

PRUEBA DE HABILIDADES PRÁCTICAS CCNA

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Contenido

LISTAS ESPECIALES.....	3
GLOSARIO	4
INTRODUCCIÓN.....	7
DESARROLLO DE LOS ESCENARIOS.....	8
1. ESCENARIO 1	8
CONFIGURACIÓN BÁSICA ISP	9
CONFIGURACIÓN BÁSICA MEDELLIN1	10
CONFIGURACIÓN BÁSICA MEDELLIN2.....	11
CONFIGURACIÓN BÁSICA MEDELLIN3.....	12
CONFIGURACIÓN BÁSICA BOGOTA1.....	13
CONFIGURACIÓN BÁSICA BOGOTA2.....	14
CONFIGURACIÓN BÁSICA BOGOTA3.....	16
ENRUTAMIENTO MEDELLIN3.....	17
ENRUTAMIENTO MEDELLIN2.....	17
ENRUTAMIENTO MEDELLIN1.....	18
ENRUTAMIENTO BOGOTA3.....	19
ENRUTAMIENTO BOGOTA2.....	19
ENRUTAMIENTO BOGOTA1.....	20
ENRUTAMIENTO ISP.....	21
2. ESCENARIO 2	67
CONFIGURACIONES ESCENARIO 2.....	67
CONFIGURACIÓN BÁSICA R1	68
CONFIGURACIÓN BÁSICA R2	69
CONFIGURACIÓN BÁSICA R3	69
CONFIGURACIÓN BÁSICA S1	70
CONFIGURACIÓN BÁSICA S3	71

LISTAS ESPECIALES

Ilustración 1 Routers Bogotá1 y Medellín1.....	8
Ilustración 2 Routers Bogotá2 y Medellín2.....	8
Ilustración 3 Condiciones para configuración de la topología de red.....	22
Tabla 1 Interfaces por router	32
Ilustración 4 Routers Bogotá y Miami	67
Ilustración 5 Routers Bogotá y Miami	68
Tabla 2 Criterios de enrtamiento	71

GLOSARIO

Algoritmo: Conjunto de instrucciones concretas y detalladas mediante el cual se consigue una acción determinada.

Binario: Representación numérica en base 2. En esta base sólo se utilizan los dígitos 0 y 1. Las posiciones de los dígitos representan potencias sucesivas de 2. Véase bit.

BGP (Border Gateway Protocol): Protocolo de enrutamiento usado para intercambiar información de enrutamiento entre diferentes redes. Exterior gateway protocol (protocolo externo).

Encriptar: proteger archivos expresando su contenido en un lenguaje cifrado. Los lenguajes cifrados simples consisten, por ejemplo, en la sustitución de letras por números.

ICMP (Internet Control Message Protocol: Protocolo de mensajes de control de Internet) Es un protocolo que permite administrar información relacionada con errores de los equipos en red. Si se tienen en cuenta los escasos controles que lleva a cabo el protocolo IP, ICMP no permite corregir los errores sino que los notifica a los protocolos de capas cercanas. Por lo tanto, el protocolo ICMP es usado por todos los router para indicar un error (llamado un problema de entrega).

Interfaz: Una interfaz de red es el software específico de red que se comunica con el controlador de dispositivo específico de red y la capa IP a fin de proporcionar a la capa IP una interfaz coherente con todos los adaptadores de red que puedan estar presentes.

IP: Es la identificación de un dispositivo en una red; estos se comunican entre sí gracias a la misma. Esta identificación se compone de cuatro números separados por un punto; los mismos pueden oscilar entre 0 y 255. El término "IP" remite a "internetprotocol", esto es, un protocolo utilizado en la red de redes, el internet. Las direcciones IP pueden ser públicas o privadas según sean accesibles desde el exterior o desde una red privada. También pueden ser estáticas o dinámicas, según se mantengan inmutables o cambien a medida que el dispositivo en cuestión se conecte a la red.

ISP (siglas en inglés de Internet Service Provider): Es el Proveedor de Servicios de Internet, es decir, a la empresa que vende a los usuarios la conexión a Internet. Así, un mismo ISP brinda a su conjunto de clientes acceso a la Web a través de distintos medios o tecnologías (DSL o "banda ancha", Dial-up, cablemódem, GSM, etc.), y en un mismo país o región pueden existir diversos ISP, que constituyen entre todos un mercado.

RIP: (Routing Information Protocol) Protocolo de Información de Routing.

Router (cuyo equivalente en idioma español sería algo como Enrutador): es un dispositivo externo al ordenador que se encarga de establecer un nexo de conexión en una Red entre un punto de partida (Emisor de la señal) hacia un terminal que oficia como el punto de llegada de esta comunicación (es decir, el Destinatario de la señal). Tal como su nombre nos parece estar indicando, se encarga de que el enorme Tráfico de Datos que se obtiene mediante una conexión a Internet llegue solamente al destino que así lo ha requerido, y que no existan fallas en la conexión, por lo que se encarga de asignar una Vía de Comunicación entre la señal y el equipo en cuestión.

RTP: Significa “Real Time Transport Protocol” (Protocolo de transporte en tiempo real), y define un formato de paquete estándar para el envío de audio y video sobre Internet. Es definido en el RFC1889. Fue desarrollado por el grupo de trabajo de transporte de audio y video y fue publicado por primera vez en 1996. RTP se utiliza ampliamente en los sistemas de comunicación y entretenimiento que involucran medios de transmisión, tales como la telefonía, aplicaciones de videoconferencias, servicios de televisión y web basado en funcionalidades push-to-talk.

RTP se utiliza junto con el protocolo de control de RTP (RTCP). Mientras que RTP transporta los flujos de medios (por ejemplo, audio y vídeo), RTCP se usa para supervisar las estadísticas de transmisión y calidad de servicio (QoS) y ayuda a la sincronización de múltiples flujos. RTP es originado y recibido en número de puerto par y la comunicación asociadas a RTCP utilizan el próximo número de puerto impar superior. RTP es uno de los fundamentos de VoIP y se utiliza conjuntamente con SIP el cual ayuda a establecer las conexiones a través de la red.

TCP/IP: Son las siglas de Protocolo de Control de Transmisión/Protocolo de Internet (en inglés Transmission Control Protocol/Internet Protocol), un sistema de protocolos que hacen posibles servicios Telnet, FTP, E-mail, y otros entre ordenadores que no pertenecen a la misma red. El Protocolo de Control de Transmisión (TCP) permite a dos anfitriones establecer una conexión e intercambiar datos. El TCP garantiza la entrega de datos, es decir, que los datos no se pierdan durante la transmisión y también garantiza que los paquetes sean entregados en el mismo orden en el cual fueron enviados. El Protocolo de Internet (IP) utiliza direcciones que son series de cuatro números octetos (byte) con un formato de punto decimal, por ejemplo: 69.5.163.59

Topología de red: Es el arreglo físico o lógico en el cual los dispositivos o nodos de una red (e.g. computadoras, impresoras, servidores, hubs, switches, enrutadores, etc.) se interconectan entre sí sobre un medio de comunicación. Está compuesta por dos partes, la topología física, que es la disposición real de los cables (los medios) y la topología lógica, que define la forma en que los hosts acceden a los medios. Las topologías físicas que se utilizan comúnmente son de bus, de anillo, en estrella, en estrella extendida, jerárquica y en malla.

WCCP, protocolo WCCP (*Web Cache Communication Protocol*): Es una tecnología desarrollada por Cisco que permite integrar motores de cacheo en una red de datos. La funcionalidad que tiene WCCP permite localizar patrones de tráfico en una red y habilitando que las peticiones de contenido se pueden entregar de forma local. La localización de tráfico reduce los costes de las transmisiones y los tiempos de descarga. Permite hacer redirecciones de contenido de forma transparente. La mayor ventaja de estas redirecciones es que los usuarios no tienen que configurar sus navegadores para usar un Proxy. En lugar de esto, puede marcarse una URL objetivo para pedir el contenido y redireccionar sus peticiones a equipo de cacheo.

INTRODUCCIÓN

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

A continuación, se elaboran dos escenarios correspondientes a la temática de implementación de soluciones soportadas en enrutamiento avanzado como etapa final del curso Diplomado de Profundización CCNA.

DESARROLLO DE LOS ESCENARIOS

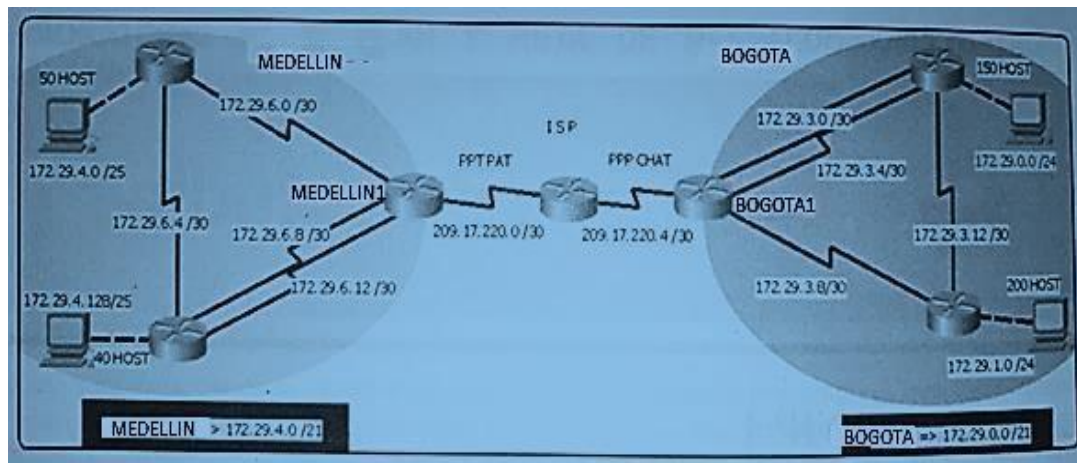
1. ESCENARIO 1

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

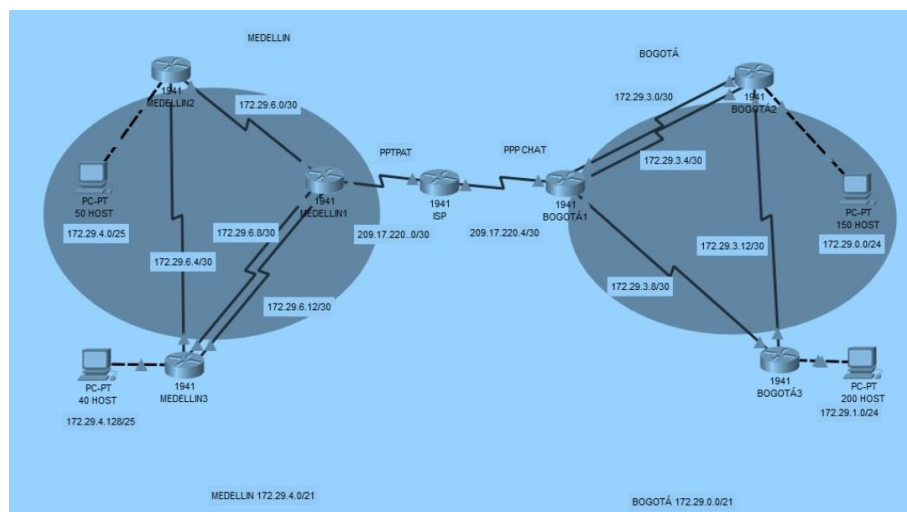
Los routers Bogota2 y medellin2 proporcionan el servicio DHCP a su propia red LAN y a los routers 3 de cada ciudad.

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

Debe habilitar NAT de sobrecarga en los routers Bogotá1 y Medellín1.



Complemento 1 Ilustración 1 Routers Bogotá1 y Medellín1



Complemento 2 Ilustración 2 Routers Bogotá2 y Medellín2

Realizar las rutinas de diagnóstico y dejar los equipos listos para su configuración (asignar nombres de equipos, asignar claves de seguridad, etc).

CONFIGURACIÓN BÁSICA ISP

A continuación, se muestran los comandos ejecutados (en su respectivo orden) para la configuración ISP:

- Router>en
- Router#conf t
- Enter configuration commands, one per line. End with CNTL/Z.
- Router(config)#no ip domain-lookup
- Router(config)#hostname ISP
- ISP(config)#enable secret class
- ISP(config)#line console 0
- ISP(config-line)#password cisco
- ISP(config-line)#login
- ISP(config-line)#logging synchronous
- ISP(config-line)#line vty 0 15
- ISP(config-line)#password cisco
- ISP(config-line)#login
- ISP(config-line)#logging synchronous
- ISP(config)#banner motd #

Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#

- ISP(config)#service password-encryption

CONFIGURACIÓN BÁSICA MEDELLIN1

A continuación, se muestra la configuración del router para medellin1:

- Router>en
- Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
- Router(config)#no ip domain-lookup
- Router(config)#hostname MEDELLIN1
- MEDELLIN1(config)#enable secret class
- MEDELLIN1(config)#line console 0
- MEDELLIN1(config-line)#password cisco
- MEDELLIN1(config-line)#login
- MEDELLIN1(config-line)#logging synchronous
- MEDELLIN1(config-line)#line vty 0 15
- MEDELLIN1(config-line)#password cisco

- MEDELLIN1(config-line)#login
- MEDELLIN1(config-line)#logging synchronous
- MEDELLIN1(config)#banner motd #

Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#

- MEDELLIN1(config)#service password-encryption

CONFIGURACIÓN BÁSICA MEDELLIN2

A continuación, se muestra la configuración para el router de medellin2:

- Router>en
 - Router#conf t
- Enter configuration commands, one per line. End with CNTL/Z.
- Router(config)#no ip domain-lookup
 - Router(config)#hostname MEDELLIN2
 - MEDELLIN2(config)#enable secret class MEDELLIN2(config)#line console 0
 - MEDELLIN2(config-line)#password cisco
 - MEDELLIN2(config-line)#login

- MEDELLIN2(config-line)#logging synchronous MEDELLIN2(config-line)#line vty 0 15
- MEDELLIN2(config-line)#password cisco MEDELLIN2(config-line)#login
- MEDELLIN2(config-line)#logging synchronous MEDELLIN2(config)#banner motd #

Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#

- MEDELLIN2(config)#service password-encryption

CONFIGURACIÓN BÁSICA MEDELLIN3

A continuación, se muestra la configuración para el router de medellin3:

- Router>en
 - Router#conf t
- Enter configuration commands, one per line. End with CNTL/Z.
- Router(config)#no ip domain-lookup
 - Router(config)#hostname MEDELLIN3
 - MEDELLIN3(config)#enable secret class
 - MEDELLIN3(config)#line console 0
 - MEDELLIN3(config-line)#password cisco

- MEDELLIN3(config-line)#login
- MEDELLIN3(config-line)#logging synchronous
- MEDELLIN3(config-line)#line vty 0 15
- MEDELLIN3(config-line)#password cisco
- MEDELLIN3(config-line)#login
- MEDELLIN3(config-line)#logging synchronous
- MEDELLIN3(config)#banner motd #

Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#

- MEDELLIN3(config)#service password-encryption

CONFIGURACIÓN BÁSICA BOGOTA1

A continuación, se muestra la configuración para el router de Bogotá 1:

- Router>en
 - Router#conf t
- Enter configuration commands, one per line. End with CNTL/Z.
- Router(config)#no ip domain-lookup

- Router(config)#hostname BOGOTA1 BOGOTA1(config)#enable secret class
- BOGOTA1(config)#line console 0
- BOGOTA1(config-line)#password cisco
- BOGOTA1(config-line)#login
- BOGOTA1(config-line)#logging synchronous
- BOGOTA1(config-line)#line vty 0 15
- BOGOTA1(config-line)#password cisco
- BOGOTA1(config-line)#login
- BOGOTA1(config-line)#logging synchronous
- BOGOTA1(config)#banner motd #

Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#

- BOGOTA1(config)#service password-encryption

CONFIGURACIÓN BÁSICA BOGOTA2

A continuación, se muestra la configuración para el router de Bogotá 2:

- Router>en

- Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
- Router(config)#no ip domain-lookup
- Router(config)#hostname BOGOTA2
- BOGOTA2(config)#enable secret class
- BOGOTA2(config)#line console 0
- BOGOTA2(config-line)#password cisco
- BOGOTA2(config-line)#login
- BOGOTA2(config-line)#logging synchronous
- BOGOTA2(config-line)#line vty 0 15
- BOGOTA2(config-line)#password cisco
- BOGOTA2(config-line)#login
- BOGOTA2(config-line)#logging synchronous
- BOGOTA2(config)#banner motd #
Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#
- BOGOTA2(config)#service password-encryption

CONFIGURACIÓN BÁSICA BOGOTA3

A continuación, se muestra la configuración para el router de Bogota3:

- Router>en
- Router#conf t
- Router(config)#no ip domain-lookup
- Router(config)#hostname BOGOTA3
- BOGOTA3(config)#enable secret class
- BOGOTA3(config)#line console 0
- BOGOTA3(config-line)#password cisco
- BOGOTA3(config-line)#login
- BOGOTA3(config-line)#logging synchronous
- BOGOTA3(config-line)#line vty 0 15
- BOGOTA3(config-line)#password cisco
- BOGOTA3(config-line)#login
- BOGOTA3(config-line)#logging synchronous
- BOGOTA3(config)#banner motd #

Enter TEXT message. End with the character '#'.

Prohibido el acceso a personal no autorizado!!!

#

- BOGOTA3(config)#service password-encryption

ENRUTAMIENTO MEDELLIN3

A continuación, se muestra la configuración del enrutamiento para medellin3:

- MEDELLIN3(config-if)#ip address 172.29.6.5 255.255.255.252
- MEDELLIN3(config-if)#no shutdown
- MEDELLIN3(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
- MEDELLIN3(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
- MEDELLIN3(config-if)#int s0/1/0
- MEDELLIN3(config-if)#ip address 172.29.6.9 255.255.255.252
- MEDELLIN3(config-if)#no shutdown
- MEDELLIN3(config-if)# %LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
- MEDELLIN3(config-if)#int s0/1/1
- MEDELLIN3(config-if)#ip address 172.29.6.13 255.255.255.252
- MEDELLIN3(config-if)#no shutdown

ENRUTAMIENTO MEDELLIN2

A continuación, se muestra la configuración del enrutamiento para medellin2:

- MEDELLIN2(config)#
- MEDELLIN2(config)#int s0/0/1

- MEDELLIN2(config-if)#ip address 172.29.6.6 255.255.255.252
- MEDELLIN2(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
- MEDELLIN2(config-if)#int s0/0/0
- MEDELLIN2(config-if)#ip address 172.29.6.2 255.255.255.252
- MEDELLIN2(config-if)#no shutdown

ENRUTAMIENTO MEDELLIN1

A continuación, se muestra la configuración del enrutamiento para medellin1:

- MEDELLIN1(config)#int s0/0/0
- MEDELLIN1(config-if)#ip address 172.29.6.1 255.255.255.252
- MEDELLIN1(config-if)#no shutdown
- MEDELLIN1(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
- MEDELLIN1(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
- MEDELLIN1(config-if)#int s0/1/0
- MEDELLIN1(config-if)#ip address 172.29.6.10 255.255.255.252
- MEDELLIN1(config-if)#no shutdown
- MEDELLIN1(config-if)# %LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
- MEDELLIN1(config-if)#int s0/1/1
- MEDELLIN1(config-if)#ip address 172.29.6.14 255.255.255.252

- MEDELLIN1(config-if)#no shutdown
- MEDELLIN1(config-if)# %LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
- MEDELLIN1(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
- MEDELLIN1(config)#int s0/0/1
- MEDELLIN1(config-if)#ip address 209.17.220.2 255.255.255.252
- MEDELLIN1(config-if)#no shutdown

ENRUTAMIENTO BOGOTA3

A continuación, se muestra la configuración del enrutamiento para bogota3:

- BOGOTA3(config)#int s0/0/0
- BOGOTA3(config-if)#ip address 172.29.3.14 255.255.255.252
- BOGOTA3(config-if)#no shutdown
- BOGOTA3(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
- BOGOTA3(config-if)#int s0/1/1
- BOGOTA3(config-if)# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
- BOGOTA3(config-if)#ip address 172.29.3.10 255.255.255.252
- BOGOTA3(config-if)#no shutdown

ENRUTAMIENTO BOGOTA2

A continuación, se muestra la configuración del enrutamiento para bogota2:

- BOGOTA2(config)#int s0/0/0
- BOGOTA2(config-if)#ip address 172.29.3.13 255.255.255.252
- BOGOTA2(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
- BOGOTA2(config-if)#int s0/0/1
- BOGOTA2(config-if)#ip address 172.29.3.1 255.255.255.252
- BOGOTA2(config-if)#no shutdown %LINK-5-CHANGED: Interface Serial0/0/1, changed state to down BOGOTA2(config-if)#int s0/1/0
- BOGOTA2(config-if)#ip address 172.29.3.5 255.255.255.252
- BOGOTA2(config-if)#no shutdown

ENRUTAMIENTO BOGOTA1

- BOGOTA1(config)#int s0/1/1
- BOGOTA1(config-if)#ip address 172.29.3.9 255.255.255.252
- BOGOTA1(config-if)#no shutdown
- BOGOTA1(config-if)#
- %LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
- BOGOTA1(config-if)#
- %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
- BOGOTA1(config-if)#int s0/1/0 BOGOTA1(config-if)#no ip address 172.29.3.2 255.255.255.252 BOGOTA1(config-if)#ip address 172.29.3.6 255.255.255.252 BOGOTA1(config-if)#no shutdown

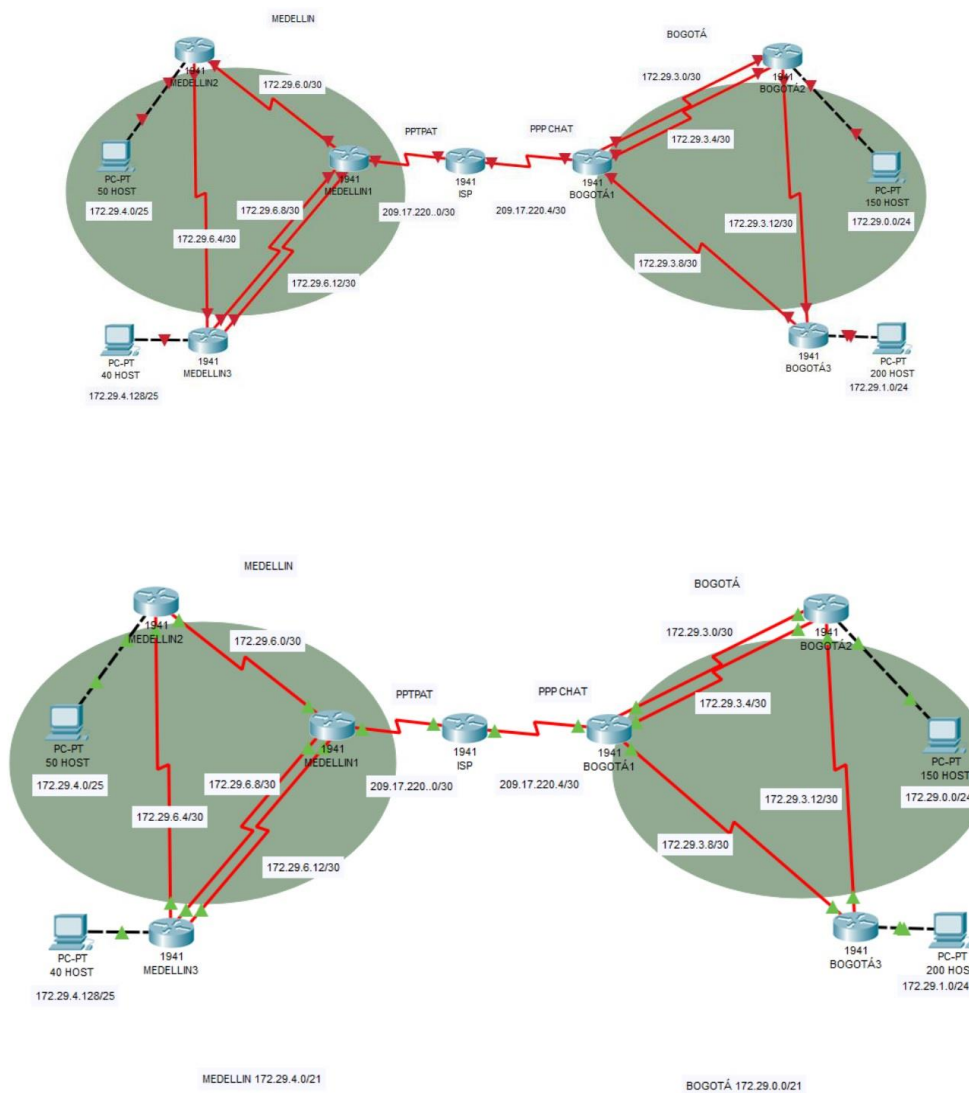
- BOGOTA1(config-if)#
- %LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
- BOGOTA1(config-if)#
- %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
- BOGOTA1(config-if)#int s0/0/1 BOGOTA1(config-if)#ip address 172.29.3.2 255.255.255.252 BOGOTA1(config-if)#no shutdown
- BOGOTA1(config-if)#
- %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
- BOGOTA1(config-if)#
- %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
- BOGOTA1(config)#int s0/0/0
- BOGOTA1(config-if)#ip address 209.17.220.6 255.255.255.252
- BOGOTA1(config-if)#no shutdown

ENRUTAMIENTO ISP

- ISP(config)#int s0/0/1
- ISP(config-if)#ip address 209.17.220.1 255.255.255.252
- ISP(config-if)#no shutdown
- ISP(config-if)#
- %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
- ISP(config-if)#
- %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

- ISP(config-if)#int s0/0/0
- ISP(config-if)#ip address 209.17.220.5 255.255.255.252
- ISP(config-if)#no shutdown
- ISP(config-if)#
- %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Realizar la conexión física de los equipos con base en la topología de red
Configurar la topología de red, de acuerdo con las siguientes especificaciones.



Complemento 3 Ilustración 3 Condiciones para configuración de la topología de red

Parte 1: Configuración del enrutamiento

- a. Configurar el enrutamiento en la red usando el protocolo RIP versión 2, declare la red principal, desactive la sumarización automática.
- b. Verificar el balanceo de carga que presentan los routers.
- c. Obsérvese en los routers Bogotá1 y Medellín1 cierta similitud por su ubicación, por tener dos enlaces de conexión hacia otro router y por la ruta por defecto que manejan.
- d. Los routers Medellín2 y Bogotá2 también presentan redes conectadas directamente y recibidas mediante RIP.
- e. Las tablas de los routers restantes deben permitir visualizar rutas redundantes para el caso de la ruta por defecto.
- f. El router ISP solo debe indicar sus rutas estáticas adicionales a las directamente conectadas.

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

- g. Los routers Bogota1 y Medellín deberán añadir a su configuración de enrutamiento una ruta por defecto hacia el ISP y, a su vez, redistribuirla dentro de las publicaciones de RIP.

MEDELLIN1

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
```

- h. El router ISP deberá tener una ruta estática dirigida hacia cada red interna de Bogotá y Medellín para el caso se sumarizan las subredes de cada uno a /22.

Parte 2: Tabla de Enrutamiento.

- a. Verificar la tabla de enrutamiento en cada uno de los routers para comprobar las redes y sus rutas.

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

R172.29.4.0/25 [120/1] via 172.29.6.6, 00:00:17, Serial0/0/1

R172.29.6.0/30 [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

C172.29.6.4/30 is directly connected, Serial0/0/1

L172.29.6.5/32 is directly connected, Serial0/0/1

C172.29.6.8/30 is directly connected, Serial0/1/0

L172.29.6.9/32 is directly connected, Serial0/1/0

C172.29.6.12/30 is directly connected, Serial0/1/1

L172.29.6.13/32 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

C172.29.4.0/25 is directly connected, GigabitEthernet0/0

L172.29.4.1/32 is directly connected, GigabitEthernet0/0

C172.29.6.0/30 is directly connected, Serial0/0/0

L172.29.6.2/32 is directly connected, Serial0/0/0

C172.29.6.4/30 is directly connected, Serial0/0/1

L172.29.6.6/32 is directly connected, Serial0/0/1

R172.29.6.8/30 [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

R172.29.6.12/30 [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

- 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

R172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:04, Serial0/0/0

C172.29.6.0/30 is directly connected, Serial0/0/0

L172.29.6.1/32 is directly connected, Serial0/0/0

R172.29.6.4/30 [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

C172.29.6.8/30 is directly connected, Serial0/1/0

L172.29.6.10/32 is directly connected, Serial0/1/0

C172.29.6.12/30 is directly connected, Serial0/1/1

L172.29.6.14/32 is directly connected, Serial0/1/1 209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks

C209.17.220.0/30 is directly connected, Serial0/0/1

L209.17.220.2/32 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

R172.29.3.0/30 [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

R172.29.3.4/30 [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

C172.29.3.8/30 is directly connected, Serial0/1/1

L172.29.3.10/32 is directly connected, Serial0/1/1

C172.29.3.12/30 is directly connected, Serial0/0/0

L172.29.3.14/32 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

C172.29.3.0/30 is directly connected, Serial0/0/1

L172.29.3.1/32 is directly connected, Serial0/0/1

C172.29.3.4/30 is directly connected, Serial0/1/0

L172.29.3.5/32 is directly connected, Serial0/1/0

R172.29.3.8/30 [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

C172.29.3.12/30 is directly connected, Serial0/0/0

L172.29.3.13/32 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

C172.29.3.0/30 is directly connected, Serial0/0/1

L172.29.3.2/32 is directly connected, Serial0/0/1

C172.29.3.4/30 is directly connected, Serial0/1/0

L172.29.3.6/32 is directly connected, Serial0/1/0

C172.29.3.8/30 is directly connected, Serial0/1/1

L172.29.3.9/32 is directly connected, Serial0/1/1

R172.29.3.12/30 [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

C209.17.220.4/30 is directly connected, Serial0/0/0

L209.17.220.6/32 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

C209.17.220.0/30 is directly connected, Serial0/0/1

L209.17.220.1/32 is directly connected, Serial0/0/1

C209.17.220.4/30 is directly connected, Serial0/0/0

L209.17.220.5/32 is directly connected, Serial0/0/0

Parte 3: Deshabilitar la propagación del protocolo RIP.

- a. Para no propagar las publicaciones por interfaces que no lo requieran se debe deshabilitar la propagación del protocolo RIP, en la siguiente tabla se indican las interfaces de cada router que no necesitan desactivación.

ROUTER	INTERFAZ
Bogotá1	SERIAL0/0/1; SERIAL0/1/0; SERIAL0/1/1
Bogotá2	SERIAL0/0/0; SERIAL0/0/1
Bogotá3	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
Medellín1	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/1
Medellín2	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/1
Medellín3	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
ISP	No lo requiere

Complemento 4 Tabla 1 Interfaces por router

- 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

Parte 4: Verificación del protocolo RIP.

- Verificar y documentar las opciones de enrutamiento configuradas en los routers, como el **passive interface** para la conexión hacia el ISP, la versión de RIP y las interfaces que participan de la publicación entre otros datos.

ROUTER MEDELLIN3

Estado de la configuración:

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 unreachable 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 unreachable 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 unreachable 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

Estado de la configuración:

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 unreachable 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 unreachable 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 unreachable 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

Estado de la configuración:

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 unreachable 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 unreachable 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 unreachable 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 unreachable 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

Estado de la configuración:

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 unreachable 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 unreachable 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

Estado de la configuración:

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 unreachable 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 unreachable 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 unreachable 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

Estado de la configuracion:

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 unreachable 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 unreachable 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 unreachable 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 unreachable 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

Estado de la configuración:

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 unreachable 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 unreachable 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

b. Verificar y documentar la base de datos de RIP de cada router, donde se informa de manera detallada de todas las rutas hacia cada red.

ROUTER MEDELLIN3

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

R172.29.4.0/25 [120/1] via 172.29.6.6, 00:00:19, Serial0/0/1

R172.29.6.0/30 [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

R172.29.6.8/30 [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

R172.29.6.12/30 [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

R172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:24, Serial0/0/0

R172.29.6.4/30 [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

R172.29.3.0/30 [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

R172.29.3.4/30 [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

R172.29.3.8/30 [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

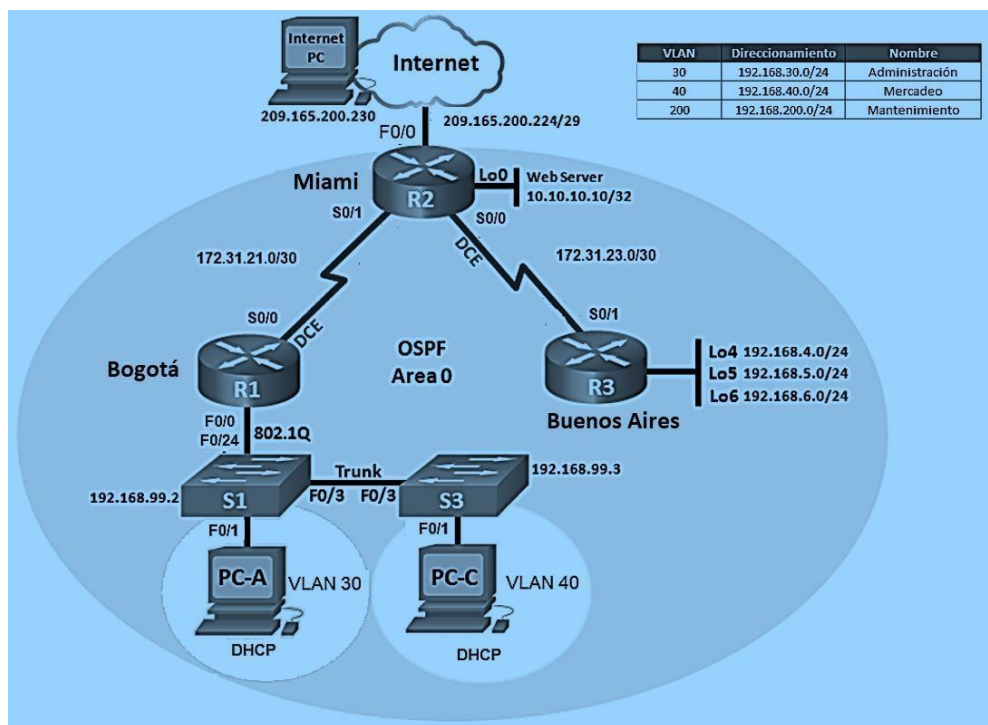
R172.29.3.12/30 [120/1] via 172.29.3.10, 00:00:04, Serial0/1/1

[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

2. ESCENARIO 2

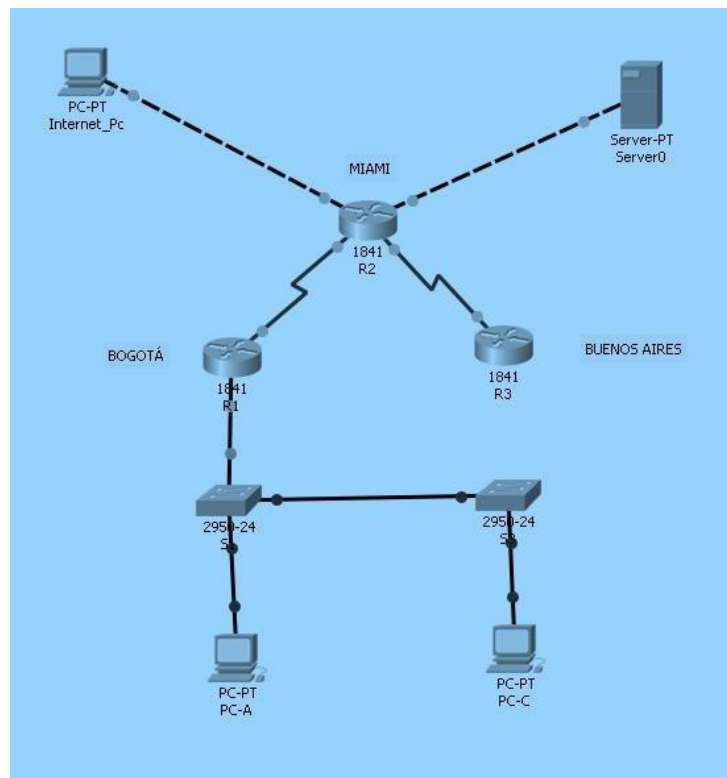
Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos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



Complemento 5 Ilustración 4 Routers Bogotá y Miami

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



Complemento 6 Ilustración 5 Routers Bogotá y Miami

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

Configuración 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

Complemento 7 Tabla 2 Criterios de enrutamiento

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.

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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