

**EVALUACIÓN-PRUEBA DE HABILIDADES PRACTICAS CCNA
DIPLOMADO DE PROFUNDIZACIÓN CISCO(DISEÑO E
IMPLEMENTACIÓN DE SOLUCIONES INTEGRADAS LAN/WAN)**

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**UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA. UNAD
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CEAD PITALITO

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Trabajo de Diplomado para Obtener el Titulo de Ingeniera de Sistemas

INGENIERO GIOVANNI ALBERTO BRACHO

**UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA. UNAD
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CEAD PITALITO

2018

NOTA DE ACEPTACIÓN

Presidente del jurado

Jurado

Jurado

Pitalito 10 Diciembre 2018

DEDICATORIA

Dedico este proyecto primeramente a Dios, a mis padres Mirranin Díaz y Luz Deisi Perdomo, a mi novio Adrian Camilo Gonzalez por el apoyo incondicional y por creer en mí, porque sentaron en mí bases de responsabilidad y deseos de superación. Así mismo me brindaron el amor y la calidez de la familia.

AGRADECIMIENTOS

Deseo presentar mi profundo agradecimiento al Director del diplomado de profundización Juan Carlos Vesga, al tutor encargado Giovani Alberto Bracho por sus observaciones para corregir cada uno de los impases presentados, De igual forma a la Universidad por permitir que cada uno de nosotros nos formemos y obtengamos los mejores resultados, gracias a la gran oportunidad de estudiar y superarnos virtualmente.



TABLA DE CONTENIDO

INTRODUCCIÓN.....	7
1.ESCENARIO.....	8
2.ESCENARIO.....	16
CONCLUSIONES.....	27
REFERENCIAS BIBLIOGRÁFICAS	28

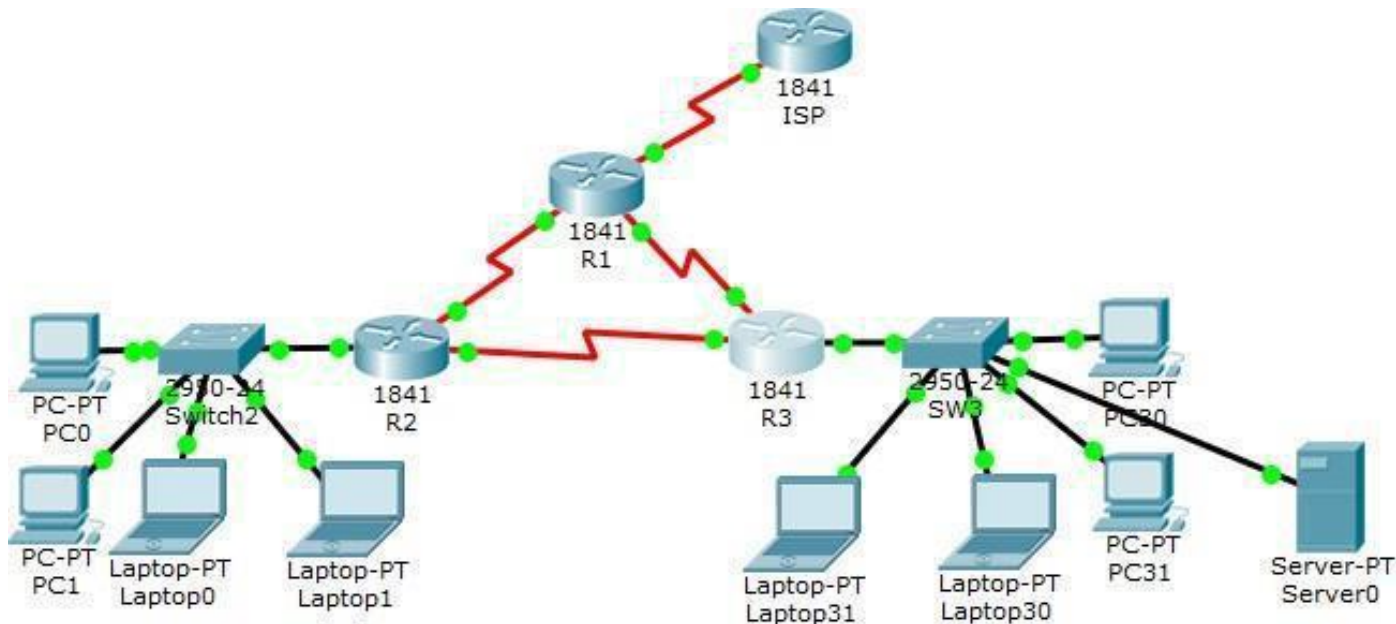
INTRODUCCION

Sin duda alguna, en el diario vivir nos encontramos con que es indispensable el uso de las telecomunicaciones, en esta rama surge una empresa como Cisco Systems, el cual se ha convertido en el líder mundial en redes para Internet, gracias a esto la Universidad Nacional Abierta y a Distancia UNAD, se asocio para obtener que los estudiantes aumenten la calidad de vida y aprendizaje mediante opción de grado obtener la certificación realizando el **DIPLOMADO DE PROFUNDIZACION CISCO(DISEÑO E IMPLEMENTACION DE SOLUCIONES INTEGRADAS LAN/WAN).**

Así mismo se implemento la Evaluación denominada “Prueba de habilidades Practicas”, la cual forma parte de las actividades evaluadoras del Diplomado de Profundización, se diseño con el objetivo de identificar el grado de conocimiento de competencias y habilidades adquiridas a lo largo del diplomado, ya que por este medio se pondría a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

En este documento se implemento la solución de dos escenarios desarrollados mediante la herramienta Cisco packet tracer Student, teniendo en cuenta las necesidades de la empresa.

ESCENARIO 1



Partiendo de la anterior topología procedemos a configurar cada dispositivo con la siguiente tabla de direccionamiento.

El administrador	Interfaces	Dirección IP	Máscara de subred	Gateway predeterminado
ISP	So/0/0	200.123.211.1	255.255.255.0	N/D
R1	Se0/0/0	200.123.211.2	255.255.255.0	N/D
	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
R2	Fa0/0,100	192.168.20.1	255.255.255.0	N/D
	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
R3	Fa0/0	192.168.30.1	255.255.255.0	N/D
		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

Descripción de las actividades

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

S2(config-if-range)# int range f0/6-24

S2(config-if-range)# shutdown

- ☐ Procedemos a configurar ISP

```

Physical    Config    CLI
IOS Command Line Interface

Type to copy with appropriate laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wurl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0947218E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
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

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 200.123.211.1 255.255.255.0
Router(config-if)#no shutdown

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

- ☐ Procedemos a configurar R1

```

IOS Command Line Interface

Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#clock rate 2000000
!is command applies only to DCE interfaces
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#no shutdown

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

Copy Paste

Procedemos a configurar R2

```

Router2
Physical Config CLI
IOS Command Line Interface

Cisco 1841 (revision 5.0) with 114698K/16384K bytes of memory.
Processor board ID FTX0947218E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
2 low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63498K 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
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Compiled Wed 18-Jul-07 04:52 by pt_team

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#no shutdown

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

Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
clock rate 128000
Router(config-if)#
  
```

Procedemos a Configurar R3

```

Router3
Physical Config CLI
IOS Command Line Interface

Cisco 1841 (revision 5.0) with 114698K/16384K bytes of memory.
Processor board ID FTX0947218E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
2 low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63498K 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.
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--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.0.0.6 255.0.0.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#
  
```

- Ahora procedemos a configurar los dos switch.
SWT2

```

Switch2
Physical Config CLI
IOS Command Line Interface

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up

Switch>
Switch#enable
Switch#configure t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 100
Switch(config-if)#exit
Switch(config)#vlan 100
Switch(config-vlan)#
%LINK-5-CHANGED: Interface Vlan100, changed state to up

Switch(config-vlan)#name vlan100
Switch(config-vlan)#exit
Switch(config-vlan)#vlan 200
Switch(config-vlan)#name vlan200
Switch(config-vlan)#exit
Switch(config-vlan)#exit
Switch(config)#
  
```

SWT3

```

Switch3
Physical Config CLI
IOS Command Line Interface

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up

Switch#ENABLE
Switch#CONFIGURE T
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#VLAN 1
Switch(config-vlan)#NAME VLAN1
Default VLAN 1 may not have its name changed.
Switch(config-vlan)#END
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#
  
```



Ahora vamos asignar puertos a las diferentes VLAN para indicarle al switch que por esos puertos solo van a ingresar las respectivas VLANs.

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



Primero en SWT2

```

Switch2
Physical Config CLI
IOS Command Line Interface

Switch#
Switch con0 is now available

Press RETURN to get started.

Switch>ENABLE
Switch#CONFIGURE T
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range fa0/2-3
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 100
Switch(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan100, changed state to up
Switch(config-if-range)#EXIT
Switch(config)#
  
```

□ Ahora en SWT3

```

Switch3
Physical Config CLI
IOS Command Line Interface

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINK-6-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINK-6-CHANGED: Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINK-6-CHANGED: Interface FastEthernet0/4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up
%LINK-6-CHANGED: Interface FastEthernet0/4, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down
%LINK-6-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up

Switch>ENABLE
Switch#CONFIGURE T
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#VLAN 1
Switch(config-vlan)#NAME VLAN1
Default VLAN 1 may not have its name changed.
Switch(config-vlan)#END
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#configure t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range 10/4-5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 200
% Access VLAN does not exist. Creating vlan 200
Switch(config-if-range)#exit
Switch(config)#
    
```

□ Lo siguiente que vamos a hacer será configurar los enlaces troncales partiendo de la siguiente tabla:

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

- Este proceso se realiza de acuerdo a las interfaces expuestas en la tabla y en el dispositivo SW2.

```
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#  
Switch#configure t  
Enter configuration commands, one per line. End with CNTL/Z.  
Switch(config)#interface f0/2  
Switch(config-if)#sv  
Switch(config-if)#switchport mode tr  
Switch(config-if)#switchport mode trunk  
  
Switch(config-if)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up  
  
Switch(config-if)#exit  
Switch(config)#interface f0/3  
Switch(config-if)#sv  
Switch(config-if)#switchport mode tr  
Switch(config-if)#switchport mode trunk  
  
Switch(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  
  
Switch(config-if)#exit  
Switch(config)#
```

- ☐ Ahora vamos a configurar el protocolo DHCP para que podamos dar direcciones ip dinámicas a todos los dispositivos host de la red.

[illegible]

- Tenemos nuestro DHCP configurado

```

Router1
Physical Config CLI
IOS Command Line Interface

Press RETURN to get started.

Router#enable
Router#configure t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#io
^
% Invalid input detected at '^' marker.

Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#ip d
Router(config)#ip dh
Router(config)#ip dhcp pool CCHA
Router(dhcp-config)#network 10.0.0.0 255.255.255.0
Router(dhcp-config)#lease 1
^
% Invalid input detected at '^' marker.

Router(dhcp-config)#
  
```

- Finalmente configuramos el protocolo rip para que haya conexión entre todas las redes de red de la siguiente manera hay que agregar todos los dispositivos de red.

```

Router1
Physical Config CLI
IOS Command Line Interface

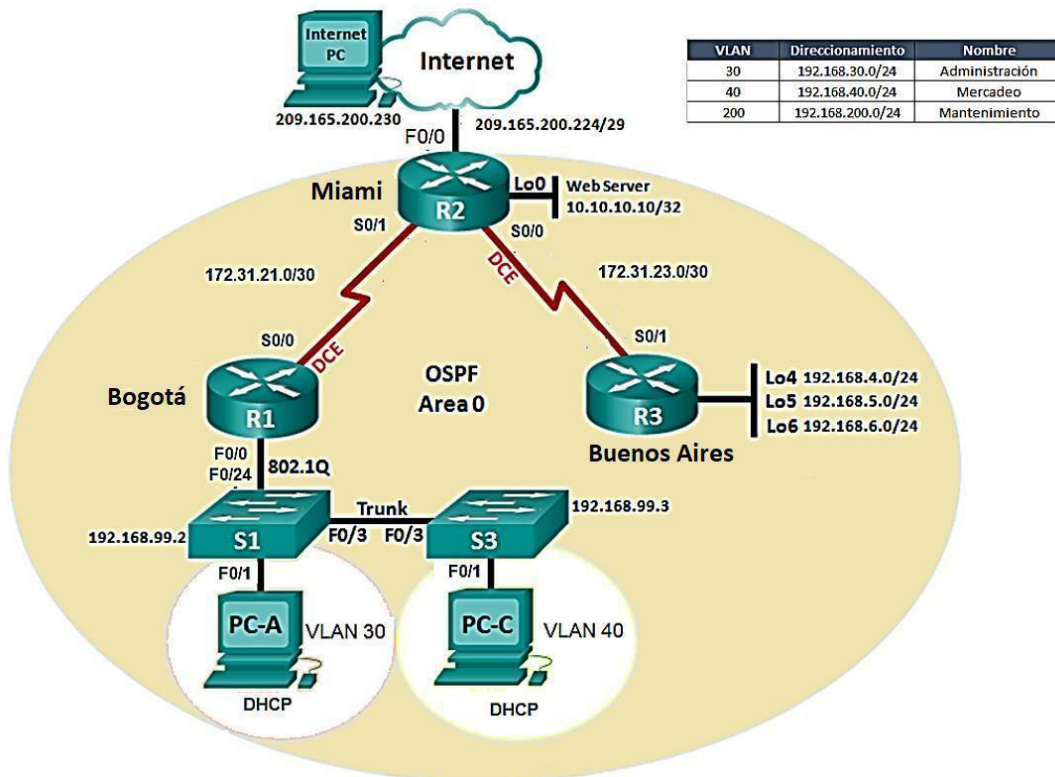
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#
Router(dhcp-config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#configure t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 200.123.211.2
Router(config-router)#network 200.123.211.1
Router(config-router)#network 10.0.0.5
Router(config-router)#network 10.0.0.2
Router(config-router)#network 10.0.0.9
Router(config-router)#network 10.0.0.10
Router(config-router)#network 10.0.0.6
Router(config-router)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
  
```

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.



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

```
Router>config t
```

```
^
```

```
% Invalid input detected at
```

```
'^' marker. Router>ena
```

```
Router#config t
```

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

```
Router(config)#
```

```
Router(config)#hostname Bogota
```

```
Bogota(config)#int s0/0/0
```

```
Bogota(config-if)#ip add 172.31.21.1 255.255.255.252
```



```
Bogota(config-if)#clock rate
```

```
% Incomplete command. Bogota(config-if)#clock rate 64000
```

```
Bogota(config-if)#no shut
```

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

```
        Bogota(config-if)#
```

```
Router>enable
```

```
Router#conf t
```

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

```
Router(config)#
```

```
Router(config)#hostname Miami
```

```
Miami(config)#int loop0
```

```
Miami(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed  
state to up
```

```
Miami(config-if)#ip address 10.10.10.10 255.255.255.255
```

```
Miami(config-if)#no shut
```

```
Miami(config-if)#int s0/0/0
```

```
Miami(config-if)#ip add 172.31.23.1 255.255.255.252
```

```
Miami(config-if)#clock rate 64000
```

```
Miami(config-if)#no shut
```

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
```

```
Miami(config-if)#
```

```
Miami(config-if)#int s0/0/1
```

```
Miami(config-if)#ip add 172.31.21.2
```

```
255.255.255.252 Miami(config-if)#no shut
```

```
Miami(config-if)#
```

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Miami(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Miami(config-if)#int g0/0

Miami(config-if)#ip add 209.165.200.225 255.255.255.248

Miami(config-if)#

Miami(config-if)#exit

Miami(config)#exit

Miami#

%SYS-5-CONFIG_I: Configured from console by console

Router>ena

Router#config t

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

Router(config)#

Router(config)#hostname BuenosAires

BuenosAires(config)#int loop4

BuenosAires(config-if)#

%LINK-5-CHANGED: Interface Loopback4, changed state to up

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

BuenosAires(config-if)#ip address 192.168.4.1 255.255.255.0

BuenosAires(config-if)#no shut

BuenosAires(config-if)#int loop5

BuenosAires(config-if)#

%LINK-5-CHANGED: Interface Loopback5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

BuenosAires(config-if)#ip address 192.168.5.1 255.255.255.0

```
BuenosAires(config-if)#no shut
BuenosAires(config-if)#int loop4
BuenosAires(config-if)#ip add 192.168.6.1 255.255.255.0
BuenosAires(config-if)#no shut
```

```
BuenosAires(config-if)#int s0/0/1
BuenosAires(config-if)#ip address
172.31.23.2 255.255.255.252
BuenosAires(config-if)#no shut
```

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

```
BuenosAires#
%SYS-5-CONFIG_I: Configured from console by console
```

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

OSPFv2 área 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

CONFIGURACIÓN OSPF V2

```
Bogota>ena
Bogota#config t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#
Bogota(config)#router ospf 1
Bogota(config-router)#router-id 1.1.1.1

Bogota(config-router)#network 192.168.99.0 0.0.0.255 area 0
Bogota(config-router)#network 172.31.21.0 0.0.0.3 area 0
Bogota(config-router)#passive-interface gi0/0
Bogota(config-router)#int s0/0/0
Bogota(config-if)#bandwidth 256
Bogota(config-if)#ip ospf cost
% Incomplete command.
Bogota(config-if)#ip ospf cost
9500
Bogota(config-if)#int s0/0/1
Bogota(config-if)#bandwidth 256
Bogota(config-if)#exit
Bogota(config)#exit
Bogota#
%SYS-5-CONFIG_I: Configured from console by console

Bogota#

Miami>enable
Miami#config t
Enter configuration commands, one per line. End with CNTL/Z.
Miami(config)#
Miami(config)#router ospf 1
Miami(config-router)#
Miami(config-router)#router-id 5.5.5.5
Miami(config-router)#network 209.165.200.224 0.0.0.7 area 0
Miami(config-router)#network 172.31.21.0 0.0.0.3 area 0
Miami(config-router)#
00:49:42: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/1 from
LOADING to FULL, Loading Done

Miami(config-router)#network 10.10.10.10 0.0.0.3 area
0
Miami(config-router)#passive-interface gi0/0
Miami(config-router)#int s0/0/0
Miami(config-if)#bandwidth 256
```

```

Miami(config-if)#ip ospf cost 9500
Miami(config-if)#int s0/0/1
Miami(config-if)#bandwidth 256
Miami(config-if)#
BuenosAires#config t
Enter configuration commands, one per line. End with CNTL/Z.
BuenosAires(config)#
BuenosAires(config)#router ospf 1
BuenosAires(config-router)#router-id 8.8.8.8
BuenosAires(config-router)#network 172.31.23.0 0.0.0.3 area 0
BuenosAires(config-router)#network 192.168.4.0 0.0.0.255 area 0
BuenosAires(config-router)#network 192.168.5.0 0.0.0.255 area 0
BuenosAires(config-router)#network 192.168.6.0 0.0.0.255 area 0
BuenosAires(config-router)#int s0/0/0
BuenosAires(config-if)#bandwidth 256
BuenosAires(config-if)#ip ospf cost 9500
BuenosAires(config-if)#int s0/0/1
BuenosAires(config-if)#bandwidth 256
BuenosAires(config-if)#
BuenosAires(config-if)#

```



Verificar información de OSPF

Visualizar tablas de enrutamiento y router conectados por OSPFv2

```

R1
Physical Config CLI Attributes
IOS Command Line Interface

00:49:33: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/0 from LOADING
to FULL, Loading Done

Bogota>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
       area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

      10.0.0.0/32 is subnetted, 1 subnets
O       10.10.10.10/32 [110/9501] via 172.31.21.2, 00:11:10, Serial0/0/0
      172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.31.21.0/30 is directly connected, Serial0/0/0
L       172.31.21.1/32 is directly connected, Serial0/0/0

Bogota>
Bogota>

```

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

```

R1
Physical Config CLI Attributes
IOS Command Line Interface

Bogota>show ip ospf interface

Serial0/0/0 is up, line protocol is up
Internet address is 172.31.21.1/30, Area 0
Process ID 1, Router ID 1.1.1.1, Network Type POINT-TO-POINT, Cost: 9500
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 00:00:04
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 5.5.5.5
Suppress hello for 0 neighbor(s)
Bogota>
  
```

```

R2
Physical Config CLI Attributes
IOS Command Line Interface

Miami>show ip ospf interface

Serial0/0/1 is up, line protocol is up
Internet address is 172.31.21.2/30, Area 0
Process ID 1, Router ID 5.5.5.5, Network Type POINT-TO-POINT, Cost: 390
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 00:00:01
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 1.1.1.1
Suppress hello for 0 neighbor(s)
Loopback0 is up, line protocol is up
Internet address is 10.10.10.10/32, Area 0
Process ID 1, Router ID 5.5.5.5, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
Miami>
  
```

```

R3
Physical Config CLI Attributes
IOS Command Line Interface

BuenosAires>show ip ospf interface

Serial0/0/1 is up, line protocol is up
Internet address is 172.31.23.2/30, Area 0
Process ID 1, Router ID 8.8.8.8, Network Type POINT-TO-POINT, Cost: 390
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 00:00:00
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
Suppress hello for 0 neighbor(s)
Loopback5 is up, line protocol is up
Internet address is 192.168.5.1/24, Area 0
Process ID 1, Router ID 8.8.8.8, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
Loopback4 is up, line protocol is up
Internet address is 192.168.6.1/24, Area 0
Process ID 1, Router ID 8.8.8.8, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
BuenosAires>
  
```


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

3. En el Switch 3 deshabilitar DNS lookup

```
BuenosAires#en
BuenosAires#config t
Enter configuration commands, one per line. End with CNTL/Z.
BuenosAires(config)# no ip domain-lookup
BuenosAires(config)#int vlan 1
BuenosAires(config-if)#ip 192.168.99.3 255.255.255.0
^
% Invalid input detected at '^' marker. BuenosAires(config-
if)#ip address 192.168.99.3 255.255.255.0
BuenosAires(config-if)#exit
BuenosAires(config)#
```

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

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

6. Implement DHCP and NAT for IPv4

```
Miami#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Miami(config)#
Miami(config)#interface gigabitEthernet 0/1
Miami(config-if)#ip nat outside
Miami(config-if)#ip nat inside
Miami(config-if)#

Miami(config-if)#
```

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

```
Bogota#en
Bogota#config t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#
Bogota(config)#ip dhcp pool administracin
Bogota(dhcp-config)#dns-server 10.10.10.10
```

```
Bogota(dhcp-config)#ip dhcp pool mercadeo
Bogota(dhcp-config)#dns-server 10.10.10.10
Bogota(dhcp-config)#ip dhcp pool mercadeo
Bogota(dhcp-config)#dns-server 10.10.10.10
Bogota(dhcp-config)#ip dhcp pool administracion
Bogota(dhcp-config)#dns-server 10.10.10.10
Bogota(dhcp-config)#
Bogota(dhcp-config)#exit
Bogota(config)#
```

8. 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.

```
Switch#show vlan brief
VLAN Name Status Ports
```

```
- -----
```

```
1 default active Fa0/1, Fa0/2, Fa0/3,
Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8
Fa0/9, Fa0/10, Fa0/11,
Fa0/12 Fa0/13, Fa0/14,
Fa0/15, Fa0/16 Fa0/17,
Fa0/18, Fa0/19, Fa0/20
```


Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1,

Gig0/2 30 Administracion active

40 Mercadeo active

1002 fddi-default active

1003 token-ring-default active

1004 fddinet-default active

1005 trnet-default

active Switch

9. Configurar NAT en R2 para permitir que los host puedan salir a Internet

Bogota#config t

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

Bogota(config)#interface GigabitEthernet0/0

Bogota(config-if)#ip nat inside

Bogota(config-if)#int s0/0/0

Bogota(config-if)#ip nat outside

Bogota(config-if)#cint s0/0/0int s0/0/1

^

% Invalid input detected at

'^' marker. Bogota(config-

if)#int s0/0/0int s0/0/1

^

% Invalid input detected at '^'

marker. Bogota(config-if)#ip nat

outsideip nat outside

^

% Invalid input detected at

'^' marker. Bogota(config-if)#

CONCLUSIONES

Con el desarrollo de la actividad se logro demostrar y reforzar la capacidad para implementar NAT, servidor DHCP, RIPV2 y el routing entre VLAN, incluyendo la configuración de direcciones IP, las VLAN, los enlaces troncales y las subinterfaces, esto con el fin de reforzar conocimientos adquiridos en el transcurso del Diplomado, teniendo en cuenta que se desarrollaron diferentes ejercicios y evaluaciones encaminadas con el fin de que el estudiante culminara de la mejor forma la actividad.

Se implementaron bases en donde se debía implementar una red, en la cual el objetivo fue configurar e interconectar entre si cada uno de los dispositivos que forman parte del escenario, acorde a los lineamientos establecidos para el direccionamiento IP. De igual forma mediante la herramienta Packet Tracer se desarrollo cada uno de los escenarios establecidos en la actividad.

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