccionamiento escenario 2



Dispositivo	Interface	Direccion IP	Mascara de	Puerta de enlace
	<u> </u>	102 169 00 1		preueterminaua
	G0/0	192.100.99.1	255.255.255.0	
R1	S0/0/0	172.31.21.1	255.255.255.252	
	S0/1/0	172.31.21.1	255.255.255.252	
R2	S0/1/1	172.31.23.1	255.255.255.252	
	G0/1	10.10.10.11	255.255.255.255	
	S0/1/0	172.32.23.2	255.255.255.252	
	Lo4	192.168.4.1	255.255.255.255	
R3	Lo5	192.168.5.1	255.255.255.255	
	Lo6	192.168.6.1	255.255.255.255	
PC-A	NIC	DHCP	DCHP	DHCP
PC-B	NIC	DHCP	DHCP	DHC
PC Internet	NIC	209.165.200.230	255.255.255.248	209.168.200.225

Para la conexión de puertos Seriales seleccione la tarjeta HWIC 2T para conexión entre los Router



Imagen 31

PC Internet- Configuración

Dirección IP 209.165.200.230 Mascara de Subred 255.255.255.248 Puerta de enlace por defecto 209.165.200.225

Configuración ip del PC – Internet

O DHCP	 Static
IP Address	209.165.200.230
Subnet Mask	255.255.248
Default Gateway	209.165.200.225
DNS Server	0.0.0.0
IPv6 Configuration	

Identificación de Router - Miami



R2>enable password: R2#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R2(config)#hostname Miami Miami(config)#enable secret cisco Miami(config)#service password-encryption Miami(config)#banner motd "solo acceso autorizado" Miami(config)#line console 0 Miami(config-line)#password class Miami(config-line)#login Miami(config-line)#exit Miami(config)#line vty 0 15 Miami(config-line)#password class Miami(config-line)#login Miami(config-line)#end Miami# Direccionamiento – Router 2 Miami Miami# Miami# configure terminal Miami(config)#interface loopback 0 Miami(config-if)#ip address 10.10.10.11 255.255.255.255 Miami(config-if)#no shutdown Miami(config-if)# Miami(config-if)#interface s0/0/1 Miami(config-if)#ip address 172.31.21.1 255.255.255.252 Miami(config-if)#no shutdown Miami(config-if)# Miami(config-if)#interface s0/0/0 Miami(config-if)#ip address 172.31.23.1 255.255.255.252 Miami(config-if)#no shutdown Miami(config-if)# Miami(config-if)#interface fa0/0 Miami(config-if)#ip address 209.165.200.255 255.255.255.248 Miami(config-if)#no shutdown Miami(config-if)#

Router 2 Miami – Conexion a Internet



Miami# Miami# configure terminal Miami(config)#interface gi 0/0 Miami(config-if)#ip address 209.165.200.255 255.255.255.248 Miami(config-if)#duplex auto Miami(config-if)#speed auto Miami(config-if)#description Internet Miami(config-if)# Miami(config-if)#interface loopback 0 Miami(config-if)# Miami(config-if)#ip address 10.10.10.10 255.255.255.255 Miami(config-if)#description Conexion a Web server Miami(config-if)#interface s0/0/0 Miami(config-if)#ip address 172.32.23.2 255.255.255.252 Miami(config-if)#no shutdown Miami(config-if)# Miami(config-if)#interface s0/0/1 Miami(config-if)#ip address 172.31.21.1 255.255.255.252 Miami(config-if)#no shutdown Miami(config-if)# %LINK-5-CHANGED:Interface Serial 0/0/1, changed state to down Miami(config-if)#Exit Miami(config)#

Activamos la Tarjeta

Miami(config)#interface gi 0/0 Miami(config-if)#no shutdown Miami(configif)#Exit Miami(config)#

Identificación de Router Bogotá R1>enable password: R1#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R1(config)#hostname Bogota Bogota(config)#enable secret cisco Bogota(config)#service password-encryption Bogota(config)#banner motd "solo acceso autorizado" Bogota(config)#line console 0 Bogota(config-line)#password class Bogota(config-line)#login Bogota(config-line)#exit Bogota(config)#line vty 0 15 Bogota(config-line)#password class Bogota(config-line)#login



Bogota(config-line)#Exit Bogota(config)#Exit Bogota#

Direccionamiento Ip – Reuter 1 Bogotá

Bogota#

Bogota#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. Bogota(config)# Bogota(config)#interface s0/0/0 Bogota(config-if)#ip address 172.31.23.2 255.255.255.252 Bogota(config-if)#no shutdown Bogota(config-if)# Bogota(config-if)#interface fa0/0 Bogota(config-if)#ip address 192.168.30.1 255.255.255.0 Bogota(config-if)#no shutdown Bogota(config-if)#no shutdown Bogota(config-if)#exit Bogota(config)#Exit Bogota(config)#Exit

Identificación Router 3 - Buenos Aires

R3>enable password: R3#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. R3(config)#hostname BuenosAires BuenosAires(config)#enable secret cisco BuenosAires(config)#service password-encryption BuenosAires(config)#banner motd "solo acceso autorizado" BuenosAires(config)#line console 0 BuenosAires(config-line)#password class BuenosAires(config-line)#login BuenosAires(config-line)#exit BuenosAires(config)#line vty 0 15 BuenosAires(config-line)#password class BuenosAires(config-line)#login BuenosAires(config-line)#Exit BuenosAires(config)#Exit **BuenosAires#**

Router 3 – Buenos Aires Configuracion IP e interfaces



BuenosAires#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. BuenosAires(config)#interface s0/0/1 BuenosAires(config-if)#ip address 172.32.23.1 255.255.255.252 BuenosAires(config-if)#no shutdown BuenosAires(config-if)#ip address 172.31.23.2255.255.255.252 BuenosAires(config-if)#no shutdown BuenosAires(config-if)#exit BuenosAires(config)#interface s0/0/0 BuenosAires(config-if)#no ip address BuenosAires(config-if)#clock rate 200000 Unknown clock rate BuenosAires(config-if)#shutdown BuenosAires(config-if)#interface loopback4 BuenosAires(config-if)#ip address 192.168.4.1 255.255.255.0 BuenosAires(config-if)#interface loopback5 BuenosAires(config-if)#ip address 192.168.5.1 255.255.255.0 BuenosAires(config-if)#interface loopback6 BuenosAires(config-if)#ip address 192.168.6.1 255.255.255.0 BuenosAires(config-if)#no shutdown BuenosAires(config-if)#exit BuenosAires(config)#exit BuenosAires#

Configuración PC-A

Imagen 32

	ogramming Attributes			
O DHCP	Static			
IPAddress	192.168.30.10			
Subnet Mask	255.255.255.0			
Default Gateway	192.168.30.1			
DNS Server	0.0.0.0			
IPv6 Configuration				
O DHCP	Auto Config	Static		
IPv6 Address			1	
Link Local Address	FE80::200:CFF:FE7	rc:26CB		

Configuración PC-C



PC-C			Interface fails	
Physical Config	Desktop	Programming	Attributes	
C DHCP			Static	
IP Address			192.168.40.10	
Subnet Mask			255.255.255.0	
Default Gateway			192.168.40.1	
DNS Server			0.0.0.0	
IPv6 Configuration				
© DHCP		Auto Con	nfig	
IPv6 Address			1	
Link Local Address			FE80::250:FFF:FEE0:DE6D	
IPv6 Gateway				
IPv6 DNS Server				

2. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 area 0 Configuration Item or Task	Specification
Router ID R1- Bogota	1.1.1.1
Router ID R2- Miami	5.5.5.5
Router ID R3- Buenos Aires	8.8.8.8
Configurar todas las interfaces LAN como pa	asivas
Establecer el ancho de banda para enlaces	128 Kb/s
seriales en	
Ajustar el costo en la métrica de S0/0 a	7500

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2
- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface
- Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.



OSPFv2 - Router - Miami

Miami(config)# Miami(config)#router ospf 1 Miami(config-router)#router-id 5.5.5.5 Miami(config-router)#passive-interface fa0/0 Miami(config-router)#Reload or use "clear ip ospf process" command, for this to take effect Miami(config-router)#

OSPFv2 - Router -Bogotá

Bogota#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. Bogota(config)#router ospf 1 Bogota(config-router)#router-id 1.1.1.1 Bogota(config-router)#passive-interface fa0/0 Bogota(config-router)#

OSPFv2 – Router -Buenos aires

BuenosAires#configure terminal Enter configuration commands, one per lien. End with CNTL/Z. BuenosAires(config)#router ospf 1 BuenosAires(config-router)#router-id 8.8.8.8 BuenosAires(config-router)#passive-interface fa0/0 BuenosAires(config-router)#Reload or use "clear ip ospf process" command, for this to take effect BuenosAires(config-router)#

ip router bogota

Bogota>enable Password: Bogota‡show ip ospf neighbor Neighbor ID Pri State Dead Time Address Interface 5.5.5.5 0 FULL/ - 00:00:36 172.31.21.1 Serial0/0/0 Bogota‡



Tablas de enrutamiento OSPFv2 Miami

Imagen 34

```
Miami#show ip route
Codes: L - local, C - connected, S - static, 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
     10.0.0/32 is subnetted, 1 subnets
С
        10.10.10.10/32 is directly connected, Loopback0
     172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
С
        172.31.21.0/30 is directly connected, Serial0/0/1
        172.31.21.1/32 is directly connected, Serial0/0/1
L
     172.32.0.0/16 is variably subnetted, 2 subnets, 2 masks
С
        172.32.23.0/30 is directly connected, Serial0/0/0
L
        172.32.23.2/32 is directly connected, Serial0/0/0
     209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
С
        209.165.200.224/29 is directly connected, GigabitEthernet0/0
L
        209.165.200.225/32 is directly connected, GigabitEthernet0/0
Miami#
```

```
Bogota#show ip route
Codes: L - local, C - connected, S - static, 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
     172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
С
       172.31.21.0/30 is directly connected, Serial0/0/0
       172.31.21.2/32 is directly connected, Serial0/0/0
L
     192.168.30.0/24 is variably subnetted, 2 subnets, 2 masks
с
       192.168.30.0/24 is directly connected, GigabitEthernet0/0
L
       192.168.30.1/32 is directly connected, GigabitEthernet0/0
Bogota#
```



Imagen 36

Show ip Route Buenos Aires

Buenos-Aires#show ip route Codes: L - local, C - connected, S - static, 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 172.32.0.0/16 is variably subnetted, 2 subnets, 2 masks С 172.32.23.0/30 is directly connected, Serial0/0/1 172.32.23.2/32 is directly connected, Serial0/0/1 L 192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks С 192.168.4.0/24 is directly connected, Loopback4 L 192.168.4.1/32 is directly connected, Loopback4 192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks С 192.168.5.0/24 is directly connected, Loopback5 L 192.168.5.1/32 is directly connected, Loopback5 192.168.6.0/24 is variably subnetted, 2 subnets, 2 masks С 192.168.6.0/24 is directly connected, Loopback6 192.168.6.1/32 is directly connected, Loopback6 L Margan

3. Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento,

Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.

VLAN en Switches

Switch>enable Switch#configure terminal Enter configuration commands, one per line, End with CNTL/Z Switch(config)#vlan 30 Switch(config-vlan)#name Administracion Switch(config-vlan)#vlan 40 Switch(config-vlan)#vlan 40 Switch(config-vlan)#name Mercadeo Switch(config-vlan)#vlan 200 Switch(config-vlan)#vlan 200 Switch(config-vlan)#name Mantenimiento Switch(config-vlan)#



Puertos troncales

Switch 1 Switch>enable Switch#configure terminal Enter configuration commands, one per line, End with CNTL/Z Switch(config)#interface gi0/1 Switch(config-if)#switchport mode trunk Switch(config-if)# Switch(config-if)#interface gi0/2 Switch(config-if)#switchport mode trunk Switch(config-if)# Swit

Switch 3

Switch(config)# Switch(config)#interface gi0/2 Switch(config-if)#switchport mode trunk Switch(config)# Puertos de acceso

Switch 1

Switch(config)# Switch(config)#interface gi0/2 Switch(config-if)#switchport mode trunk Switch(config-if)# switchport mode access Switch(config-if)# switchport access vlan 30 Switch(config-if)#

Switch 3

Switch(config)# Switch(config)#interface gi0/1 Switch(config-if)#switchport mode access Switch(config-if)# switchport access vlan 40 Switch(config-if)#



4. En el Switch 3 deshabilitar DNS lookup

S3 SIN DNS LOOKUP

Switch(config-if)# Switch(config-if)#no ip domain-lookuo Switch(config-if)#

5. Asignar direcciones IP a los Switches acorde a los lineamientos.

Switch 1 Switch(config-if)# Switch(config-if)#interface vlan 99 Switch(config-if)#ip address 192.168.99.2 255.255.255.0 Switch(config-if)#no shutdown Switch(config-if)#

Switch 3

Switch(config-if)# Switch(config-if)#interface vlan 99 Switch(config-if)#ip address 192.168.99.3 255.255.255.0 Switch(config-if)#no shutdown Switch(config-if)#

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

Switch 1 Switch(config)# Switch(config)#interface range fa0/2-24 Switch(config-if-range)#shutdown %LINK-5CHANGED: Interface FastEthernet0/2, changed state administratively down

Switch 3 Switch(config)# Switch(config)#interface range fa0/2-24 Switch(config-if-range)#shutdown %LINK-5CHANGED: Interface FastEthernet0/2, changed state administratively down



7. Implementar DHCP and NAT for IPv4

Bogota(config)# Bogota(config)#ip dhcp excluded-address 192.168.30.2 192.168.30.32 Bogota(config)#ip dhcp excluded-address 192.168.40.2 192.168.30.32 Bogota(config)#

9. 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.	

Direcciones excluida DHCP

Bogota(config)#

Bogota(config)#ip dhcp excluded-address 192.168.30.2 192.168.30.32 Bogota(config)#ip dhcp excluded-address 192.168.40.2 192.168.30.32 Bogota(config)#

DHCP POOL

Bogota(config)# Bogota(config)#ip dhcp pool MERCADEO Bogota(dhcp-config)#dns-server 10.10.10.11 Bogota(dhcp-config)#default-router 172.31.21.1 Bogota(dhcp-config)#

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

Bogota(config)#

Bogota(config)#ip access-list extended ADMINISTRACION Bogota(config-ext-nacl)#remark permit local lan to use nat Bogota(config-ext-nacl)#permit ip 192.168.30.0 0.0.0.255 any Bogota(config-ext-nacl)#permit ip 192.168.40.0 0.0.0.255 any



Bogota(config-ext-nacl)#exit Bogota(config)#ip nat pool Bogota-pool 209.165.200.225 209.165.200.228 netmask 255.255.255.248 Bogota(config)#ip nat inside source list ADMINISTRACION pool Bogota-pool Bogota(config)#interface lo0 Bogota(config-if)#ip nat inside Bogota(config-if)#ip nat inside Bogota(config-if)#ip nat outside Bogota(config-if)#ip nat outside Bogota(config-if)#

11. 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. Bogota(config)# access-list 2 deny 192.168.30.0 0.0.255 Bogota(config-if)#

12. 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.

```
Buenosaires>enable
Password:
                                                              Imagen 37
Password:
Buenosaires#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Buenosaires(config) #router rip
Buenosaires(config-router) #version 2
Buenosaires(config-router)#do show ip route connected
C 172.31.23.0/30 is directly connected, Serial0/0/1
C 192.168.4.0/24 is directly connected, Loopback4
C 192.168.5.0/24 is directly connected, Loopback5
   192.168.6.0/24 is directly connected, Loopback6
C
Buenosaires(config-router)#
Buenosaires(config-router)#network 172.16.23.0
Buenosaires(config-router) #network 172.168.4.0
Buenosaires(config-router) #network 172.16.5.0
Buenosaires (config-router) #
```

Ctrl+F6 to exit CLI focus

Сору



13. Verificar procesos de comunicación y re direccionamiento de tráfico en los Reuters mediante el uso de Ping y Traceroute.



Top



Link Packet tracer - Escenario 1 Escenario 2 https://drive.google.com/file/d/1FcFdsm-2c9JwB4Uf6G1PKWxz3yncSsvV/view?usp=sharing



Conclusiones

Identificar cada uno de los dispositivos que intervienen en el proceso de configuración del sistema de redes y su implementación de acuerdo a los requisitos establecido en la guía de actividades prácticas.

Reconocer Los dispositivos PC, Router, Swiches, y los diferentes cables y tarjetas de configuración de cada componente utilizado en el Sistema.

Aplicar los protocolos de conexión de acuerdo al requisito indicado en la Guia de Actividades, aplicando todo el conocimiento adquirido durante el desarrollo del Diplomado. Implementados en la Herramienta de Simulación Packet Tracer.

Demostrar el conocimiento, habilidades y destrezas en la configuración y enrutamiento de cada uno de los dispositivos que conforman el sistema de redes de acuerdo al requisito establecido en esta actividad

Aplicar los conceptos fundamentales aprendidos en la unidad CCNA2, como lo es el protocolo de Routing dinámico, OSPFv2 para el caso de ipv4 respectivamente

Aplicar los conocimientos adquiridos a lo largo del curso de Profundización Cisco CCNA I y II, y sobre todo relacionados con el protocolo de enrutamiento denominado OSPF, aplicando la configuración para cada dispositivos de red de acuerdo a la tipología de red establecida.

Impulsar el uso de nuevas tecnologías en base a lo aprendido en el diplomado como es el uso del Software o herramienta de simulación Cisco Packet Tracert, en la cual permite simular en forma real la configuración de cada red de acuerdo a su topología.



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