

PRUEBAS DE HABILIDADES PRÁCTICAS CCNA

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INTRODUCCIÓN

El desarrollo del trabajo se basa en las prácticas realizadas durante todo el semestre, en este caso en particular se toma como escenario una red pequeña de una empresa con sedes en tres ciudades, se deben de configurar todos los equipos según las preguntas y el esquema descrito a continuación de manera que la empresa pueda operar con un buen nivel de seguridad el cual lo proporcionan las listas de acceso, la creación de VLANS, la desactivación de las interfaces que no tengan equipos conectados, y el uso de claves de acceso a los enrutadores y switches.

OBJETIVOS

- Implementar una red de trabajo segura, confiable y escalable.
- Segmentar de redes con Vlans.
- Configurar la red según criterios de diseño
- Crear listas de acceso para restringir el acceso a redes externas o a servicios que no sean propias de una VLAN.
- Implementar el protocolo de enrutamiento OSPFv2 según criterios de diseño.
- Realizar pruebas de ping, tracer y telnet para verificar la conectividad entre equipos, sin importar la ubicación física de los mismos.

DESCRIPCIÓN DEL ESCENARIO PROPUESTO PARA LA PRUEBA DE HABILIDADES

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

Topología de red

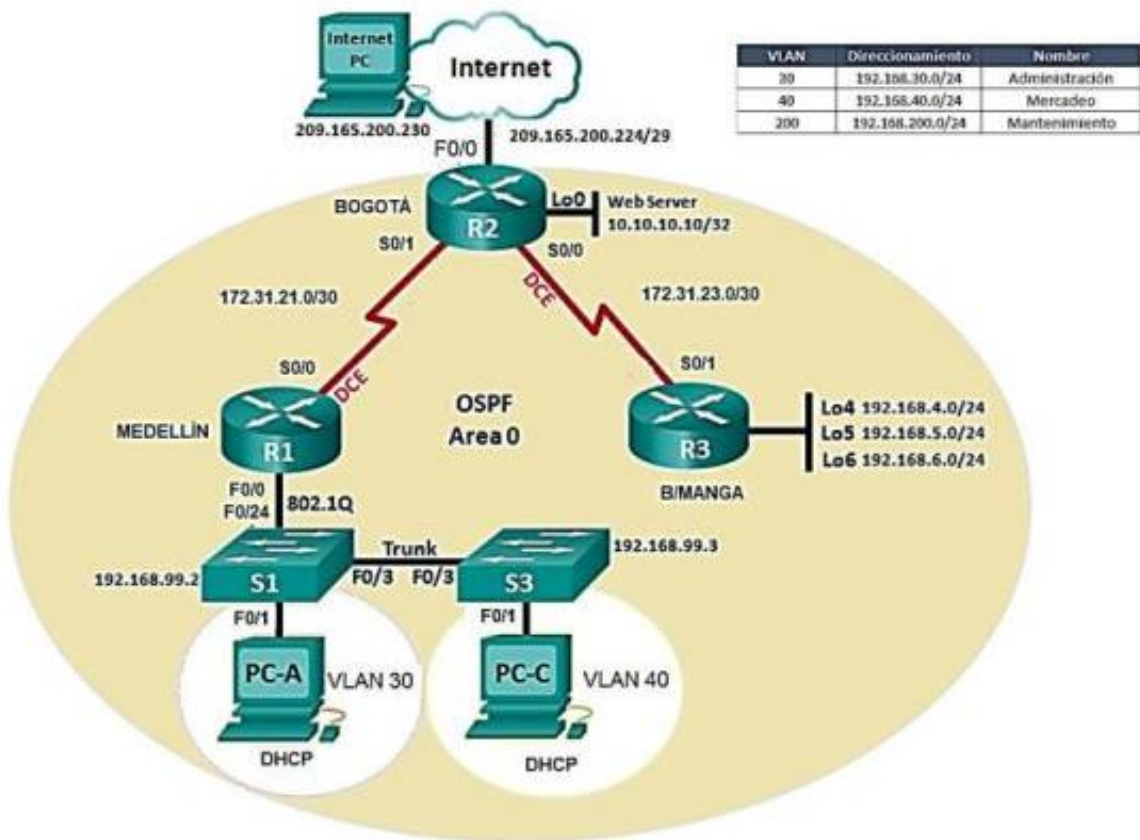


Imagen No. 1

1. Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario
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	2.2.2.2
Router ID R3	3.3.3.3
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	128 Kb/s
Ajustar el costo en la métrica de S0/0 a	7500

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2

TABLA DE ENRUTAMIENTO R1

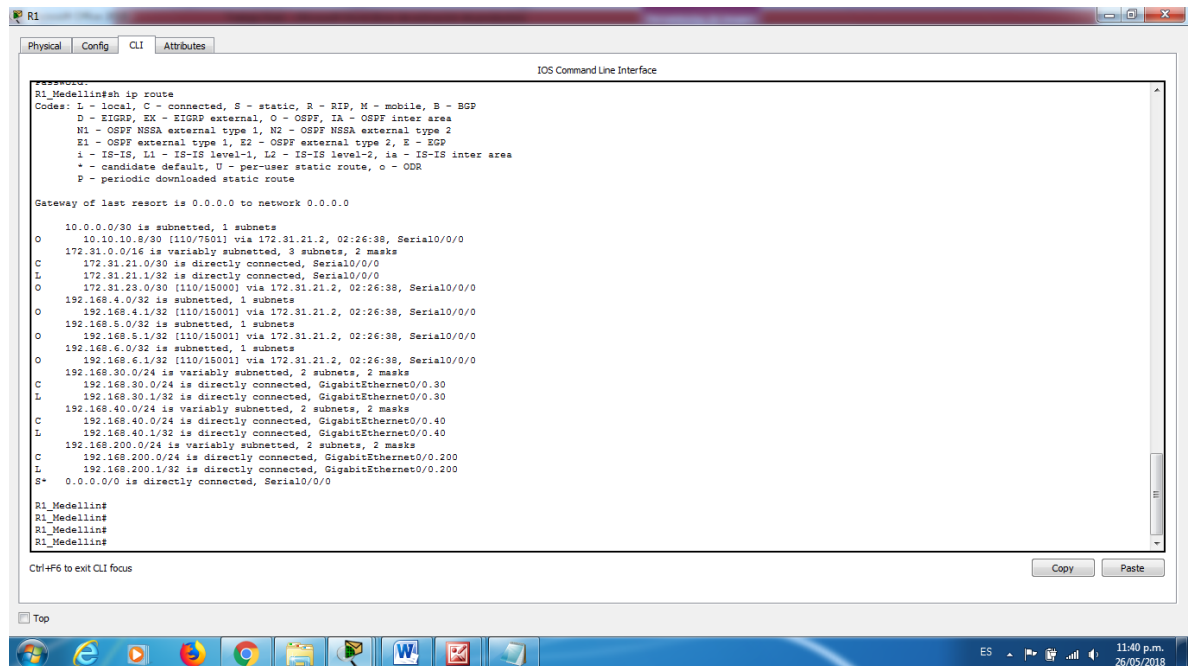


Imagen No. 2

TABLA DE ENRUTAMIENTO R2

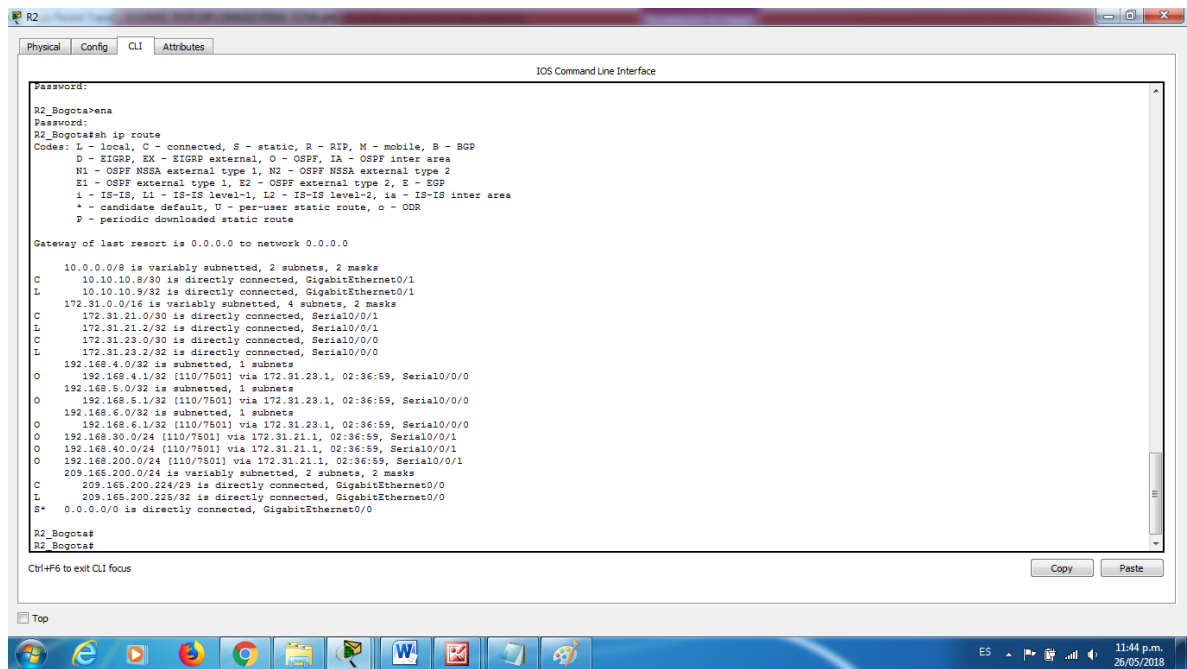


Imagen No. 3

TABLA DE ENRUTAMIENTO R3

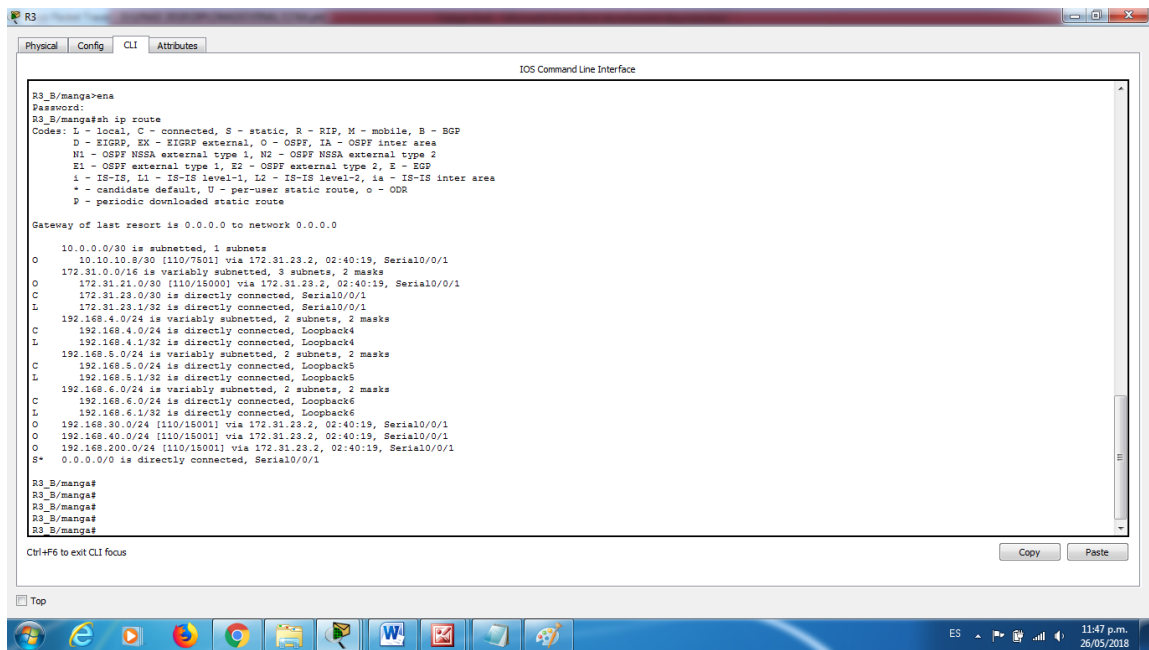


Imagen No. 4

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

OSPF RESUMIDA R1

```

Sin título: Bloc de notas
Archivo Edición Formato Ver Ayuda

R1_Medellin#sh ip ospf interface
GigabitEthernet0/30 is up, line protocol is up
Internet address is 192.168.30.1/24, Area 0
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 1.1.1.1, Interface address 192.168.30.1
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, wait 40, Retransmit s
No hellos (passive interface)
Index 2/1, 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 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
GigabitEthernet0/40 is up, line protocol is up
Internet address is 192.168.40.1/24, Area 0
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 1.1.1.1, Interface address 192.168.40.1
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, wait 40, Retransmit s
No hellos (passive interface)
Index 2/2, 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 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
GigabitEthernet0/200 is up, line protocol is up
Internet address is 192.168.200.1/24, Area 0
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 1.1.1.1, Interface address 192.168.200.1
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, wait 40, Retransmit s
No hellos (passive interface)
Index 3/3, 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 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
Serial10/0/0 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: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, wait 40, Retransmit s
Hello due in 00:00:01
Index 4/4, 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 2.2.2.2
Suppress hello for 0 neighbor(s)
R1_Medellin#

```

Imagen No. 5

OSPF RESUMIDA R2

```
R2_Bogota#sh ip ospf interface
GigabitEthernet0/1 is up, line protocol is up
Internet address is 10.10.10.3/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 2.2.2.2, Interface address 10.10.10.9
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  No Hellos (Passive interface)
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 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
Serial10/0/0 is up, line protocol is up
Internet address is 172.31.23.2/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  Hello due in 00:00:04
Index 2/2, 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 3.3.3.3
  Suppress hello for 0 neighbor(s)
Serial10/0/1 is up, line protocol is up
Internet address is 172.31.21.2/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  Hello due in 00:00:04
Index 3/3, 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 2.1.1.1
  Suppress hello for 0 neighbor(s)
R2_Bogota#
```

Imagen No. 6

OSPF RESUMIDA R3

```
R3
R3_B/manga#sh ip ospf interface
Loopback4 is up, line protocol is up
Internet address is 192.168.4.1/24, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
Loopback5 is up, line protocol is up
Internet address is 192.168.5.1/24, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
Loopback6 is up, line protocol is up
Internet address is 192.168.6.1/24, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
Serial0/0/1 is up, line protocol is up
Internet address is 172.31.23.1/30, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  Hello due in 00:00:06
Index 4/4, 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 2.2.2.2
  Suppress hello for 0 neighbor(s)
R3_B/manga#
```

Imagen No. 7

3. Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.
4. En el Switch 3 deshabilitar DNS lookup
5. Asignar direcciones IP a los Switches acorde a los lineamientos.
6. Desactivar todas las interfaces que no sean utilizadas en el esquema de red.
7. Implement DHCP and NAT for IPv4.
8. Configurar R1 como servidor DHCP para las VLANs 30 y 40.
9. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

Configurar DHCP pool para VLAN 30	Name: ADMINISTRACIÓN 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.

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

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

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

CONFIGURACIÓN ROUTER 1

```
R1_Medellin#sh run
Building configuration...

Current configuration: 1699 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname R1_Medellin
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!

no ip cef
no ipv6 cef
!

license udi pid CISCO1941/K9 sn FTX1524KTI7
!
no ip domain-lookup
!
!
spanning-tree mode pvst
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
!
interface GigabitEthernet0/0.30
description VLAN ADMINISTRACION
encapsulation dot1Q 30
ip address 192.168.30.1 255.255.255.0
!
interface GigabitEthernet0/0.40
description VLAN MERCADEO
encapsulation dot1Q 40
ip address 192.168.40.1 255.255.255.0
!
interface GigabitEthernet0/0.200
description LAN_MANTENIMIENTO
encapsulation dot1Q 200
```

```
ip address 192.168.200.1 255.255.255.0
!
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
description CONEXION AL R2
bandwidth 128
ip address 172.31.21.1 255.255.255.252
ip ospf cost 7500
clock rate 128000
!
interface Serial0/0/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
!
router ospf 1
router-id 1.1.1.1
log-adjacency-changes
passive-interface default
no passive-interface Serial0/0/0
network 172.31.21.0 0.0.0.3 area 0
network 192.168.30.0 0.0.0.255 area 0
network 192.168.40.0 0.0.0.255 area 0
network 192.168.200.0 0.0.0.255 area 0
!
ip classless
ip route 0.0.0.0 0.0.0.0 Serial0/0/0
!
ip flow-export version 9
!
!
!
banner motd ^C PROHIBIDO EL ACCESO NO AUTORIZADO ^C
!
!
!
!
line con 0
password 7 0822455D0A16
```

```
login
!  
line aux 0  
!  
line vty 0 4  
password 7 0822455D0A16  
logging synchronous  
login  
!  
!  
!  
end
```

CONFIGURACIÓN ROUTER 2

```
R2_Bogota#sh run
Building configuration...

Current configuration : 2203 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R2_Bogota
!
!
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
ip dhcp excluded-address 192.168.30.1 192.168.30.30
ip dhcp excluded-address 192.168.40.1 192.168.40.30
!
ip dhcp pool ADMINISTACION
default-router 192.168.30.1
dns-server 10.10.10.11
ip dhcp pool MERCADEO
default-router 192.168.40.1
dns-server 10.10.10.11
ip dhcp pool ADMIISTRACION
network 192.168.30.0 255.255.255.0
!
!
!
no ip cef
no ipv6 cef
!
!
!
username webuser privilege 15 password 0 cisco12345
!
!
license udi pid CISCO1941/K9 sn FTX1524PS0Y
!
!
no ip domain-lookup
ip domain-name ccna-unad.com
```

```
!  
!  
spanning-tree mode pvst  
!  
!interface GigabitEthernet0/0  
description CONEXION PC-INTERNET  
ip address 209.165.200.225 255.255.255.248  
ip nat outside  
duplex auto  
speed auto  
!  
interface GigabitEthernet0/1  
ip address 10.10.10.9 255.255.255.252  
ip nat inside  
duplex auto  
speed auto  
!  
interface Serial0/0/0  
description CONEXION R3_B/MANGA  
bandwidth 128  
ip address 172.31.23.2 255.255.255.252  
ip ospf cost 7500  
clock rate 128000  
!  
interface Serial0/0/1  
description CONEXION A R1_MEDELLIN  
bandwidth 128  
ip address 172.31.21.2 255.255.255.252  
ip ospf cost 7500  
!  
interface Vlan1  
no ip address  
shutdown  
!  
router ospf 1  
router-id 2.2.2.2  
log-adjacency-changes  
passive-interface GigabitEthernet0/1  
network 10.10.10.8 0.0.0.3 area 0  
network 172.31.21.0 0.0.0.3 area 0  
network 172.31.23.0 0.0.0.3 area 0  
!  
ip nat pool INTERNET 209.165.200.225 209.165.200.228 netmask 255.255.255.248  
ip nat inside source static 10.10.10.10 209.165.200.229  
ip classless  
ip route 0.0.0.0 0.0.0.0 GigabitEthernet0/0  
!
```

```
ip flow-export version 9
!  
!  
access-list 1 permit 192.168.30.0 0.0.0.255  
access-list 1 permit 192.168.40.0 0.0.0.255  
access-list 1 permit 192.168.4.0 0.0.3.255  
access-list 101 permit tcp any host 209.165.200.229  
access-list 101 permit tcp any host 209.165.200.229 eq www  
!  
banner motd ^C PROHIBIDO EL ACCESO NO AUTORIZADO ^C  
!!  
line con 0  
password cisco  
login  
!  
line aux 0  
!  
line vty 0 4  
password cisco  
logging synchronous  
login  
!  
!  
!  
end
```

CONFIGURACIÓN ROUTER 3

```
R2_Bogota#sh run
Building configuration...

Current configuration : 2203 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R2_Bogota
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
ip dhcp excluded-address 192.168.30.1 192.168.30.30
ip dhcp excluded-address 192.168.40.1 192.168.40.30
!
ip dhcp pool ADMINISTACION
default-router 192.168.30.1
dns-server 10.10.10.11
ip dhcp pool MERCADEO
default-router 192.168.40.1
dns-server 10.10.10.11
ip dhcp pool ADMIISTRACION
network 192.168.30.0 255.255.255.0
!
no ip cef
no ipv6 cef
!
username webuser privilege 15 password 0 cisco12345
!
!
license udi pid CISCO1941/K9 sn FTX1524PS0Y
!

no ip domain-lookup
ip domain-name ccna-unad.com
!
!
spanning-tree mode pvst
!
interface GigabitEthernet0/0
description CONEXION PC-INTERNET
```

```
ip address 209.165.200.225 255.255.255.248
ip nat outside
duplex auto
speed auto
!
interface GigabitEthernet0/1
ip address 10.10.10.9 255.255.255.252
ip nat inside
duplex auto
speed auto
!
interface Serial0/0/0
description CONEXION R3_B/MANGA
bandwidth 128
ip address 172.31.23.2 255.255.255.252
ip ospf cost 7500
clock rate 128000
!
interface Serial0/0/1
description CONEXION A R1_MEDELLIN
bandwidth 128
ip address 172.31.21.2 255.255.255.252
ip ospf cost 7500
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 2.2.2.2
log-adjacency-changes
passive-interface GigabitEthernet0/1
network 10.10.10.8 0.0.0.3 area 0
network 172.31.21.0 0.0.0.3 area 0
network 172.31.23.0 0.0.0.3 area 0
!
ip nat pool INTERNET 209.165.200.225 209.165.200.228 netmask 255.255.255.248
ip nat inside source static 10.10.10.10 209.165.200.229
ip classless
ip route 0.0.0.0 0.0.0.0 GigabitEthernet0/0
!
ip flow-export version 9
!
!
access-list 1 permit 192.168.30.0 0.0.0.255
access-list 1 permit 192.168.40.0 0.0.0.255
access-list 1 permit 192.168.4.0 0.0.3.255
```

```
access-list 101 permit tcp any host 209.165.200.229
access-list 101 permit tcp any host 209.165.200.229 eq www
!
banner motd ^C PROHIBIDO EL ACCESO NO AUTORIZADO ^C
!
!
!
!
line con 0
password cisco
login
!
line aux 0
!
line vty 0 4
password cisco
logging synchronous
login
!
!
!
end
```

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

PRUEBAS DE PING Y TRACERROUTE DESDE R1 HACIA R2 Y R3

R1_Medellin#ping 172.31.21.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.21.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms

R1_Medellin#ping 172.31.23.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.23.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/15 ms

R1_Medellin#ping 172.31.23.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.23.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/4/15 ms

R1_Medellin#ping 192.168.6.0

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.6.0, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

R1_Medellin#ping 192.168.6.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.6.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/5 ms

R1_Medellin#ping 192.168.5.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.5.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/4 ms

R1_Medellin#ping 192.168.4.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.4.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/5/16 ms

R1_Medellin#

R1_Medellin#ping 209.165.200.230

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2 seconds:

..!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/2/6 ms

R1_Medellin#ping 209.165.200.230

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/17 ms

R1_Medellin#tracer

R1_Medellin#traceroute 172.31.21.2

Type escape sequence to abort.

Tracing the route to 172.31.21.2

1 172.31.21.2 2 msec 1 msec 0 msec

R1_Medellin#traceroute 172.31.23.1

Type escape sequence to abort.

Tracing the route to 172.31.23.1

1 172.31.21.2 1 msec 1 msec 0 msec

2 172.31.23.1 1 msec 1 msec 2 msec

R1_Medellin#traceroute 209.165.200.230

Type escape sequence to abort.

Tracing the route to 209.165.200.230

1 172.31.21.2 1 msec 1 msec 7 msec

2 209.165.200.230 1 msec 0 msec 1 msec

R1_Medellin#traceroute 192.168.99.3

Type escape sequence to abort.

Tracing the route to 192.168.99.3

PRUEBAS DE PING Y TRACERROUTE DESDE R2 HACIA R1 Y R3

R2_Bogota#ping 172.31.21.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.21.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/11 ms

R2_Bogota#ping 172.31.23.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.23.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/14 ms

R2_Bogota#ping 192.168.99.3

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.99.3, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

R2_Bogota#ping 192.168.4.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.4.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/14 ms

R2_Bogota#ping 192.168.5.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.5.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/15 ms

R2_Bogota#ping 192.168.6.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.6.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/15 ms

R2_Bogota#ping 192.168.99.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.99.2, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

R2_Bogota#trace route 172.31.21.1

^

% Invalid input detected at '^' marker.

R2_Bogota#trace

R2_Bogota#traceroute 172.31.21.1

Type escape sequence to abort.

Tracing the route to 172.31.21.1

1 172.31.21.1 0 msec 4 msec 0 msec

R2_Bogota#traceroute 172.31.23.1

Type escape sequence to abort.

Tracing the route to 172.31.23.1

1 172.31.23.1 10 msec 1 msec 1 msec

R2_Bogota#traceroute 192.168.4.1

Type escape sequence to abort.

Tracing the route to 192.168.4.1

1 172.31.23.1 9 msec 2 msec 1 msec

R2_Bogota#traceroute 192.168.5.1

Type escape sequence to abort.

Tracing the route to 192.168.5.1

1 172.31.23.1 1 msec 1 msec 1 msec

R2_Bogota#traceroute 192.168.6.1

Type escape sequence to abort.

Tracing the route to 192.168.6.1

1 172.31.23.1 1 msec 0 msec 1 msec

R2_Bogota#

PRUEBAS DE PING Y TRACERROUTE DESDE R3 HACIA R2 Y R1

R3_B/manga#ping 172.31.23.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.23.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/12 ms

R3_B/manga#ping 172.31.21.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.21.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/15 ms

R3_B/manga#ping 172.31.21.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.31.21.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/4/15 ms

R3_B/manga#ping 10.10.10.10

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.10.10.10, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms

R3_B/manga#ping 209.165.200.230

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/5/20 ms

R3_B/manga#ping 192.168.99

Translating "192.168.99"

% Unrecognized host or address or protocol not running.

R3_B/manga#ping 192.168.99.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.99.2, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

R3_B/manga#

CONCLUSIONES

- Se implementó una red de trabajo segura, confiable y escalable.
- Se crearon 3 VLANS y se configuraron según los parámetros.
- Se configuró la red según criterios de diseño
- Se crearon listas de acceso para restringir el acceso a redes externas o a servicios que no sean propias de una VLAN.
- Se implementó el protocolo de enrutamiento OSPFv2 según criterios de diseño.
- Se realizaron pruebas de ping, tracer y telnet para verificar la conectividad entre equipos, sin importar la ubicación física de los mismos.

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