PRUEBA DE HABILIDADES PRÁCTICAS CCNA

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA – UNAD ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA INGENIERÍA DE SISTEMAS OCAÑA, NORTE DE SANTANDER

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Informe de habilidades prácticas de naturaleza evaluación final para obtener nota final en Diplomado de profundización habilitado como opción de grado.

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2018

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Introducción

Después de realizar un largo recorrido desde los conceptos básicos de una red, su topología, sus capas y modelos, terminamos por aprender las configuraciones específicas para una red y cómo hallar soluciones relacionadas con las conexiones LAN y WAN.

En esta ocasión, asumiremos la práctica condensadora de todos los conocimientos vistos durante el presente diplomado de profundización, en el cual se nos expone dos escenarios de diferentes naturalezas en los cuales debemos demostrar las competencias adquiridas durante el presente diplomado.

Desarrollo de los escenarios



Tabla de direccionamiento:

El Administrador	Interfaces	Dirección IP	Máscara de subred	Gateway 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
	F20/0	192.168.30.1	255.255.255.0	N/D
R3	1 40/0	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
Laptop31	NIC	DHCP	DHCP	DHCP

Tabla de asignación de VLAN y de puertos:

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

Tabla de enlaces troncales:

Dispositivo local	Interfaz local	Dispositivo remoto
SW2	Fa0/2-3	100

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.
- Los puertos de red que no se utilizan se deben deshabilitar.
- La información de dirección IP R1, R2 y R3 debe cumplir con la tabla
 1.

Comenzamos a realizar estas tres configuraciones:

Switch>enable Switch#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Switch(config) #hostname SW2 SW2(config)#vlan 100 SW2(config-vlan) #name LAPTOPS 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 mode access SW2 (config-if-range) #switchport access vlan 100 SW2(config-if-range) #int range fa0/4-5 SW2 (config-if-range) #switchport mode access SW2 (config-if-range) #switchport access vlan 200 SW2(config-if-range)#int fa0/1 SW2 (config-if) #switchport mode trunk SW2(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up SW2(config-if)#int range fa0/6-24 SW2(config-if-range)#shutdown %LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down %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 FastEthernet0/21, 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 %LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down SW2 (config-if-range) #exit Ahora, procedemos a configurar R2: Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config) #hostname R2 R2(config) #int f0/0.100 R2(config-subif)# %LINK-5-CHANGED: Interface FastEthernet0/0.100, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.100, changed state to up R2(config-subif) #encapsulation dot1Q 100 R2(config-subif) #ip address 192.168.20.1 255.255.255.0 R2(config-subif) #int f0/0.200 R2(config-subif)# %LINK-5-CHANGED: Interface FastEthernet0/0.200, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.200, changed state to up R2(config-subif) #encapsulation dot1Q 200 R2(config-subif) #ip address 192.168.21.1 255.255.255.0 R2(config-subif)#int f0/0 R2(config-if) #no shutdown R2(config-if)#int s0/0/0 R2(config-if) #ip address 10.0.0.2 255.255.255.252 R2(config-if) #no shutdown

```
R2(config-if)#int s0/0/1
R2(config-if) #ip address 10.0.0.9 255.255.255.252
R2(config-if) #no shutdown
Ahora, procedemos a configurar R1:
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config) #hostname R1
R1(config)#int s0/0/0
R1(config-if) #ip address 200.123.211.2 255.255.255.0
R1 (config-if) #no shutdown
R1(config-if) #int s0/1/0
R1(config-if)#ip address 10.0.0.1 255.255.255.252
R1(config-if) #no shutdown
R1(config-if)#int s0/1/1
R1(config-if) #ip address 10.0.0.5 255.255.255.252
R1(config-if) #no shutdown
Ahora, procedemos a configurar R3:
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config) #hostname R3
R3(config) #ipv6 unicast-routing
R3(config) #int f0/0
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(config-if)#ipv6 dhcp server vlan 1
R3(config-if) #ipv6 nd other-config-flag
R3(config-if) #no shutdown
R3(config-if)#int s0/0/0
R3(config-if) #ip address 10.0.0.6 255.255.255.252
R3(config-if) #no shutdown
R3(config-if)#int s0/0/1
R3(config-if) #ip address 10.0.0.10 255.255.255.252
R3(config-if) #no shutdown
```

Hasta este punto se han hecho las configuraciones respectivas para los tres primeros puntos.

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

Ahora, nos disponemos a configurar el servidor DHCP:

En R2: R2>enable

```
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config) #ip dhcp pool vlan 100
R2(dhcp-config)#network 192.168.20.1 255.255.255.0
R2(dhcp-config)#default-router 192.168.20.1
R2(dhcp-config) #ip dhcp pool vlan 200
R2(dhcp-config)#network 192.168.21.1 255.255.255.0
R2(dhcp-config)#default-router 192.168.21.1
R2(config)#int f0/0
R2(config-if) #no shutdown
En R3:
R3(config) #ip dhcp pool vlan 1
R3(dhcp-config) #network 192.168.30.1 255.255.255.0
R3(dhcp-config)#default-router 192.168.30.1
R3(dhcp-config)#ipv6 dhcp pool vlan 1
R3(config-dhcpv6)#dns-server 2001:db8:130::
R3(config-dhcpv6)#exit
```

- K5 (CONTIG=dilepv6) #exit
 - 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 Ilama INSIDE-DEVS.

```
R1(config)#int s0/1/1
R1(config-if) #ip nat inside
R1(config-if)#exit
R1(config)#int s0/1/0
R1(config-if) #ip nat inside
R1(config-if) #exit
R1(config)#int s0/0/0
R1(config-if) #ip nat outside
R1(config-if) #exit
R1(config) #ip nat pool INSIDE-DEVS 200.123.211.2
200.123.211.128 netmask 255.255.255.0
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) #ip nat inside source static tcp 192.168.30.6 80
200.123.211.1 80
R1 (config) #exit
```

• **R1** debe tener una ruta estática predeterminada al ISP que se

```
configuró y que incluye esa ruta en el dominio RIPv2.
```

```
Configuraré, inicialmente, R1, luego R2 y por último R3:
R1(config) #router rip
R1(config-router) #version 2
R1(config-router) #ip route 0.0.0.0 0.0.0.0 s0/0/0
R1(config) #router rip
R1(config-router) #network 10.0.0.4
R1(config-router) #network 10.0.0.0
R1 (config-router) #default-information originate
R2(config) #router rip
R2(config-router) #version 2
R2(config-router) #network 192.168.30.0
R2(config-router) #network 192.168.20.0
R2(config-router) #network 192.168.21.0
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 192.168.0.0
R3(config-router) #network 10.0.0.8
R3(config-router) #network 10.0.0.4
R3(config-router)#exit
```

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-DEV
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
^
% Invalid input detected at '^' marker.
R2(dhcp-config)#default-router 192.168.1.1
R2(dhcp-config)#default-router 192.168.1.1
R2(dhcp-config)#default-router 0.0.0
R2(dhcp-config)#exit
```

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

 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.

Ya están habilitadas.

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

```
R3(config)#ipv6 unicast-routing
R3(config)#int f0/0
R3(config-if)#ipv6 enable
R3(config-if)#ip address 192.168.30.1
% Incomplete command.
R3(config-if)#ip address 192.168.30.1 255.255.255.0
R3(config-if)#ipv6 address 2001:db8::9c0:80F:301/64
```

```
R3(config-if) #no shutdown
R1 (config) #router rip
R1(config-router) #network 10.0.0.0
R1(config-router) #network 10.0.0.4
R1 (config-router) #exit
R2(config) #router rip
R2(config-router) #version 2
R2(config-router)#network 10.0.0.0
R2(config-router) #network 10.0.0.8
R2 (config-router) #exit
R2(config) #do show ip route connected
C 10.0.0/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.20.0/24 is directly connected, FastEthernet0/0.100
      192.168.21.0/24
С
                          is
                                 directly
                                               connected,
FastEthernet0/0.200
R3(config-if) #router rip
R3(config-router) #version 2
R3(config-router) #network 10.0.0.0
R3(config-router) #network 10.0.0.8
R3(config-router)#end
R3#
%SYS-5-CONFIG I: Configured from console by console
R3#show ip route connected
C 10.0.0.4/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.30.0/24 is directly connected, FastEthernet0/0
```

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

Este paso va incluido en el paso anterior (router rip, version 2).

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

Este paso se puede hacer manualmente de la siguiente manera:

	E C	have the barry of the second	for Ted Badrowed		Environment strategy
IF 61		€		्र •	
Let Proved Corfs C1 Attheter Sciences Agentin Strings Basic Sectors Se	70 (-2) <u>Add</u> 	Physical Config Quil Alabadia Settingsi Algorithm Settingsi Setingsi Setting Settingsi Settingsi Settingsi Settingsi Setting S	RPRadry (/2) Add Remove PPP 1584. MM Vikh Uhil/7. e per 1584. MM Vikh Uhil/7. e per 1584. MM Vikh Uhil/7.	Payson Confe CL Anthone CLORA Sector Anthone Sector Anthone	RP Range (r.) Add Remore a latertaken Relialo/0/1/ a latertaken Relialo/0
Top		Τορ		Top	
	% <i>\$</i>		Sconario 0 Fire Latt Sconario 0 File Sconario 0 Sconario	tatus Source Destination Type Calor Time(be seaful Laptop3 Server0 12049 6.00 ceaful Laptop3 Server0 12049 6.00 ceaful PC30 Server0 12049 0.00	* RC) Periodic Num Edit Delete N 0 (edit) (dei N 1 (edit) (dei N 1 (edit) (dei

 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.



Todos los pings realizados bajo el R3 son exitosos, incluso hacia ISP.

🗣 Cisco Packet Tracer - C/Users/Pc/Desktop/Escenario_1.pkt	1 P PC30	Server0 C S
Ne Edit Cotors Vev Tools Extensions Neb		
🗋 🖻 🖶 🖆 🔟 🗐 🛤 (P) (P) /P /P /P 🕺 🖼 🕾	Physical Contrg Desimp Programming Attroutes	Physical Contig Services Desktop Programming Attributes
Logical Back (Root) New	Command Prompt X	Command Prompt
	<pre>Ping statistics for 192.168.30.2: Packets: Sant = 4, Deceived = 4, Lost = 0 (0% loss), Approximate round trip times in milli-resconds: Minimum = Ons, Maximum = 2ms, Average = Ons</pre>	<pre>Fing statistics for 132.140.30.2: Packets: Sant = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milis=seconds: Minimum = Oms, Maximum = 2ms, Average = Oms</pre>
	C:\>ping 192.168.80.8	C:\sping 192.160.30.3
	Pinging 192.168.30.3 with 32 bytes of data:	Pinging 192.168.30.3 with 32 bytes of data:
	Reply from 192.168.30.3: bytes=02 time=21ms 7TL=128 Reply from 192.168.30.3: bytes=02 time=1ms TTL=128 Reply from 192.168.30.3: bytes=02 time<1ms TTL=128 Reply from 192.168.30.3: bytes=02 time<1ms TTL=128	Reply from 192.168.50.3: bytes=52 time=lms TTL=128 Reply from 192.168.30.3: bytes=52 time=lms TTL=128 Reply from 192.168.30.3: bytes=92 time=lms TTL=128 Reply from 192.168.30.3: bytes=92 time <lms ttl="128</th"></lms>
	<pre>Ping statistics for 192.168.30.3: Packets: Sant = 4, Pacsived = 4, Lost = 0 (D% loss), Approximate sound trip times in milliresconds: Minimum = One, Maximum = 21me, Average = Same</pre>	<pre>Ping statistics for 192.168.30.8: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milis-reaconds: Minimum = Ome, Maximum = Ime, Average = Ome</pre>
PC20 PC30	C:\>ping 192.168.90.4	C:\>ping 192.160.30.4
	Finging 192.168.80.4 with 32 bytes of data:	Finging 192.168.30.4 with 32 bytes of data:
	Baply from 192.168.30.4: bytes=52 time=ims TTL=128 Baply from 192.168.30.4: bytes=52 time=ims TTL=128 Baply from 192.168.30.4: bytes=52 time=ims TTL=128 Baply from 192.168.30.4: bytes=52 time <ims ttl="128</td"><td><pre>Reply from 192.140.30.4: hytes=32 time=ims TTL=128 Reply from 192.168.30.4: hytes=32 time=ims TTL=128 Reply from 192.168.30.4: hytes=32 time=ims TTL=128 Reply from 192.168.30.4: hytes=32 time<ims ttl="128</pre"></ims></pre></td></ims>	<pre>Reply from 192.140.30.4: hytes=32 time=ims TTL=128 Reply from 192.168.30.4: hytes=32 time=ims TTL=128 Reply from 192.168.30.4: hytes=32 time=ims TTL=128 Reply from 192.168.30.4: hytes=32 time<ims ttl="128</pre"></ims></pre>
Lapingoti Lapingoti	<pre>Ping statistics for 192.160.30.4: Packets: Hent = 4, Received = 4, Lost = 0 (0% loss), Approximate round try times in milli-seconds: Minimum = Oms, Maximum = 1ms, Average = Oms</pre>	<pre>Ping statistics for 192.160.80.4: Packets:Sants = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Ims, Average = Oms</pre>
	C:\>ping 192.168.30.6	C:\>ping 192.168.30.6
	Pinging 192.160.30.6 with 32 bytes of data:	Pinging 192.168.30.5 with 32 bytes of data:
	<pre>Paply from 192.168.30.6: bytes=02 time=ims TTL=120 Paply from 192.168.30.6: bytes=02 time=ims TTL=120 Paply from 192.168.00.6: bytes=02 time=ims TTL=120 Paply from 192.168.30.6: bytes=02 time=ims TTL=120</pre>	Reply from 192.168.30.5: byte==02 time=lime TTL=128 Reply from 192.168.30.5: byte==02 time=lime TTL=128 Reply from 192.168.30.5: byte==02 time=lime=from TTL=128 Reply from 192.168.30.5: byte==02 time=2/me TTL=128
	<pre>Ping statistics for 192.168.80.6: Packets: Sent = 4, Paceived = 4, Lost = 0 (0% loss), Approximate round try times im milli-mesconds: Minimum = One, Maximum = 17ms, Average = 4ms</pre>	<pre>Ping statistics for 192.168.30.5: Packets:Sant = 4, Resived = 4, Lost = 0 (0% loss), Approximate count try times in milli-seconds: Minimum = Oms, Maximum = 27ms, Average = Sms</pre>
	C:\>ping 200.123.211.1	C:\>ping 200.123.211.1
	Pinging 200.123.211.1 with 32 bytes of data:	Finging 200.123.211.1 with 32 bytes of data:
	<pre>2aply from 200.123.211.1: bytes=32 time=lims TTL=285 2aply from 200.123.211.3: bytes=32 time=tem TTL=283 2aply from 200.123.211.1: bytes=32 time=tem TTL=283 2aply from 200.123.211.3: bytes=32 time=tem TTL=283</pre>	Reply from 200.123.211.1: bytes=32 time=16ms TTL=263 Reply from 200.123.311.1: bytes=32 time=12ms TTL=63 Reply from 200.123.311.1: bytes=32 time=11ms TTL=253 Reply from 200.123.211.1: bytes=32 time=11ms TTL=253
е 	Ping statistics for 200.123.211.1: Packets: Sent = 4, Deceived = 4, Lost = 0 (0% logal	Ping statistics for 200.123.211.1: Parkets: Sant = 4 Parainad = 4 Lost = 0 (0% loss)
Time: 27:11:35 Power Cycle Devices Fast Forward Time	Approximate round trip times in milli-seconds: Minimum = 3ms Maximum = 11ms Average = 5ms	Approximate round trip times in milli-second :
> • • • • • • • • • • • • • • • • • • •	C://d	CI/>
	- Top	Птор
Copper Straight-Through		J
		E5 - 10 (1) and 1222 a.m. 14/32/2018

Desde otros terminales también es exitoso:

Cisco Packet Tracer - ChUserstPc\Desktop\tscena	PC20	PC21	KCanton Martine Commence
	Physical Config Desktop Programming Attributes	Physical Config Desktop Programming Attributes	Physical Config Desktop Programming Attributes
Logical is	Command Prompt	Command Prompt	Command Prompt
A	Link-local TPv6 Address : FE00::208:BEFF:FE80:41A4 IP Address	Link-local IPv6 Address FER0::200:85FF:FE40:E681 IP Address	Link-local 1Pv6 Addrews FEB0::200:0859'FE46:287A 1P Addrews
	C:\>ping 192.160.21.4	C:\>ping 192.168.21.6	C:\>ping 192.160.21.5
	Finging 192.168.21.4 with 32 bytes of data:	Finging 192.168.21.5 with 32 bytes of data:	Pinging 192.168.21.5 with 52 bytes of data:
	Seply from 192.168.21.4: bytes=32 time=lms TTL=128 Reply from 192.168.21.4: bytes=32 time=lms TTL=128 Reply from 192.168.21.4: bytes=32 time=lms TTL=128 Reply from 192.168.21.4: bytes=32 time=lms TTL=128	Reply from 192.168.21.5: bytes=32 time=lmm TTL=128 Reply from 192.168.21.5: bytes=32 time=lmm TTL=128 Reply from 192.168.21.5: bytes=32 time <lmm ttl="128<br">Reply from 192.168.21.5: bytes=32 time<lmm ttl="128</th"><th>Reply from 192.168.21.5: bytes=32 time=ins TTL=127 Reply from 192.168.21.6: bytes=32 time=ins TTL=127 Reply from 192.168.21.6: bytes=32 time=ins TTL=127 Reply from 192.168.21.5: bytes=32 time=ins TTL=127</th></lmm></lmm>	Reply from 192.168.21.5: bytes=32 time=ins TTL=127 Reply from 192.168.21.6: bytes=32 time=ins TTL=127 Reply from 192.168.21.6: bytes=32 time=ins TTL=127 Reply from 192.168.21.5: bytes=32 time=ins TTL=127
	Ping statistics for 192.140.21.4: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trips timme in millisesconds: Minimum = Oms, Maximum = Dms, Average = Ins	<pre>Fing statistics for 192.168.21.5: Packets: Sens = 4, Secsived = 4, Lost = 0 (0% loss), Approximate round tryp lines in mill:=seconds: Minimum = Ome, Maximum = Ins, Average = Ome</pre>	<pre>Ping statistics for 192.160.21.6: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trup times in mill:=seconds: Minimum = Oms, Maximum = 2ms, Average = Oms</pre>
PC20 SV2 R3	C:\>ping 192.160.20.5	C:\>ping 192.168.20.5	C:\>ping 192.168.21.4
	Pinging 192.168.20.5 with 32 bytes of data:	Pinging 192.168.20.5 with 32 bytes of data:	Pinging 192.168.21.4 with 32 bytes of data:
	<pre>Paply from 192.168.20.5: bytes=32 time=16ms TTL=127 Paply from 192.168.20.5: bytes=32 time=16ms TTL=127 Paply from 192.168.20.5: bytes=32 time<1ms TTL=127 Paply from 192.168.20.5: bytes=32 time<1ms TTL=127</pre>	<pre>Saply from 192.168.20.5: bytes=32 time=13ms TTL=127 Reply from 192.168.20.5: bytes=32 time=13ms TTL=127 Reply from 192.168.20.6: bytes=32 time=13ms TTL=127 Reply from 192.168.20.5: bytes=32 time=3sms TTL=127</pre>	Reply from 192.168.21.4: bytes=32 time=lms TTL=127 Reply from 192.168.21.4: bytes=52 time=lms TTL=127 Reply from 192.168.21.4: bytes=52 time=lms TTL=127 Reply from 192.168.21.4: bytes=52 time=lms TTL=127
Laptop20 Laptop21	<pre>Ping statistics for 192.160.20.5: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round strip times in milli=seconds: Minimum = Oms, Maximum = 14ms, Average = 4ms</pre>	Fing statistics for 192.168.20.6: Fackets: Sent = 4, Received = 4, Lost = 0 (0% Loss), Approximate round trup times in milli-seconds: Minimum = Ome, Maximum = 13ms, Average = Smm	<pre>Ping statistics for 192:168.21.6: Packets: Bent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trup times in mill:=seconds: Minimum = Oms, Maximum = Ims, Average = Oms</pre>
	C:\>ping 192.148.20.4	C:\>ping 192.160.20.4	C:\>ping 192.148.20.4
	Pinging 192.168.20.4 with 32 bytes of data:	Pinging 192.168.20.4 with 32 bytes of data:	Pinging 192.168.20.4 with 32 bytes of data:
	<pre>2eply from 192.168.20.4: byte=32 time=lms TTL=127 2eply from 192.168.20.4: byte=32 time=lms TTL=127 2eply from 192.168.20.4: byte=32 time<lms ttl="127<br">2eply from 192.168.20.4: byte=32 time<lms ttl="127</pre"></lms></lms></pre>	<pre>Baply from 192.108.20.4: bytas=32 time=1mm TTL=127 Baply from 192.108.20.4: bytas=32 time=tmm TTL=127 Baply from 192.108.20.4: bytas=32 time=10mm TTL=127 Baply from 192.108.20.4: bytas=32 time=10mm TTL=127</pre>	Reply from 152.168.20.4: hytes=12 time=thm TTL=128 Reply from 152.168.20.4: hytes=12 time=thm TTL=128 Reply from 152.168.20.4: hytes=12 time=thm TTL=128 Reply from 152.168.20.4: hytes=32 time=thm TTL=128
	<pre>Ping statistics for 192.168.20.4: Pachets: Sent = 4, Recalved = 4, Lost = 0 (0% loss), Approximate round strip times in milli=seconds: Minimum = Oms, Maximum = Zms, Average = Oms</pre>	<pre>Fing statistics for 192.168.20.4: Fackets: Sant = 4, Received = 4, Lost = 0 (0% loss), Approximate round trup times in milli-seconds: Minimum = Oms, Maximum = 11ms, Average = 6ms</pre>	<pre>Ping statistics for 152.168.20.4: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in mill-seconds: Minimum = Oms, Maximum = Oms, Average = Oms</pre>
	C:\>ping 200.123.211.1	C:\>ping 200.128.211.1	C:\>ping 200.128.211.1
	Pinging 200.123.211.1 with 32 bytes of data:	Pinging 200.123.211.1 with 32 bytes of data:	Pinging 200.123.211.1 with 32 bytes of data:
	Reply from 200.123.311.1: bytes=32 time=2ms TTL=253 Reply from 200.123.311.1: bytes=32 time=1ms TTL=253 Reply from 200.123.311.1: bytes=32 time=1ms TTL=255 Reply from 200.123.311.1: bytes=32 time=2ms TTL=253	Reply from 200.123.211.1: bytes=22 time=lms TTL=253 Reply from 200.123.211.1: bytes=22 time=lms TTL=253 Reply from 200.123.211.1: bytes=32 time=lms TTL=253 Reply from 200.123.211.1: bytes=32 time=lims TTL=253	Reply from 200.123.211.1: bytes=32 time=12ms TTI=53 Reply from 200.123.211.1: bytes=32 time=3nm TTL=53 Reply from 200.123.211.1: bytes=32 time=12mm TTL=53 Reply from 200.123.211.1: bytes=32 time=2nm TTL=53
Time: 27:17:20 Power Cycle Devices Fast Forward 1	<pre>Ping statistics for 200.123.211.1: Packets: Sant = 4, Bacaived = 4, Lost = 0 (0% loss), Approximate round stufy times in milli=seconds: Minimum = 2ms, Maximum = 27ms, Average = 13ms</pre>	<pre>Ping statistics for 200.123.211.1: Fachets: Sens = 4, Received = 4, Lost = 0 (0% loss), Approximate count tryp times in milli-seconds: Minimum = Sms, Maximum = 12ms, Average = Tms</pre>	<pre>Ping statistics for 200.123.211.1: Packets: Sent = 4, Decestvad = 4, Lost = 0 (0% loss), Approximate round trup times in milli-seconds: Minimum = 2ms, Maximum = 12ms, Average = 7ms</pre>
<u></u>	C:\> +	C:\>	C:\>
×	Top	Top	Τορ
🚳 🖉 🚞 👰 👰			ES • 10 49 40 and 12:27 a.m. 14/12/2018

Ahora, para probar que sí hay conectividad efectivamente entre todos los terminales, hice ping desde el server hasta PC20, PC21, Laptop20 y Laptop21, siendo exitosos, al igual que desde el PC21 hasta los terminales bajo el R3:



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.



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

Configuramos los equipos de la siguiente manera:

- Internet PC: Doble clic en el equipo, luego ir al apartado, Desktop, luego a IP Configuration y por último agregar la siguiente información: IP Address: 209.165.200.230; Subnet Mask: 255.255.255.248; y Default Gateway: 209.165.200.225.

- **R1**: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera: Router>enable

Router#configure terminal

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

Router(config) #no ip domain-lookup

Cambiar el nombre al router

Router(config) #hostname R1

Activar las contraseñas

R1(config)#enable secret class

```
R1(config)#line con 0
R1(config-line) #pass cisco
R1 (config-line) #login
R1(config-line)#line vty 0 4
R1(config-line) #pass cisco
R1(config-line)#login
R1(config-line)#exit
Activar el service password-encryption, el mensaje del día y la s0/0/0
R1 (config) #service password-encryption
R1(config) #banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized Access is Prohibited.#
R1(config)#int s0/0/0
R1(config-if)#ip address 172.31.21.1 255.255.255.252
R1(config-if)#clockrate 128000
- R2: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera:
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Desactivar el Lookup
Router(config) #no ip domain-lookup
Cambiar el nombre al router
Router(config) #hostname R2
Activar las contraseñas
R2(config) #enable secret class
R2(config)#line con 0
R2(config-line) #pass cisco
R2(config-line)#login
R2(config-line)#line vty 0 4
R2 (config-line) #pass cisco
R2(config-line)#login
R2(config-line)#exit
Activar el service password-encryption, el mensaje del día y las interfaces
R2(config) #service password-encryption
R2(config) #banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized Access is Prohibited.#
R2(config)#int s0/0/0
R2(config-if)#description Connection to R1
R2(config-if) #ip address 172.31.21.2 255.255.255.252
R2(config-if) #no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up
R2(config-if)#int s0/0/1
R2(config-if)#description Connection to R3
R2(config-if) #ip address 172.31.23.1 255.255.255.252
R2(config-if)#clock rate 128000
R2(config-if) #no shutdown
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if) # int g0/0
R2(config-if)#description Connection to ISP
R2(config-if) #ip address 209.165.200.225 255.255.248
R2(config-if) #no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state
to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0, changed state to up
R2(config)#int g0/1
R2(config-if) #ip address 10.10.10.1 255.255.255.0
R2(config-if) #no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state
to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1, changed state to up
R2(config-if)#description Connection to Web Server
R2(config-if)#exit
R2(config) #ip route 0.0.0.0 0.0.0.0 g0/0
- Web Server: Doble clic en el servidor, luego ir al apartado, Desktop, luego a IP
Configuration y por último agregar la siguiente información: IP Address: 10.10.10.10;
Subnet Mask: 255.255.255.0; y Default Gateway: 10.10.10.1.
- R3: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera:
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Desactivar el Lookup
Router(config) #no ip domain-lookup
Cambiar el nombre al router
Router(config) #hostname R3
Activar las contraseñas
R3(config) #enable secret class
R3(config)#line con 0
R3(config-line) #pass cisco
R3(config-line)#login
R3(config-line)#line vty 0 4
```

```
R3(config-line) #pass cisco
R3(config-line)#login
R3(config-line)#exit
Activar el service password-encryption, el mensaje del día y las interfaces
R3(config) #service password-encryption
R3(config) #banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized Access is Prohibited.#
R3(config)#int s0/0/1
R3(config-if)#description Connection to R2
R3(config-if)#ip address 172.31.23.2 255.255.255.252
R3(config-if) #no shutdown
R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
R3(config-if)#int lo4
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4,
changed state to up
R3(config-if) #ip address 192.168.4.1 255.255.255.0
R3(config-if) #no shutdown
R3(config-if)#int lo5
%LINK-5-CHANGED: Interface Loopback5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5,
changed state to up
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if) #no shutdown
R3(config-if)#int lo6
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6,
changed state to up
R3(config-if) #ip address 192.168.6.1 255.255.255.0
R3(config-if)#exit
R3(config) #ip route 0.0.0.0 0.0.0.0 s0/0/1
- S1: Doble clic en el switch, ir al apartado CLI y configurar de la siguiente manera:
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Desactivar el Lookup
Switch(config)#no ip domain-lookup
Cambiar el nombre al router
Switch(config) #hostname S1
Activar las contraseñas
S1(config) #enable secret class
S1(config)#line con 0
```

```
S1(config-line) #pass cisco
S1(config-line)#login
S1(config-line) #line vty 0 4
S1(config-line) #pass cisco
S1(config-line)#login
Activar el service password-encryption, el mensaje del día
S1(config-line) #service password-encryption
S1(config)#banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized Access is Prohibited.#
- S3: Doble clic en el switch, ir al apartado CLI y configurar de la siguiente manera:
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Desactivar el Lookup
Switch(config)#no ip domain-lookup
Cambiar el nombre al router
Switch(config) #hostname S3
Activar las contraseñas
S3(config) #enable secret class
S3(config)#line con 0
S3(config-line) #pass cisco
S3(config-line)#login
S3(config-line)#line vty 0 4
S3(config-line) #pass cisco
S3(config-line)#login
Activar el service password-encryption, el mensaje del día
S3(config-line) #service password-encryption
S3(config) #banner motd #
Enter TEXT message. End with the character '#'.
Unauthorized Access is Prohibited.#
```

Nota: Debemos recordar que como *Packet Tracer* no soporta el comando *ip http server*, ponemos un Web Server físico en la topología.

Ahora, para verificar que todo el proceso ha sido exitoso, procedemos a hacer *ping* desde los diferentes dispositivos, obteniendo los siguientes resultados satisfactorios:

Cisco Packet Tracer - C:\Users\Pc\Desktop\Escenario_2.pkt		and all the local sectors and	- • ×
Re Edit Options View Tools Extensions Help	E RL C E	₹ R2	0.2
Logical Beck	Physical Config O.I Attributes	Physical Config O.I Attributes	Environment: 17:51:00
	IOS Command Line Interface	105 Command Line Interface	
	*	Enter configuration commands, one per line. Ind with CHTL/2. A R2(config)#exit	
Internet PC	Unauthorized Access is Prohibited.	92# 95YS-5-CONFIG_I: Configured from console by console	
82	User Access Verification	R2#ping 172.31.23.2	× 1
S Web Server	Password:	Type escape sequence to abort. Sending 5, 100-burge ICMP Echas to 172, 31, 28, 2, timeout is 2	a
	R1>en Password:	seconds:	
R3	R1#ping 172.81.21.2	Success rate is 100 percent (5/5), round-trip min/avg/max = 1/8/35 ms	• •
•	Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 172.31.21.2, timeout is 2	R2+	
	seconds: Success rate is 100 percent (5/5), roundstrip pip/avg/max e	changed state to down	
4 4	1/57/202 ==	%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down.	
	Dis \$LINEDROTO-5-UPDONN: Line protocol on Interface Serial0/0/0, changed state to down	<pre>%LINEPROTO-5-UPDONN: Line protocol on Interface Serial0/0/1, charged state to up</pre>	
	4LINEDROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,	\$LINEDROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,	
PC-A PC-C	changed state to up	changed state to up	
	Ctrl+F6 to exit CLI focus Copy Paste	Ctrl+F6 to exit CLI focus Copy Paste	
	Top	Тор	
R Internet PC		Web Server	
Physical Config Desktop Programming Atto	tributes	Physical Config Services Desktop Programming Attributes	
Command Prompt	x	Command Prompt	x
		Darbat Weaper (990)PD Compand Line A.A.	
C:\>ping 209.165.200.225		C:\>ping 209.165.200.225	
Pinging 209.165.200.225 with 32 bytes o	of data:	Pinging 209.165.200.225 with 32 bytes of data:	
Reply from 209.165.200.225: bytes=32 tip Reply from 209.165.200.225: bytes=32 tip	ime=44ms TTL=255 ime<1ms TTL=255	Reply from 209.165.200.225: bytes=32 time=12ms TTL=255 Reply from 209.165.200.225: bytes=32 time<1ms TTL=255	
Reply from 209.165.200.225: bytes=32 ti Reply from 209.165.200.225: bytes=32 ti	ime <lms ttl="255<br">ime<lms ttl="255</td"><td>Reply from 209.165.200.225: bytes=32 time<ims ttl="255<br">Reply from 209.165.200.225: bytes=32 time<ims ttl="255</td"><td></td></ims></ims></td></lms></lms>	Reply from 209.165.200.225: bytes=32 time <ims ttl="255<br">Reply from 209.165.200.225: bytes=32 time<ims ttl="255</td"><td></td></ims></ims>	
Time: 0 Ping statistics for 209.165.200.225: Declara: Sent = 4 Received = 4 To	net = 0 (0% local	<pre>Ping statistics for 209.165.200.225: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss).</pre>	Realting
Approximate round trip times in milli-s Minimum = Oms, Maximum = 44ms, Aver	seconds: rage = lims	Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = 12ms, Average = 3ms	Realitie
C:\>		c:vi	4
1		-	· · · · · · · · · · · · · · · · · · ·
(3) (2) (3) (3) (3) (3) (3) (3) (3) (3) (3) (3			ES 🔺 🃭 🚀 (1) at 0234 p.m. 1 13/12/2018

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

OSPFv2 area 0

Configuration Item or Task	Specification
Router ID R1	1.1.1.1
Router ID R2	
	5.5.5.5
Router ID R3	
	8.8.8.8
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	256 Kb/s
Ajustar el costo en la métrica de S0/0 a	9500

Comenzamos la configuración en el siguiente orden:

- **R1**: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera: R1>enable

```
Rl#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config) #router ospf 1
R1(config-router) #router-id 1.1.1.1
R1(config-router) #network 172.31.21.0 0.0.0.3 area 0
R1(config-router) #network 192.168.30.0 0.0.0.255 area 0
R1(config-router) #network 192.168.40.0 0.0.0.255 area 0
R1(config-router) #network 192.168.200.0 0.0.0.255 area 0
R1(config-router) #network 192.168.200.0 0.0.0.255 area 0
R1(config-router) #network 192.168.200.0 0.0.0.255 area 0
R1(config-router) #passive-interface g0/1.30
R1(config-router) #passive-interface g0/1.40
R1(config-router) #passive-interface g0/1.200
```

```
R1 (config-router) #exit
R1(config)#int s0/0/0
R1(config-if) #bandwidth 256
R1(config-if) #ip ospf cost 9500
- R2: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera:
R2>enable
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config) #router ospf 1
R2(config-router) #router-id 5.5.5.5
R2(config-router)#network 172.31.21.0 0.0.0.3 area 0
R2(config-router)#
05:27:37: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on
Serial0/0/0 from LOADING to FULL, Loading Done
R2(config-router) #network 172.31.23.0 0.0.0.3 area 0
R2(config-router)#network 10.10.10.0 0.0.255 area 0
R2 (config-router) #passive-interface g0/1
R2(config-router)#int s0/0/0
R2(config-if) #bandwidth 256
R2(config-if)#int s0/0/1
R2(config-if) #bandwidth 256
R2(config-if)#int s0/0/0
R2(config-if) #ip ospf cost 9500
- R3: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera:
R3>enable
R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config) #router ospf 1
R3(config-router) #router-id 8.8.8.8
R3(config-router)#network 172.31.23.0 0.0.0.3 area 0
R3(config-router) #network 172.31.23.0 0.0.0.3 area 0
05:39:11: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on
Serial0/0/1 from LOADING to FULL, Loading Done
R3(config-router)#network 192.168.4.0 0.0.3.255 area 0
R3(config-router) #passive-interface lo4
R3(config-router) #passive-interface lo5
R3(config-router) #passive-interface lo6
R3(config-router)#int s0/0/1
R3(config-if) #bandwidth 256
R3(config-if) #ip ospf cost 9500
```

Verificar información de OSPF

 Visualizar tablas de enrutamiento y routers conectados por OSPFv2 Usé los comandos show ip ospf neighbor y show ip ospf interface





• Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface *Utilicé el comando* show run

🗜 R1 - 🗆 X	₩ P2 X	R3 C Ka
		í
Physical Config CLI Attributes	Physical Config QLI Attributes	Physical Config O.I Attributes
IOS Command Line Interface	IOS Command Line Interface	IDS Command Line Interface
Geneription Mantenimiento LAN	akeen ann	
encapsulation dot10 200	1 A A A A A A A A A A A A A A A A A A A	1 I I I I I I I I I I I I I I I I I I I
ip address 192.168.200.1 255.255.255.0	Interface Significationermet0/1	in in demainslookup
Interface Serial0/0/0	ip address 10.10.10.1 256.256.265.0	1
description Connection to R2	duplex auto	
bandwidth 256	speed auto	spanning-tree mode pvst
1p address 172.31.21.1 255.255.255.252	interface Serial0/0/0	
clock rate 128000	description Connection to Ri	
	bandwidth 256	
interface Serial0/0/1	1p address 172,31,21.2 255,255,255,252	
no ip address	ap capt cost year	interface Loophacki
shutdown	interface Serial0/0/1	ip address 192.168.4.1 255.255.255.0
1	description Connection to R3	
interface Vlan1	bandwidth 256	interface Loopback5
no 1p address abutdown	clock rate 128000	
		interface Loopback6
router capf 1	interface Vlani	ip address 192.168.6.1 255.255.255.0
router-id 1.1.1.1	no ip address	Interface (Intel®Thermort)/0
log-adjacency-changes	anacomis I	no in address
passive-interface GigabitEthernet0/1.30	router ospf 1	duplex auto
passive-interface GigabitEthernet0/1.200	router-id 5.5.5.5	speed auto
network 172.31.21.0 0.0.0.3 area 0	log-adjacency-changes	
network 192.168.30.0 0.0.0.255 area 0	network 172, 31, 21, 0, 0, 0, 0, 3 area 0	no ip address
network 192,160,200,0,0,0,255 area 0	network 172.31.23.0 0.0.0.3 area 0	duplex auto
	network 10.10.10.0 0.0.0.255 area 0	speed auto
ip classless	in standard	international Provide 10/0/0
ip route 0.0.0.0 0.0.0.0 Serial0/0/0	ip route 0.0.0.0 0.0.0.0 GigebitThernet0/0	no ip address
ip flow-export version 9		clock rate 2000000
	ip flow-export version 9	shutdown
		interface Revision/0/1
hanner metd 20		description Connection to R2
Unauthorized Access is Prohibited. "C	banner motd "C	bandwidth 256
1	Unauthorized Access is Prohibited. "C	ip address 172.81.23.2 255.255.255.252
		1p oapt cost 9600
		interface Vlani E
line con 0	1	no ip address
password 7 0822455D0A16	line con 0	shutdown
login	login / Verroevente 1	router cepf 1
line aux 0		router-id 0.0.0.0
	line aux 0	log-adjacency-changes
line vty 0 4	Time way 0.4	passive-interface Loopback4
password 7 0522455D0A16	password 7 0822455D0A16	passive-interface Loopback6
and the second s	login	network 172.31.23.0 0.0.0.3 area 0
		network 192.168.4.0 0.0.3.255 area 0
		in alassias
603	end	ip route 0.0.0.0 0.0.0.0 Serial0/0/1
R1# *		ip flow-export version 9
Copy Paste Copy	Ctrl+Pb to exit CLI focus Copy Paste	Ctri+r6 to exit CLI focus Copy Paste
Пар	Тор	Тор
		C
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• Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.

R1	. 🗆 🗙	R2 -	• ×	🦉 R3	• X
Physical Config CLI Attributes		Physical Config OLI Attributes		Physical Config C.I Attributes	
TOT Commentions Testantion		TOT Communities Totalities		The Commodition States form	
GENERIDEION MARCENIMIENCE LAN	_	Lakera anno		sos contrato pre anteriade	_
encapsulation dot10 200	^		^		^
ip address 192.168.200.1 255.255.255.0		interface Gigabitithernet0/1 description Consection to Web Server		1 no in demainsleakup	
interface Serial0/0/0		ip address 10.10.10.1 255.255.255.0		1	
description Connection to R2		duplex auto			
bandwidth 256		speed auto		spanning-tree mode pvst	
1p address 172.31.21.1 255.255.255.252		interface Serial0/0/0			
clock rate 128000		description Connection to R1			
		bandwidth 256			
interface Serial0/0/1		1p sodress 1/2.31.21.2 200.200.200.200			
clock rate 2000000				interface Loopback4	
shutdown		interface Serial0/0/1		ip address 192.168.4.1 255.255.255.0	
1 (manuface 10 and		description Connection to x3 bandwidth 256		interface Loopback5	
no ip address		ip address 172.31.23.1 255.255.252		ip address 192.168.5.1 255.255.255.0	
shutdown		clock rate 128000		Landon tonbald	
senses and 1		interface Viani		interrace Loopback6 in address 192.168.6.1 255.255.255.0	
router-id 1.1.1.1		no ip address			
log-adjacency-changes		shutdown		interface GigabitEthernet0/0	
passive-interface GigabitEthernet0/1.40		router and 1		no ip address duplay auto	
passive-interface GigabitEthernet0/1.30		router-1d 5.5.5		speed auto	
network 172.31.21.0 0.0.0.3 area 0		log-adjacency-changes			
network 192.168.30.0 0.0.0.255 area 0		passive-interface GigabitEthernet0/1		interface GigabitEthernet0/1	
network 192.168.40.0 0.0.0.255 area 0		network 172.31.21.0 0.0.0.3 area 0		no ip address dumler auto	
BESNOER 192.140.200.0 0.0.0.200 MICK 0		network 10.10.10.0 0.0.0.255 area 0		speed auto	
ip classless					
ip route 0.0.0.0 0.0.0.0 Serial0/0/0		ip classiess		interface Serial0/0/0	
in Concernors version 3		ip idde 0.0.0.0 0.0.0.0 digadeetaerneco/o		clock rate 2000000	
1		ip flow-export version 9		shutdown	
1				1 International Application	
hannes mand 20			- m 1	description Connection to 22	
Unauthorized Access is Prohibited. "C		banner motd "C		bandwidth 256	
1		Unauthorized Access is Prohibited. "C		ip address 172.31.23.2 255.255.255.252	
				1p ospf cost 5600	
				interface Viani	=
line con 0				no ip address	
password 7 0822455D0A16		line con 0		shutdown	
login		login	- 11 -	router orof 1	
lime aux 0				router-id 0.0.0.0	
		line aux O		log-adjacency-changes	
line vty 0 4		line vtv 0 4		passive-interface Loopback5	
login		password 7 0822455D0A16		passive-interface Loopback6	
1		login		network 172.31.23.0 0.0.0.3 area 0	
	1			Desmore 174.100.4.0 0.0.3.400 area 0	
end				ip classless	
		end		ip route 0.0.0.0 0.0.0.0 Serial0/0/1	
714				in flow-export version 9	
	~		*		*
Ctrl+F6 to exit CLI focus Copy	Paste	Ctrl+F6 to exit CLI focus Capy Pa	ste	Ctrl+F6 to exit CLI focus Copy	Paste
		ET Tan		El Ten	
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• Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida. *Algunas configuraciones ya se han hecho anteriormente.*

```
Para hacer las configuraciones, iniciamos con cada uno de los switches:
- S1: Doble clic en el switch, ir al apartado CLI y configurar de la siguiente manera:
S1>enable
S1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#vlan 30
S1(config-vlan) #name Administracion
S1(config-vlan) #vlan 40
S1(config-vlan) #name Mercadeo
S1(config-vlan) #vlan 200
S1(config-vlan) #name Mantenimiento
S1(config-vlan)#exit
S1(config)#int vlan 30
%LINK-5-CHANGED: Interface Vlan30, changed state to up
S1(config-if) #ip address 192.168.99.2 255.255.255.0
S1(config-if) #no shutdown
S1(config-if) #exit
S1(config) #ip default-gateway 192.168.99.1
S1(config) #int f0/3
S1(config-if)#switchport mode trunk
S1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30,
changed state to up
S1(config-if)#switchport trunk native vlan 1
S1(config)#int f0/24
S1(config-if) #switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if) #int range fa0/1-2, fa0/4-23, g0/1-2
S1(config) #switchport mode access
S1(config-if-range)#int fa0/1
S1(config-if) #switchport mode access
S1(config-if) #switchport acces vlan 30
S1(config-if) #int range fa0/2, fa0/4-23, g0/1-2
S1(config-if-range)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to
administratively down
```

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down %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 FastEthernet0/21, 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 %LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down %LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to administratively down - S3: Doble clic en el switch, ir al apartado CLI y configurar de la siguiente manera: S3>enable S3#configure terminal Enter configuration commands, one per line. End with CNTL/Z. S3(config)#vlan 30

```
S3(config-vlan) #name Administracion
S3(config-vlan) #vlan 40
S3(config-vlan) #name Mercadeo
S3(config-vlan) #vlan 200
S3(config-vlan) #name Mantenimiento
S3(config-vlan)#exit
S3(config)#int vlan 30
%LINK-5-CHANGED: Interface Vlan30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30,
changed state to up
S3(config-if) #ip address 192.168.99.3 255.255.255.0
S3(config-if) #no shutdown
S3(config-if) #exit
S3(config) #ip default-gateway 192.168.99.1
S3(config)#int fa0/3
S3(config-if)#switchport mode trunk
S3(config-if) #switchport trunk native vlan 1
S3(config-if) #int range fa0/1-2, fa0/4-24, g0/1-2
S3(config-if-range) #switchport mode access
S3(config-if-range)#int fa0/1
S3(config-if) #switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if) #int range fa0/2, fa0/4-24, g0/1-2
S3(config-if-range)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to
administratively down
```

%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 FastEthernet0/21, 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 %LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down %LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down %LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to administratively down S3(config-if-range)#end - R1: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera: R1>enable Password: R1#configure terminal Enter configuration commands, one per line. End with CNTL/Z. R1(config) #int g0/1.40R1 (config-subif) #description Mercadeo LAN R1(config-subif)#encapsulation dot1g 40 R1(config-subif)#ip address 192.168.40.1 255.255.255.0 R1(config-subif) #int q0/1.30 R1(config-subif)#description Administracion LAN R1(config-subif) #encapsulation dot1g 30 R1(config-subif)#ip address 192.168.30.1 255.255.255.0 R1(config-subif) #int g0/1.200 R1 (config-subif) #description Mantenimiento LAN R1(config-subif) #encapsulation dot1g 200

```
R1(config-subif) #ip address 192.168.200.1 255.255.255.0
R1(config-subif) #exit
R1(config)#int q0/1
R1(config-if) #no shutdown
R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state
to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.30, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1.30, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.40, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1.40, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.200, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1.200, changed state to up
```

- 3. En el Switch 3 deshabilitar DNS lookup Ya este paso se realizó anteriormente. En las configuraciones iniciales se le dio al S3 el comando no ip domain-lookup.
- 4. Asignar direcciones IP a los Switches acorde a los lineamientos. Ya este paso fue realizado previamente. Revisar código en el aparte de cada switch que contiene el comando *ip* address.
- 5. Desactivar todas las interfaces que no sean utilizadas en el esquema de red.

Ya este paso fue realizado previamente. Revisar código en el aparte que contiene los comandos int range y donde se indican las interfaces que se desactivan administrativamente (changed state to

administratively down) después de introducir el comando shutdown.

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

Ya este paso fue realizado previamente. Revisar código en el aparte que contiene los comandos int range y donde se indican las interfaces que se desactivan administrativamente (changed state to administratively down) después de introducir el comando shutdown.

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

Ya este paso fue realizado previamente. Revisar código en el aparte que contiene los comandos int range y donde se indican las interfaces que se desactivan administrativamente (changed state to administratively down) después de introducir el comando shutdown.

- 8. Implementar DHCP y NAT para IPv4
- 9. Configurar R1 como servidor DHCP para las VLANs 30 y 40.
- 10. 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.		

Las configuraciones de los puntos 8, 9 y 10 se hacen a continuación y en secuencia. Comenzamos inicialmente configurando R1:

```
- R1: Doble clic en el router, ir al apartado CLI y configurar de la siguiente manera:
R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config) #ip dhcp excluded-address 192.168.30.1
192.168.30.30
R1(config) #ip dhcp excluded-address 192.168.40.1
192.168.40.30
R1(config) #ip dhcp pool ADMINISTRACION
R1 (dhcp-config) #dns-server 10.10.10.11
R1(dhcp-config)#domain_name ccna-unad.com
                  \overline{}
                             Packet tracer no soporta este comando
% Invalid input detected at '^' marker.
R1 (dhcp-config) #default-router 192.168.30.1
R1(dhcp-config)#network 192.168.30.0 255.255.255.0
R1 (dhcp-config) #ip dhcp pool MERCADEO
R1 (dhcp-config) #dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-unad.com
                 \wedge
                             Packet tracer no soporta este comando
% Invalid input detected at '^' marker.
R1 (dhcp-config) #default-router 192.168.40.1
R1 (dhcp-config) #network 192.168.40.0 255.255.255.0
R1 (dhcp-config) #end
```

- 11. Configurar NAT en R2 para permitir que los hosts puedan salir a internet
- 12. 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.
- 13. 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.

Las configuraciones de los puntos 11, 12 y 13 están determinadas a continuación: R2>enable

```
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#user webuser privilege 15 secret cisco12345
R2(config)#ip http server
                ^{\sim}
                        — Packet tracer no soporta este comando
% Invalid input detected at '^' marker.
R2(config) #ip nat inside source static 10.10.10.10
209.165.200.229
R2(config) #int g0/0
R2(config-if) #ip nat outside
R2(config-if)#int q0/1
R2(config-if) #ip nat inside
R2(config-if)#exit
R2(config)#access-list 1 permit 192.168.30.0 0.0.255
R2(config)#access-list 1 permit 192.168.40.0 0.0.0.255
R2(config)#access-list 1 permit 192.168.4.0 0.0.3.255
R2(config) #ip nat pool INTERNET 209.165.200.225
209.165.200.228 netmask 255.255.258.248
R2(config) #ip nat inside source list 1 pool INTERNET
Ahora, configuramos las listas de control de acceso estándar en R2:
R2>enable
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config) #ip access-list standard ADMIN-MGT
R2(config-std-nacl) #permit 172.31.21.1 0.0.0.0
R2(config-std-nacl)#exit
R2(config)#line vty 0 4
R2(config-line) #access-class ADMIN-MGT in
Ahora, verificamos en R1:
R1#telnet 172.31.21.1
Trying 172.31.21.1 ... Open
Unauthorized Access is Prohibited.
User Access Verification
Password:
R1>enable
Password:
R1#exit
```

```
[Connection to 172.31.21.1 closed by foreign host]
R1#telnet 172.31.21.2
Trying 172.31.21.2 ... Open
Unauthorized Access is Prohibited.
User Access Verification
Password:
R2>enable
Password:
R2#exit
[Connection to 172.31.21.2 closed by foreign host]
R1#
Ahora, configuramos las listas de acceso extendidas:
R2(config) #access-list 101 permit tcp any host
209.165.200.229 eq www
R2(config) #access-list 101 permit icmp any any echo-reply
R2(config) #int g0/0
R2(config-if) #ip access-group 101 in
R2(config-if) #int s0/0/0
R2(config-if) #ip access-group 101 out
R2(config-if)#int s0/0/1
R2(config-if) #ip access-group 101 out
R2(config-if)#int g0/1
R2(config-if) #ip access-group 101 out
Es hora de probar la accesibilidad hacienda ping:
```



Hacer *ping* desde los dispositivos al *Internet PC* es posible, pero desde este terminar no es posible hacer *ping* a otros dispositivos por la configuración hecha.

14. Verificar procesos de comunicación y redireccionamiento de tráfico en los routers mediante el uso de Ping y Traceroute.

Image:	Cisco Packet Tracer - CiWiem/Pc/Desktop/Escenario 2.pkt				-	
Indian in intermediation intermediatintermediation intermediation intermediation inte		@				0 ?
	Logical Back	[Root]	New Cluster Move Object	Set Tiled Background	Viewport	Environment: 19:17:30
The state 22 Power Cycle Descond Frant Forward The Control Con		✓ R2 Provent Config. Provide Config. Provid	Cl Athenes a.30.31 a.30.31 a.30.31 a.30.31 a.30.31 a.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.30.31 b.31.55.45.31 b.32.55.31 b.32.55.31 b.32.55.31 b.32.55.31 b.32.55.31 b.33.55.45.31 b.35.55.35.31 b.35.55.35.31 b.35.55.35.31 b.35.55.35.31 b.35.55.35.35.35.35.35.35.35.35.35.35.35.	DG Command Law Shifefane Inserve 1a 3 seconda: avgr/max = 1/3/12 ma Laweves 1a 2 seconda: avgr/max = 1/3/10 ma		
	Time 02-65-21 Desire Code Destroy Every Time					• (3) term
B Selece						Realtime
	×			12/1/202		
				Serial DCE		

Como podemos ver, a ejecutar el comando ping y el traceroute a las rutas de los demás router, estos se hacen exitosamente.

Nota: Para encontrar los archivos en *Packet Tracer* trabajados en los presentes ejercicios, seguir el siguiente enlace: <u>https://drive.google.com/open?id=1fXWyEqtooOvjM7bMQQCw8-MCScPsCzhE</u>

Conclusiones

La presente práctica nos permitió desarrollar cada una de las competencias adquiridas durante el diplomado presente, aunque esa vez se nos puso un reto diferente: demostrar las habilidades en la implementación de los códigos necesarios para hallar las soluciones propuestas en cada escenario, permitiendo con ello ahondar en otros espacios y aspectos importantes para poder demostrar que las habilidades adquiridas en el diplomado fueron de total éxito.

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