UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA UNAD

DIPLOMADO DE PROFUNDIZACIÓN CISCO CCNA

PRUEBA DE HABILIDADES PRÁCTICAS

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GRUPO:

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TABLA DE CONTENIDO

INTRODUCCIÓN

Esta actividad es desarrollada para culminar el ciclo del diplomado en CCNA cisco, donde se logra la solución de los dos escenarios correspondientes a la guía correspondiente "prueba de habilidades prácticas", tomando como punto de referencia la rúbrica de la actividad, podemos decir que una vez desarrollado cada ejercicio en la plataforma de nedecat, se pone en práctica lo aprendido durante el transcurso del diplomado.

DESARROLLO DE LOS ESCENARIOS

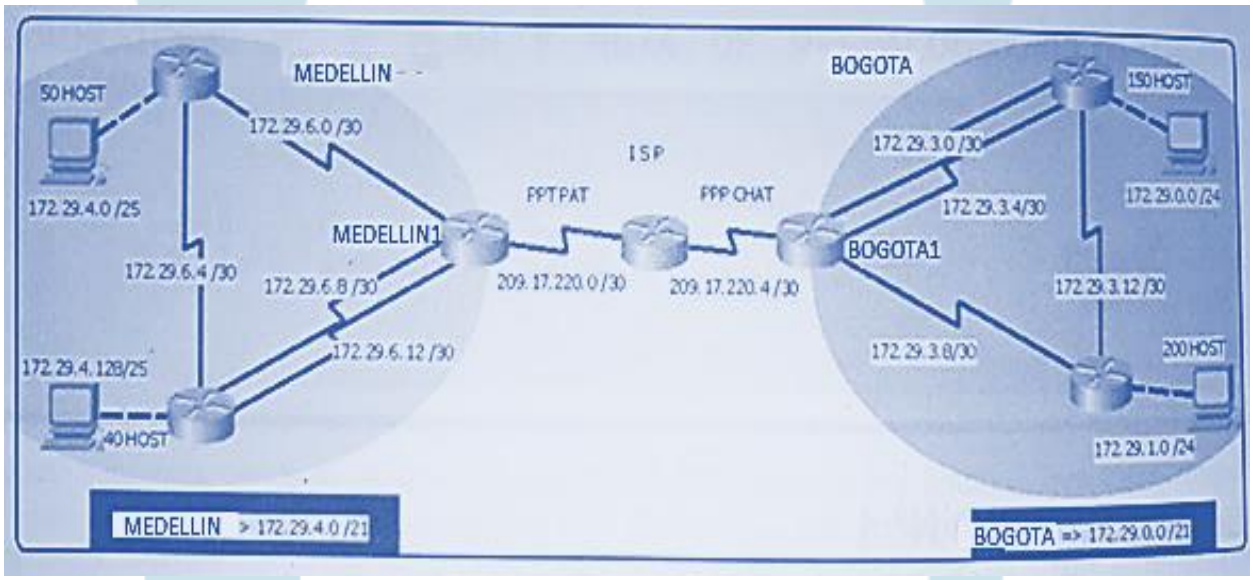
ESCENARIO 1

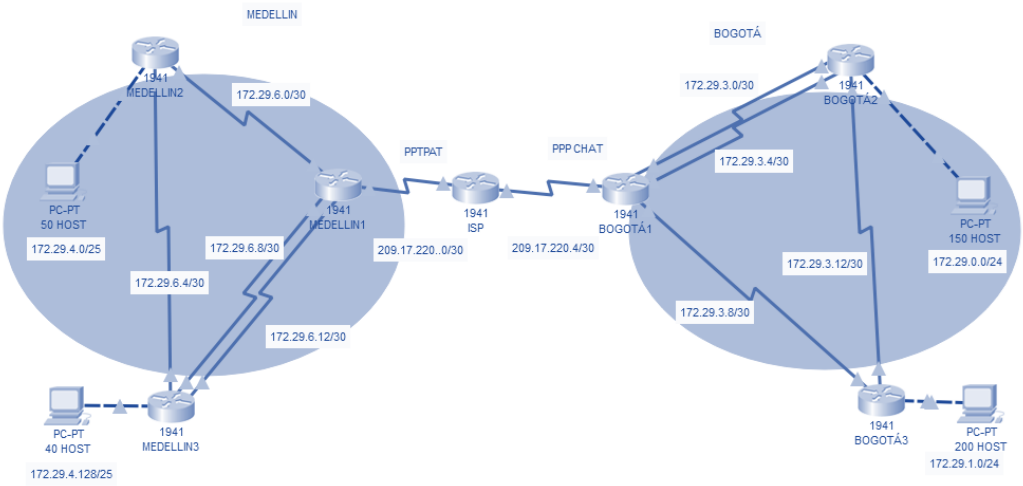
Este escenario plantea el uso de RIP como protocolo de enrutamiento, considerando que se tendrán rutas por defecto redistribuidas; asimismo, habilitar el encapsulamiento PPP y su autenticación.

Los routers Bogota2 y medellin2 proporcionan el servicio DHCP a su propia red LAN y a los routers 3 de cada ciudad.

Debe configurar PPP en los enlaces hacia el ISP, con autenticación.

Debe habilitar NAT de sobrecarga en los routers Bogota1 y medellin1.





ROUTER RIP V2 MEDELLIN 3

MEDELLIN3(config)#router rip

MEDELLIN3(config-router)#network 172.29.4.128

MEDELLIN3(config-router)#network 172.29.6.4

MEDELLIN3(config-router)#network 172.29.6.8

MEDELLIN3(config-router)#network 172.29.6.12

MEDELLIN3(config-router)#version 2

MEDELLIN3(config-router)#no auto-summary

ROUTER RIP V2 MEDELLIN 2

MEDELLIN2(config)#router rip

MEDELLIN2(config-router)#network 172.29.4.0

MEDELLIN2(config-router)#network 172.29.6.4

MEDELLIN2(config-router)#network 172.29.6.0

MEDELLIN2(config-router)#version 2

MEDELLIN2(config-router)#no auto-summary

ROUTER RIP V2 MEDELLIN 1

MEDELLIN1(config)#router rip

MEDELLIN1(config-router)#network 172.29.6.0

MEDELLIN1(config-router)#network 172.29.6.8

MEDELLIN1(config-router)#network 172.29.6.12

MEDELLIN1(config-router)#version 2

MEDELLIN1(config-router)#no auto-summary

ROUTER RIP V2 BOGOTA3

BOGOTA3(config)#router rip

BOGOTA3(config-router)#network 172.29.1.0

BOGOTA3(config-router)#network 172.29.3.8

BOGOTA3(config-router)#network 172.29.3.12

BOGOTA3(config-router)#version 2

BOGOTA3(config-router)#no auto-summary

ROUTER RIP V2 BOGOTA2

BOGOTA2(config)#router rip

BOGOTA2(config-router)#network 172.29.3.0

BOGOTA2(config-router)#network 172.29.3.4

BOGOTA2(config-router)#network 172.29.3.12

BOGOTA2(config-router)#network 172.29.0.0

BOGOTA2(config-router)#version 2

BOGOTA2(config-router)#no auto-summary

ROUTER RIP V2 BOGOTA1

BOGOTA1(config)#router rip

BOGOTA1(config-router)#network 172.29.3.0

BOGOTA1(config-router)#network 172.29.3.4

BOGOTA1(config-router)#network 172.29.3.8

BOGOTA1(config-router)#version 2

BOGOTA1(config-router)#no auto-summary

MEDELLN1

MEDELLIN1(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1

BOGOTA1

BOGOTA1(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0

ISP

ISP(config)#ip route 209.17.220.0 255.255.255.252 209.17.220.2

ISP(config)#ip route 209.17.220.4 255.255.255.252 209.17.220.6

ISP(config)#router rip

ISP(config-router)#network 209.17.220.0

ISP(config-router)#network 209.17.220.4

ISP(config-router)#version 2

ISP(config-router)#redistribute static

ROUTER MEDELLIN3

MEDELLIN3#show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks

R 172.29.4.0/25 [120/1] via 172.29.6.6, 00:00:17, Serial0/0/1

R 172.29.6.0/30 [120/1] via 172.29.6.10, 00:00:00, Serial0/1/0

[120/1] via 172.29.6.6, 00:00:17, Serial0/0/1

[120/1] via 172.29.6.14, 00:00:00, Serial0/1/1

C 172.29.6.4/30 is directly connected, Serial0/0/1

L 172.29.6.5/32 is directly connected, Serial0/0/1

C 172.29.6.8/30 is directly connected, Serial0/1/0

L 172.29.6.9/32 is directly connected, Serial0/1/0

C 172.29.6.12/30 is directly connected, Serial0/1/1

L 172.29.6.13/32 is directly connected, Serial0/1/1

ROUTER MEDELLIN2

MEDELLIN2#show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks

C 172.29.4.0/25 is directly connected, GigabitEthernet0/0

L 172.29.4.1/32 is directly connected, GigabitEthernet0/0

C 172.29.6.0/30 is directly connected, Serial0/0/0

L 172.29.6.2/32 is directly connected, Serial0/0/0

C 172.29.6.4/30 is directly connected, Serial0/0/1

L 172.29.6.6/32 is directly connected, Serial0/0/1

R 172.29.6.8/30 [120/1] via 172.29.6.5, 00:00:02, Serial0/0/1
[120/1] via 172.29.6.1, 00:00:10, Serial0/0/0

R 172.29.6.12/30 [120/1] via 172.29.6.5, 00:00:02, Serial0/0/1
[120/1] via 172.29.6.1, 00:00:10, Serial0/0/0

ROUTER MEDELLIN1

MEDELLIN1#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 0.0.0.0 to network 0.0.0.0

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks

R 172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:04, Serial0/0/0

C 172.29.6.0/30 is directly connected, Serial0/0/0

L 172.29.6.1/32 is directly connected, Serial0/0/0

R 172.29.6.4/30 [120/1] via 172.29.6.13, 00:00:08, Serial0/1/1

[120/1] via 172.29.6.9, 00:00:08, Serial0/1/0

[120/1] via 172.29.6.2, 00:00:04, Serial0/0/0

C 172.29.6.8/30 is directly connected, Serial0/1/0

L 172.29.6.10/32 is directly connected, Serial0/1/0

C 172.29.6.12/30 is directly connected, Serial0/1/1

L 172.29.6.14/32 is directly connected, Serial0/1/1

209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks

C 209.17.220.0/30 is directly connected, Serial0/0/1

L 209.17.220.2/32 is directly connected, Serial0/0/1

S* 0.0.0.0/0 is directly connected, Serial0/0/1

ROUTER BOGOTA3

BOGOTA3#show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks

R 172.29.3.0/30 [120/1] via 172.29.3.9, 00:00:04, Serial0/1/1
[120/1] via 172.29.3.13, 00:00:09, Serial0/0/0

R 172.29.3.4/30 [120/1] via 172.29.3.9, 00:00:04, Serial0/1/1
[120/1] via 172.29.3.13, 00:00:09, Serial0/0/0

C 172.29.3.8/30 is directly connected, Serial0/1/1

L 172.29.3.10/32 is directly connected, Serial0/1/1

C 172.29.3.12/30 is directly connected, Serial0/0/0

L 172.29.3.14/32 is directly connected, Serial0/0/0

ROUTER BOGOTA2

BOGOTA2#show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

C 172.29.3.0/30 is directly connected, Serial0/0/1

L 172.29.3.1/32 is directly connected, Serial0/0/1

C 172.29.3.4/30 is directly connected, Serial0/1/0

L 172.29.3.5/32 is directly connected, Serial0/1/0

R 172.29.3.8/30 [120/1] via 172.29.3.14, 00:00:12, Serial0/0/0

[120/1] via 172.29.3.2, 00:00:02, Serial0/0/1

[120/1] via 172.29.3.6, 00:00:02, Serial0/1/0

C 172.29.3.12/30 is directly connected, Serial0/0/0

L 172.29.3.13/32 is directly connected, Serial0/0/0

ROUTER BOGOTA1

BOGOTA1#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 0.0.0.0 to network 0.0.0.0

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

C 172.29.3.0/30 is directly connected, Serial0/0/1

L 172.29.3.2/32 is directly connected, Serial0/0/1

C 172.29.3.4/30 is directly connected, Serial0/1/0

L 172.29.3.6/32 is directly connected, Serial0/1/0

C 172.29.3.8/30 is directly connected, Serial0/1/1

L 172.29.3.9/32 is directly connected, Serial0/1/1

R 172.29.3.12/30 [120/1] via 172.29.3.5, 00:00:09, Serial0/1/0

[120/1] via 172.29.3.1, 00:00:09, Serial0/0/1

[120/1] via 172.29.3.10, 00:00:13, Serial0/1/1

209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks

C 209.17.220.4/30 is directly connected, Serial0/0/0

L 209.17.220.6/32 is directly connected, Serial0/0/0

S* 0.0.0.0/0 is directly connected, Serial0/0/0

ROUTER ISP

ISP#show ip route

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

209.17.220.0/24 is variably subnetted, 4 subnets, 2 masks

C 209.17.220.0/30 is directly connected, Serial0/0/1

L 209.17.220.1/32 is directly connected, Serial0/0/1

C 209.17.220.4/30 is directly connected, Serial0/0/0

L 209.17.220.5/32 is directly connected, Serial0/0/0

MEDELLIN3(config-router)#passive-interface s0/0/0

MEDELLIN2(config-router)#passive-interface s0/1/0

MEDELLIN2(config-router)#passive-interface s0/1/1

MEDELLIN1(config-router)#passive-interface s0/0/1

BOGOTA3(config-router)#passive-interface s0/0/1

BOGOTA3(config-router)#passive-interface s0/1/0

BOGOTA2(config-router)#passive-interface s0/1/1

BOGOTA1(config-router)#passive-interface s0/0/0

ROUTER MEDELLIN3

MEDELLIN3#show ip int

GigabitEthernet0/0 is up, line protocol is up (connected)

  Internet protocol processing disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

  Internet protocol processing disabled

Serial0/0/0 is administratively down, line protocol is down (disabled)

  Internet protocol processing disabled

Serial0/0/1 is up, line protocol is up (connected)

  Internet address is 172.29.6.5/30

  Broadcast address is 255.255.255.255

  Address determined by setup command

  MTU is 1500

  Helper address is not set

  Directed broadcast forwarding is disabled

  Outgoing access list is not set

  Inbound access list is not set

  Proxy ARP is enabled

Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/0 is up, line protocol is up (connected)
Internet address is 172.29.6.9/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled

Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/1 is up, line protocol is up (connected)
Internet address is 172.29.6.13/30
Broadcast address is 255.255.255.255
Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Vlan1 is administratively down, line protocol is down

Internet protocol processing disabled

ROUTER MEDELLIN2

MEDELLIN2#show ip int

GigabitEthernet0/0 is up, line protocol is up (connected)

Internet address is 172.29.4.1/25

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500 bytes

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

BGP Policy Mapping is disabled

Input features: MCI Check

WCCP Redirect outbound is disabled

WCCP Redirect inbound is disabled

WCCP Redirect exclude is disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/0/0 is up, line protocol is up (connected)

Internet address is 172.29.6.2/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/0/1 is up, line protocol is up (connected)
Internet address is 172.29.6.6/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Serial0/1/0 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/1/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Vlan1 is administratively down, line protocol is down

Internet protocol processing disabled

ROUTER MEDELLIN1

MEDELLIN1#show ip int

GigabitEthernet0/0 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/0/0 is up, line protocol is up (connected)

Internet address is 172.29.6.1/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/0/1 is up, line protocol is up (connected)
Internet address is 209.17.220.2/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled

TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/0 is up, line protocol is up (connected)
Internet address is 172.29.6.10/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled

Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/1 is up, line protocol is up (connected)
Internet address is 172.29.6.14/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Vlan1 is administratively down, line protocol is down

Internet protocol processing disabled

ROUTER BOGOTA3

BOGOTA3#show ip int

GigabitEthernet0/0 is up, line protocol is up (connected)

Internet protocol processing disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/0/0 is up, line protocol is up (connected)

Internet address is 172.29.3.14/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/0/1 is administratively down, line protocol is down (disabled)
Internet protocol processing disabled

Serial0/1/0 is administratively down, line protocol is down (disabled)
  Internet protocol processing disabled
Serial0/1/1 is up, line protocol is up (connected)
  Internet address is 172.29.3.10/30
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables are always sent
  ICMP mask replies are never sent
  IP fast switching is disabled
  IP fast switching on the same interface is disabled
  IP Flow switching is disabled
  IP Fast switching turbo vector
  IP multicast fast switching is disabled
  IP multicast distributed fast switching is disabled
  Router Discovery is disabled
  IP output packet accounting is disabled
  IP access violation accounting is disabled
  TCP/IP header compression is disabled
  RTP/IP header compression is disabled
  Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Vlan1 is administratively down, line protocol is down

Internet protocol processing disabled

ROUTER BOGOTA2

BOGOTA2#show ip int

GigabitEthernet0/0 is up, line protocol is up (connected)

Internet protocol processing disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/0/0 is up, line protocol is up (connected)

Internet address is 172.29.3.13/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/0/1 is up, line protocol is up (connected)
Internet address is 172.29.3.1/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled

ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/0 is up, line protocol is up (connected)
Internet address is 172.29.3.5/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set

Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/1 is administratively down, line protocol is down (disabled)
Internet protocol processing disabled
Vlan1 is administratively down, line protocol is down
Internet protocol processing disabled

ROUTER BOGOTA1

BOGOTA1#show ip int

GigabitEthernet0/0 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/0/0 is up, line protocol is up (connected)

Internet address is 209.17.220.6/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Serial0/0/1 is up, line protocol is up (connected)

Internet address is 172.29.3.2/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/0 is up, line protocol is up (connected)
Internet address is 172.29.3.6/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled

IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/1/1 is up, line protocol is up (connected)
Internet address is 172.29.3.9/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Vlan1 is administratively down, line protocol is down

Internet protocol processing disabled

ROUTER ISP

ISP#show ip int

GigabitEthernet0/0 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

GigabitEthernet0/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/0/0 is up, line protocol is up (connected)

Internet address is 209.17.220.5/30

Broadcast address is 255.255.255.255

Address determined by setup command

MTU is 1500

Helper address is not set

Directed broadcast forwarding is disabled

Outgoing access list is not set

Inbound access list is not set

Proxy ARP is enabled

Security level is default

Split horizon is enabled

ICMP redirects are always sent

ICMP unreachables are always sent

ICMP mask replies are never sent

IP fast switching is disabled

IP fast switching on the same interface is disabled

IP Flow switching is disabled

IP Fast switching turbo vector

IP multicast fast switching is disabled

IP multicast distributed fast switching is disabled

Router Discovery is disabled

IP output packet accounting is disabled

IP access violation accounting is disabled

TCP/IP header compression is disabled

RTP/IP header compression is disabled

Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Serial0/0/1 is up, line protocol is up (connected)
Internet address is 209.17.220.1/30
Broadcast address is 255.255.255.255
Address determined by setup command
MTU is 1500
Helper address is not set
Directed broadcast forwarding is disabled
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachables are always sent
ICMP mask replies are never sent
IP fast switching is disabled
IP fast switching on the same interface is disabled
IP Flow switching is disabled
IP Fast switching turbo vector
IP multicast fast switching is disabled
IP multicast distributed fast switching is disabled
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled

Policy routing is disabled

Network address translation is disabled

WCCP Redirect outbound is disabled

WCCP Redirect exclude is disabled

BGP Policy Mapping is disabled

Serial0/1/0 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Serial0/1/1 is administratively down, line protocol is down (disabled)

Internet protocol processing disabled

Vlan1 is administratively down, line protocol is down

Internet protocol processing disabled

ROUTER MEDELLIN3

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks

R 172.29.4.0/25 [120/1] via 172.29.6.6, 00:00:19, Serial0/0/1

R 172.29.6.0/30 [120/1] via 172.29.6.10, 00:00:19, Serial0/1/0

[120/1] via 172.29.6.6, 00:00:19, Serial0/0/1

[120/1] via 172.29.6.14, 00:00:19, Serial0/1/1

ROUTER MEDELLIN2

MEDELLIN2#show ip route rip

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks

R 172.29.6.8/30 [120/1] via 172.29.6.5, 00:00:25, Serial0/0/1

[120/1] via 172.29.6.1, 00:00:01, Serial0/0/0

R 172.29.6.12/30 [120/1] via 172.29.6.5, 00:00:25, Serial0/0/1

[120/1] via 172.29.6.1, 00:00:01, Serial0/0/0

ROUTER MEDELLIN1

MEDELLIN1#show ip route rip

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks

R 172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:24, Serial0/0/0

R 172.29.6.4/30 [120/1] via 172.29.6.13, 00:00:17, Serial0/1/1

[120/1] via 172.29.6.9, 00:00:17, Serial0/1/0

[120/1] via 172.29.6.2, 00:00:24, Serial0/0/0

209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks

ROUTER BOGOTA3

BOGOTA3#show ip route rip

172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks

R 172.29.3.0/30 [120/1] via 172.29.3.9, 00:00:03, Serial0/1/1

[120/1] via 172.29.3.13, 00:00:20, Serial0/0/0

R 172.29.3.4/30 [120/1] via 172.29.3.9, 00:00:03, Serial0/1/1

[120/1] via 172.29.3.13, 00:00:20, Serial0/0/0

ROUTER BOGOTA2

BOGOTA2#show ip route rip

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

R 172.29.3.8/30 [120/1] via 172.29.3.14, 00:00:26, Serial0/0/0

[120/1] via 172.29.3.2, 00:00:27, Serial0/0/1

[120/1] via 172.29.3.6, 00:00:27, Serial0/1/0

ROUTER BOGOTA1

BOGOTA1#show ip route rip

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

R 172.29.3.12/30 [120/1] via 172.29.3.10, 00:00:04, Serial0/1/1

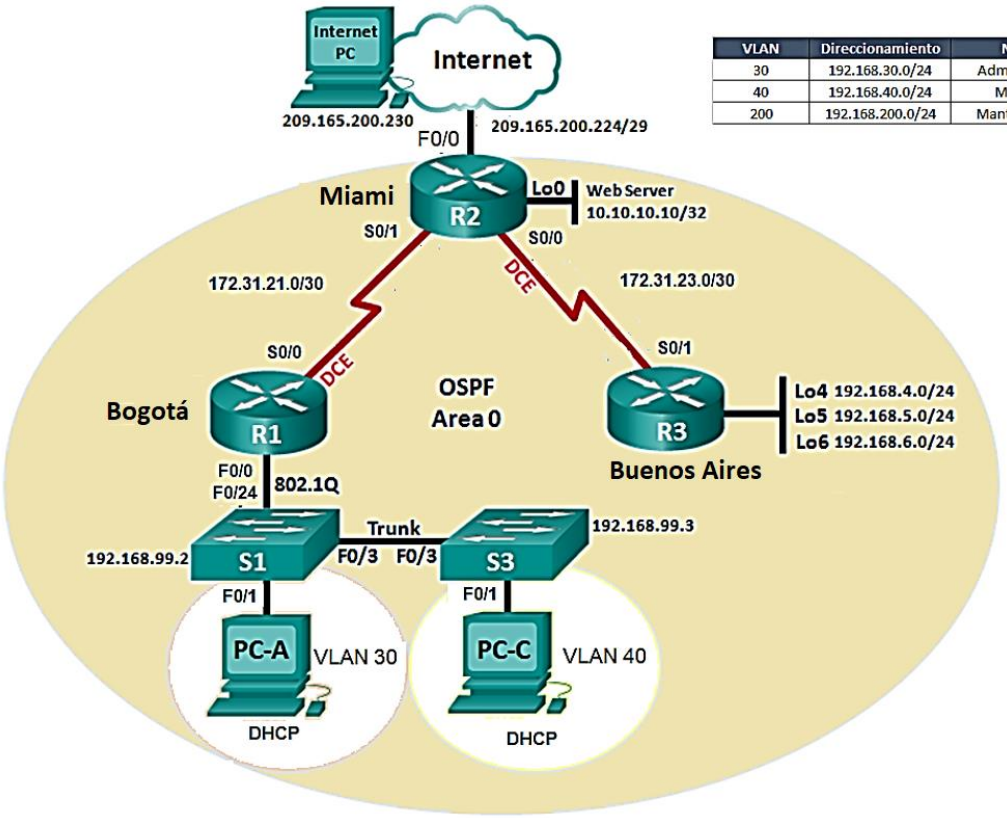
[120/1] via 172.29.3.1, 00:00:23, Serial0/0/1

[120/1] via 172.29.3.5, 00:00:23, Serial0/1/0

209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks

ESCENARIO 2

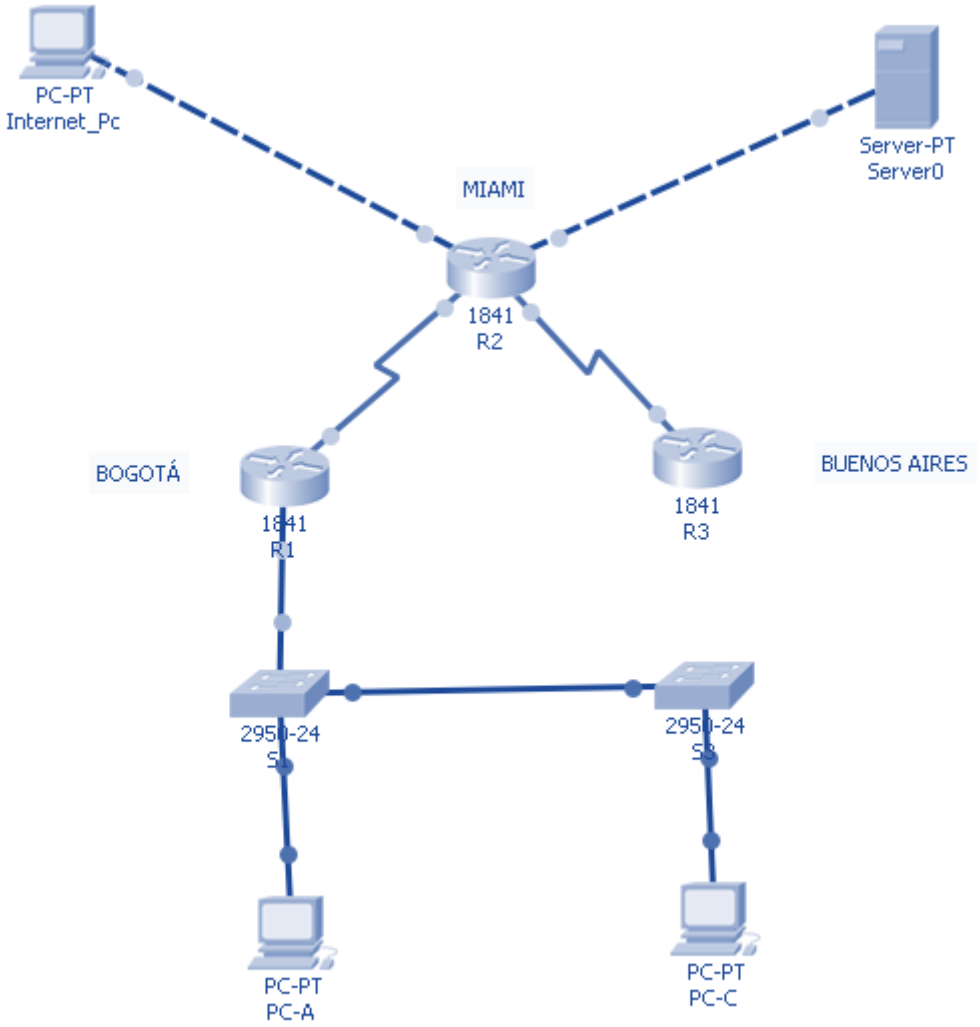
Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos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



VLAN	Direccionamiento	Nombre
30	192.168.30.0/24	Administración
40	192.168.40.0/24	Mercadeo
200	192.168.200.0/24	Mantenimiento

CONFIGURACIONES ESCENARIO 2

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



CONFIGURACIÓN BÁSICA R1

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname BOGOTA
BOGOTA(config)#no ip domain-lookup
BOGOTA(config)#enable secret class
BOGOTA(config)#line con 0
```

BOGOTA(config-line)#password cisco
BOGOTA(config-line)#login
BOGOTA(config-line)#exit
BOGOTA(config)#service password-encryption
BOGOTA(config)#banner motd $ Acceso no autorizado o prohibido!! $
BOGOTA(config)#

CONFIGURACIÓN BÁSICA R2

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MIAMI
MIAMI(config)# no ip domain-lookup
MIAMI(config)#enable secret class
MIAMI(config)#line con 0
MIAMI(config-line)#password cisco
MIAMI(config-line)#login
MIAMI(config-line)#exit
MIAMI(config)#service password-encryption
MIAMI(config)#banner motd $ Acceso no autorizado o prohibido!! $
MIAMI(config)#

CONFIGURACIÓN BÁSICA R3

Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname BUENOSAIRES
BUENOSAIRES(config)#no ip domain-lookup
BUENOSAIRES(config)#enable secret class
BUENOSAIRES(config)#line con 0
BUENOSAIRES(config-line)#password cisco
BUENOSAIRES(config-line)#login
BUENOSAIRES(config-line)#exit
BUENOSAIRES(config)#service password-encryption
BUENOSAIRES(config)#banner motd $ Acceso no autorizado o prohibido!! $
BUENOSAIRES(config)#

CONFIGURACIÓN BÁSICA S1

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S1

```
S1(config)#no ip domain-lookup
S1(config)#enable secret class
S1(config)#line con 0
S1(config-line)#password cisco
S1(config-line)#login
S1(config-line)#exit
S1(config)#service password-encryption
S1(config)#banner motd $ Solo personal autorizado!! $
S1(config)#
```

CONFIGURACIÓN BÁSICA S3

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S3
S3(config)#no ip domain-lookup
S3(config)#enable secret class
S3(config)#line con 0
S3(config-line)#password cisco
S3(config-line)#login
S3(config-line)#exit
S3(config)#service password-encryption
S3(config)#banner motd $ Solo personal autorizado!! $
S3(config)#
```

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

Verificar información de OSPF

```
BOGOTA(config)#router ospf 1
```

```
BOGOTA(config-router)#router-id 1.1.1.1
BOGOTA(config-router)#network 172.31.21.0 0.0.0.3 area 0
BOGOTA(config-router)#network 192.168.30.0 0.0.0.255 area
0
BOGOTA(config-router)#network 192.168.40.0 0.0.0.255 area
0
BOGOTA(config-router)#network 192.168.200.0 0.0.0.255 area
0
BOGOTA(config-router)#


BOGOTA(config-router)#passive-interface f0/0.30
BOGOTA(config-router)#passive-interface f0/0.40
BOGOTA(config-router)#passive-interface f0/0.200
BOGOTA(config-router)#


BOGOTA(config)#int s0/0/0
BOGOTA(config-if)#bandwidth 256
BOGOTA(config-if)#ip ospf cost 9500
BOGOTA(config-if)#


MIAMI(config)#router ospf 1
MIAMI(config-router)#router-id 5.5.5.5
MIAMI(config-router)#network 172.31.21.0 0.0.0.3 area 0
MIAMI(config-router)#
00:16:21: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on
Serial0/1/0 from LOADING to FULL, Loading Done

MIAMI(config-router)#network 172.31.23.0 0.0.0.3 area 0
MIAMI(config-router)#network 10.10.10.0 0.0.0.255 area 0
MIAMI(config-router)#
MIAMI(config-router)#passive-interface f0/1
MIAMI(config-router)#exit
MIAMI(config)#int s0/1/1
MIAMI(config-if)#bandwidth 256
MIAMI(config-if)#ip ospf cost 9500
MIAMI(config-if)#

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)#
```

00:25:00: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/0 from LOADING to FULL, Loading Done

BUENOSAIRES(config-router)#network 192.168.4.0 0.0.3.255 area 0
BUENOSAIRES(config-router)#passive-interface lo4
BUENOSAIRES(config-router)#passive-interface lo5
BUENOSAIRES(config-router)#passive-interface lo6
BUENOSAIRES(config-router)#exit
BUENOSAIRES(config)#int s0/0/0
BUENOSAIRES(config-if)#bandwidth 256
BUENOSAIRES(config-if)#ip ospf cost 9500
BUENOSAIRES(config-if)#

```
MIAMI(config)#router ospf 1
MIAMI(config-router)#router-id 5.5.5.5
MIAMI(config-router)#network 172.31.21.0 0.0.0.3 area 0
MIAMI(config-router)#
00:16:21: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/1/0
from LOADING to FULL, Loading Done

MIAMI(config-router)#network 172.31.23.0 0.0.0.3 area 0
MIAMI(config-router)#network 10.10.10.0 0.0.0.255 area 0
MIAMI(config-router)#
MIAMI(config-router)#passive-interface f0/1
MIAMI(config-router)#exit
MIAMI(config)#int s0/1/1
MIAMI(config-if)#bandwidth 256
MIAMI(config-if)#ip ospf cost 9500
MIAMI(config-if)#
```

```
BOGOTA(config)#router ospf 1
BOGOTA(config-router)#router-id 1.1.1.1
BOGOTA(config-router)#network 172.31.21.0 0.0.0.3 area 0
BOGOTA(config-router)#network 192.168.30.0 0.0.0.255 area 0
BOGOTA(config-router)#network 192.168.40.0 0.0.0.255 area 0
BOGOTA(config-router)#network 192.168.200.0 0.0.0.255 area 0
BOGOTA(config-router)#
```

```
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)#
00:25:00: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/0
from LOADING to FULL, Loading Done
BUENOSAIRES(config-router)#network 192.168.4.0 0.0.3.255 area 0
BUENOSAIRES(config-router)#passive-interface lo4
BUENOSAIRES(config-router)#passive-interface lo5
BUENOSAIRES(config-router)#passive-interface lo6
BUENOSAIRES(config-router)#exit
BUENOSAIRES(config)#int s0/0/0
BUENOSAIRES(config-if)#bandwidth 256
BUENOSAIRES(config-if)#ip ospf cost 9500
```

- **Visualizar tablas de enrutamiento y routers conectados por OSPFv2**

```
MIAMI#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address
Interface
1.1.1.1           0   FULL/  -        00:00:34    172.31.21.1
Serial0/1/0
8.8.8.8           0   FULL/  -        00:00:31    172.31.23.2
Serial0/1/1
MIAMI#
```

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

```
MIAMI#show ip ospf interface

FastEthernet0/1 is up, line protocol is up
  Internet address is 10.10.10.10/24, Area 0
  Process ID 1, Router ID 5.5.5.5, Network Type BROADCAST, Cost: 1
  Transmit Delay is 1 sec, State WAITING, Priority 1
  No designated router on this network
  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)
Serial0/1/1 is up, line protocol is up
  Internet address is 172.31.23.1/30, Area 0
  Process ID 1, Router ID 5.5.5.5, 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 00:00:00
  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 8.8.8.8
  Suppress hello for 0 neighbor(s)
Serial0/1/0 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: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
  No designated router on this network
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:09
  Index 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 1.1.1.1
  Suppress hello for 0 neighbor(s)
```

- **Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router**

```
router ospf 1
 router-id 5.5.5.5
 log-adjacency-changes
 passive-interface FastEthernet0/1
 network 172.31.21.0 0.0.0.3 area 0
 network 172.31.23.0 0.0.0.3 area 0
 network 10.10.10.0 0.0.0.255 area 0
!
```

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

```
S1(config)#
S1(config)#int f0/3
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#

S1(config)#int f0/24
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#no shutdown
S1(config-if)#

S1(config)#int range fa0/1-2, fa0/4-24
S1(config-if-range)#switchport mode access
S1(config-if-range)#

S1(config)#int f0/1
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#int range fa0/1-2, fa0/4-24
S1(config-if-range)#shutdown

S1(config)#int vlan 200
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)#ip address 192.168.99.2 255.255.255.0
S1(config-if)#
```

```
S3#conf t
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)#

S3(config)#int vlan 200

S3(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up
S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#

S3(config)#ip default-gateway 192.168.99.1
S3(config)#
S3#

S3(config)#int f0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#

S3(config)#int range fa0/1-2, fa0/4-24
S3(config-if-range)#switchport mode access
S3(config-if-range)#

S3(config)#int f0/1
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if)#int range fa0/1-2, fa0/4-24
S3(config-if-range)#shutdown

BOGOTA(config)#int f0/0.30
BOGOTA(config-subif)#description accounting LAN
BOGOTA(config-subif)#encapsulation dot1q 30
BOGOTA(config-subif)#ip address 192.168.30.1 255.255.255.0
BOGOTA(config-subif)#
BOGOTA(config)#int f0/0.40
BOGOTA(config-subif)#description accounting LAN
BOGOTA(config-subif)#encapsulation dot1q 40
BOGOTA(config-subif)#ip address 192.168.40.1 255.255.255.0
BOGOTA(config-subif)#
BOGOTA(config)#int f0/0.200
BOGOTA(config-subif)#description accounting LAN
BOGOTA(config-subif)#encapsulation dot1q 200
```

BOGOTA(config-subif)#ip address 192.168.200.1
255.255.255.0
BOGOTA(config-subif)#

4. En el Switch 3 deshabilitar DNS lookup

S3(config)#no ip domain-lookup

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

S1(config-if)#ip address 192.168.99.2 255.255.255.0
S1(config-if)#

S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#

S3(config)#ip default-gateway 192.168.99.1
S3(config)#

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

S1(config-if)#int range fa0/1-2, fa0/4-24
S1(config-if-range)#shutdown

S3(config-if)#int range fa0/1-2, fa0/4-24
S3(config-if-range)#shutdown

7. Implement DHCP and NAT for IPv4

MIAMI(config)#user webuser privilege 15 secret cisco12345
MIAMI(config)#ip nat inside source static 10.10.10.10
209.165.200.229
MIAMI(config)#int f0/0
MIAMI(config-if)#ip nat outside
MIAMI(config-if)#exit

```
MIAMI(config)#int f0/1
MIAMI(config-if)#ip nat inside
MIAMI(config-if)#
MIAMI(config-if)#exit
MIAMI(config)#access-list 1 permit 192.168.30.0 0.0.0.255
MIAMI(config)#access-list 1 permit 192.168.40.0 0.0.0.255
MIAMI(config)#access-list 1 permit 192.168.4.0 0.0.3.255
MIAMI(config)#ip nat pool INTERNET 209.165.200.225
209.165.200.229 netmask 255.255.255.248
MIAMI(config)#
```

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

```
BOGOTA(config)#ip dhcp pool ADMINISTRACION
BOGOTA(dhcp-config)#dns-server 10.10.10.11
BOGOTA(dhcp-config)#default-router 192.168.30.1
BOGOTA(dhcp-config)#network 192.168.30.0 255.255.255.0
BOGOTA(dhcp-config)#

BOGOTA(config)#ip dhcp pool MERCADEO
BOGOTA(dhcp-config)#dns-server 10.10.10.11
BOGOTA(dhcp-config)#default-router 192.168.40.1
BOGOTA(dhcp-config)#network 192.168.40.0 255.255.255.0
BOGOTA(dhcp-config)#
```

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

```
BOGOTA#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#ip dhcp excluded-address 192.168.30.1
192.168.30.30
BOGOTA(config)#ip dhcp excluded-address 192.168.30.1
192.168.40.30
BOGOTA(config)#
```

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

```
MIAMI(config)#int f0/0
MIAMI(config-if)#ip nat outside
MIAMI(config-if)#exit
MIAMI(config)#int f0/1
MIAMI(config-if)#ip nat inside
MIAMI(config-if)#
```

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

```
MIAMI(config)#access-list 1 permit 192.168.30.0 0.0.0.255
MIAMI(config)#access-list 1 permit 192.168.40.0 0.0.0.255
MIAMI(config)#access-list 1 permit 192.168.4.0 0.0.3.255
MIAMI(config)#ip nat pool INTERNET 209.165.200.225
209.165.200.229 netmask 255.255.255.248

MIAMI(config)#ip access-list standard ADMIN
MIAMI(config-std-nacl)#permit host 172.31.21.1
MIAMI(config-std-nacl)#exit
MIAMI(config)#line vty 0 4
MIAMI(config-line)#access-class ADMIN in
MIAMI(config-line)#
```

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

```
MIAMI(config)#access-list 100 permit tcp any host
209.165.200.229 eq www
MIAMI(config)#access-list 100 permit icmp any any echo-reply
```

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

```
MIAMI#show access-lists
Standard IP access list 1
    10 permit 192.168.30.0 0.0.0.255
    20 permit 192.168.40.0 0.0.0.255
    30 permit 192.168.4.0 0.0.3.255
Standard IP access list ADMIN
    10 permit host 172.31.21.1
Extended IP access list 100
    10 permit tcp any host 209.165.200.229 eq www
    20 permit icmp any any echo-reply
```

```
BOGOTA#ping 209.165.200.230

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2
seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/5/18
ms

BOGOTA#
```

CONCLUSIONES

De acuerdo con los contenidos vistos dentro del curso Diplomado de Profundización Cisco CCNA, se logra conceptualizar con claridad el término red, que es un conjunto de dispositivos conectados por medio de cables, ondas, señales, y demás métodos de transporte de datos para compartir información y servicios.

En esta actividad se realiza un numero amplio de tareas importantes para el buen desarrollo de los ejercicios propuestos, en este se ejecutan funciones como la de verificar una conexión entre los dispositivos proporcionada en la configuración inicial de la topología, se configura la ACL de los Routers, esto con el objetivo de mitigar los ataques de forma remota y por supuesto no podrían faltar la verificación de la funcionalidad de las actividades ejecutadas con anterioridad. (ACL) para permitir el acceso de direcciones IP específicas, lo que asegura que solo la computadora del administrador tenga permiso para acceder al router mediante telnet o SSH.

En la configuración NAT y PAT se tiene niveles de seguridad importantes, pues un router ISP solo puede responder solicitudes mas no puede hacer solicitudes a los hosts que conforman una red privada, pues no conoce sus direcciones IPs.

NAT necesita información de la IP o a información del número del puerto en la cabecera IP y encabezado TCP de paquetes para traducción; además hay una lista parcial de protocolos que no se pueden utilizar con NAT, por ejemplo, LDAP, SNMP, Kerveros versión 5; también encontramos que NAT tiene otra desventaja la cual es que se retrasa en el proceso de traducción.

Cuando tenemos Routers separados DHCP para cada subred estamos agregando más complejidad y decrementamos la administración central de la red. Requiriendo que cada Router trabaje para sus propias direcciones DHCP, teniendo como función primaria el tráfico del ruteo y siendo más fácil de administrar.

PAT resulta más sencillo de implementar que NAT debido a que solo es necesario especificar el puerto a la red externa para realizar la traducción de direcciones IP privadas a públicas y no un rango de direcciones.

Se logró hacer un reconocimiento a los comandos básicos de direccionamiento IPv6.

El tiempo de vida o TTL de los paquetes que se envían de una red LAN a otra es mucho menor que el TTL de los paquetes que recorren una misma red debido a que tiene que atravesar R1 y R2.

TTL de paquetes entre los dispositivos de una misma red LAN es 127 ms mientras que el TTL de los paquetes entre los dispositivos de diferente LAN es 126 ms. Para la asignación de subredes IPv6 es importante conocer la conversión de números Hexadecimales.

El protocolo DHCP es diseñado para ahorrar tiempo en la gestión de direccionamiento IP en una red extensa. Este servicio se encuentra activo en un servidor donde administra las direcciones de la red.

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