

EVALUACIÓN – PRUEBA DE HABILIDADES PRÁCTICAS CCNA

POR:

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203092_40

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DIPLOMADO DE PROFUNDIZACIÓN CISCO (DISEÑO E IMPLEMENTACIÓN DE SOLUCIONES INTEGRADAS LAN/WAN)

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA UNAD

2018



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Introducción

La evaluación denominada "Prueba de habilidades prácticas", forma parte de las actividades evaluativas del Diplomado de Profundización CCNA, y busca identificar el grado de desarrollo de competencias y habilidades que fueron adquiridas a lo largo del diplomado. Lo esencial es poner a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

El trabajo evaluativo consiste en desarrollar dos Escenarios en la herramienta de Packet Tracer, Escenario 1: implementar NAT, servidor de DHCP, RIPV2 y el routing entre VLAN, incluida la configuración de direcciones IP, las VLAN, los enlaces troncales y las subinterfaces. Escenario 2: 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.

Las practicas debe estar acompañada de los respectivos procesos de documentación de la solución, correspondientes al registro de la configuración de cada uno de los dispositivos, la descripción detallada del paso a paso de cada una de las etapas realizadas durante su desarrollo, el registro de los procesos de verificación de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros.



Escenario 1





_ □ × P SW 2 Config CLI Physical Attributes IOS Command Line Interface ۸ %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to up %LINK-5-CHANGED: Interface FastEthernet0/13, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/13, changed state to up &LINK-3-UPDOWN: Interface FastEthernet0/13, changed state to down %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/13, changed state to down Switch> Switch>enable Switch#configure t Enter configuration commands, one per line. End with CNTL/Z. Switch(config) #hostname SW2 SW2(config) #exit SW2# SYS-5-CONFIG_I: Configured from console by console SW2# _











ę _ R1 Physical Config CLI Attributes IOS Command Line Interface Technical Support: http://www.cisco.com/techsupport Copyright (c) 1986-2007 by Cisco Systems, Inc. Compiled Wed 18-Jul-07 04:52 by pt_team --- System Configuration Dialog ---Would you like to enter the initial configuration dialog? [yes/no]: % Please answer 'yes' or 'no'. Would you like to enter the initial configuration dialog? [yes/no]: NO Press RETURN to get started! Router>ENABLE Router#CONFIGURE T Enter configuration commands, one per line. End with CNTL/Z. Router(config) #HOSTNAME R1 R1(config) #EXIT R1# SYS-5-CONFIG_I: Configured from console by console



```
- 0
ę
                                      R2
          Config CLI
  Physical
                         Attributes
                             IOS Command Line Interface
  Copyright (c) 1986-2007 by Cisco Systems, Inc.
   Compiled Wed 18-Jul-07 04:52 by pt_team
            --- System Configuration Dialog ---
  Would you like to enter the initial configuration dialog? [yes/no]:
   % Please answer 'yes' or 'no'.
  Would you like to enter the initial configuration dialog? [yes/no]:
  NO
  Press RETURN to get started!
  Router>enable
  Router#configure t
  Enter configuration commands, one per line. End with CNTL/Z.
  Router(config) #hostname R2
  R2(config) #EXIT
  R2#
   SYS-5-CONFIG_I: Configured from console by console
  R2#
```



🤻 R3 – 🗖	
Physical Config CLI Attributes	
IOS Command Line Interface	
Technical Support: http://www.cisco.com/techsupport Copyright (c) 1986-2007 by Cisco Systems, Inc. Compiled Wed 18-Jul-07 04:52 by pt_team	
System Configuration Dialog	
Would you like to enter the initial configuration dialog? [yes/no]: % Please answer 'yes' or 'no'. Would you like to enter the initial configuration dialog? [yes/no]: NO	
Press RETURN to get started!	
Router>ENABLE Router#CONFIGURE T Enter configuration commands, one per line. End with CNTL/Z. Router(config)#HOSTNAME R3	
R3# %SYS-5-CONFIG_I: Configured from console by console	

Laptop31

NIC

DHCP



Tabla de direccionamiento

El administrador	Interfaces	Dirección IP	Máscara de subred	<mark>Gateway</mark> predeterminado
ISP	S0/0/0	200.123.211.1	255.255.255.0	N/D
	Se0/0/0	200.123.211.2	255.255.255.0	N/D
R1	Se0/1/0	10.0.0.1	255.255.255.252	N/D
	Se0/1/1	10.0.0.5	255.255.255.252	N/D
	Fa0/0,100	192.168.20.1	255.255.255.0	N/D
R2	Fa0/0,200	192.168.21.1	255.255.255.0	N/D
	Se0/0/0	10.0.0.2	255.255.255.252	N/D
	Se0/0/1	10.0.0.9	255.255.255.252	N/D
	E-0/0	192.168.30.1	255.255.255.0	N/D
R3	raoyo	2001:db8:130::9C0:80F:301	/64	N/D
	Se0/0/0	10.0.0.6	255.255.255.252	N/D
	Se0/0/1	10.0.0.10	255.255.255.252	N/D
SW2	VLAN 100	N/D	N/D	N/D
	VLAN 200	N/D	N/D	N/D
SW3	VLAN1	N/D	N/D	N/D
		-		
PC20	NIC	DHCP	DHCP	DHCP
PC21	NIC	DHCP	DHCP	DHCP
PC30	NIC	DHCP	DHCP	DHCP
PC31	NIC	DHCP	DHCP	DHCP
Laptop20	NIC	DHCP	DHCP	DHCP
Laptop21	NIC	DHCP	DHCP	DHCP
Laptop30	NIC	DHCP	DHCP	DHCP

DHCP

DHCP



Tabla de asignación de VLAN y de puertos

Dispositivo	VLAN	Nombre	Interf az
SW2	100	LAPTOPS	Fa0/2-3
SW2	200	DESTOPS	Fa0/4-5
SW3	1	-	Todas las interfaces

Tabla de enlaces troncales

Dispositivo	Interfaz	Dispositivo
local	local	remoto
SW2	Fa0/2-3	

Situación

En esta actividad, demostrará y reforzará su capacidad para implementar NAT, servidor de DHCP, RIPV2 y el routing entre VLAN, incluida la configuración de direcciones IP, las VLAN, los enlaces troncales y las subinterfaces. Todas las pruebas de alcance deben realizarse a través de ping únicamente.

Descripción de las actividades

• SW1 VLAN y las asignaciones de puertos de VLAN deben cumplir con la tabla 1.

SW2>enable SW2#configure t Enter configuration commands, one per line. End with CNTL/Z. SW2(config)#vlan 100 SW2(config-vlan)#name LAPTOPS SW2(config-vlan)#vlan 200 SW2(config-vlan)#vlan 200 SW2(config-vlan)#name DESTOPS SW2(config-vlan)#exit SW2(config)#int range fa0/2-3

SW2(config-if-range)#switchport access vlan 100 SW2(config-if-range)#int range fa0/4-5 SW2(config-if-range)#switchport access vlan 200 SW2(config-if-range)#



SW2(config-if-range)#int fa0/9 SW2(config-if)# SW2(config-if)#switchport mode trunk SW2(config-if)#int range fa0/6-24

SW2(config-if-range)#shutdon

Physical Config CLI Attributes		
IOS C	ommand Line Interface	
VLAN Name	Status Ports	
1 default Fa0/8	- active Fa0/1, Fa0/6, Fa0,	/7,
F-0/11 F-0/12	Fa0/9, Fa0/10,	
ra0/11, ra0/12	Fa0/13, Fa0/14,	
Fa0/15, Fa0/16	Fa0/17, Fa0/18,	
Fa0/19, Fa0/20	Fa0/21, Fa0/22,	
Fa0/23, Fa0/24		
100 LAPTOPS	active Fa0/2, Fa0/3	1
200 DESTOPS	active Fa0/4, Fa0/5	I
1002 Idd1-delault	active	•
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

SW3>enable SW3#configure t Enter configuration commands, one per line. End with CNTL/Z. SW3(config)#vlan 1 SW3(config-if-range)#switchport access



SW3(config-if-range)#switchport access vlan 1 SW3(config-if-range)# SW3#

				S	W 3				-		
Physica	il Co	onfig <u>CLI</u>	Attribut	es							
			ю	OS Commar	nd Line Inte	erface					
							-				
1	defau	lt			act:	ive	Fa0/1,	Fa0/2, 1	Fa0/:	з,	
ra0/4	ŧ						Fa0/5,	Fa0/6, 1	Fa0/	7,	
Fa0/8	3										
Fa0/1	11. Fa	0/12					Fa0/9,	Fa0/10,			
	,						Fa0/13,	Fa0/14	,		
Fa0/1	15, Fa	0/16					F=0/17	F=0/18			
Fa0/1	19, Fa	0/20					140/1/,	140/10	·		
E-0/2	10 F-	0/24					Fa0/21,	Fa0/22	,		
1002	fddi-	default			act:	ive					
1003	token	-ring-defa	ault		act:	ive					
1004	fddin	et-defaul	t		act:	ive					
1005	trnet	-default			act:	ive					
VLAN	Туре	SAID	MTU	Parent	RingNo	Brid	geNo Stp	BrdgMod	de		
Trans	s1 Tra	ns2									
1	enet	100001	1500	-	-	_	-	-	0		
0											

• Los puertos de red que no se utilizan se deben deshabilitar.

SW3(config)#int range fa0/6-23 SW3(config-if-range)#shutdown

SW2(config)#int range fa0/6-24 SW2(config-if-range)#shutdown







%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down SW3(config-if-range)# %LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to down

• La información de dirección IP R1, R2 y R3 debe cumplir con la tabla 1.

R1>enable R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#int s0/0/0 R1(config-if)#ip address 200.123.211.2 255.255.255.0 R1(config-if)#exit R1(config)#int s0/1/0 R1(config-if)#ip address 10.0.0.1 255.255.255.252 R1(config-if)#exit R1(config)#int s0/1/1 R1(config)#int s0/1/1 R1(config-if)#ip address 10.0.0.5 255.255.255.252 R1(config-if)#exit

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ę **R1** Physical Config CLI Attributes IOS Command Line Interface R1> R1>configure t % Invalid input detected at '^' marker. R1>enable R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config) #int s0/0/0 R1(config-if) #ip address 200.123.211.2 255.255.255.0 R1(config-if) #no shut %LINK-5-CHANGED: Interface Serial0/0/0, changed state to down R1(config-if)#int s0/1/0 R1(config-if)#ip address 10.0.0.1 255.255.255.252 R1(config-if) #no shut %LINK-5-CHANGED: Interface Serial0/1/0, changed state to down R1(config-if) #int s0/1/1 R1(config-if) #ip address 10.0.0.5 255.255.255.252 R1(config-if) #no shut %LINK-5-CHANGED: Interface Serial0/1/1, changed state to down R1(config-if)#

R2>

R2>enable R2#configure t Enter configuration commands, one per line. End with CNTL/Z. R2(config)#int fa0/0.100 R2(config-subif)# R2(config-subif)#encapsulation dot1q 100 R2(config-subif)#ip address 192.168.20.1 255.255.255.0

R2(config)#int fa0/0.200 R2(config-subif)#encapsulation dot1q 200 R2(config-subif)#ip address 192.168.21.1 255.255.255.0 R2(config-subif)#exit



P R2 Physical Config CLI Attributes IOS Command Line Interface R2>enable R2#configure t Enter configuration commands, one per line. End with CNTL/Z. R2(config) #int fa0/0.100 R2(config-subif) # R2(config-subif) #encapsulation dot1g 100 R2(config-subif) #ip address 192.168.20.1 255.255.255.0 unfig Jubif) R2(config) #no shut % Invalid input detected at '^' marker. R2(config)# R2(config) #exit R2# SYS-5-CONFIG_I: Configured from console by console R2#enable R2#configure t ter centie R2(config) #int fa0/0.200 R2(config-subif) #encapsulation dot1q 200 R2(config-subif) #ip address 192.168.21.1 255.255.255.0 R2 (CONFIG-SUDIT) #EXIT R2(config)#

R2#enable

R2#configure t Enter configuration commands, one per line. End with CNTL/Z. R2(config)#int fa0/0.200 R2(config-subif)#encapsulation dot1q 200 R2(config-subif)#ip address 192.168.21.1 255.255.255.0 R2(config-subif)#exit R2(config)#int s0/1/1 R2(config-if)#ip address 10.0.0.2 255.255.255.252 R2(config-if)#exit R2(config)#int s0/1/0 R2(config-if)#ip address 10.0.0.9 255.255.255.252 R2(config-if)#ip address 10.0.0.9 255.255.255.252 R2(config-if)#exit R2(config-if)#exit R2(config-if)#exit R2(config-if)#exit R2(config)#



	R2	×
hysical Config CLI A	Attributes	
	IOS Command Line Interface	
$V_{\alpha}^{\gamma}(cont_{\alpha} - sub_{\alpha} + t) = cc$	Press 192 168 20 1 255 255	255 0
R2(config-subif) #exit	11255 192.100.20.1 200.203.	× 100 ×
R2 (config) #no shut		
<u>^</u>		
% Invalid input detecte	ed at '^' marker.	
R2(config)#		
R2 (config) #exit		
R2#		
SYS-5-CONFIG_I: Config	gured from console by conso	ole
R2#enable		
R2#configure t		
Enter configuration com	mmands, one per line. End	with CNTL/Z.
R2(config)#int fa0/0.20	00	
R2(config-subif)#encaps	sulation dot1q 200	
R2(config-subif) #ip add	dress 192.168.21.1 255.255.	.255.0
R2 (config-subir) #exit		
R2(config_if) tip_addres	10 0 0 2 255 255 255 255	
R2(config-if) #exit	55 10.0.0.2 200.200.200.202	
R2(config)#int s0/1/0		
R2(config-if) #ip addres	ss 10.0.0.9 255.255.255.252	2
R2(config-if) #exit		
R2(config)#		~
trl+F6 to exit CLI focus		Copy Paste
Top		
Тор		₽ + 899

R3>enable R3#configure t Enter configuration commands, one per line. End with CNTL/Z. R3(config)#int fa0/0



R3(config-if)#ip address 192.168.30.1 255.255.255.0 R3(config-if)#exit R3(config)#ipv6 unicast-routing R3(config)#int s0/1/0 R3(config-if)#ip address 10.0.0.6 255.255.255.252 R3(config-if)#exit R3(config)#int s0/1/1 R3(config-if)#ip address 10.0.0.10 255.255.255.252 R3(config-if)#exit R3(config-if)#exit R3(config)#

```
P
                                                                        R3
  Physical
           Config
                   CLI
                         Attributes
                              IOS Command Line Interface
   63488K bytes of ATA CompactFlash (Read/Write)
  Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version
  12.4(15)T1, RELEASE SOFTWARE (fc2)
  Technical Support: http://www.cisco.com/techsupport
  Copyright (c) 1986-2007 by Cisco Systems, Inc.
  Compiled Wed 18-Jul-07 04:52 by pt_team
  Press RETURN to get started!
   R3>enable
   R3#configure t
   Enter configuration commands, one per line. End with CNTL/Z.
   R3(config) #int fa0/0
   R3(config-if) #ip address 192.168.30.1 255.255.255.0
   R3(config-if) #exit
   R3(config) #ipv6 unicast-routing
   R3(config) #int s0/1/0
   R3(config-if)#ip address 10.0.0.6 255.255.255.252
   R3(config-if) #exit
   R3(config) #int s0/1/1
   R3(config-if) #ip address 10.0.0.10 255.255.255.252
   R3(config-if) #exit
   R3(config)#
```

 Laptop20, Laptop21, PC20, PC21, Laptop30, Laptop31, PC30 y PC31 deben obtener información IPv4 del servidor DHCP.



()		PCO
Physical Config Desktop Programming	Attributes	
DHCP	O Static	DHCP failed. APIPA is being used.
IP Address	169.254.98.185	
Subnet Mask	255.255.0.0	
Default Gateway	0.0.0.0	
DNS Server	0.0.0.0	
-		
		PC1
Physical Config Desktop Programming	Attributes	
DHCP	 Static 	DHCP failed. APIPA is being used.
IP Address	169.254.107.149	
Subnet Mask	255.255.0.0	
		Lanton
		Laptopo
Physical Config Desktop Programming	Attributes	
DHCP	Static	DHCP failed. APIPA is being used.
IP Address	169.254.185.48	
Subnet Mask	255.255.0.0	
Default Gateway	0.0.0.0	
Physical Config Desktop Programming	Attributes	
DHCP	◯ Static	DHCP failed. APIPA is being used.
IP Address	169.254.24.137	
Subnet Mask	255.255.0.0	
Default Gateway	0.0.0.0	
		Laptop 31
Physical Config Desktop Programming	Attributes	
DHCP	⊖ Static	DHCP failed. APIPA is being used.
IP Address	169.254.155.54	
Subnet Mask	255.255.0.0	



1					Laptop	р 30
Physical	Config	Desktop	Programming	Attributes		
OHCP				◯ Static		DHCP failed. APIPA is being used.
IP Address	s			169.254.46.23	5	
Subnet Ma	ask			255.255.0.0		
Default Ga	ateway			0.0.0.0		
DNS Serv	er			0.0.0.0		
3					Se	erver0
Physical	Config	Services	Desktop	Programming	Attributes	
DHCI	P			○ Static		DHCP failed. APIPA is being us
IP Addres	ss			169.254.16	7.221	
Subnet N	lask			255.255.0.0)	
Default G	Gateway			0.0.0.0		
DNS Ser	ver			0.0.0.0		
2					P	PC 30
Physical	Config	Desktop	Programming	Attributes		
OHC	Р			 Static 		DHCP failed. APIPA is being us
IP Addres	ss			169.254.6.9	12	
Subnet N	lask			255.255.0.0)	
Default 0	Gateway			0.0.0.0		
DNS Ser	ver			0.0.0.0		
2					P	PC 31
Physical	Config	Desktop	Programming	Attributes		
OHC	Р			O Static		DHCP failed. APIPA is being u
IP Addre	SS			169.254.16	2.77	
Subnet N	lask			255.255.0.	0	
Defente				0.0.0.0		

 R1 debe realizar una NAT con sobrecarga sobre una dirección IPv4 pública. Asegúrese de que todos los terminales pueden comunicarse con Internet pública (haga ping a la dirección ISP) y la lista de acceso estándar se llama INSIDE-DEVS.

R1>enable R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#int s0/1/0



R1(config-if)#ip nat inside

R1(config)#int s0/0/0 R1(config-if)#ip nat inside R1(config-if)#exit

R1#enable R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config)# R1(config)#int s0/0/0 R1(config-if)#ip nat inside R1(config-if)#exit R1(config)#int s0/1/1 R1(config-if)#ip nat inside R1(config-if)# pnat outside R1(config-if)#protection R1(config-if)#exit R1(config-if)#exit R1(config)#



- 🗆 ę R1 Config CLI Attributes Physical IOS Command Line Interface Enter configuration commands, one per line. End with CNTL/Z. R1(config) #int s0/1/0 R1(config-if) #nat inside % Invalid input detected at '^' marker. R1(config-if) #ip nat inside R1(config-if)# R1# SYS-5-CONFIG_I: Configured from console by console R1# R1#enable R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config)# R1(config) #int s0/0/0 R1(config-if) #ip nat inside R1(config-if) #exit R1(config) #int s0/1/1 R1(config-if) #ip nat inside R1(config-if)# R1(config-if) #ip nat outside R1(config-if) #exit R1(config) #

R1(config)#ip nat pool INSIDE-DEVS 200.123.211.2 200.123.211.128 netmask 255.255.255.0



P **R1** CLI Attributes Physical Config IOS Command Line Interface R1# %SYS-5-CONFIG_I: Configured from console by console R1# R1#enable R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config)# R1(config) #int s0/0/0 R1(config-if) #ip nat inside R1(config-if) #exit R1(config) #int s0/1/1 R1(config-if) #ip nat inside R1(config-if)# R1(config-if) #ip nat outside R1(config-if) #exit R1(config)# R1(config) #ip nat pool INSIDE-DEVE 200.123.211.2 200.123.211.128 net % Incomplete command. R1(config) # R1(config) #ip nat pool INSIDE-DEVS 200.123.211.2 200.123.211.128 net % Incomplete command. R1(config) #ip nat pool INSIDE-DEVS 200.123.211.2 200.123.211.128 netmask 255.255.255.0 R1(config)#

R1(config)#access-list 1 permit 192.168.0.0 0.0.255.255 R1(config)#access-list 1 permit 10.0.0 0.255.255.255

R1(config)#ip nat inside source list 1 interface s0/0/0 overload

R1(config)#ip nat inside source static tcp 192.168.30.6 80 200.123.211.1 80

• R1 debe tener una ruta estática predeterminada al ISP que se configuró y que incluye esa ruta en el dominio RIPv2.

R1(config)#router rip R1(config-router)#version 2 R1(config-router)#network 10.0.0.0



P _ □ **R1** Config CLI Attributes Physical IOS Command Line Interface % Invalid input detected at '^' marker. R1(config) #access-list 1 permit 192.168.0.0 0.0.255.255 R1(config) #access-list 1 permit 10.0.0.0 0.255.255.255 R1(config) #ip nat inside source list 1 interface s0/0/0 overload R1(config)# R1# SYS-5-CONFIG_I: Configured from console by console R1# R1#configure t Enter configuration commands, one per line. End with CNTL/Z. R1(config) #ip nat inside source static tcp 192.168.30.6.80 200.123.211.1 80 % Invalid input detected at '^' marker. R1(config) #ip nat inside source static tcp 192.168.30.6 80 200.123.211.1 80 R1(config) #router rip R1(config-router) #version 2 R1(config-router) #network 10.0.0.0 R1(config-router) #exit R1(config)#

```
R1#show ip nat translations

Pro Inside global Inside local Outside local Outside

global

tcp 200.123.211.1:80 192.168.30.6:80 --- ---
```

R1#

```
R1$show ip nat statistics
Total translations: 1 (1 static, 0 dynamic, 1 extended)
Outside Interfaces: Serial0/1/1
Inside Interfaces: Serial0/0/0 , Serial0/1/0
Hits: 0 Misses: 0
Expired translations: 0
Dynamic mappings:
R1$
```



• R2 es un servidor de DHCP para los dispositivos conectados al puerto FastEthernet0/0.

R2(config)#ip dhcp excluded-address 10.0.0.2 10.0.0.9 R2(config)#ip dhcp pool INSIDE-DEVS R2(dhcp-config)#NETwork 192.168.20.1 255.255.255.0 R2(dhcp-config)#NETwork 192.168.21.1 255.255.255.0 R2(dhcp-config)#default-router 192.168.1.1 R2(dhcp-config)#dns-server 0.0.0.0 R2(dhcp-config)#exit

```
R2>enable
R2#configure t
Enter configuration commands, one per line. End with CNTL/Z.
R2 (config) #ip dhep excluded-address 10.0.0.2 10.0.
*
Invalid input detected at '^' marker.
R2 (config) #ip dhep excluded-address 10.0.0.2 10.0.0.9
R2 (config) #ip dhep pool INSIDE-DEVS
R2 (dhep-config) #NETwork 192.168.20.1 255.255.255.0
R2 (dhep-config) #NETwork 192.168.21.1 255.255.255.0
R2 (dhep-config) #default-router 192.168.1.1
R2 (dhep-config) #default-router 192.168.1.1
R2 (dhep-config) #marker
R2 (config) #marker
```

 R2 debe, además de enrutamiento a otras partes de la red, ruta entre las VLAN 100 y 200.

R2(config)#int vlan 100 R2(config-if)#ip address 192.168.20.1 255.255.255.0

```
R2(config)#
R2(config)#int vlan 100
R2(config-if)#ip address 192.168.20.1 255.255.255.0
% 192.168.20.0 overlaps with FastEthernet0/0.100
R2(config-if)#exit
R2(config)#
```

R2(config)#int vlan 200 R2(config-if)#ip address 192.168.21.1 255.255.255.0

```
R2(config-if) #ip address 192.168.21.1 255.255.255.0 
% 192.168.21.0 overlaps with FastEthernet0/0.200
R2(config-if) #
```



- El Servidor0 es sólo un servidor IPv6 y solo debe ser accesibles para los dispositivos en R3 (ping).
- La NIC instalado en direcciones IPv4 e IPv6 de Laptop30, de Laptop31, de PC30 y obligación de configurados PC31 simultáneas (dual-stack). Las direcciones se deben configurar mediante DHCP y DHCPv6.

R	Laptop 31
Physical Config Desktop Programming	Attributes
DHCP	○ Static
IPAddress	169.254.155.54
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
DHCP Auto Co	n fig O Static
IPv6 Address	
Link Local Address	FE80::2D0:BAFF:FE39:9B36
P	Laptop 30
Physical Config Desktop Program	nming Attributes
DHCP	⊖ Static
IPAddress	169.254.46.235
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
DHCP	Auto Config O Static
IPv6 Address	
Link Local Address	FE80::2D0:58FF:FED6:2EEB



R				PC 31
Physical Co	nfig Deskt	op Programming	Attributes	
DHCP			O Static	
IP Address			169.254.162.77	
Subnet Mask			255.255.0.0	
Default Gatew	ау		0.0.0.0	
DNS Server			0.0.0.0	
-IPv6 Configuration	tion			
OHCP		🔘 Auto C	Config	 Static
IPv6 Address				
Link Local Add	ress		FE80::260:47FF	:FEB9:A24D
R				PC 30
Physical Cor	nfig Deskt	op Programming	Attributes	PC 30
Physical Cor	nfig Deskt	op Programming	Attributes	PC 30
Physical Cor O DHCP IP Address	nfig Deskt	op Programming	Attributes O Static 169.254.6.92	PC 30
Physical Cor DHCP IP Address Subnet Mask	nfig Deskt	op Programming	Attributes O Static 169.254.6.92 255.255.0.0	PC 30
Physical Cor Physical Cor DHCP IP Address Subnet Mask Default Gatewa	nfig <u>Deskt</u> ay	op Programming	Attributes Static 169.254.6.92 255.255.0.0 0.0.0.0	PC 30
Physical Cor Physical Cor DHCP IP Address Subnet Mask Default Gatewa DNS Server	nfig <u>Deskt</u> ay	op Programming	Attributes Static 169.254.6.92 255.255.0.0 0.0.0 0.0.0	PC 30
Physical Cor Physical Cor DHCP IP Address Subnet Mask Default Gatewa DNS Server IPv6 Configurat	nfig <u>Deskt</u> ay ion	op Programming	Attributes Attributes Static 169.254.6.92 255.255.0.0 0.0.0.0 0.0.0.0	PC 30
Physical Cor Physical Cor DHCP IP Address Subnet Mask Default Gatewa DNS Server IPv6 Configurat OHCP	nfig <u>Deskt</u> ay ion	op Programming	Attributes Attributes Static 169.254.6.92 255.255.0.0 0.0.0.0 0.0.0.0	PC 30
Physical Cor Physical Cor DHCP IP Address Subnet Mask Default Gatewa DNS Server IPv6 Configurat OHCP IPv6 Address	ay	op Programming	Attributes Static 169.254.6.92 255.255.0.0 0.0.0.0 0.0.0 onfig	PC 30

• La interfaz FastEthernet 0/0 del R3 también deben tener direcciones IPv4 e IPv6 configuradas (dual- stack).

R3>enable R3#configure t R3(config)#ipv6 unicast-routing R3(config)#int f0/0 R3(config-if)#ipv6 enable R3(config-if)#ip address 192.168.30.1 255.255.255.0



R3(config-if)#ipv6 address 2001:db8:130::9c0:80f:301/64

🤻 R3					
Physical Config CLI Attributes					
IOS Command Line Interface					
S Invalid input detected at '^' marker.	1				
P2(config) tipuf unicast-routing					
R3(config) #int f0/0					
R3(config-if)#ipv6 enable					
R3(config-if)#ip address 192.168.30.1 255.255.255.0					
R3(config-if)#ipv6 address 2001:db8:130::9c0:80f:301					
% Incomplete command.					
R3(config-if)#ipv6 address 2001:db8:130::9c0:80f:301/64					
R3(config-if) # no ahutdown					

• R1, R2 y R3 intercambian información de routing mediante RIP versión 2.

R1(config)#router rip R1(config-router)#version 2 R1(config-router)#do show ip route connected

R1(config-router)#network 10.0.0.0 R1(config-router)#network 10.0.0.4





R2(config-if)# R2(config-if)#router rip R2(config-router)#version 2 R2(config-router)#do show ip route connected

```
C 10.0.0/30 is directly connected, Serial0/1/1
C 10.0.0.8/30 is directly connected, Serial0/1/0
C 192.168.20.0/24 is directly connected, FastEthernet0/0.100
C 192.168.21.0/24 is directly connected, FastEthernet0/0.200
```

R2(config-router)#network 10.0.0.0 R2(config-router)#network 10.0.0.8

R3(config)#router rip R3(config-router)#version 2



R3(config-router)#network 10.0.0.4 R3(config-router)#network 10.0.0.8

```
R3>enable

R3‡configure t

Enter configuration commands, one per line. End with CNTL/Z.

R3(config) #router rip

R3(config-router) #version 2

R3(config-router) #do show ip route connected

C 10.0.0.4/30 is directly connected, Serial0/1/0

C 10.0.0.8/30 is directly connected, Serial0/1/1

C 192.168.30.0/24 is directly connected, FastEthernet0/0

R3(config-router) #network 10.0.0.4

R3(config-router) #network 10.0.0.8

R3(config-router) #network 10.0.0
```

• R1, R2 y R3 deben saber sobre las rutas de cada uno y la ruta predeterminada desde R1.



R	R1	_ D ×
Physical Config CLI	Attributes	
GLOBAL	RIP Routing	(v2)
Algorithm Settings	Network	Add
ROUTING	Network Address	
RIP	10.0.0.0	
SWITCHING VLAN Database	200.123.211.0	
FastEthernet0/1		
Serial0/0/0 Serial0/0/1		
Serial0/1/0		Remove
Serial0/1/1		
Equivalent IOS Commands		
Enter configuration (R1(config) #router rip	commands, one per line. End	with CNTL/Z.
R1(config-router)#net R1(config-router)#	work 200.123.211.0	~



				R	2		-		
Physical	Config	CLI	Attributes						
GLO	BAL	^			RIP Routi	ina (v2)			
Sett	ings		Network						
Algorithm	Settings	;	Hormonik						
ROUT	TING					Ad	a		
Sta	tic		Network A	ddress					
R	IP		10.0.0.0						
SWITC	HING								
VLAN D	atabase		200.123.21	1.0					
INTER	FACE								
FastEthe	rnet0/0								
FastEthe	rnet0/1								
Serial	0/1/0						D		_
Serial	0/1/1						Remo	ove	
Equivalent IO %SYS-5-C	<u>S Comman</u> ONFIG_I	ds : Con	figured fr	om con	sole by con	nsole			^
R2#			_						
R2#confi Enter co	gure te: nfigure:	rmina tior	1 commande	one re	rline Fr	d with CNTL/2	,		
R2 (confi	g) #rout	er ri	p	one pe	I IINE. DI	id with thilly?			
R2 (confi	g-route:	r)‡ne	twork 200.	123.21	1.0				
R2 (confi	g-route:	r)#							~

Too



				R	3			-		
Physical	Config	CLI	Attributes							
GLO	BAL	^			RIP Rou	uting (v2)				
Set	tings		Network							_
Algorithn	n Settings		,				Add			-
ROU	TING						7.00			_
St	atic		Network Add	iress						
R	IP		10.0.0.0							
SWIT	CHING									
VLAN D	atabase		200.123.211.0)						
INTE	RFACE									
FastEth	ernet0/0									
FastEth	ernet0/1									
Seria	10/1/0							Dem		
Seria	10/1/1	\sim						Rem	ove	
Equivalent IC	OS Comman	ds								
R3#						_				I
*SYS-5-0	CONFIG_1:	: Con:	figured from	n con	sole by co	onsole				
R3#confi	igure te:	cmina)	1							
Enter co	onfigurat	tion (commands, or	ne pe	r line. H	and with C	NTL/Z.			
R3 (confi R3 (confi	ig-route	er rij c) #net	p twork 200.1;	23.21	1.0					
	ig-route:	c) #								

• Verifique la conectividad. Todos los terminales deben poder hacer ping entre sí y a la dirección IP del ISP. Los terminales bajo el R3 deberían poder hacer IPv6-ping entre ellos y el servidor.

```
ISP#ping 192.168.20.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.20.1, timeout is 2 seconds:
```



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.

Topología







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

R	Internet- PC	- 🗆
Physical Config	Desktop Programming Attributes	
О рнср	 Static 	
IP Address	209.165.200.230	
Subnet Mask	255.255.255.248	
Default Gateway	209.165.200.225	
DNS Server	0.0.0.0	



Q	ð	Server0	
	Physical Config	Services Desktop Programming Attributes	4
	O DHCP	 Static 	
	IP Address	10.10.10	
	Subnet Mask	255.255.255.0	
	Default Gateway	10.10.1	
	DNS Server	0.0.0.0	

R1

Bogota> Bogota>enable Bogota#configure t Enter configuration commands, one per line. End with CNTL/Z. Bogota(config)#no ip domain-lookup Bogota(config)#enable secret class Bogota(config)#line con 0 Bogota(config-line)#password cisco Bogota(config-line)#login Bogota(config-line)#line vty 0 4 Bogota(config-line)#password cisco Bogota(config-line)#login Bogota(config-line)#exit Bogota(config)#service password-encryption Bogota(config)#banner motd "Solo Personal Autorizado" Bogota(config)#exit Bogota# %SYS-5-CONFIG_I: Configured from console by console

Bogota(config)#interface s0/0/0 %Invalid interface type and number Bogota(config)#int s0/0/0 %Invalid interface type and number Bogota(config)#int s0/1/0 Bogota(config-if)#ip address 172.31.21.1 255.255.255.252



Bogota(config-if)#no shutdown

```
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Bogota(config-if)#
```

R2

Router>enable Router#configure t Enter configuration commands, one per line. End with CNTL/Z. Router(config)#hostname Miami Miami(config)#no ip domain-lookup Miami(config)#enable secret class Miami(config)#line con 0 Miami(config-line)#password cisco Miami(config-line)#password cisco Miami(config-line)#login Miami(config-line)#exit Miami(config)#service password-encryption Miami(config)#banner motd "Solo Personal Autorizado" Miami(config)#exit Miami(config)#exit Miami# %SYS-5-CONFIG_I: Configured from console by console

Miami(config-if)# Miami(config-if)#exit Miami(config)#interface s0/1/1 Miami(config-if)#ip address 172.31.23.1 255.255.255.252 Miami(config-if)#no shutdown Filemi (config-if)#no shutdown Filemi (config-if)#no shutdown

Miami(config)#interface s0/1/0 Miami(config-if)#ip address 172.31.21.2 255.255.255.252 Miami(config-if)#no shutdown \$LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

```
R3
```

Router(config)#hostname Aires Aires(config)#hostname Aires



Aires(config)#no ip domain-lookup Aires(config)#enable secret class Aires(config)#line con 0 Aires(config-line)#password cisco Aires(config-line)#login Aires(config-line)#password cisco Aires(config-line)#password cisco Aires(config-line)#login Aires(config-line)#exit Aires(config)#service password-encryption Aires(config)#service password-encryption Aires(config)#banner motd "Solo Personal Autorizado" Aires(config)#exit Aires# %SYS-5-CONFIG_I: Configured from console by console

Aires(config)#interface s0/1/0 Aires(config-if)#ip address 172.31.23.2 255.255.255.252 Aires(config-if)#no shutdown

```
Aires(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed
state to up
```

Aires(config-if)#ip address 192.168.5.1 255.255.255.0000 Aires(config-if)#no shutdown Aires(config-if)#intreface lo4

```
%LINK-5-CHANGED: Interface Loopback4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed
state to up
```

Aires(config-if)#ip address 192.168.4.1 255.255.255.0000 Aires(config-if)#no shutdown Aires(config-if)#interface lo6

```
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed
state to up
```

Aires(config)#int s0/1/0 Aires(config-if)#ip address 192.168.4.1 255.255.255.0 Aires(config-if)#no shut



Aires(config-if)#int lo5

```
Aires(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed
state to up
```

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

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
Ajustar el costo en la métrica de S0/0 a	9500

OSPFv2 area 0







```
ę
                                                                         R2
                          Attributes
           Config
  Physical
                    CLL
                              IOS Command Line Interface
  Miami(config) #router ospf 1
  Miami(config-router) #router-id 2.2.2.2
  Miami(config-router) #network 172.31.21.0 0.0.0.3 area 0
  Miami(config-router) #
  04:24:42: %OSPF-5-ADJCHG: Process 1, Nbr 172.31.21.1 on Serial0/1/0
  from LOADING to FULL, Loading Done
  Miami(config-router) #network 172.31.23.0 0.0.0.3 area 0
  Miami(config-router)#network 10.10.10.0 0.0.0.255 area 0
  Miami(config-router) #passive-interface fa070
  % Invalid input detected at '^' marker.
  Miami(config-router) #passive-interface fa0/0
  Miami(config-router) #auto-cost reference-bandwidth 7500
   % OSPF: Reference bandwidth is changed.
           Please ensure reference bandwidth is consistent across all
  routers.
  Miami(config-router) #int s0/1/1
  Miami(config-if) #bandwidth 128
  Miami(config-if) #int s0/1/0
  Miami(config-if) #bandwidth 128
  Miami(config-if) #ip ospf cost 7500
  Miami(config-if) #exit
  Miami(config)#
  Ctrl+F6 to exit CLI focus
                                                            Copy
                                                                        Paste
🗌 Тор
```

Aires(config)#router ospf 1 Aires(config-router)#router-id 8.8.8.8 Aires(config-router)#network 172.31.23.0 0.0.0.3 area 0 Aires(config-router)#network 192.168.4.0 0.0.0.3 area 0 Aires(config-router)#passive-interface lo4 Aires(config-router)#passive-interface lo5 Aires(config-router)#passive-interface lo6 Aires(config-router)#auto-cost reference-bandwidth 9500



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.

```
Neighbor ID
              Pri State
                                    Dead Time Address
Interface
                 0 FULL/ -
                                    00:00:32
2.2.2.2
                                                 172.31.21.2
Serial0/1/0
Bogota#
  yuvu,
Bogota#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
       * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route
Gateway of last resort is not set
    172.31.0.0/30 is subnetted, 2 subnets
С
       172.31.21.0 is directly connected, Serial0/1/0
0
       172.31.23.0 [110/12357] via 172.31.21.2, 00:31:00,
Seria10/1/0
```



```
Routing Protocol is "ospf 1"
        Outgoing update filter list for all interfaces is not set
        Incoming update filter list for all interfaces is not set
        Router ID 172.31.21.1
        Number of areas in this router is 1. 1 normal 0 stub 0 nssa
        Maximum path: 4
        Routing for Networks:
          172.31.21.0 0.0.0.3 area 0
          192.168.30.0 0.0.0.3 area 0
          192.168.40.0 0.0.0.3 area 0
          192.168.30.0 0.0.0.255 area 0
          192.168.40.0 0.0.0.255 area 0
          192.168.200.0 0.0.0.255 area 0
        Passive Interface(s):
          FastEthernet0/0
        Routing Information Sources:
          Gateway
                                         Last Update
                           Distance
          2.2.2.2
                                110
                                         00:28:55
          172.31.21.1
                                110
                                          00:06:08
        Distance: (default is 110)
Fassword:
Miami#show ip ospf neig
Neighbor ID
                Pri
                      State
                                        Dead Time
                                                    Address
                                                                      Interface
                       FULL/ -
172.31.21.1
                   0
                                        00:00:35
                                                     172.31.21.1
                                                                      Serial0/1/0
Miami#
P
                                                   R2
  Physical Config CLI Attributes
                                           IOS Command Line Interface
  Miami#show ip ospf interface
  Serial0/1/0 is up, line protocol is up
    Internet address is 172.31.21.2/30, Area 0
    Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
    Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
    No designated router on this network
    No backup designated router on this network
    Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
      Hello due in 00:00:09
    Index 1/1, flood queue length 0
    Next 0x0(0)/0x0(0)
    Last flood scan length is 1, maximum is 1
    Last flood scan time is 0 msec, maximum is 0 msec
    Neighbor Count is 1 , Adjacent neighbor count is 1
      Adjacent with neighbor 172.31.21.1
    Suppress hello for 0 neighbor(s)
  Serial0/1/1 is up, line protocol is up
    Internet address is 172.31.23.1/30, Area 0
    Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 4857
    Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
    No designated router on this network
    No backup designated router on this network
    --More--
```



```
Miami#show ip route
 Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route
 Gateway of last resort is not set
      172.31.0.0/30 is subnetted, 2 subnets
 С
        172.31.21.0 is directly connected, Serial0/1/0
С
         172.31.23.0 is directly connected, Serial0/1/1
Routing Protocol is "ospf 1"
 Outgoing update filter list for all interfaces is not set
 Incoming update filter list for all interfaces is not set
 Router ID 2.2.2.2
 Number of areas in this router is 1. 1 normal 0 stub 0 nssa
 Maximum path: 4
 Routing for Networks:
   172.31.21.0 0.0.0.3 area 0
   172.31.23.0 0.0.0.3 area 0
   10.10.10.0 0.0.0.255 area 0
 Passive Interface(s):
   FastEthernet0/0
 Routing Information Sources:
   Gateway
              Distance
                                Last Update
   2.2.2.2
                       110
                                00:23:59
   172.31.21.1
                       110
                                00:01:12
 Distance: (default is 110)
 Aires#show ip route
 Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
 BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
 inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route
 Gateway of last resort is not set
 С
     192.168.4.0/24 is directly connected, Serial0/1/0
```

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



S1>enable S1#configure t Enter configuration commands, one per line. End with CNTL/Z. S1(config)# 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)# ę **S1** Physical CLI Attributes Config IOS Command Line Interface S1#configure t Enter configuration commands, one per line. End with CNTL/Z. S1(config) # 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) #int fa0/3 S1(config-if) #switchport mode trunk S1(config-if)# S1(config-if) #exit S1(config) #interface FastEthernet0/3 S1(config-if)# %LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up \$LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up



```
P
                                       S3
            Config CLI Attributes
  Physical
                              IOS Command Line Interface
   Switch>enable
   Switch#configure t
   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) #name Mercadeo
   Switch(config-vlan) #vlan 200
   Switch(config-vlan) #name Mantenimiento
   Switch(config-vlan) #exit
   Switch(config) #int vlan 200
   Switch(config-if)#
   %LINK-5-CHANGED: Interface Vlan200, changed state to up
   Switch(config-if) #ip address 192.168.99.3 255.255.255.0
   Switch(config-if) #no shut
   Switch(config-if) #exit
   Switch(config) #ip default-gateway 192.168.99.1
   Switch(config) #
```

4. En el Switch 3 deshabilitar DNS lookup

```
S3(conrig)#
S3(config)#no ip domain-lookup
```

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



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

```
S1(config-if) #switchport mode trunk
S1(config-if) #switchport trunk native vlan 1
S1(config-if) #int range fa0/2, fa0/4-23, g0/1-2
interface range not validated - command rejected
S1(config) #int range fa0/2, fa0/4-23
S1(config-if-range) #switch mode access
S1(config-if-range) #int fa0/1
S1(config-if) #switch mode access
S1(config-if) #switch access vlan
% Incomplete command.
S1(config-if) #switch access vlan
% Incomplete command.
S1(config-if) #switch access vlan 30
S1(config-if) #int range fa0/2, fa0/4-23
S1(config-if-range)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to
administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/16, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/17, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/18, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/19, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/20, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/21, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/22, changed state to
 administratively down
 %LINK-5-CHANGED: Interface FastEthernet0/23, changed state to
 administratively down
 S1(config-if-range)#
```

7. Implement DHCP and NAT for IPv4

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

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



Bogota#configure t

Enter configuration commands, one per line. End with CNTL/Z. Bogota(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30 Bogota(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30 Bogota(config)#ip dhcp pool admin Bogota(dhcp-config)#dns-server 10.10.10.11 Bogota(dhcp-config)#default-router 192.168.30.1 Bogota(dhcp-config)#network 192.168.30.0 255.255.255.0 Bogota(dhcp-config)#ip dhcp pool merca Bogota(dhcp-config)#dns-server 10.10.10.11 Bogota(dhcp-config)#dns-server 10.10.10.11 Bogota(dhcp-config)#default-router 192.168.40.1 Bogota(dhcp-config)#network 192.168.40.0 255.255.255.0 Bogota(dhcp-config)#network 192.168.40.0 255.255.255.0 Bogota(dhcp-config)#network 192.168.40.0 255.255.255.0 Bogota(dhcp-config)#network 192.168.40.0 255.255.255.0

	Name: ADMINISTRACION
Cardinana DUCDaraharan VI AN 20	DNS-Server: 10.10.10.11
Configurar DHCP pool para VLAN 30	Domain-Name: ccna-unad.com
	Establecer default gateway.
	Name: MERCADEO
Configurar DHCP pool para VLAN 40	DNS-Server: 10.10.10.11
	Domain-Name: ccna-unad.com
	Establecer default gateway.

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

```
Miami‡configure t
Enter configuration commands, one per line. End with CNTL/Z.
Miami(config)‡user webuser privilege 15 secret cisco 12345
Miami(config)‡ip http server
* Invalid input detected at '^' marker.
Miami(config)‡
```

Miami(config) #ip http authentication local

Nota: dado que no se pueden utilizar los comandos: ip http server y ip http authentication local, se emplea un servidor dentro de la topología.

Miami(config)#ip nat inside source static 10.10.10.10 209.165.200.229 Miami(config)#int f0/1 Miami(config-if)#ip nat outside Miami(config-if)#int fa0/0



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.

```
P
                                                                        R2
  Physical
           Config
                   CLI
                         Attributes
                              IOS Command Line Interface
  Miami(config-if) #ip nat autside
  % Invalid input detected at '^' marker.
  Miami(config-if) #ip nat outside
  Miami(config-if) #int fa0/0
  Miami(config-if) #
  Miami(config-if) #exit
  Miami(config)#access-list 1 permit 192.168.30.0 0.0.0.255
  Miami(config)#access-list 1 permit 192.168.40.0 0.0.0.255
  Miami(config) #ip nat pool INTERNET 209.165.200.225 209.165.200.228
  netmask 255.255.255.248
  Miami(config) #ip nat inside source list 1 pool INTERNET
  Miami(config) #EXIT
  Miami#
  SYS-5-CONFIG I: Configured from console by console
  Miami#configure t
  Enter configuration commands, one per line. End with CNTL/Z.
  Miami(config) #ip access-list standard ADMIN-S
  Miami(config-std-nacl) #permit host 172.31.21.1
  Miami (config-std-nacl) #exit
  Miami(config) #line vty 0 4
  Miami(config-line) #access-class ADMIN S in
  Miami(config-line)#
```

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.

```
Miami(config) #int g0/0
%Invalid interface type and number
Miami(config) #int fa0/0
Miami(config-if) #int s0/1/0
Miami(config-if) #int s0/1/0
Miami(config-if) #int s0/0/0
%Invalid interface type and number
Miami(config) #int s0/0/1
%Invalid interface type and number
Miami(config) #int s0/1/1
%Invalid interface type and number
Miami(config) #int s0/1/1
Miami(config-if) #int s0/1/1
Miami(config-if) #int fa0/1
Miami(config-if) #int fa0/1
Miami(config-if) #int fa0/1
Miami(config-if) #int fa0/1
```

_

-



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

Miami#show access-lists Standard IP access list 1 10 permit 192.168.30.0 0.0.0.255 20 permit 192.168.40.0 0.0.0.255 Standard IP access list ADMIN-S 10 permit host 172.31.21.1 Extended IP access list 101 10 permit tcp any host 209.165.200.229 eq www Fassword: Bogota#ping 209.165.200.230 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2 seconds: · -.



Conclusiones

De acuerdo al trabajo realizado se tiene claridad sobre las configuraciones de red las cuales forman parte de las actividades evaluativas del Diplomado de Profundización CCNA I y II, realizando pruebas en los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

Mediante el trabajo evaluativo se desarrollan dos escenarios en la herramienta de Packet Tracer, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

Se tiene en cuenta la importancia de procesos de documentación de la solución, correspondientes al registro de la configuración de cada uno de los dispositivos, la descripción detallada del paso a paso de cada una de las etapas realizadas durante el desarrollo, el registro de los procesos de verificación de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros, para hacer actividades de retroalimentación y mejora en el futuro.



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