

MONOGRAFIA

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Grupo 203091_15

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INTRODUCCION

En la Universidad Nacional Abierta Y a Distancia 'UNAD' se ha implementado una opción de grado para la carrera de Ingeniería de sistemas la cual trata de un curso de profundización en redes, el cual es dictado por la UNAD y CISCO, la última una empresa multinacional que enfoca su producción en los dispositivos usados para la conectividad de computadores.

Cisco Systems, Inc. es el líder mundial en redes para Internet. Hoy en día, las redes son una parte esencial en los negocios, la educación, el gobierno y las comunicaciones en el hogar, y las soluciones de conectividad basadas en el Protocolo de Internet (IP) de Cisco son las bases de estas redes.

Cisco fue fundada en el año 1984 por un grupo pequeño de científicos de la Universidad de Stanford. Desde los inicios de la compañía, los ingenieros de Cisco han sido líderes en el desarrollo de tecnologías de conectividad basadas en el Protocolo de Internet (IP). Actualmente, con más de 47.000 empleados en todo el mundo, esa tradición de innovación continua en productos y soluciones líderes en la industria, en las áreas principales de la compañía de routing y switching, así como en tecnologías avanzadas tales como:

Comunicaciones IP, LAN inalámbrica, Conectividad en el hogar, Servicios de aplicación de Red, Seguridad de red, Redes de área de almacenamiento, Sistemas de video.

Cisco ha estado en el centro de muchos de los cambios históricos ocurridos en la tecnología, y así continúa sucediendo actualmente. Ahora, cuando la industria de la tecnología está atravesando un período de evoluciones dramáticas, Cisco es el líder del mercado en diversas áreas, tales como routing y switching, comunicaciones unificadas, soluciones inalámbricas y seguridad. La compañía ayudó a catalizar el movimiento de la industria hacia IP y ahora que la transición está completamente encaminada, la empresa se ubica en el centro de cambios fundamentales en la manera en cómo el mundo se comunica.

JUSTIFICACION

En la actualidad los profesionales de la carrera ingeniería de Sistemas deben estar a la vanguardia en todos los temas relacionados con tecnología y por ende con las maneras de configurar y comunicar los diferentes dispositivos manejados tecnológicamente, entonces la universidad Nacional Abierta y a Distancia "UNAD" nos brinda la oportunidad de optar como proyecto de grado por el curso de profundización CISCO, el cual nos brinda el conocimiento necesario para adentrarnos eficientemente en este mundo en el que aun hay muchas cosas por descubrir e implementar en el área de las redes computacionales.

Teniendo en cuenta la amplia experiencia que por más de 25 años ha desarrollado y ejercido la UNAD en la actividad de educación a distancia e importancia de aprovechar los avances tecnológicos y de la ciencia en el mantenimiento de Redes los futuros profesionales debemos aprovechar esta oportunidad que se nos brinda pues no solo realizan un curso básico para su profesión sino que también mediante esta modalidad obtiene su grado como Ingenieros de Sistemas.

Este curso de profundización es la herramienta que todo ingeniero necesita para desenvolverse muy bien en el área de la redes y con la gran ventaja que el ingeniero estará certificado directamente por la empresa CISCO que es un gran respaldo para nuestro perfil profesional.

OBJETIVO GENERAL

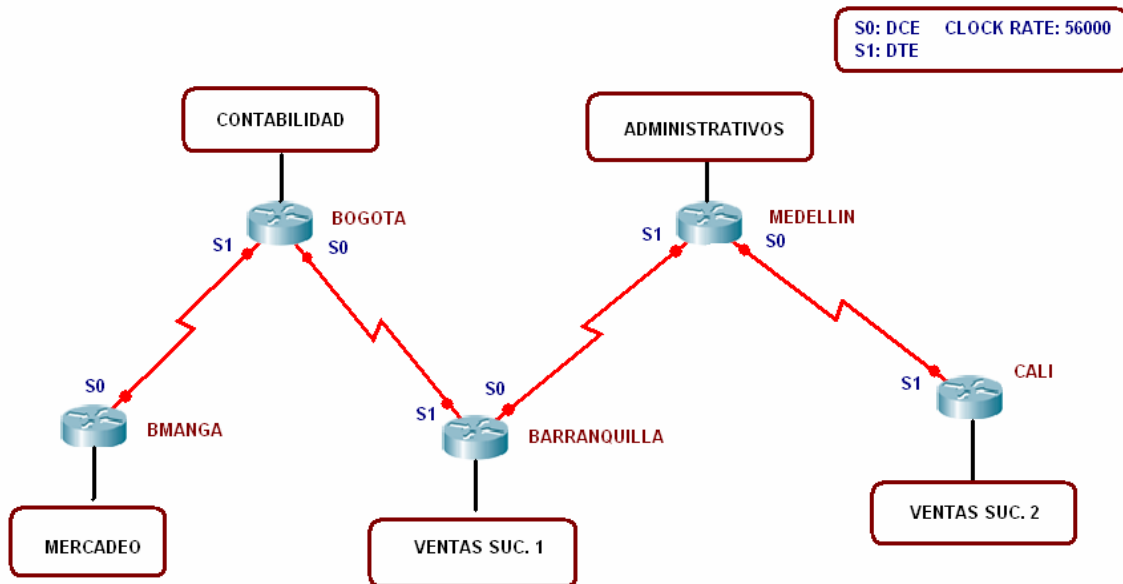
Realizar una profundización en el tema relacionado con las redes de computadoras bajo el programa cisco **CISCO NETWORKING ACADEMY** modelo **LEARNING**, para así aprender a configurar redes LAN, WAN, MAN y PAN utilizando todos los protocolos establecidos por las entidades que dictan el estándar para el buen funcionamiento de este tipo de redes.

Objetivos específicos:

- ✓ Verificación de la completa conectividad entre todos los dispositivos de la topología.
- ✓ Conocer y entender el funcionamiento de cada una de las capas del modelo OSI y TCP.
- ✓ Diferenciar las topologías de red.
- ✓ Conocer las diferentes formas de comunicación entre redes y computadoras.
- ✓ Configurar competentemente los diferentes dispositivos intermediarios utilizados en las redes computacionales.
- ✓ Configurar redes computacionales con la intervención de los diferentes protocolos utilizados para estas.
- ✓ Diseñar y documentar un esquema de direccionamiento según los requisitos.
- ✓ Aplicar una configuración básica a los dispositivos.
- ✓ Configurar una prioridad de routers y RID.
- ✓ Configurar el enrutamiento OSPF
- ✓ Desactivación de las actualizaciones de enrutamiento en las interfaces adecuadas.

CASO DE ESTUDIO: CCNA 1 EXPLORATION

Una empresa denominada COMERCIANTES S.A. desea implementar una red WAN acorde con la estructura que se ilustra en la siguiente figura.



La cantidad de host requeridos por cada una de las LAN es la siguiente:

Contabilidad	:	15
Mercadeo	:	10
Ventas Sucursal 1	:	30
Ventas Sucursal 2	:	40
Administrativos	:	25

Se desea establecer cada uno de los siguientes criterios:

Protocolo de enrutamiento: RIP Versión 2

Todos los puertos seriales 0 (S0) son terminales DCE

Todos los puertos seriales 1 (S1) son terminales DTE

Definir la tabla de direcciones IP indicando por cada subred los siguientes elementos:

Por cada LAN

1. Dirección de Red
2. Dirección IP de Gateway
3. Dirección IP del Primer PC
4. Dirección IP del último PC
5. Dirección de Broadcast
6. Máscara de Subred

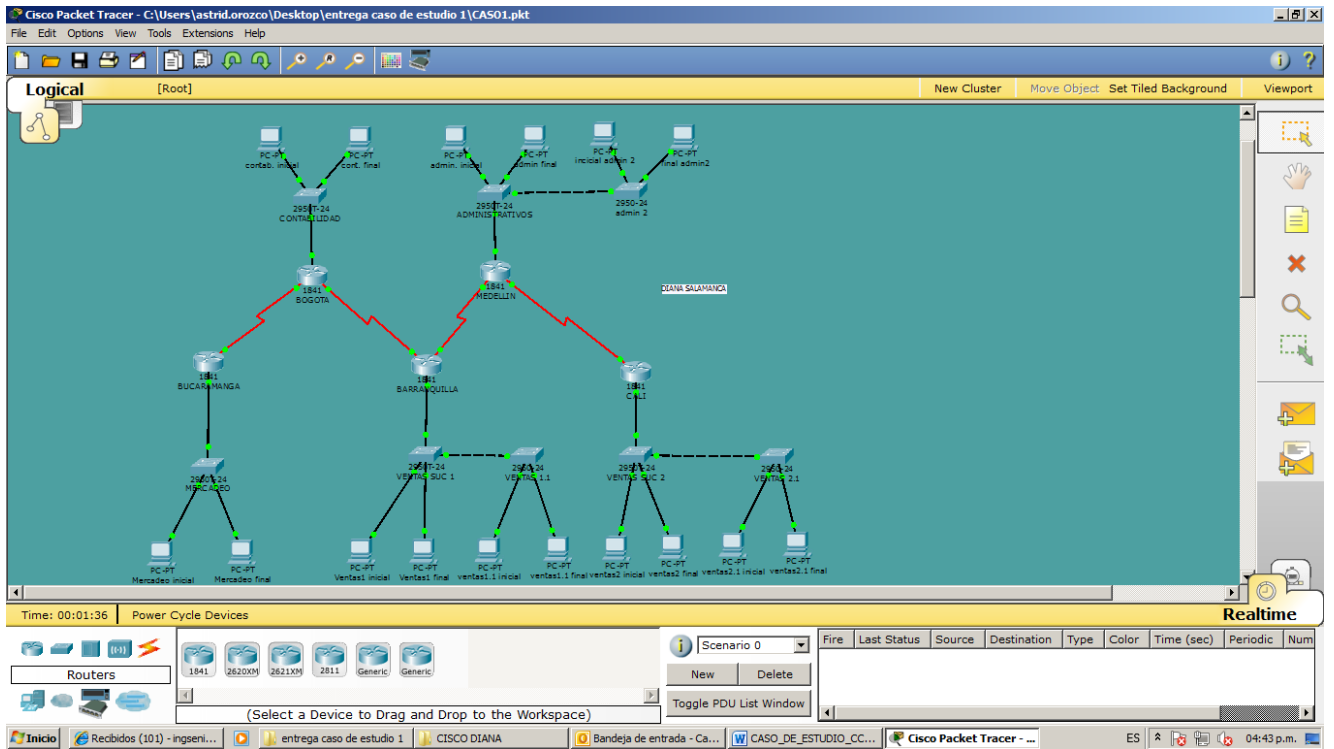
Por cada conexión serial

1. Dirección de Red
2. Dirección IP Serial 0 (Indicar a qué Router pertenece)
3. Dirección IP Serial 1 (Indicar a qué Router pertenece)
4. Dirección de Broadcast
5. Máscara de Subred

En Cada router configurar:

- 1- Nombre del router (Hostname)
- 2- Direcciones IP de las interfaces a utilizar
- 3- Por cada interface utilizada, hacer uso del comando DESCRIPTION con el fin de indicar la función que cumple cada interface. Ej. Interfaz de conexión con la red LAN Mercadeo.
- 4- Establecer contraseñas para CON 0, VTY, ENABLE SECRET. Todas con el password CISCO
- 5- Protocolo de enrutamiento a utilizar: RIP versión 2

DIAGRAMA DEL CASO DE ESTUDIO EN PACKET TRACER



CONFIGURACION DE LOS EQUIPOS

SUBRED	No HOST	DESCRIPCION	DIRECCION IP	MASCARA
MERCADEO	10	DIR. SUBRED GATEWAY PC inicial PC final BROADCAST	192.168.1.0 192.168.1.1 192.168.1.2 192.168.1.11 192.168.1.63	255.255.255.192
CONTABILIDAD	15	DIR. SUBRED GATEWAY PC inicial PC final BROADCAST	192.168.2.0 192.168.2.1 192.168.2.2 192.168.2.31 192.168.2.63	255.255.255.192
VENTAS SUCURSAL 1	30	DIR. SUBRED GATEWAY PC inicial PC final BROADCAST	192.168.3.0 192.168.3.1 192.168.3.2 192.168.3.31 192.168.3.63	255.255.255.192
ADMINISTRATIVOS	25	DIR. SUBRED GATEWAY PC inicial PC final BROADCAST	192.168.4.0 192.168.4.1 192.168.4.2 192.168.4.28 192.168.4.63	255.255.255.192
VENTAS SUCURSAL 2	40	DIR. SUBRED GATEWAY PC inicial PC final BROADCAST	192.168.5.0 192.168.5.1 192.168.5.2 192.168.5.42 192.168.5.63	255.255.255.192

CONFIGURACION FINAL ROUTER BUCARAMANGA

```
BUCARAMANGA#show running-config
Building configuration...

Current configuration : 613 bytes version 12.4

no service password-encryption hostname
BUCARAMANGA

enable secret 5 $1$mERr$hX5rVt7rPNoS4wqbXKX7m0 ip ssh version 1

interface FastEthernet0/0

ip address 192.168.1.1 255.255.255.0 duplex auto

speed auto

interface FastEthernet0/1 no ip address

duplex auto speed auto shutdown

interface Serial0/1/0

description Connection to the router ip address
200.10.10.1 255.255.255.0 clock rate 56000

interface Vlan1 no ip address

shutdown router rip

network 192.168.1.0 network 200.10.10.0 ip classless

line con 0 line vty 0 4

password cisco login

end
```

TABLA DE ENRUTAMIENTO ROUTER BUCARAMANGA

```
BUCARAMANGA>Show IP Route
```

Codes: C - connected, S - static, I - IGRP, 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

C 192.168.1.0/24 is directly connected, FastEthernet0/0

R 192.168.2.0/24 [120/1] via 200.10.10.2, 00:00:04, Serial0/1/0 R 192.168.3.0/24 [120/2] via 200.10.10.2, 00:00:04, Serial0/1/0 R 192.168.4.0/24 [120/3] via 200.10.10.2, 00:00:04, Serial0/1/0 R 192.168.5.0/24 [120/4] via 200.10.10.2, 00:00:04, Serial0/1/0 C 200.10.10.0/24 is directly connected, Serial0/1/0

R 200.10.20.0/24 [120/1] via 200.10.10.2, 00:00:04, Serial0/1/0 R 200.10.30.0/24 [120/2] via 200.10.10.2, 00:00:04, Serial0/1/0 R 200.10.40.0/24 [120/3] via 200.10.10.2, 00:00:04, Serial0/1/0 BUCARAMANGA>

CONFIGURACION CONTRASEÑA ROUTER BUCARAMANGA

BUCARAMANGA>enable BUCARAMANGA#config terminal

Enter configuration commands, one per line. End with CNTL/Z. BUCARAMANGA(config)#

enable secret cisco BUCARAMANGA(config)#line vty 0 4 BUCARAMANGA(config-line)#

password cisco BUCARAMANGA(config-line)#login BUCARAMANGA(config-line)#

DESCRIPCION DE LA INTERFACE SERIAL SE 0/0/0 ROUTER BUCARAMANGA

BUCARAMANGA>SHOW INTERFACE SE0/1/0 Serial0/1/0 is up, line

protocol is up (connected) Hardware is HD64570

Description: Connection to the router Internet address is

200.10.10.1/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation

HDLC, loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of

"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing

strategy: weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations

0/0/256 (active/max active/max total) Reserved Conversations 0/0

(allocated/max allocated)

5 minute input rate 55 bits/sec, 0 packets/sec

5 minute output rate 20 bits/sec, 0 packets/sec

148 packets input, 28120 bytes, 0 no buffer Received 147 broadcasts, 0

runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 154 packets

output, 10642 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

DESCRIPCION DE LA INTERFACE FAST ETHERNET FA 0/0 ROUTERBUCARAMANGA

```
BUCARAMANGA>SHOW INTERFACE FA0/0 FastEthernet0/0 is up,  
line protocol is up (connected)  
  
Hardware is Lance, address is 0010.111d.3c01 (bia 0010.111d.3c01) Internet  
address is 192.168.1.1/24  
  
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255  
Encapsulation ARPA, loopback not set  
ARP type: ARPA, ARP Timeout 04:00:00,  
  
Last input 00:00:08, output 00:00:05, output hang never Last clearing  
of "show interface" counters never Queueing strategy: fifo  
Output queue :0/40 (size/max)  
5 minute input rate 0 bits/sec, 0 packets/sec  
5 minute output rate 61 bits/sec, 0 packets/sec  
0 packets input, 0 bytes, 0 no buffer  
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles  
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 0 input  
packets with dribble condition detected  
161 packets output, 32672 bytes, 0 underruns  
0 output errors, 0 collisions, 1 interface resets  
0 babbles, 0 late collision, 0 deferred  
0 lost carrier, 0 no carrier  
0 output buffer failures, 0 output buffers swapped out
```

CONFIGURACION FINAL ROUTER BOGOTA

```
BOGOTA#show running-config  
Building configuration...
```

Current configuration : 653 bytes version 12.4

```
no service password-encryption hostname BOGOTA

enable secret 5 $1$mERr$hX5rVt7rPNoS4wqbXKX7m0 ip ssh version 1

interface FastEthernet0/0

ip address 192.168.2.1 255.255.255.0 duplex auto

speed auto

interface FastEthernet0/1 no ip address

duplex auto speed auto shutdown

interface Serial0/0/0

ip address 200.10.10.2 255.255.255.0 interface Serial0/1/0

ip address 200.10.20.1 255.255.255.0 clock rate 56000

interface Vlan1 no ip address shutdown

router rip

network 192.168.2.0 network 200.10.10.0 network 200.10.20.0 ip classless

line con 0 line vty 0 4

password cisco login

end
```

TABLA DE ENRUTAMIENTO ROUTER BOGOTA

BOGOTA>Show IP Route

Codes: C - connected, S - static, I - IGRP, 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

R 192.168.1.0/24 [120/1] via 200.10.10.1, 00:00:22, Serial0/0/0 C 192.168.2.0/24 is directly
connected, FastEthernet0/0

R 192.168.3.0/24 [120/1] via 200.10.20.2, 00:00:01, Serial0/1/0 R 192.168.4.0/24 [120/2] via
200.10.20.2, 00:00:01, Serial0/1/0 R 192.168.5.0/24 [120/3] via 200.10.20.2, 00:00:01,
Serial0/1/0 C 200.10.10.0/24 is directly connected, Serial0/0/0

C 200.10.20.0/24 is directly connected, Serial0/1/0

R 200.10.30.0/24 [120/1] via 200.10.20.2, 00:00:01, Serial0/1/0 R 200.10.40.0/24 [120/2] via
200.10.20.2, 00:00:01, Serial0/1/0 BOGOTA>

CONFIGURACION DE CONTRASEÑA ROUTER BOGOTA

BOGOTA>enable BOGOTA#config terminal

Enter configuration commands, one per line. End with CNTL/Z. BOGOTA(config)#enable secret
cisco

BOGOTA(config)#line vty 0 4 BOGOTA(config-line)#password cisco

BOGOTA(config-line)#login BOGOTA(config-line)# BOGOTA(config-
line)#end

%SYS-5-CONFIG_I: Configured from console by console BOGOTA#copy running-config
startup-config Destination filename [startup-config]?

Building configuration...

[OK] BOGOTA#

DESCRIPCION DE LA INTERFACE FAST ETHERNET FA 0/0 ROUTER BOGOTA

BOGOTA>show interface fa0/0

FastEthernet0/0 is up, line protocol is up (connected)

Hardware is Lance, address is 0050.0fce.4a87 (bia 0050.0fce.4a87) Internet address is 192.168.2.1/24

MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255 Encapsulation ARPA, loopback not set

ARP type: ARPA, ARP Timeout 04:00:00,

Last input 00:00:08, output 00:00:05, output hang never Last clearing of

"show interface" counters never Queueing strategy: fifo

Output queue :0/40 (size/max)

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 61 bits/sec, 0 packets/sec

0 packets input, 0 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 0 input packets with dribble condition detected

70 packets output, 14300 bytes, 0 underruns

0 output errors, 0 collisions, 1 interface resets

0 babbles, 0 late collision, 0 deferred

0 lost carrier, 0 no carrier

0 output buffer failures, 0 output buffers swapped out BOGOTA>

DESCRIPCION DE LA INTERFACE SERIAL SE 0/0/0 ROUTER BOGOTA

```
BOGOTA>show interface se0/1/0
```

```
Serial0/1/0 is up, line protocol is up (connected) Hardware is HD64570
```

```
Internet address is 200.10.20.1/24
```

```
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,  
loopback not set, keepalive set (10 sec)
```

```
Last input never, output never, output hang never Last clearing of
```

```
"show interface" counters never
```

```
Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:  
weighted fair
```

```
Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations  
0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max  
allocated)
```

```
5 minute input rate 40 bits/sec, 0 packets/sec
```

```
5 minute output rate 32 bits/sec, 0 packets/sec
```

```
68 packets input, 9780 bytes, 0 no buffer
```

```
Received 67 broadcasts, 0 runts, 0 giants, 0 throttles
```

```
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 64 packets output,  
6960 bytes, 0 underruns
```

```
0 output errors, 0 collisions, 0 interface resets
```

```
0 output buffer failures, 0 output buffers swapped out
```

```
0 carrier transitions
```

```
DCD=up DSR=up DTR=up RTS=up CTS=up
```

```
BOGOTA>
```

DESCRIPCION DE LA INTERFACE SERIAL SE 0/1/0 ROUTER BOGOTA

```
BOGOTA>show interface se0/1/0
```

Serial0/1/0 is up, line protocol is up (connected) Hardware is HD64570

Internet address is 200.10.20.1/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,
loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of

"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:
weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations
0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max
allocated)

5 minute input rate 40 bits/sec, 0 packets/sec

5 minute output rate 32 bits/sec, 0 packets/sec

68 packets input, 9780 bytes, 0 no buffer

Received 67 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 64 packets output,
6960 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

BOGOTA>

CONFIGURACION FINAL ROUTER BARRANQUILLA

BARRANQUILLA#show running-config

Building configuration...

```
Current configuration : 659 bytes version 12.4

no service password-encryption hostname
BARRANQUILLA

enable secret 5 $1$mERr$hX5rVt7rPNoS4wqbXKX7m0 ip ssh version 1

interface FastEthernet0/0

ip address 192.168.3.1 255.255.255.0 duplex auto

speed auto

interface FastEthernet0/1 no ip address

duplex auto speed auto shutdown

interface Serial0/0/0

ip address 200.10.20.2 255.255.255.0 interface Serial0/1/0

ip address 200.10.30.1 255.255.255.0 clock rate 56000

interface Vlan1 no ip address

shutdown router rip

network 192.168.3.0 network 200.10.20.0 network 200.10.30.0 ip classless

line con 0 line vty 0 4

password cisco login

end
```

TABLA DE ENRUTAMIENTO ROUTER BARRANQUILLA

BARRANQUILLA>Show IP Route

Codes: C - connected, S - static, I - IGRP, 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

```
R 192.168.1.0/24 [120/2] via 200.10.20.1, 00:00:22, Serial0/0/0 R 192.168.2.0/24 [120/1] via
200.10.20.1, 00:00:22, Serial0/0/0 C 192.168.3.0/24 is directly connected, FastEthernet0/0
R 192.168.4.0/24 [120/1] via 200.10.30.2, 00:00:02, Serial0/1/0 R 192.168.5.0/24 [120/2] via
200.10.30.2, 00:00:02, Serial0/1/0 R 200.10.10.0/24 [120/1] via 200.10.20.1, 00:00:22,
Serial0/0/0 C 200.10.20.0/24 is directly connected, Serial0/0/0
C 200.10.30.0/24 is directly connected, Serial0/1/0
R 200.10.40.0/24 [120/1] via 200.10.30.2, 00:00:02, Serial0/1/0 BARRANQUILLA>
```

CONFIGURACION DE CONTRASEÑA ROUTER BARRANQUILLA

```
BARRANQUILLA>ENABLE BARRANQUILLA#config terminal
Enter configuration commands, one per line. End with CNTL/Z. BARRANQUILLA(config)#enable
secret cisco BARRANQUILLA(config)#line vty 0 4 BARRANQUILLA(config-line)#password cisco
BARRANQUILLA(config-line)#login BARRANQUILLA(config-line)#exit
BARRANQUILLA(config)#exit
%SYS-5-CONFIG_: Configured from console by console BARRANQUILLA#exit
```

DESCRIPCION DE LA INTERFACE FAST ETHERNET FA0/0 ROUTER BARRANQUILLA

```
BARRANQUILLA>show interface fa0/0 FastEthernet0/0 is up, line
```

protocol is up (connected)

Hardware is Lance, address is 0004.9ae7.adb9 (bia 0004.9ae7.adb9) Internet

address is 192.168.3.1/24

MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255 Encapsulation

ARPA, loopback not set

ARP type: ARPA, ARP Timeout 04:00:00,

Last input 00:00:08, output 00:00:05, output hang never Last clearing

of "show interface" counters never Queueing strategy: fifo

Output queue :0/40 (size/max)

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 61 bits/sec, 0 packets/sec

0 packets input, 0 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 0 input

packets with dribble condition detected

41 packets output, 8470 bytes, 0 underruns

0 output errors, 0 collisions, 1 interface resets

0 babbles, 0 late collision, 0 deferred

0 lost carrier, 0 no carrier

0 output buffer failures, 0 output buffers swapped out

BARRANQUILLA>

DESCRIPCION DE LA INTERFACE SERIAL SE 0/1/0 ROUTER BARRANQUILLA

BARRANQUILLA>show interface se0/1/0 Serial0/1/0 is up, line

protocol is up (connected) Hardware is HD64570

Internet address is 200.10.30.1/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,
loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of

"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:
weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations
0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max
allocated)

5 minute input rate 32 bits/sec, 0 packets/sec

5 minute output rate 44 bits/sec, 0 packets/sec

73 packets input, 6776 bytes, 0 no buffer

Received 72 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 54 packets output,

7920 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

BARRANQUILLA>

DESCRIPCION DE LA INTERFACE SERIAL SE 0/0/0 ROUTER BARRANQUILLA

BARRANQUILLA>show interface se0/0/0 Serial0/0/0 is up, line

protocol is up (connected) Hardware is HD64570

Internet address is 200.10.20.2/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,
loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of
"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:
weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations
0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max
allocated)

5 minute input rate 32 bits/sec, 0 packets/sec

5 minute output rate 44 bits/sec, 0 packets/sec

53 packets input, 5710 bytes, 0 no buffer

Received 52 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 52 packets output,
7640 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

BARRANQUILLA>

CONFIGURACION FINAL ROUTER MEDELLIN

MEDELLIN#show running-config

Building configuration...

Current configuration : 655 bytes version 12.4

no service password-encryption hostname MEDELLIN

```

enable secret 5 $1$mERr$hx5rVt7rPNoS4wqbXKX7m0 ip ssh version 1

interface FastEthernet0/0

ip address 192.168.4.1 255.255.255.0 duplex auto

speed auto

interface FastEthernet0/1 no ip address

duplex auto speed auto shutdown

interface Serial0/0/0

ip address 200.10.30.2 255.255.255.0 interface Serial0/1/0

ip address 200.10.40.1 255.255.255.0 clock rate 56000

interface Vlan1 no ip address shutdown

router rip

network 192.168.4.0 network 200.10.30.0 network 200.10.40.0 ip classless

line con 0 line vty 0 4

password cisco login

end

```

TABLA DE ENRUTAMIENTO ROUTER MEDELLIN

MEDELLIN>Show IP Route

Codes: C - connected, S - static, I - IGRP, 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

```
R 192.168.1.0/24 [120/3] via 200.10.30.1, 00:00:02, Serial0/0/0 R 192.168.2.0/24 [120/2] via
200.10.30.1, 00:00:02, Serial0/0/0 R 192.168.3.0/24 [120/1] via 200.10.30.1, 00:00:02,
Serial0/0/0 C 192.168.4.0/24 is directly connected, FastEthernet0/0
R 192.168.5.0/24 [120/1] via 200.10.40.2, 00:00:22, Serial0/1/0 R 200.10.10.0/24 [120/2] via
200.10.30.1, 00:00:02, Serial0/0/0 R 200.10.20.0/24 [120/1] via 200.10.30.1, 00:00:02,
Serial0/0/0 C 200.10.30.0/24 is directly connected, Serial0/0/0
C 200.10.40.0/24 is directly connected, Serial0/1/0 MEDELLIN>
```

CONFIGURACION DE CONTRASEÑA ROUTER MEDELLIN

```
MEDELLIN>ENABLE MEDELLIN#config terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z. MEDELLIN(config)#enable
secret cisco
```

```
MEDELLIN(config)#line vty 0 4 MEDELLIN(config-line)#password cisco
```

```
MEDELLIN(config-line)#login MEDELLIN(config-line)#exit
```

```
MEDELLIN(config)#exit
```

```
%SYS-5-CONFIG_: Configured from console by console MEDELLIN#exit
```

DESCRIPCION DE LA INTERFACE FAST ETHERNET ROUTER MEDELLIN

```
MEDELLIN>show interface FA 0/0
```

```
FastEthernet0/0 is up, line protocol is up (connected)
```

```
Hardware is Lance, address is 000c.85eb.bc75 (bia 000c.85eb.bc75) Internet address is
192.168.4.1/24
```

MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255 Encapsulation ARPA,
loopback not set

ARP type: ARPA, ARP Timeout 04:00:00,

Last input 00:00:08, output 00:00:05, output hang never Last clearing of

"show interface" counters never Queueing strategy: fifo

Output queue :0/40 (size/max)

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 61 bits/sec, 0 packets/sec

0 packets input, 0 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 0 input packets with
dribble condition detected

323 packets output, 66550 bytes, 0 underruns

0 output errors, 0 collisions, 2 interface resets

0 babbles, 0 late collision, 0 deferred

0 lost carrier, 0 no carrier

0 output buffer failures, 0 output buffers swapped out

DESCRIPCION DE LA INTERFACE SERIAL 0/1/0 ROUTER MEDELLIN

MEDELLIN>show interface se 0/1/0

Serial0/1/0 is up, line protocol is up (connected) Hardware is HD64570

Internet address is 200.10.40.1/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,
loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of

"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:
weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations
0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max
allocated)

5 minute input rate 20 bits/sec, 0 packets/sec

5 minute output rate 73 bits/sec, 0 packets/sec

17 packets input, 1190 bytes, 0 no buffer

Received 16 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 34 packets output,
3646 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

MEDELLIN>

DESCRIPCION DE LA INTERFACE SERIAL 0/0/0 ROUTER MEDELLIN

MEDELLIN>show interface se 0/0/0

Serial0/0/0 is up, line protocol is up (connected) Hardware is HD64570

Internet address is 200.10.30.2/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,
loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of

"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:

weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations
0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max
allocated)

5 minute input rate 44 bits/sec, 0 packets/sec

5 minute output rate 49 bits/sec, 0 packets/sec

22 packets input, 3000 bytes, 0 no buffer

Received 21 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 35 packets output,
2716 bytes, 0 underruns

0 output errors, 0 collisions, 0 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

MEDELLIN>

CONFIGURACION FINAL ROUTER CALI

CALI#show running-config

Building configuration...

Current configuration : 586 bytes version 12.4

no service password-encryption hostname CALI

enable secret 5 \$1\$mERr\$hx5rVt7rPNoS4wqbXKX7m0 ip ssh version 1

interface FastEthernet0/0

ip address 192.168.5.1 255.255.255.0 duplex auto

speed auto

interface FastEthernet0/1 no ip address

```
duplex auto speed auto shutdown
interface Serial0/0/0 description interface serial 0/0/0
ip address 200.10.40.2 255.255.255.0 interface Vlan1
no ip address shutdown router rip
network 192.168.5.0 network 200.10.40.0
ip classless
line con 0
line vty 0 4
password cisco
login
end
```

TABLA DE ENRUTAMIENTO ROUTER CALI

CALI>Show IP Route

Codes: C - connected, S - static, I - IGRP, 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

R 192.168.1.0/24 [120/4] via 200.10.40.1, 00:00:06, Serial0/0/0 R 192.168.2.0/24 [120/3] via

200.10.40.1, 00:00:06, Serial0/0/0 R 192.168.3.0/24 [120/2] via 200.10.40.1, 00:00:06,
Serial0/0/0 R 192.168.4.0/24 [120/1] via 200.10.40.1, 00:00:06, Serial0/0/0 C 192.168.5.0/24
is directly connected, FastEthernet0/0

R 200.10.10.0/24 [120/3] via 200.10.40.1, 00:00:06, Serial0/0/0 R 200.10.20.0/24 [120/2] via
200.10.40.1, 00:00:06, Serial0/0/0 R 200.10.30.0/24 [120/1] via 200.10.40.1, 00:00:06,
Serial0/0/0 C 200.10.40.0/24 is directly connected, Serial0/0/0

CALI>

CONFIGURACION DE CONTRASEÑA ROUTER CALI

CALI>ENABLE CALI#config terminal

Enter configuration commands, one per line. End with CNTL/Z. CALI(config)#enable secret cisco

CALI(config)#line vty 0 4 CALI(config-line)#password cisco

CALI(config-line)#login CALI(config-line)#exit CALI(config)#exit

%SYS-5-CONFIG_I: Configured from console by console CALI#exit

DESCIPCION DE LA INTERFACE SERIAL ROUTER CALI

CALI>show interface serial 0/0/0

Serial0/0/0 is up, line protocol is up (connected) Hardware is HD64570

Description: interface serial 0/0/0 Internet address is

200.10.40.2/24

MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255 Encapsulation HDLC,
loopback not set, keepalive set (10 sec)

Last input never, output never, output hang never Last clearing of

"show interface" counters never

Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy:
weighted fair

Output queue: 0/1000/64/0 (size/max total/threshold/drops) Conversations

0/0/256 (active/max active/max total) Reserved Conversations 0/0 (allocated/max allocated)

5 minute input rate 55 bits/sec, 0 packets/sec

5 minute output rate 20 bits/sec, 0 packets/sec

297 packets input, 54550 bytes, 0 no buffer Received 287 broadcasts, 0 runs, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 301 packets output, 20469 bytes, 0 underruns

0 output errors, 0 collisions, 3 interface resets

0 output buffer failures, 0 output buffers swapped out

0 carrier transitions

DESCRIPCION DE LA INTERFACE FAST ETHERNET ROUTER CALI

CALI>show interface FA 0/0

FastEthernet0/0 is up, line protocol is up (connected)

Hardware is Lance, address is 0030.a3b1.d992 (bia 0030.a3b1.d992) Internet address is 192.168.5.1/24

MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 1/255 Encapsulation ARPA, loopback not set

ARP type: ARPA, ARP Timeout 04:00:00,

Last input 00:00:08, output 00:00:05, output hang never Last clearing of

"show interface" counters never Queueing strategy: fifo

Output queue :0/40 (size/max)

5 minute input rate 0 bits/sec, 0 packets/sec

5 minute output rate 56 bits/sec, 0 packets/sec

7 packets input, 280 bytes, 0 no buffer

Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 0 input packets with
dribble condition detected

323 packets output, 62886 bytes, 0 underruns

0 output errors, 0 collisions, 2 interface resets

0 babbles, 0 late collision, 0 deferred

0 lost carrier, 0 no carrier

0 output buffer failures, 0 output buffers swapped out

COMPROBACION DE CONEXIONES CON COMANDO PING

PC>PING 192.168.5.2

Pinging 192.168.5.2 with 32 bytes of data:

Reply from 192.168.5.2: bytes=32 time=203ms TTL=123

Reply from 192.168.5.2: bytes=32 time=217ms TTL=123

Reply from 192.168.5.2: bytes=32 time=172ms TTL=123

Reply from 192.168.5.2: bytes=32 time=155ms TTL=123

Ping statistics for 192.168.5.2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate
round trip times in milli-seconds:

Minimum = 155ms, Maximum = 217ms, Average = 186ms

PC>

PC>PING 192.168.4.28

Pinging 192.168.4.28 with 32 bytes of data:

Reply from 192.168.4.28: bytes=32 time=140ms TTL=125

Reply from 192.168.4.28: bytes=32 time=172ms TTL=125

Reply from 192.168.4.28: bytes=32 time=127ms TTL=125

Reply from 192.168.4.28: bytes=32 time=174ms TTL=125

Ping statistics for 192.168.4.28:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds:

Minimum = 127ms, Maximum = 174ms, Average = 153ms

PC>

COMPROBACION DE RED CON TRACEROUTE

BUCARAMANGA>tracert 192.168.5.2

Type escape sequence to abort.

Tracing the route to 192.168.5.2

1 200.10.10.2 31 msec 31 msec 32 msec

```
2 200.10.20.2 62 msec 62 msec 47 msec
3 200.10.30.2 78 msec 79 msec 78 msec
4 200.10.40.2 110 msec 95 msec 95 msec
5 192.168.5.2 125 msec 172 msec 127 msec
```

BUCARAMANGA>

BUCARAMANGA>traceroute 192.168.4.28

Type escape sequence to abort.

Tracing the route to 192.168.4.28

```
1 200.10.10.2 32 msec 16 msec 16 msec
2 200.10.20.2 47 msec 63 msec 63 msec
3 200.10.30.2 94 msec 94 msec 78 msec
4 192.168.4.28 125 msec 141 msec 172 msec
```

ALI>traceroute 192.168.1.2

Type escape sequence to abort.

Tracing the route to 192.168.1.2

```
1 200.10.40.1 32 msec 31 msec 15 msec
2 200.10.30.1 65 msec 63 msec 63 msec
3 200.10.20.1 63 msec 78 msec 93 msec
4 200.10.10.1 125 msec 109 msec 125 msec
```

5 192.168.1.2 141 msec 156 msec 172 msec CALI>

MEDELLIN>tracert 192.168.3.2

Type escape sequence to abort.

Tracing the route to 192.168.3.2

1 200.10.30.1 15 msec 17 msec 15 msec

2 * 62 msec 93 msec

MEDELLIN>

CONECTIVIDAD

The screenshot displays the Cisco Packet Tracer interface. The main workspace shows a network topology with two central routers, 1841 BOGOTA and 1841 MEDELLIN, connected to three other routers: 1841 BUCARAMANGA, 2941-24 MERCADERO, and 2941-24 VENTAS SUC 1. The 2941-24 VENTAS SUC 1 router is connected to two other 2941-24 routers, VENTAS 1.1 and VENTAS 1.1. Below these routers are several PC-PT devices, including Mercadeo inicial, Mercadeo final, Ventas1 inicial, Ventas1 final, ventas1.1 inicial, and ventas1.1 final. The Event List window on the right shows a list of events with columns for Vis., Time (sec), Last Device, At Device, Type, and Info. The events include ICMP and ARP traffic between various devices. The Simulation window at the bottom shows a table of events with columns for Fire, Last Status, Source, Destination, Type, Color, Time (sec), and Per. The table contains three rows of data, all with a Time (sec) of 0.000.

Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Per
In Progress		VENTAS SUC 2	ventas1.1 inicial	ICMP	Orange	0.000	N
In Progress		ventas2 final	ventas2.1 inicial	ICMP	Purple	0.000	N
In Progress		Mercadeo inicial	Ventas1 inicial	ICMP	Pink	0.000	N

ESCENARIO

Una empresa con varias sucursales en diferentes ciudades del país desea modernizar el manejo de la red de datos que actualmente tiene y se describe a continuación:

Nombre empresa: CHALVER

Objeto social: Empresa dedicada a la exportación e importación de equipos de computo.

Sedes:

- Principal: Pasto

Sucursales

- Bogotá
- Medellín
- Pereira
- Cali
- Cartagena
- Ibagué
- Cúcuta
- Bucaramanga
- Barranquilla
- Villavicencio

Descripción Sede Principal:

Se cuenta con un edificio que tiene 3 pisos, en el primero están los cuartos de equipos que permiten la conexión con todo el país, allí se tiene:

- 3 Enrutadores CISCO principales, uno para el enlace nacional, otro para la administración de la red interna en los pisos 1 y 2 y otro para el tercer piso.
- 3 Switches Catalyst CISCO, uno para cada piso del edificio con soporte de 24 equipos cada uno, actualmente se esta al 95% de la capacidad.
- Un canal dedicado con tecnología ATM que se ha contratado con ISP nacional de capacidad de 2048 Kbps.

- El direccionamiento a nivel local es clase C. Se cuenta con 70 equipos en tres pisos, se tiene las oficinas de Sistemas (15 equipos, primer piso), Gerencia (5 Equipos, primer piso), Ventas (30 equipos, segundo piso), Importaciones (10 Equipos, tercer piso), Mercadeo (5 Equipos, tercer piso) y Contabilidad (5 Equipos, tercer piso)
- El direccionamiento a nivel nacional es Clase A privada, se tiene un IP pública al ISP para el servicio de Internet la cual es: 200.21.85.93 Mascara: 255.255.240.0.
- Actualmente el Enrutamiento se hace con RIP versión 1, tanto para la parte local como para la parte nacional.

Descripción de las sucursales:

Cada sucursal se compone de oficinas arrendadas en un piso de un edificio y compone de los siguientes elementos:

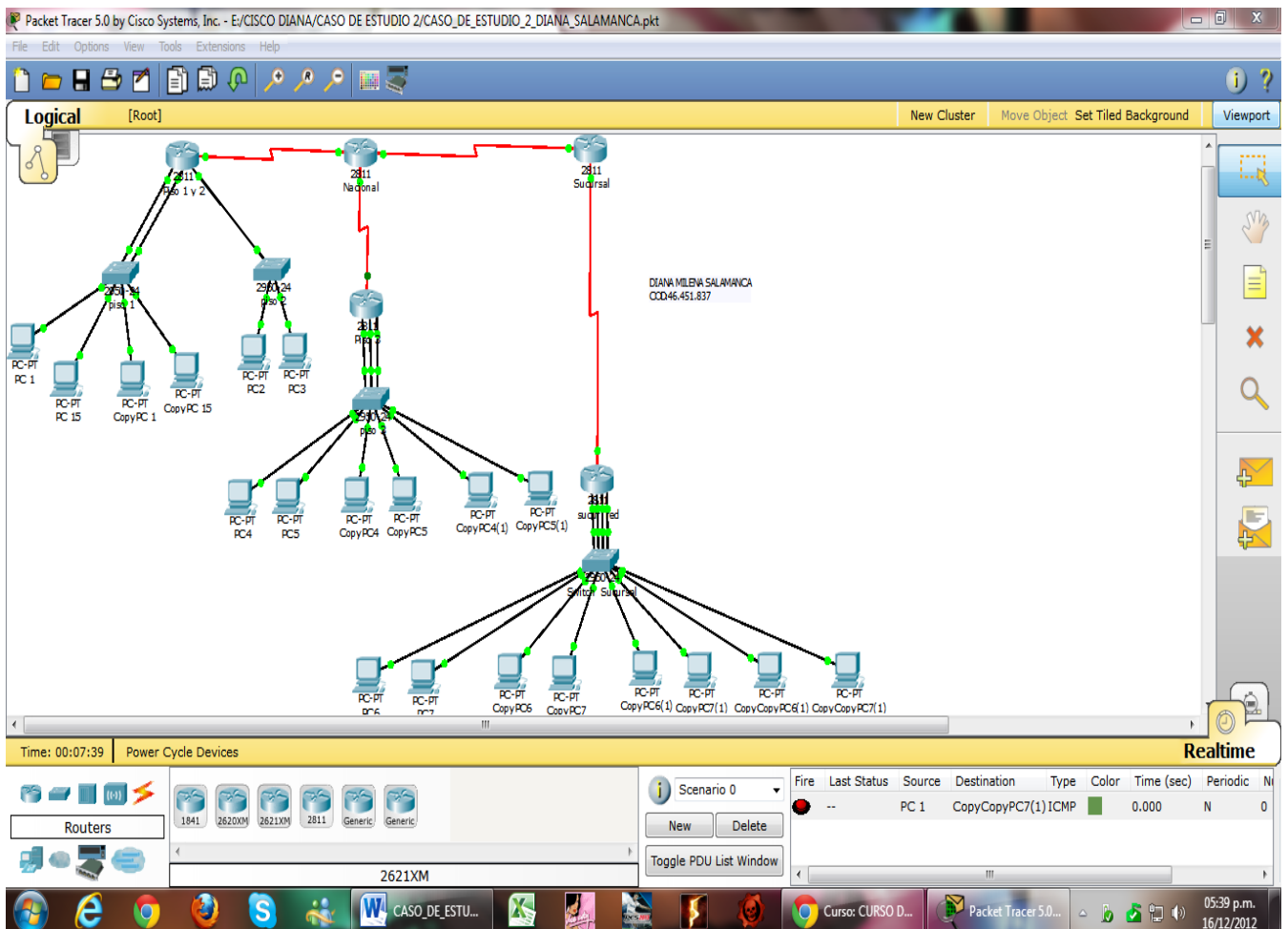
- Dos Routers por sucursal: Uno para el enlace nacional y otro para la administración de la red interna.
- Un Switch Catalyst para 24 equipos, actualmente se utilizan 20 puertos
- Los 20 equipos se utilizan así: 10 para ventas, 5 para sistemas, 2 para importaciones y 3 para contabilidad.
- Un canal dedicado con tecnología ATM para conectarse a la sede principal de 512Kbps.
- El direccionamiento a nivel local es Clase C privado y a nivel nacional B como se había dicho en la descripción de la sede principal.
- El enrutamiento también es RIP.

ACTIVIDADES A DESARROLLAR:

1. Realizar el diseño de la sede principal y sucursales con las especificaciones actuales, un archivo PKT para la sede principal y para una sucursal.
2. Realizar un diseño a nivel de Routers y Switch para todo el país con Packet Tracert.
3. Aplicar el direccionamiento especificado en el diseño del punto anterior.
4. Aplicar el enrutamiento actual en el diseño del punto 2.
5. Cambiar las especificaciones de direccionamiento y enrutamiento según las siguientes condiciones:
 - Aplicar VLSM en la sede principal y sucursales

- Aplicar VLSM para la conexión nacional
- Aplicar Enrutamiento OSPF en la conexión Nacional
- Aplicar Enrutamiento EIGRP para la conexión interna en la sede principal
- Aplicar Enrutamiento RIPv2 para todas las sucursales
- Permitir el acceso a la IP Publica para: Pasto, Barranquilla, Bogotá, Medellín y Bucaramanga.

DIAGRAMA EN PACKET TRACER



Diseño y documentación del esquema de direccionamiento

1. SEDE PRINCIPAL

SEDE PRINCIPAL								
Piso	Oficina	subnet	gateway	IP Inicial	IP final	Boadcast	Mascara	Equipos
1	Sistemas	192.168.1.64	192.168.1.65	192.168.1.66	192.168.1.80	192.168.1.95	255.255.255.224	15
1	Gerencia	192.168.1.112	192.168.1.113	192.168.1.114	192.168.1.118	192.168.1.119	255.255.255.248	5
2	Ventas	192.168.1.0	192.168.1.1	192.168.1.1	192.168.1.31	192.168.1.63	255.255.255.192	30
3	Importaciones	192.168.1.96	192.168.1.97	192.168.1.98	192.168.1.107	192.168.1.111	255.255.255.240	10
3	Mercadeo	192.168.1.120	192.168.1.121	192.168.1.122	192.168.1.126	192.168.1.127	255.255.255.248	5
3	Contabilidad	192.168.1.128	192.168.1.129	192.168.1.130	192.168.1.134	192.168.1.135	255.255.255.248	5

Routers Piso 1 y Piso 2 sede principal con enlace nacional							
Piso	subnet	gateway	IP Inicial	IP final	Boadcast	Mascara	Equipos
1 y 2	192.168.1.136		192.168.1.137	192.168.1.138	192.168.1.139	255.255.255.252	2

Router Piso 3 sede principal con enlace nacional							
Piso	subnet	gateway	IP Inicial	IP final	Boadcast	Mascara	Equipos
3	192.168.1.140		192.168.1.141	192.168.1.142	192.168.1.143	255.255.255.252	2

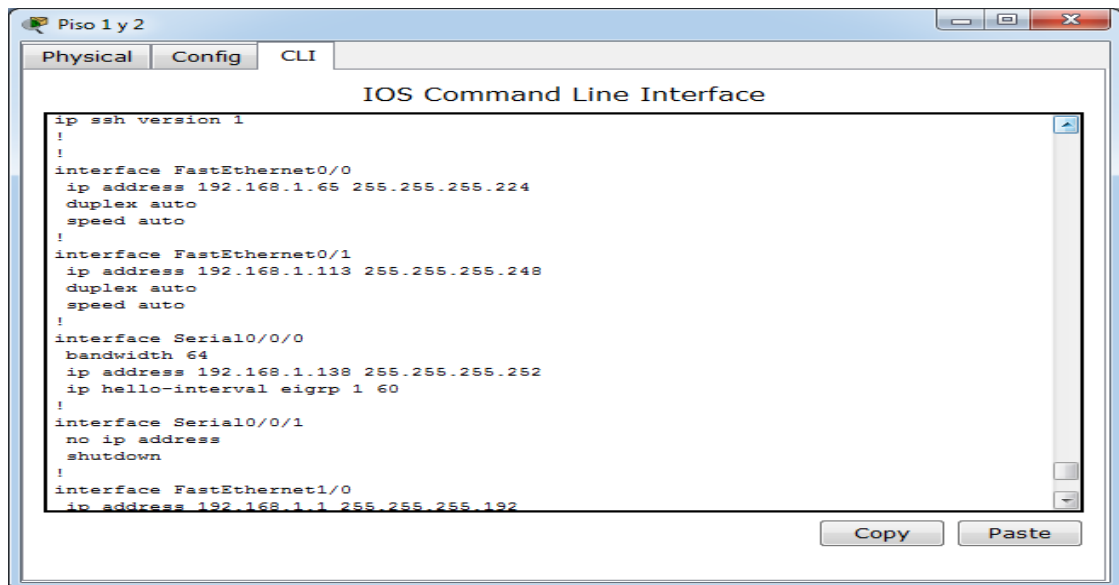
2. SUCURSAL

SUCURSAL								
Piso	Oficina	subnet	gateway	IP Inicial	IP final	Boadcast	Mascara	Equipos
1	Ventas	192.168.0.0	192.168.0.1	192.168.0.2	192.168.0.11	192.168.0.15	255.255.255.240	10
1	Sistemas	192.168.0.16	192.168.0.17	192.168.0.18	192.168.0.22	192.168.0.23	255.255.255.248	5
1	Importaciones	192.168.0.32	192.168.0.33	192.168.0.34	192.168.0.35	192.168.0.39	255.255.255.248	2
1	Contabilidad	192.168.0.24	192.168.0.25	192.168.0.26	192.168.0.28	192.168.0.31	255.255.255.248	3

Router sucursal con enlace nacional							
Piso	subnet	gateway	IP Inicial	IP final	Boadcast	Mascara	Equipos
1	192.168.0.40		192.168.0.41	192.168.0.42	192.168.0.43	255.255.255.252	2

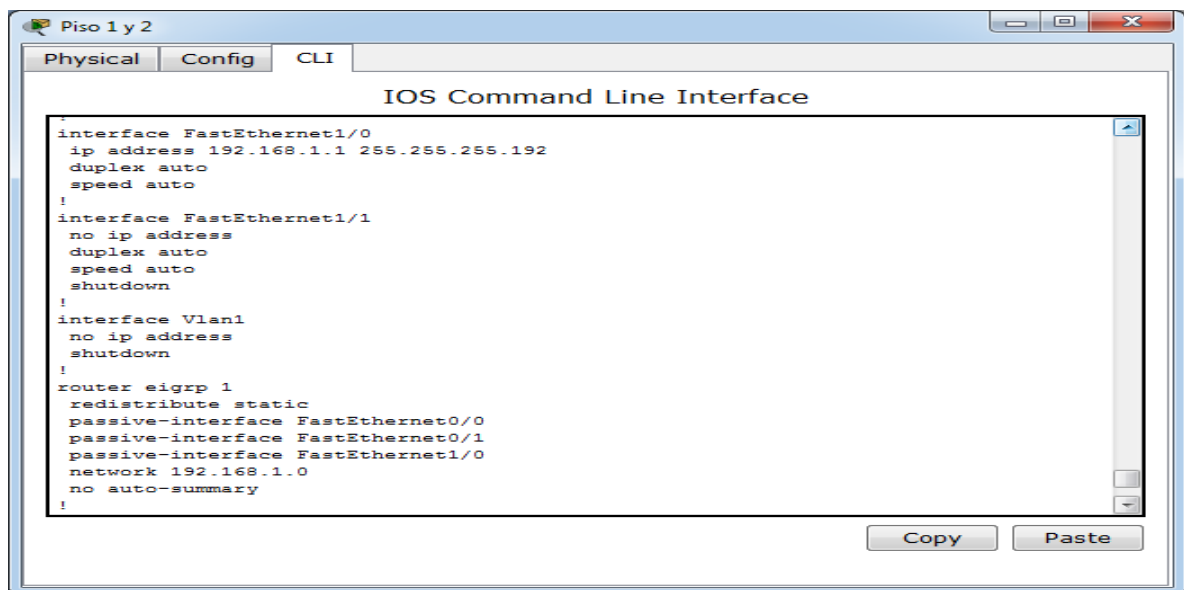
Router conexión nacional - Esquema Clase A							
Piso	Subnet	gateway	IP Inicial	IP final	Boadcast	Mascara	Equipos
1	10.10.10.0		10.10.10.1	10.10.10.2	10.10.10.3	255.255.255.252	2

2. PANTALLAZOS DE CONFIGURACION DE ROUTERS



```
ip ssh version 1
!
!
interface FastEthernet0/0
 ip address 192.168.1.65 255.255.255.224
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 192.168.1.113 255.255.255.248
 duplex auto
 speed auto
!
interface Serial0/0/0
 bandwidth 64
 ip address 192.168.1.138 255.255.255.252
 ip hello-interval eigrp 1 60
!
interface Serial0/0/1
 no ip address
 shutdown
!
interface FastEthernet1/0
 ip address 192.168.1.1 255.255.255.192
```

Aquí se ve que se configura en el puerto serie el ancho de banda y el tiempo del intervalo de comunicación para eigrp en 60



```
interface FastEthernet1/0
 ip address 192.168.1.1 255.255.255.192
 duplex auto
 speed auto
!
interface FastEthernet1/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router eigrp 1
 redistribute static
 passive-interface FastEthernet0/0
 passive-interface FastEthernet0/1
 passive-interface FastEthernet1/0
 network 192.168.1.0
 no auto-summary
!
```

Aquí se ve que se en el protocolo eigrp se le dio redistribuir la ruta estática, se colocaron las interfaces Ethernet en pasivas y se le dio la red que se trabajo y se desactivo la sumatoria automática.

```
Piso 1 y 2
Physical Config CLI
IOS Command Line Interface

Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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

    192.168.1.0/24 is variably subnetted, 8 subnets, 5 masks
C       192.168.1.0/26 is directly connected, FastEthernet1/0
C       192.168.1.64/27 is directly connected, FastEthernet0/0
D       192.168.1.96/28 [90/41026560] via 192.168.1.137, 03:56:39, Serial0/0/0
C       192.168.1.112/29 is directly connected, FastEthernet0/1
D       192.168.1.120/29 [90/41026560] via 192.168.1.137, 03:56:39, Serial0/0/0
D       192.168.1.128/29 [90/41026560] via 192.168.1.137, 03:56:39, Serial0/0/0
D       192.168.1.136/30 is directly connected, Serial0/0/0
C       192.168.1.140/30 [90/41024000] via 192.168.1.137, 03:56:39, Serial0/0/0
S*     0.0.0.0/0 is directly connected, Serial0/0/0
Router#
```

Aquí se muestra que el protocolo eigrp está trabajando y se ven las redes vecinas que usan este protocolo.

```
Piso 1 y 2
Physical Config CLI
IOS Command Line Interface

Router#show ip protocols
Routing Protocol is "eigrp 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0
  EIGRP maximum hopcount 100
  EIGRP maximum metric variance 1
  Redistributing: eigrp 1, static
  Automatic network summarization is not in effect
  Maximum path: 4
  Routing for Networks:
    192.168.1.0
  Passive Interface(s):
    FastEthernet0/0
    FastEthernet0/1
    FastEthernet1/0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.1.137   90           13089134
  Distance: internal 90 external 170
--More--
```

Aquí se ve la distancia administrativa que maneja eigrp que es de 90 y las especificaciones importantes que tiene este protocolo de comunicación.

The screenshot shows the Cisco IOS Command Line Interface with the following output:

```

Router# show ip eigrp ?
  interfaces IP-EIGRP interfaces
  neighbors IP-EIGRP neighbors
  topology IP-EIGRP Topology Table
  traffic IP-EIGRP Traffic Statistics
Router# show ip eigrp interface
IP-EIGRP interfaces for process 1

```

Interface	Peers	Xmit Queue Un/Reliable	Mean SRTT	Pacing Time Un/Reliable	Multicast Flow Timer	Pending Routes
Fa0/0	0	0/0	1236	0/10	0	0
Fa0/1	0	0/0	1236	0/10	0	0
Fa1/0	0	0/0	1236	0/10	0	0
Ser0/0/0	1	0/0	1236	0/10	0	0

```

Router# show ip eigrp neighbors
IP-EIGRP neighbors for process 1
H Address Interface Hold Uptime SRTT RTO Q Seq
(sec) (ms) Cnt Num
0 192.168.1.137 Ser0/0/0 13 04:03:16 40 1000 0 13
Router#

```

Se ven los vecinos que encuentra el protocolo eigrp, también vemos que se conecta por el puerto serie

The screenshot shows the Cisco IOS Command Line Interface with the following output:

```

Router# show ip eigrp interface
IP-EIGRP interfaces for process 1

```

Interface	Peers	Xmit Queue Un/Reliable	Mean SRTT	Pacing Time Un/Reliable	Multicast Flow Timer	Pending Routes
Fa0/0	0	0/0	1236	0/10	0	0
Fa0/1	0	0/0	1236	0/10	0	0
Fa1/0	0	0/0	1236	0/10	0	0
Ser0/0/0	1	0/0	1236	0/10	0	0

```

Router# show ip eigrp neighbors
IP-EIGRP neighbors for process 1
H Address Interface Hold Uptime SRTT RTO Q Seq
(sec) (ms) Cnt Num
0 192.168.1.137 Ser0/0/0 13 04:03:16 40 1000 0 13

Router# show ip route eigrp
D 192.168.1.96/28 [90/41026560] via 192.168.1.137, 04:04:55, Serial0/0/0
D 192.168.1.120/29 [90/41026560] via 192.168.1.137, 04:04:55, Serial0/0/0
D 192.168.1.128/29 [90/41026560] via 192.168.1.137, 04:04:55, Serial0/0/0
D 192.168.1.140/30 [90/41024000] via 192.168.1.137, 04:04:56, Serial0/0/0
Router#

```

Solo las conexiones por el protocolo eigrp

```

interface Vlan1
no ip address
shutdown
!
router eigrp 1
redistribute static
passive-interface FastEthernet0/0
passive-interface FastEthernet0/1
passive-interface FastEthernet1/0
passive-interface FastEthernet1/1
network 192.168.1.0
no auto-summary
!
router ospf 1
log-adjacency-changes
redistribute eigrp 1 subnets
network 10.10.10.0 0.0.0.3 area 0
network 192.168.1.136 0.0.0.3 area 0
network 192.168.1.140 0.0.0.3 area 0
!
ip classless
!
!
!

```

Aquí vemos que el protocolo eigrp está configurado con la red 192.168.1.0 y se desactivo la sumatoria automática y esta redistribuyendo la ruta estatica y que el protocolo ospf esta redistribuyendo las direcciones de subred del protocolo eigrp, y se colocan las tres redes que están conectadas al router que hace la conexión nacional

```

Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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 - ECP
       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 10.10.10.2 to network 0.0.0.0

C        10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.1.1.0/24 is directly connected, Loopback0
C        10.10.10.0/30 is directly connected, Serial0/1/0
O E2    192.168.0.0/24 is variably subnetted, 5 subnets, 3 masks
O E2    192.168.0.0/28 [110/64] via 10.10.10.2, 01:14:55, Serial0/1/0
O E2    192.168.0.16/29 [110/64] via 10.10.10.2, 01:14:55, Serial0/1/0
O E2    192.168.0.24/29 [110/64] via 10.10.10.2, 01:14:55, Serial0/1/0
O E2    192.168.0.32/29 [110/64] via 10.10.10.2, 01:14:55, Serial0/1/0
O       192.168.0.40/30 [110/128] via 10.10.10.2, 01:14:55, Serial0/1/0
D       192.168.1.0/24 is variably subnetted, 8 subnets, 5 masks
D       192.168.1.0/26 [90/2172416] via 192.168.1.138, 04:09:10, Serial0/0/0
D       192.168.1.64/27 [90/2172416] via 192.168.1.138, 04:09:10, Serial0/0/0
D       192.168.1.96/28 [90/2172416] via 192.168.1.142, 04:09:10, Serial0/0/1
D       192.168.1.112/29 [90/2172416] via 192.168.1.138, 04:09:10, Serial0/0/0
D       192.168.1.120/29 [90/2172416] via 192.168.1.142, 04:09:10, Serial0/0/1
D       192.168.1.128/29 [90/2172416] via 192.168.1.142, 04:09:10, Serial0/0/1
D       192.168.1.136/30 is directly connected, Serial0/0/0
D       192.168.1.140/30 is directly connected, Serial0/0/1
C*E2   0.0.0.0/0 [110/1] via 10.10.10.2, 01:14:55, Serial0/1/0
Router#

```

Aquí se ven los dos protocolos usados y las redes conectadas directamente y las distancias administrativas que utiliza cada uno de los protocolos.

```
Nacional
Physical Config CLI
IOS Command Line Interface

Routing Protocol is "eigrp 1 "
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0
  EIGRP maximum hopcount 100
  EIGRP maximum metric variance 1
  Redistributing: eigrp 1, static
  Automatic network summarization is not in effect
  Maximum path: 4
  Routing for Networks:
    192.168.1.0
  Passive Interface(s):
    FastEthernet0/0
    FastEthernet0/1
    FastEthernet1/0
    FastEthernet1/1
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.1.142    90           S274728
    192.168.1.138    90           S274728
  Distance: internal 90 external 170

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 200.21.85.93
  Redistributing External Routes from,
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
  Routing Information Sources:
  Distance: (default is 110)

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```

Aquí se ve la configuración de los dos protocolos que se usan en este router

```
Nacional
Physical Config CLI
IOS Command Line Interface

Distance: internal 90 external 170

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 200.21.85.93
  Redistributing External Routes from,
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    10.10.10.0 0.0.0.3 area 0
    192.168.1.136 0.0.0.3 area 0
    192.168.1.140 0.0.0.3 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    19.10.10.2       110          00:02:55
  Distance: (default is 110)

Router#show ip eigrp ?
  interfaces      IP-EIGRP interfaces
  neighbors       IP-EIGRP neighbors
  topology        IP-EIGRP Topology Table
  traffic         IP-EIGRP Traffic Statistics
Router#show ip eigrp neigh
IP-EIGRP neighbors for process 1
H   Address          Interface      Hold Uptime    SRTT  RTO  Q   Seq
  0  192.168.1.142     Ser0/0/1      14   04:19:28    40   1000 0   9
  1  192.168.1.138     Ser0/0/0      14   04:19:28    40   1000 0   9

Router#

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```

Aquí se ven los vecinos de este router conectados por los dos puertos serie

```
Router#show ip ospf neig
Neighbor ID Pri State Dead Time Address Interface
192.168.0.41 1 FULL/- 00:00:34 10.10.10.2 Serial0/1/0
Router#
```

Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 200.21.85.93
Redistributing External Routes from,
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
10.10.10.0 0.0.0.3 area 0
192.168.1.136 0.0.0.3 area 0
192.168.1.140 0.0.0.3 area 0
Routing Information Sources:
Gateway Distance Last Update
10.10.10.2 110 00:02:55
Distance: (default is 110)

Router#show ip eigrp ?
interfaces IP-EIGRP interfaces
neighbors IP-EIGRP neighbors
topology IP-EIGRP Topology Table
traffic IP-EIGRP Traffic Statistics

Router#show ip eigrp neig
IP-EIGRP neighbors for process 1

H	Address	Interface	Hold Uptime (sec)	SRTT (ms)	RTO	Q Cnt	Seq Num
0	192.168.1.142	Ser0/0/1	14 04:19:28	40	1000	0	9
1	192.168.1.138	Ser0/0/0	14 04:19:28	40	1000	0	9

Se ve los vecinos del protocolo ospf y porque puerto serie está saliendo y a qué dirección tiene

```
Router#show ip ospf interface
Serial0/1/0 is up, line protocol is up
Internet address is 10.10.10.1/30, Area 0
Process ID 1, Router ID 200.21.85.93, Network Type POINT-TO-POINT, Cost: 64
Transmit Delay is 1 sec, State POINT-TO-POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:05
Index 1/1, Flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 10.10.10.2
Suppress hello for 0 neighbor(s)
Router#
```

Router#show ip eigrp neig
IP-EIGRP neighbors for process 1

H	Address	Interface	Hold Uptime (sec)	SRTT (ms)	RTO	Q Cnt	Seq Num
0	192.168.1.142	Ser0/0/1	14 04:19:28	40	1000	0	9
1	192.168.1.138	Ser0/0/0	14 04:19:28	40	1000	0	9

Router#show ip ospf neig
Neighbor ID Pri State Dead Time Address Interface
192.168.0.41 1 FULL/- 00:00:34 10.10.10.2 Serial0/1/0
Router#

Aquí se ve la configuración de la interface que usa ospf

Physical Config CLI

IOS Command Line Interface

```

Router#show ip ospf neig
Neighbor ID Pri State Dead Time Address Interface
192.168.0.41 1 FULL/- 00:00:34 10.10.10.2 Serial0/1/0
Router#show ip ospf ?
<1-65535> Process ID number
border-routers Border and Boundary Router Information
database Database summary
interface Interface information
neighbor Neighbor list
<cr>
Router#show ip ospf interface
Serial0/1/0 is up, line protocol is up
Internet address is 10.10.10.1/30, Area 0
Process ID 1, Router ID 200.21.88.93, Network Type POINT-TO-POINT, Cost: 64
Transmit Delay is 1 sec, State POINT-TO-POINT,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:05
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 10.10.10.2
Suppress hello for 0 neighbor(s)
Router#show ip eigrp interface
IP-EIGRP interfaces for process 1

```

Interface	Peers	Xmit Queue Un/Reliable	Mean SRTT	Pacing Time Un/Reliable	Multicast Flow Timer	Pending Routes
Serial0/0/0	1	0/0	1236	0/10	0	0
Serial0/0/1	1	0/0	1236	0/10	0	0

Router#

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Aquí se ve la configuración de los puertos que usan eigrp

Physical Config CLI

IOS Command Line Interface

```

Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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

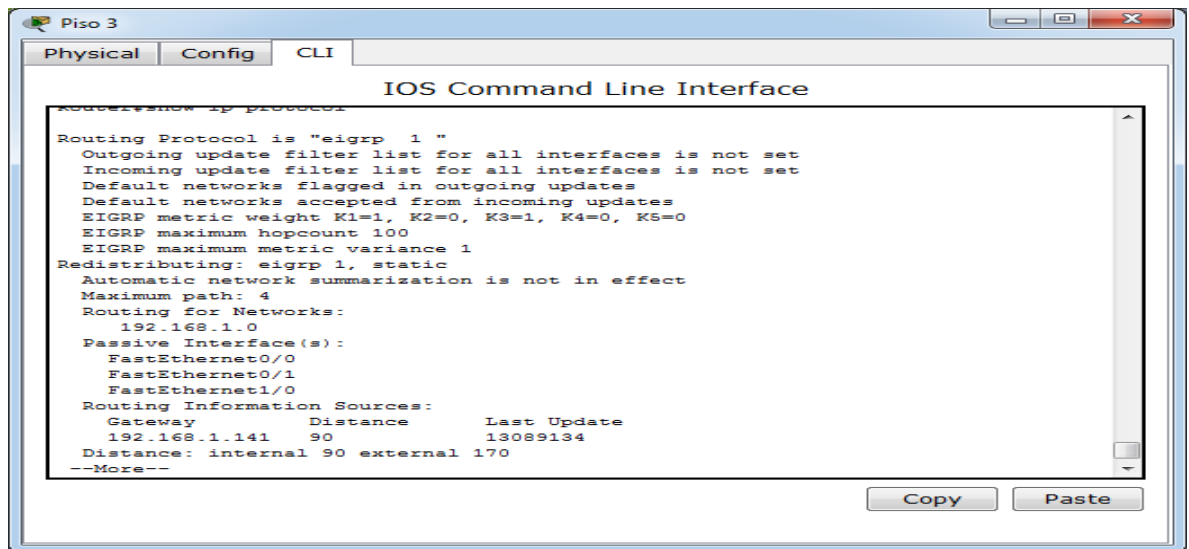
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

192.168.1.0/24 is variably subnetted, 8 subnets, 5 masks
D 192.168.1.0/26 [90/41026560] via 192.168.1.141, 04:34:51, Serial0/0/1
D 192.168.1.64/27 [90/41026560] via 192.168.1.141, 04:34:51, Serial0/0/1
C 192.168.1.96/28 is directly connected, FastEthernet0/0
D 192.168.1.112/29 [90/41026560] via 192.168.1.141, 04:34:51, Serial0/0/1
C 192.168.1.120/29 is directly connected, FastEthernet0/1
C 192.168.1.128/29 is directly connected, FastEthernet1/0
D 192.168.1.136/30 [90/41024000] via 192.168.1.141, 04:34:51, Serial0/0/1
C 192.168.1.140/30 is directly connected, Serial0/0/1
S* 0.0.0.0/0 is directly connected, Serial0/0/1
Router#

```

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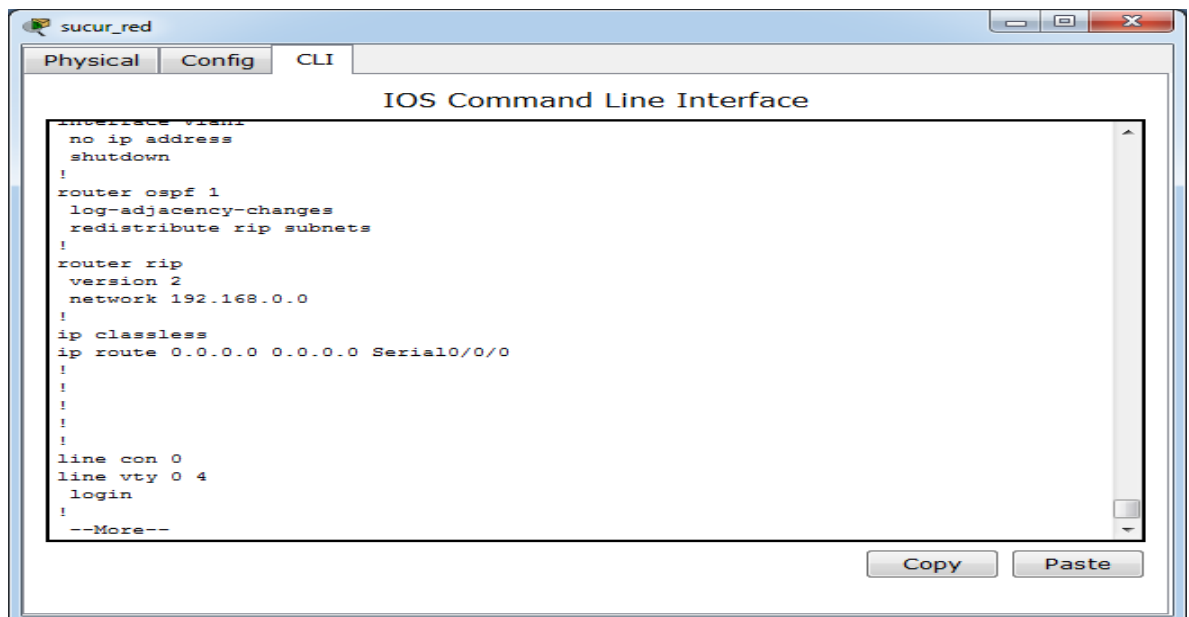
En el router del piso 3 se ve la configuración de protocolos que son eigrp



The screenshot shows a Cisco IOS Command Line Interface window titled "Piso 3". The interface is in the "CLI" tab. The command "router#show ip protocols" has been executed, displaying the following configuration details:

```
Routing Protocol is "eigrp 1 "  
  Outgoing update filter list for all interfaces is not set  
  Incoming update filter list for all interfaces is not set  
  Default networks flagged in outgoing updates  
  Default networks accepted from incoming updates  
  EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0  
  EIGRP maximum hopcount 100  
  EIGRP maximum metric variance 1  
  Redistributing: eigrp 1, static  
    Automatic network summarization is not in effect  
  Maximum path: 4  
  Routing for Networks:  
    192.168.1.0  
  Passive Interface(s):  
    FastEthernet0/0  
    FastEthernet0/1  
    FastEthernet1/0  
  Routing Information Sources:  
    Gateway         Distance      Last Update  
    192.168.1.141   90           13089134  
  Distance: internal 90 external 170  
--More--
```

La configuración del protocolo



The screenshot shows a Cisco IOS Command Line Interface window titled "sukur_red". The interface is in the "CLI" tab. The command "interface viana" has been executed, displaying the following configuration details:

```
interface viana  
  no ip address  
  shutdown  
  !  
  router ospf 1  
    log-adjacency-changes  
    redistribute rip subnets  
  !  
  router rip  
    version 2  
    network 192.168.0.0  
  !  
  ip classless  
  ip route 0.0.0.0 0.0.0.0 Serial0/0/0  
  !  
  !  
  !  
  !  
  !  
  line con 0  
  line vty 0 4  
    login  
  !  
--More--
```

Se muestra la configuración del protocolo rip v2 en el cual se especifica la dirección de subred.

```
!
end

Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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

     192.168.0.0/24 is variably subnetted, 5 subnets, 3 masks
C       192.168.0.0/28 is directly connected, FastEthernet0/0
C       192.168.0.16/29 is directly connected, FastEthernet0/1
C       192.168.0.24/29 is directly connected, FastEthernet1/0
C       192.168.0.32/29 is directly connected, FastEthernet1/1
C       192.168.0.40/30 is directly connected, Serial0/0/0
S*     0.0.0.0/0 is directly connected, Serial0/0/0
Router#
```

Se ve que todas las conexiones son directas con las subredes

```
Router#show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 6 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  FastEthernet0/0    2      2
  FastEthernet0/1    2      2
  FastEthernet1/0    2      2
  FastEthernet1/1    2      2
  Serial0/0/0        2      2
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  192.168.0.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)
--More--
```

Se ve la configuración del protocolo rip en el router

```
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
log-adjacency-changes
redistribute rip subnets
network 192.168.0.0 0.0.0.15 area 0
network 192.168.0.16 0.0.0.7 area 0
network 192.168.0.24 0.0.0.7 area 0
network 192.168.0.32 0.0.0.7 area 0
network 192.168.0.40 0.0.0.3 area 0
network 10.10.10.0 0.0.0.3 area 0
!
router rip
version 2
network 192.168.0.0
!
ip classless
!
!
```

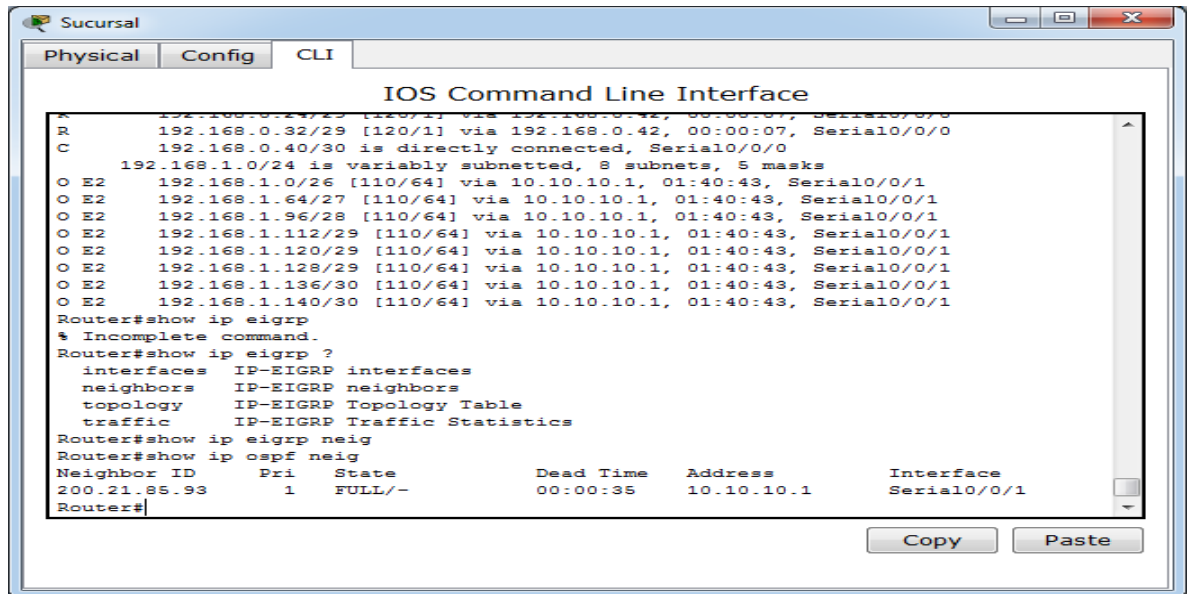
Se ve la configuración de los dos protocolos rip y ospf.

```
IOS Command Line Interface
+ - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

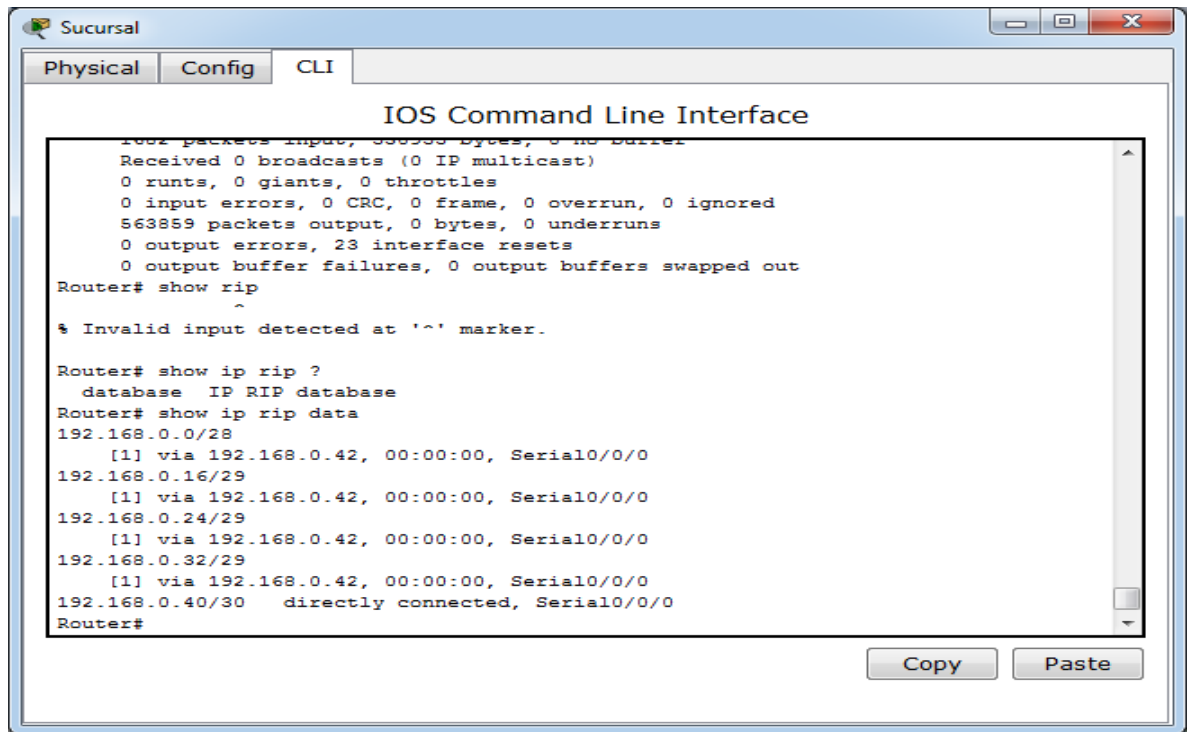
Gateway of last resort is not set

10.0.0.0/30 is subnetted, 1 subnets
C 10.10.10.0 is directly connected, Serial0/0/1
R 192.168.0.0/24 is variably subnetted, 5 subnets, 3 masks
R 192.168.0.0/28 [120/1] via 192.168.0.42, 00:00:07, Serial0/0/0
R 192.168.0.16/29 [120/1] via 192.168.0.42, 00:00:07, Serial0/0/0
R 192.168.0.24/29 [120/1] via 192.168.0.42, 00:00:07, Serial0/0/0
R 192.168.0.32/29 [120/1] via 192.168.0.42, 00:00:07, Serial0/0/0
C 192.168.0.40/30 is directly connected, Serial0/0/0
192.168.1.0/24 is variably subnetted, 8 subnets, 5 masks
O E2 192.168.1.0/26 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.64/27 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.96/28 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.112/29 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.120/29 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.128/29 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.136/30 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
O E2 192.168.1.140/30 [110/64] via 10.10.10.1, 01:40:43, Serial0/0/1
Router#
```

Se ve como están operando los dos protocolos el rip y el ospf en el router en donde se ve el direccionamiento de la sede principal y de la sucursal.



Se ve el vecino de ospf y la dirección y el puerto por el que sale



```
1002 packets input, 30000 bytes, 0 no buffer
Received 0 broadcasts (0 IP multicast)
0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
563859 packets output, 0 bytes, 0 underruns
0 output errors, 23 interface resets
0 output buffer failures, 0 output buffers swapped out
Router# show rip
^
% Invalid input detected at '^' marker.

Router# show ip rip ?
database IP RIP database
Router# show ip rip data
192.168.0.0/28
[1] via 192.168.0.42, 00:00:00, Serial0/0/0
192.168.0.16/29
[1] via 192.168.0.42, 00:00:00, Serial0/0/0
192.168.0.24/29
[1] via 192.168.0.42, 00:00:00, Serial0/0/0
192.168.0.32/29
[1] via 192.168.0.42, 00:00:00, Serial0/0/0
192.168.0.40/30 directly connected, Serial0/0/0
Router#
```

Se muestra por donde sale cada una de las subnets que salen con el protocolo rip y porque puerto salen.

CONECTIVIDAD

Packet Tracer 5.0 by Cisco Systems, Inc. - E:\CISCO DIANA\CASO DE ESTUDIO 2\CASO_DE_ESTUDIO_2_DIANA_SALAMANCA.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

DIANA MILENA SALAMANCA
COD:46.451.837

Event List

Vis.	Time (sec)	Last Device	At Device	Type	Info
<input type="checkbox"/>	0.000	--	PC 1	ICMP	
<input type="checkbox"/>	0.000	--	PC 1	ARP	
<input type="checkbox"/>	0.000	--	CopyPC5(1)	ICMP	

Reset Simulation Constant Delay Captured to: *
0.000 s

Play Controls

Back Auto Capture / Play Capture / Forward

Event List Filters

ARP, CDP, DHCP, EIGRP, ICMP, RIP, TCP, UDP, VTP, STP, OSPF, DTP, Telnet, TFTP, HTTP, DNS, SSH, ICMPv6, LACP, PAGP, ACL Filter

Edit Filters Show All

Time: 00:09:28.079 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward Event List Simulation

Routers: 1941 2620XM 2621XM 2811 Generic Generic

2621XM

Scenario 0

Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Periodic
<input checked="" type="checkbox"/>	In Progress	PC 1	CopyCopyPC7(1)	ICMP	Green	0.000	N
<input checked="" type="checkbox"/>	In Progress	CopyPC5(1)	CopyPC5	ICMP	Blue	0.000	N

New Delete Toggle PDU List Window

CASO_DE_ESTU... Packet Tracer 5.0... 05:41 p.m. 16/12/2012

CONCLUSIONES

- En esta fase final del curso de profundización con la implementación de los dos casos de estudio se comprueba que el conocimiento adquirido a través de la UNAD y de CISCO es de gran ayuda en el momento práctico de configurar enrutadores y redes no solo locales sino también de tipo WAN, esto es de vital importancia para nosotros como ingenieros de sistemas los cuales nos estamos enfocando en el área de las redes computacionales.
- El enrutamiento de paquetes es necesario conocerlo detalladamente para configurarlo adecuadamente.
- El protocolo de enrutamiento rip v2 es fácil de configurar en los routers y además es muy efectivo en el momento de encontrar las tablas de enrutamiento.
- La configuración de routers es una labor en la que se debe dedicar buen tiempo de estudio.
- Los inconvenientes presentados en el momento de configurar un router pueden ser aclarados tomando como guía el módulo de ccna 2.
- El caso de estudio del módulo ccna 2 es la oportunidad de poner en práctica todo lo aprendido durante el curso de profundización.

BIBLIOGRAFIA

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