

Instituto Tecnológico de Salina Cruz

Fundamentos de Redes

Semestre Enero – Julio 2015

Reporte de Práctica

Practica nº 2

Unidad 4

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Objetivo:

Detectar y describir las limitaciones de RIPv1.

Aplicar los comandos de configuración básica del protocolo de información de enrutamiento versión 2 (RIPv2) y evaluar las actualizaciones de enrutamiento classless RIPv2.

Analizar el resultado del router para ver si RIPv2 proporciona soporte para VLSM y CIDR.

Identificar los comandos de verificación RIPv2 y los problemas de RIPv2 comunes.

Configurar, verificar y resolver problemas de RIPv2 en laboratorios prácticos.

Instrucciones:

- 1.- Crear la tabla de enrutamiento.
- 2.- Realizar las configuraciones iniciales a los routers.
- 3.- Realizar configuraciones para usar RIP.
- 4.- Verificar el funcionamiento de RIP.

Materiales:

Programa de simulacion Packet Tracer

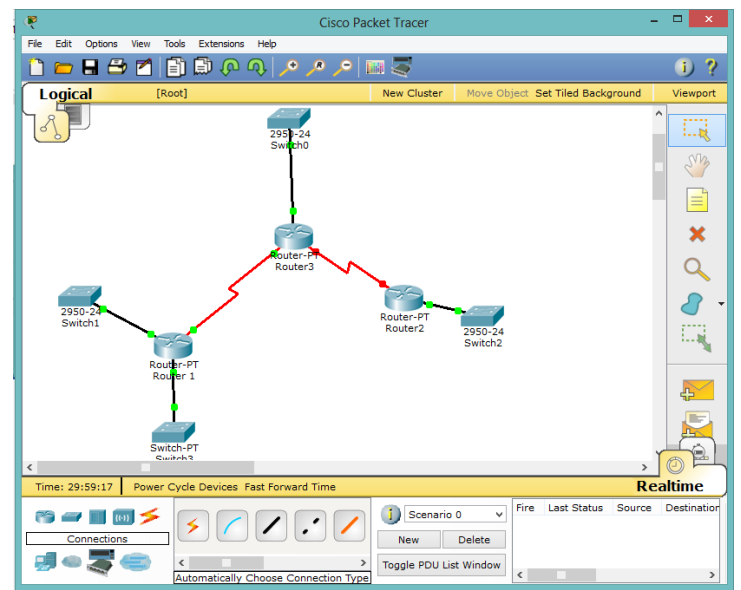
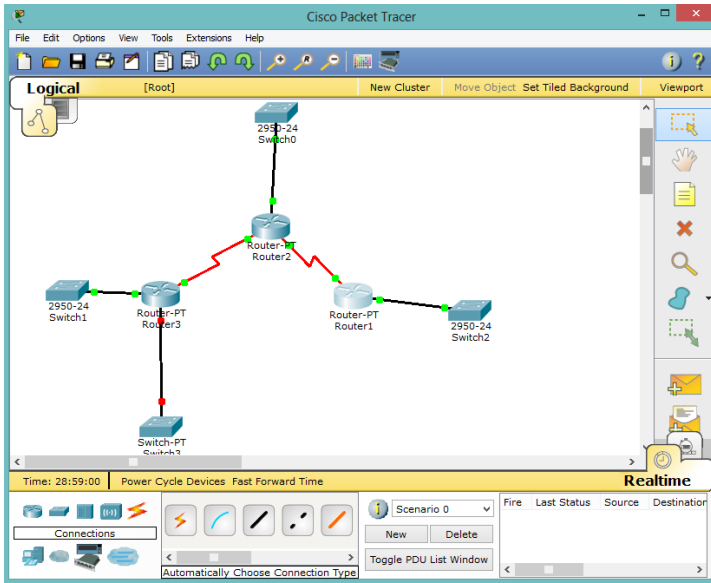


Tabla de enrutamiento.

Dispositivo	Interfaz	Dirección IP	Mascara de subred	Gateway
A(R1)	Fa0/0	172.30.1.1	255.255.0.0	No aplicable
	Fa1/0	192.30.0.1	255.255.0	
	S2/0	209.165.200.228	255.255.255.0	
B (R2)	Fa0/0	10.1.0.1	255.0.0.0	No aplicable
	S2/0	209.165.200.229	255.255.255.0	
	S3/0	219.165.200.232	255.255.255.0	
C (R3)	Fa0/0	172.30.100.1	255.255.0.0	No aplicable
	S2/0	219.165.200.233	255.255.255.0	

CONFIGURACIÓN INICIAL

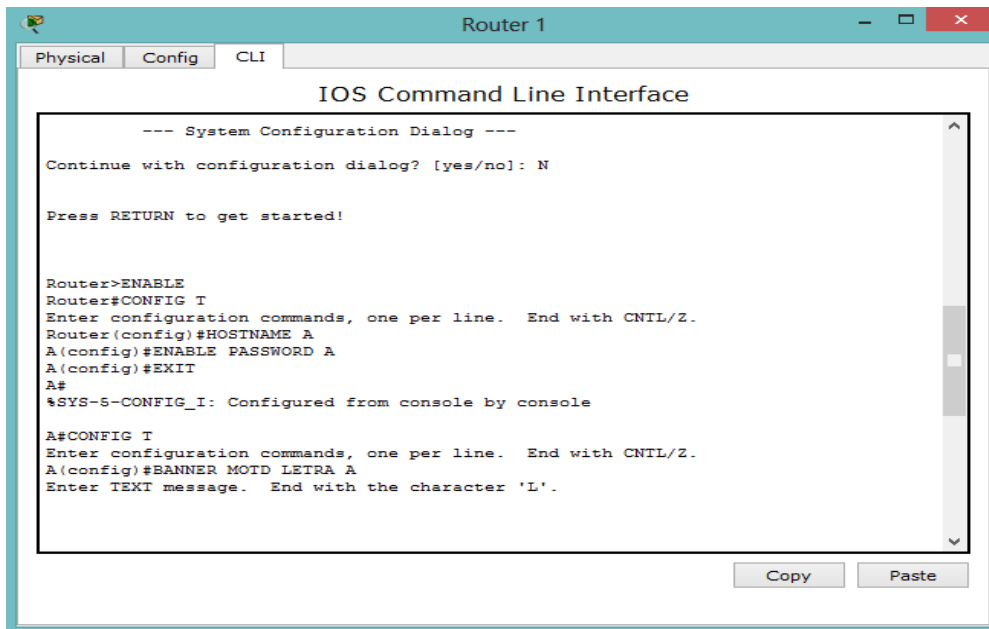
En este paso es en donde se lleva a cabo el levantamiento de puertos hará poder interconectar los diferentes dispositivos.

R1 (A).

Cambio de nombre.

Posteriormente se le asigna una contraseña.

De ahí se le asigna un banner.



The screenshot shows the CLI interface of Router 1. The window title is "Router 1". The tabs are "Physical", "Config", and "CLI". The main content area is titled "IOS Command Line Interface" and contains the following text:

```
--- System Configuration Dialog ---  
Continue with configuration dialog? [yes/no]: N  
  
Press RETURN to get started!  
  
Router>ENABLE  
Router#CONFIG T  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#HOSTNAME A  
A(config)#ENABLE PASSWORD A  
A(config)#EXIT  
A#  
%SYS-5-CONFIG_I: Configured from console by console  
  
A#CONFIG T  
Enter configuration commands, one per line. End with CNTL/Z.  
A(config)#BANNER MOTD LETRA A  
Enter TEXT message. End with the character 'L'.  
A(config)#
```

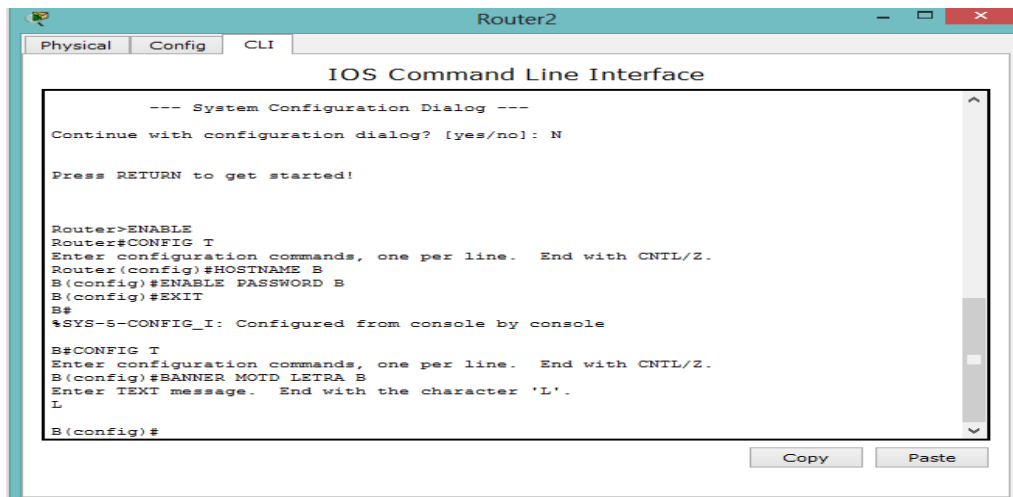
At the bottom right of the window, there are "Copy" and "Paste" buttons.

R2 (B).

Cambio de nombre.

Posteriormente se le asigna una contraseña.

De ahí se le asigna un banner.



The screenshot shows the CLI interface of Router 2. The window title is "Router2". The tabs are "Physical", "Config", and "CLI". The main content area is titled "IOS Command Line Interface" and contains the following text:

```
--- System Configuration Dialog ---  
Continue with configuration dialog? [yes/no]: N  
  
Press RETURN to get started!  
  
Router>ENABLE  
Router#CONFIG T  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#HOSTNAME B  
B(config)#ENABLE PASSWORD B  
B(config)#EXIT  
B#  
%SYS-5-CONFIG_I: Configured from console by console  
  
B#CONFIG T  
Enter configuration commands, one per line. End with CNTL/Z.  
B(config)#BANNER MOTD LETRA B  
Enter TEXT message. End with the character 'L'.  
L  
B(config)#
```

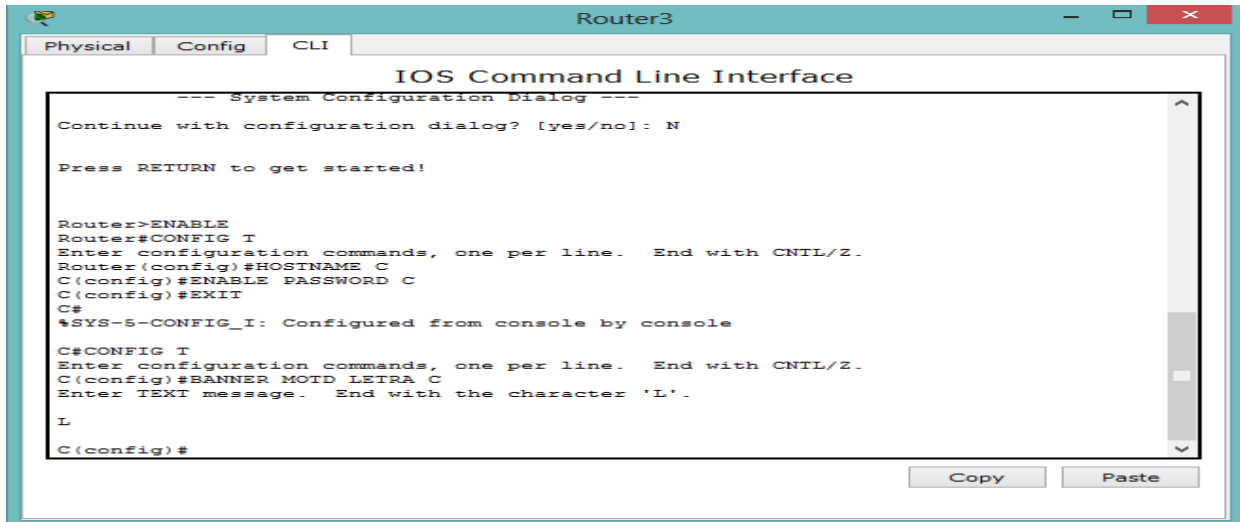
At the bottom right of the window, there are "Copy" and "Paste" buttons.

R3 (C).

Cambio de nombre.

Posteriormente se le asigna una contraseña.

De ahí se le asigna un banner.



```
Router3
Physical Config CLI
IOS Command Line Interface
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: N
Press RETURN to get started!

Router>ENABLE
Router#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#HOSTNAME C
C(config)#ENABLE PASSWORD C
C(config)#EXIT
C#
%SYS-5-CONFIG_I: Configured from console by console
C#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
C(config)#BANNER MOID LEIRA C
Enter TEXT message. End with the character 'L'.
L
C(config)#
```

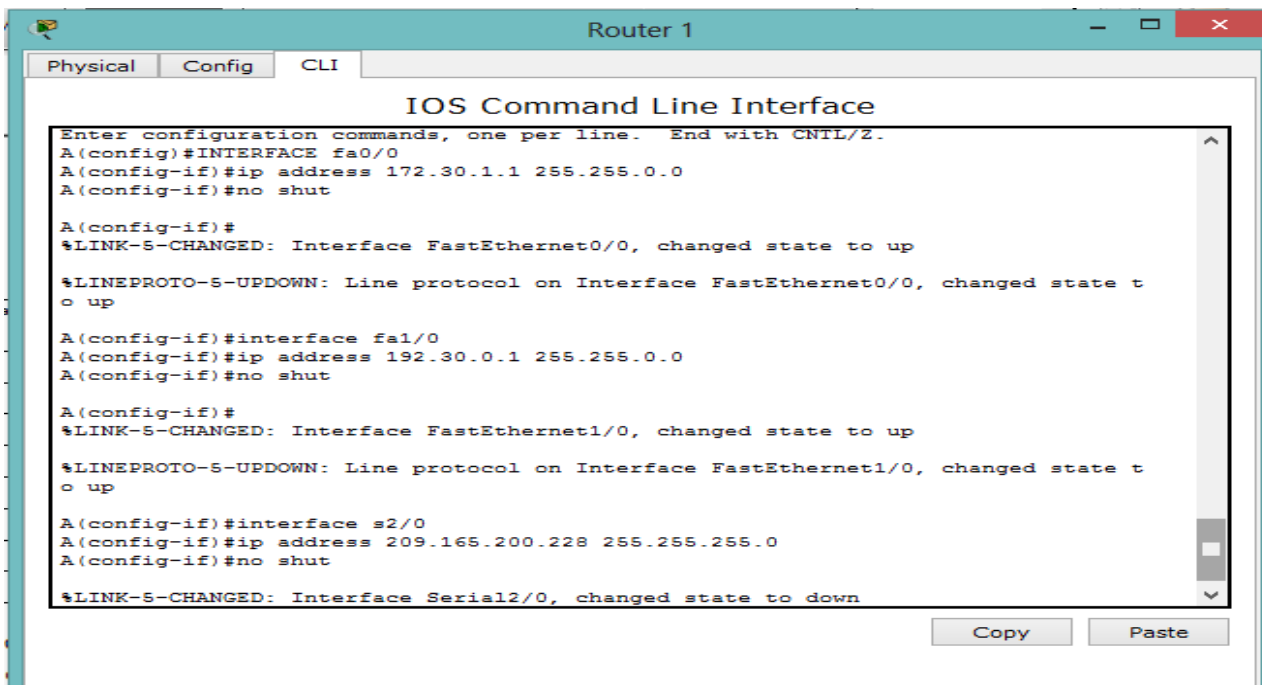
Posteriormente luego de realizar estas configuraciones, necesitamos llevar a cabo el levantamiento de puertos para que se lleve a cabo la conexión de los dispositivos.

R1 (A).

Puerto fa0/0

Serialfa1/0.

Serial2/0.



```
Router 1
Physical Config CLI
IOS Command Line Interface
Enter configuration commands, one per line. End with CNTL/Z.
A(config)#INTERFACE fa0/0
A(config-if)#ip address 172.30.1.1 255.255.0.0
A(config-if)#no shut

A(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

A(config-if)#interface fa1/0
A(config-if)#ip address 192.30.0.1 255.255.0.0
A(config-if)#no shut

A(config-if)#
%LINK-S-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

A(config-if)#interface s2/0
A(config-if)#ip address 209.165.200.228 255.255.255.0
A(config-if)#no shut

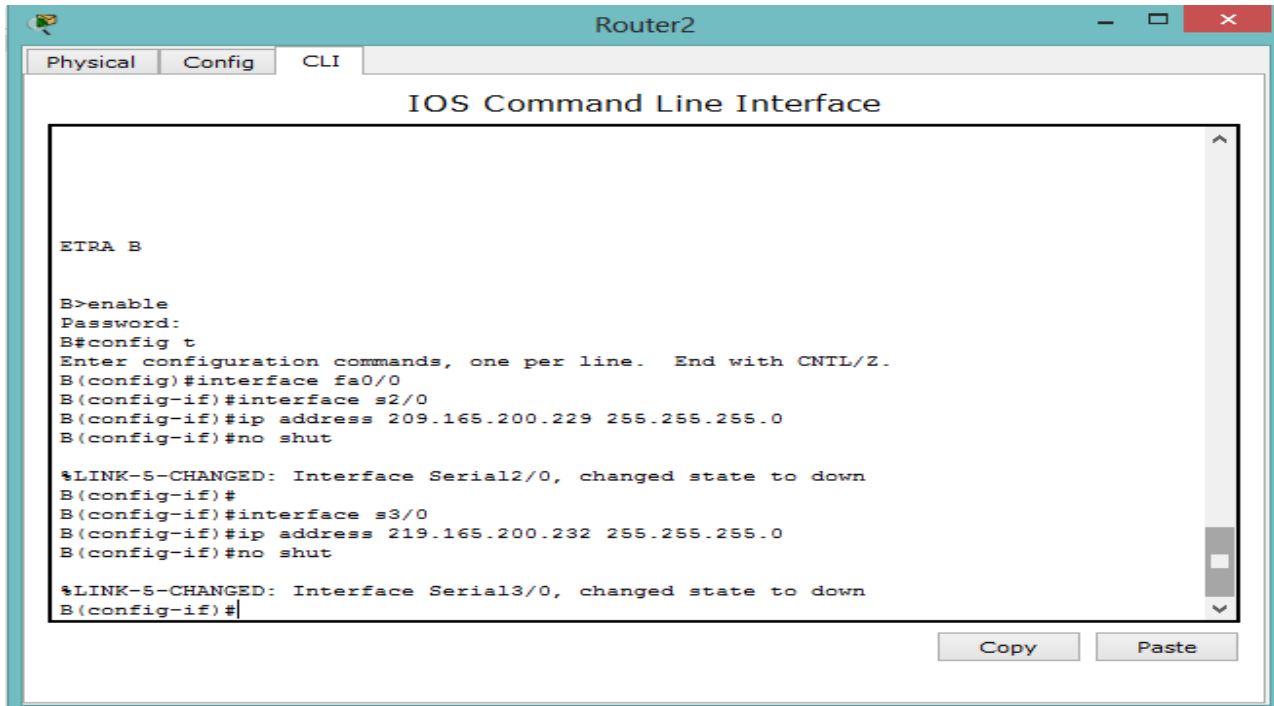
%LINK-S-CHANGED: Interface Serial2/0, changed state to down
```

R2 (B).

Puerto fa0/0.

Serial2/0.

Serial3/0.



```
Router2
Physical Config CLI
IOS Command Line Interface

E T R A B

B>enable
Password:
B#config t
Enter configuration commands, one per line. End with CNTL/Z.
B(config)#interface fa0/0
B(config-if)#interface s2/0
B(config-if)#ip address 209.165.200.229 255.255.255.0
B(config-if)#no shut

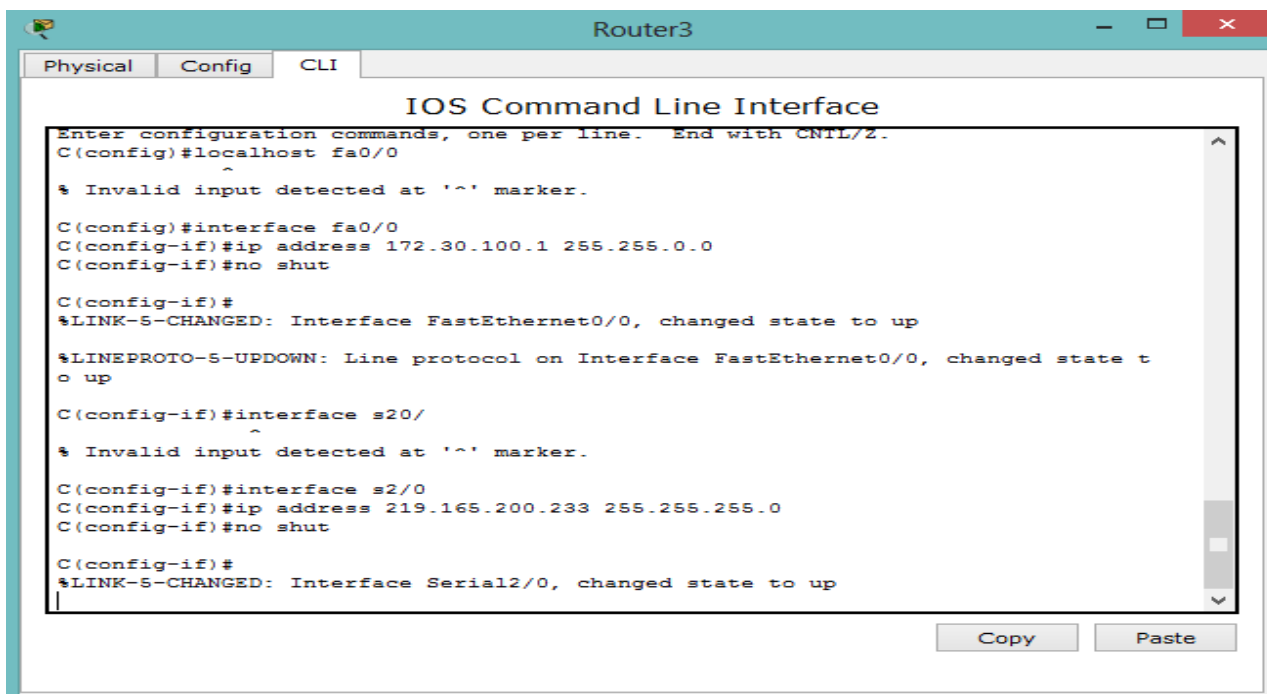
%LINK-5-CHANGED: Interface Serial2/0, changed state to down
B(config-if)#
B(config-if)#interface s3/0
B(config-if)#ip address 219.165.200.232 255.255.255.0
B(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
B(config-if)#
```

R3 (C).

Puerto fa0/0.

Serial2/0.



```
Router3
Physical Config CLI
IOS Command Line Interface

Enter configuration commands, one per line. End with CNTL/Z.
C(config)#localhost fa0/0
^
% Invalid input detected at '^' marker.

C(config)#interface fa0/0
C(config-if)#ip address 172.30.100.1 255.255.0.0
C(config-if)#no shut

C(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

C(config-if)#interface s20/
^
% Invalid input detected at '^' marker.

C(config-if)#interface s2/0
C(config-if)#ip address 219.165.200.233 255.255.255.0
C(config-if)#no shut

C(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
```

Después de eso necesitamos saber las conexiones que tienen cada router, esto mediante el comando show ip route.

R1

R2

R3

```
Router 1
IOS Command Line Interface

D
D
EXIT

A>enable
Password:
Password:
A#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    172.30.0.0/16 is directly connected, FastEthernet0/0
C    192.30.0.0/16 is directly connected, FastEthernet1/0
C    209.165.200.0/24 is directly connected, Serial2/0

h#
```

```
Router 2
IOS Command Line Interface

B>enable
Password:
B#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    10.0.0.0/8 is directly connected, FastEthernet0/0

h#
```

```
Router 3
IOS Command Line Interface

C(config-if)#
%LINK-6-CHANGED: Interface Serial2/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

C(config-if)#
C(config-if)#exit
C(config)#exit
C#
%SYS-5-CONFIG_I: Configured from console by console

C#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    172.30.0.0/16 is directly connected, FastEthernet0/0
C    192.30.0.0/16 is directly connected, FastEthernet1/0
C    219.165.200.0/24 is directly connected, Serial2/0

C#
```

Para terminar es necesario examinar los protocolos que están implementados a cada uno de los routers.

```
Router 1
IOS Command Line Interface

EXIT

A>enable
Password:
Password:
A#config t
% Invalid input detected at '^' marker.

A#config t
Enter configuration commands, one per line.  End with CNTL/Z.
A(config)#router rip
A(config-router)#network 172.80.0.0
A(config-router)#network 209.166.200.0
A(config-router)#
A(config-router)#
A(config-router)#exit
A(config)#router rip
A(config-router)#redistribute static
A(config-router)#network 10.0.0.0
A(config-router)#network 209.168.200.0
A(config-router)#
```

Verificación y prueba de la conectividad.

```
RIP protocol debugging is on
Ronaldo#RIP: received v1 update from 209.165.200.229 on Serial2/0
10.0.0.0 in 1 hops
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.30.1.1)
RIP: build update entries
network 10.0.0.0 metric 2
network 209.165.200.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial2/0 (209.165.200.228)
RIP: build update entries
network 172.30.0.0 metric 1
RIP: received v1 update from 209.165.200.229 on Serial2/0
10.0.0.0 in 1 hops
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.30.1.1)
RIP: build update entries
network 10.0.0.0 metric 2
network 209.165.200.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial2/0 (209.165.200.228)
RIP: build update entries
network 172.30.0.0 metric 1
RIP: received v1 update from 209.165.200.229 on Serial2/0
10.0.0.0 in 1 hops
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0 (172.30.1.1)
RIP: build update entries
```

Copy

Paste

Como siguiente paso se realiza la Habilitación y verificación de RIPv2.

```
.1)
RIP: build update entries
network 10.0.0.0 metric 2
network 209.165.200.0 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial2/0 (209.165.200.228)
RIP: build update entries
network 172.30.0.0 metric 1
```

```
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
Serial2/0 2 2
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
172.30.0.0
209.165.200.0
Passive Interface(s):
Routing Information Sources:
Gateway Distance Last Update
209.165.200.229 120 00:00:18
Distance: (default is 120)
Ronaldo#
```

Copy

Paste

A continuación se muestra la Inhabilitación de sumarización automática en RIPv2.

```
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 4 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
Serial2/0 2 2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
172.30.0.0
209.165.200.0
Passive Interface(s):
Routing Information Sources:
Gateway Distance Last Update
209.165.200.229 120 00:00:25
Distance: (default is 120)
```

Como parte final para verificar que las subredes se envían y se reciben, se utilizan los siguientes comandos: show ip route y debug ip rip.

```
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    10.0.0.0/8 [120/1] via 209.165.200.229, 00:00:04, Serial2/0
C    172.30.0.0/16 is directly connected, FastEthernet0/0
C    192.30.0.0/24 is directly connected, FastEthernet1/0
C    209.165.200.0/24 is directly connected, Serial2/0
```

Conclusión

En esta práctica se tomaron mucho en cuenta las configuraciones básicas de un router como son el cambio de contraseña, de nombre y a colocar un banner de bienvenida.

Esta práctica fue realizada para mostrar los comandos de un router cisco, lo cual se manejaron dos protocolos de enrutamiento, que son el RIP y el RIPv2, se mostró su funcionamiento y se utilizaron comandos para saber si las subredes se envían y se reciben.