

# Laboratorio 4

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## 4.1 Configuración protocolo enrutamiento RIPv1

Puntos 1,2 y 3

```
Router(config)#no ip domain-lookup
Router(config)#hostname R2
R2(config)#line
% Incomplete command.
R2(config)#line con 0
R2(config-line)#logging synchronous
```

Punto 4

```
R2(config-if)#ip address 192.168.10.5 255.255.255.0
R2(config-if)#
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface G0/1
R2(config-if)#ip address 192.168.30.1 255.255.255.0
R2(config-if)#
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface Loopback 2

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up

R2(config-if)#ip address 172.16.1.4 255.255.0.0
```

Pruebas de conexión

Desde PC2

```

C:\>ping 192.168.20.5

Pinging 192.168.20.5 with 32 bytes of data:

Reply from 192.168.20.5: bytes=32 time<1ms TTL=255
Reply from 192.168.20.5: bytes=32 time=1ms TTL=255
Reply from 192.168.20.5: bytes=32 time<1ms TTL=255
Reply from 192.168.20.5: bytes=32 time=18ms TTL=255

Ping statistics for 192.168.20.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 18ms, Average = 4ms

```

## Enrutamiento

```

R2#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

    172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/16 is directly connected, Loopback2
L       172.16.1.4/32 is directly connected, Loopback2
    192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/0
L       192.168.10.5/32 is directly connected, GigabitEthernet0/0
R       192.168.20.0/24 [120/1] via 192.168.10.4, 00:00:19, GigabitEthernet0/0
    192.168.30.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.30.0/24 is directly connected, GigabitEthernet0/1
L       192.168.30.1/32 is directly connected, GigabitEthernet0/1
R       192.168.40.0/24 [120/2] via 192.168.10.4, 00:00:19, GigabitEthernet0/0

```

```

R3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 27 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 1, receive any version
  Interface          Send  Recv  Triggered RIP  Key-chain
  GigabitEthernet0/0    1     2    1
  GigabitEthernet0/1    1     2    1
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  192.168.20.0
  192.168.40.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
  192.168.20.4      120          00:00:25
Distance: (default is 120)

```

Prueba de conexión desde PC1 a PC2

```

C:\>ping 192.168.40.41

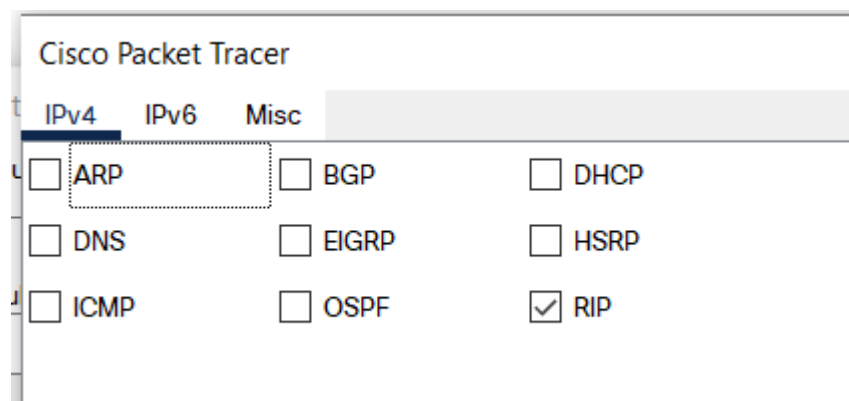
Pinging 192.168.40.41 with 32 bytes of data:

Reply from 192.168.40.41: bytes=32 time<1ms TTL=125
Reply from 192.168.40.41: bytes=32 time<1ms TTL=125
Reply from 192.168.40.41: bytes=32 time=1ms TTL=125
Reply from 192.168.40.41: bytes=32 time<1ms TTL=125

Ping statistics for 192.168.40.41:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

```

Simulación



Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.125	--	R3	RIPv1
	0.125	--	R3	RIPv1
	0.127	R3	R1	RIPv1
	0.128	R3	Switch1	RIPv1
	0.130	Switch1	PC2	RIPv1
	0.709	--	R2	RIPv1
	0.709	--	R2	RIPv1
	0.710	R2	R1	RIPv1
	0.710	R2	Switch0	RIPv1
	0.712	Switch0	PC1	RIPv1
	1.342	--	Switch1	STP
	1.344	Switch1	R3	STP
	1.344	Switch1	PC2	STP
	1.854	--	Switch1	DTP
	1.856	Switch1	R3	DTP
	1.998	--	Switch0	STP
	2.000	Switch0	R2	STP

¿Por qué los enrutadores intercambian paquetes con información del protocolo?

Al revisar e investigar, vemos que lo hacen por el puerto 520, indicando que estos paquetes se usan para actualizar las tablas de enrutamiento.

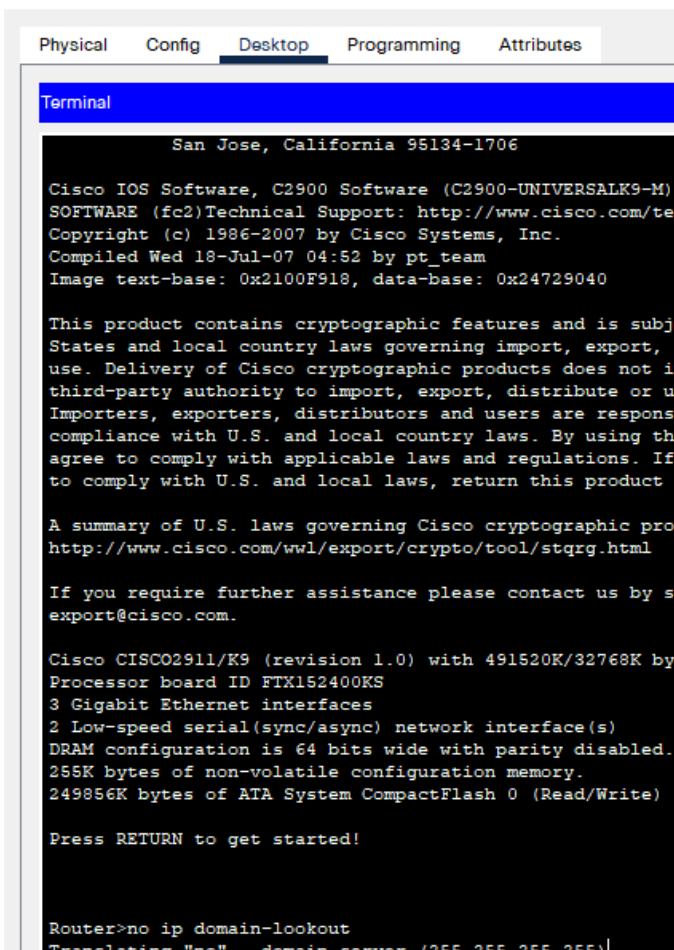
¿A qué se debe que los computadores reciban tráfico RIP?

Porque los enrutadores mandan las actualizaciones en broadcast, haciendo que lleguen a todos los equipos enlazados.

## 4.2. Configuración protocolo enrutamiento OSPF

### 4.2.1. Configuración básica de enrutadores

Punto 1- . desactivar la búsqueda del DNS



```
Router(config)#no ip domain-lookup
Router(config)#hostname R2
R2(config)#line
% Incomplete command.
R2(config)#line con 0
R2(config-line)#logging synchronous
```

```
R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#line con 0
R3(config-line)#logging synchronous
R3(config-line)#
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#interface G0/0
R3(config-if)#ip address 192.168.20.4
% Incomplete command.
R3(config-if)#ip address 192.168.20.4 255.255.255.0
R3(config-if)#
```

## Punto 6 - verificación de routers conectados

```
00:45:49: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.20.11 on GigabitEthernet0/0 from LOADING to FULL, Loading Done

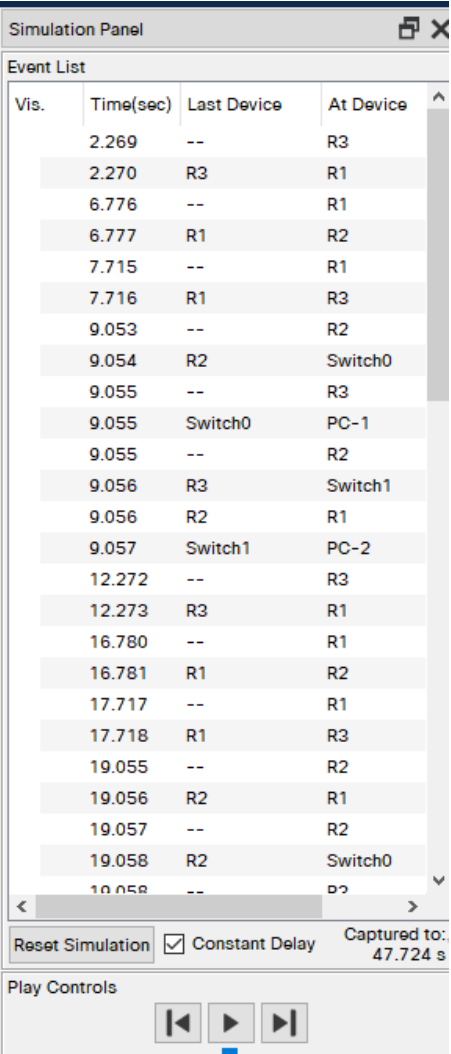
R3>ping 192.168.20.5

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.20.5, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/1/6 ms
```

### 4.2.3. preguntas

#### ¿Qué información puede identificar en la simulación?

En la simulación se puede observar el tiempo de transmisión que ocurre entre cada router y equipo utilizando el protocolo OSPF.



Vis.	Time(sec)	Last Device	At Device
	2.269	--	R3
	2.270	R3	R1
	6.776	--	R1
	6.777	R1	R2
	7.715	--	R1
	7.716	R1	R3
	9.053	--	R2
	9.054	R2	Switch0
	9.055	--	R3
	9.055	Switch0	PC-1
	9.055	--	R2
	9.056	R3	Switch1
	9.056	R2	R1
	9.057	Switch1	PC-2
	12.272	--	R3
	12.273	R3	R1
	16.780	--	R1
	16.781	R1	R2
	17.717	--	R1
	17.718	R1	R3
	19.055	--	R2
	19.056	R2	R1
	19.057	--	R2
	19.058	R2	Switch0
	19.058	--	R3

Reset Simulation ☒ Constant Delay Captured to: 47.724 s

Play Controls

### **¿Cómo son los paquetes OSPF?, realice una breve descripción del mismo.**

Existen 5 tipos de paquetes OSPF:

#### **1. El paquete de saludo:**

Los paquetes de saludo se envían estableciendo la conexión y permitiendo el descubrimiento de routers vecinos de forma dinámica.

#### **2. El paquete de descripción de la base de datos:**

Estos paquetes describen el contenido de la base de datos topológica. Se utiliza un procedimiento de respuesta de encuesta para la descripción del uso de múltiples paquetes ,entre los routers.

#### **3. El paquete de solicitud de estado de enlace:**

El paquete Link State Request se utiliza para solicitar las partes de la base de datos del vecino que están más actualizadas. Puede ser necesario utilizar varios paquetes de solicitud de estado de enlace.

#### **4. Los paquetes de actualización del estado del enlace:**

Estos paquetes implementan la inundación de anuncios de estado de enlace.

#### **5. Los paquetes de reconocimiento de estado de enlace:**

Se utiliza un solo paquete de reconocimiento de estado de enlace para reconocer los anuncios de estado de enlace múltiple.

### **¿Cuál es el propósito del intercambio de información de enrutamiento?**

El propósito principal del intercambio de información de enrutamiento es el conocimiento completo de la topología, lo cual permite a los enrutadores calcular rutas que satisfacen criterios particulares.

## **4.3 Configuración protocolo enrutamiento RIP versión 2**

Una vez se crea el esquema general y se modifican las ip, se empieza la configuración de los routers.

### **4.3.2.3 Configuración del cifrado de contraseñas:**

Comandos de asignación de la clave del modo EXEC privilegiado, Console password y Clave VTY:

```
enable

conf t
no ip domain-lookup
# EXE PRIVILEGIADO

enable password infracom

## Console password

line console 0
password cisco-class
login
exit

# Clave VTY
line vty 0 15
password cisco-class
login

exit
exit
do show run|
```

Pestaña del show en donde se evidencian las claves configuradas para el Router 1:



## IOS Command Line Interface

```
Router(config)#do show run
Building configuration...

Current configuration : 874 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable password infracom
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.30.15.254 255.255.255.0
 duplex auto
 speed auto
 shutdown
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial2/0
 ip address 10.1.1.1 255.255.255.224
 shutdown
!
interface Serial3/0
 no ip address
 shutdown
```

Ctrl+F6 to exit CLI focus

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R1

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
!
!
interface FastEthernet0/0
ip address 172.30.15.254 255.255.255.0
duplex auto
speed auto
shutdown
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
shutdown
!
interface Serial2/0
ip address 10.1.1.1 255.255.255.224
shutdown
!
interface Serial3/0
no ip address
shutdown
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
password cisco-class
login
!
line aux 0
!
line vty 0 4
password cisco-class
login
line vty 5 15
password cisco-class
login
!
!
!
end

Router(config)#
```

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☐ Top

## Router 2:

 R2 — □ ×

Physical Config CLI Attributes

IOS Command Line Interface

```
User Access Verification

Password:

Router>enable
Password:
Router#show run
Building configuration...

Current configuration : 928 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable password infracom
!
!
!
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 209.165.101.254 255.255.255.0
 duplex auto
 speed auto
 shutdown
!
interface FastEthernet1/0
 no ip address
```

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☐ Top

R2

Physical Config CLI Attributes

IOS Command Line Interface

```
!
interface FastEthernet0/0
 ip address 209.165.101.254 255.255.255.0
 duplex auto
 speed auto
 shutdown
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial2/0
 ip address 10.1.1.2 255.255.255.224
 shutdown
!
interface Serial3/0
 ip address 10.2.2.2 255.255.255.224
 clock rate 128000
!
interface FastEthernet4/0
 no ip address
 shutdown
!
interface FastEthernet5/0
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
 password cisco-class
 logging synchronous
 login
!
line aux 0
!
line vty 0 4
 password cisco-class
 login
line vty 5 15
 password cisco-class
 login
!
!
!
end

Router#
```

Ctrl+F6 to exit CLI focus

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☐ Top

Router 3:



Physical Config CLI Attributes

## IOS Command Line Interface

```
User Access Verification

Password:

Router>enable
Password:
Router#show run
Building configuration...

Current configuration : 895 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
enable password infracom
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.30.35.254 255.255.255.0
 duplex auto
 speed auto
 shutdown
!
interface FastEthernet1/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
```

Ctrl+F6 to exit CLI focus

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## IOS Command Line Interface

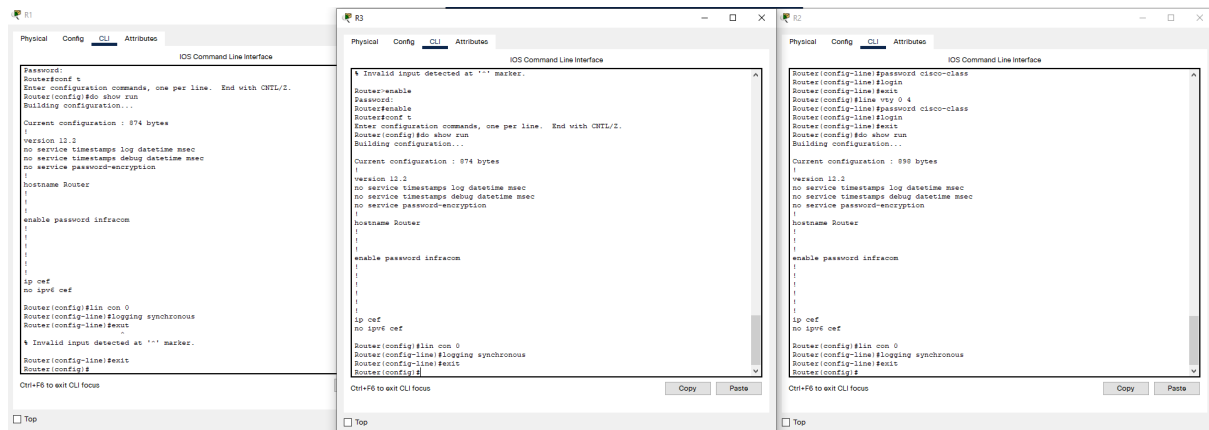
```
!  
interface FastEthernet0/0  
  ip address 172.30.35.254 255.255.255.0  
  duplex auto  
  speed auto  
  shutdown  
!  
interface FastEthernet1/0  
  no ip address  
  duplex auto  
  speed auto  
  shutdown  
!  
interface Serial2/0  
  no ip address  
  shutdown  
!  
interface Serial3/0  
  ip address 10.2.2.1 255.255.255.224  
  shutdown  
!  
interface FastEthernet4/0  
  no ip address  
  shutdown  
!  
interface FastEthernet5/0  
  no ip address  
  shutdown  
!  
ip classless  
!  
ip flow-export version 9  
!  
!  
!  
!  
!  
!  
!  
line con 0  
  password cisco-class  
  logging synchronous  
  login  
!  
line aux 0  
!  
line vty 0 4  
  password cisco-class  
  login  
line vty 5 15  
  password cisco-class  
  login  
!  
!  
!  
end  
  
Router#
```

Ctrl+F6 to exit CLI focus

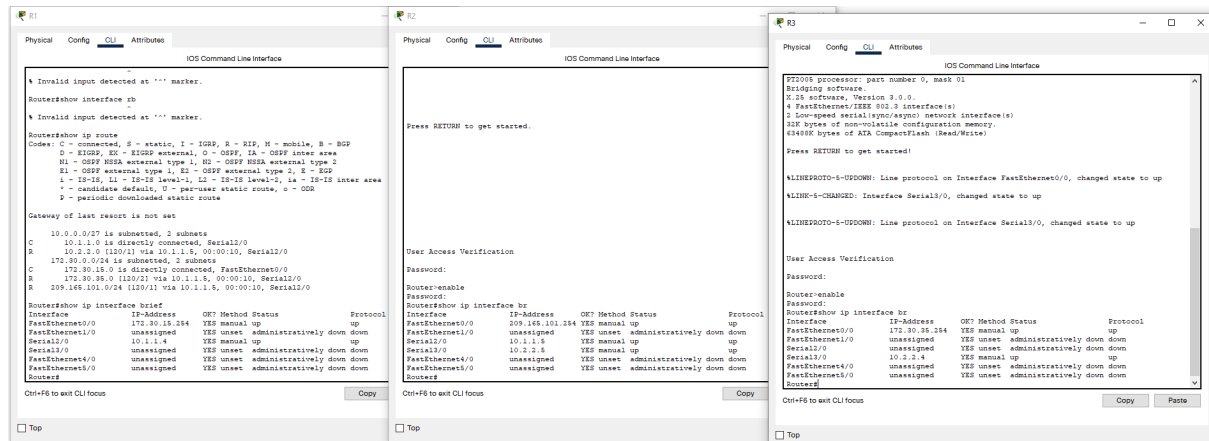
Copy

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### 4.3.2.4 Examinar la summarización automática de las rutas configuración de logging synchronous:

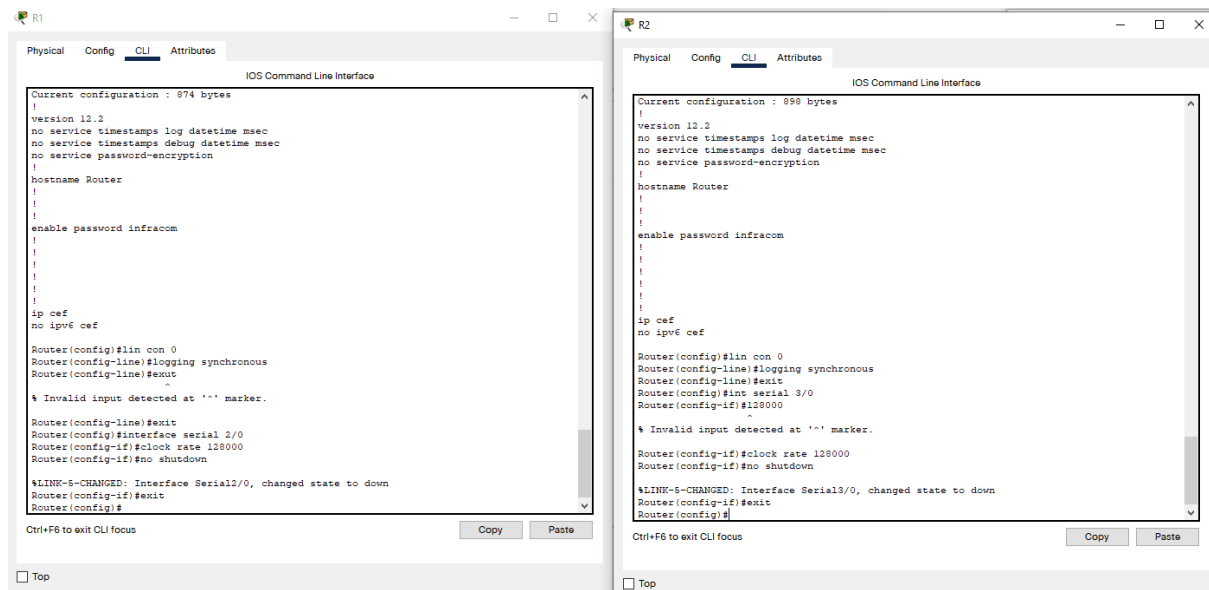


### 4.3.2.5 Configure la dirección IP que se indica en la Tabla 2 para cada una de las interfaces en todos los enrutadores.



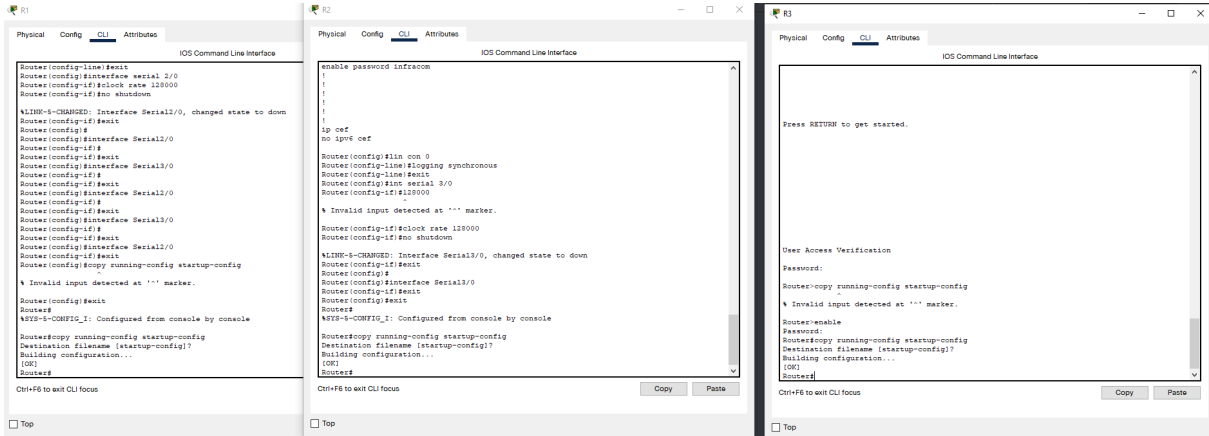
### 4.3.2.6. Configure la frecuencia de reloj, si corresponde, para la interfaz serial DCE:

#### Configuración de clock rate

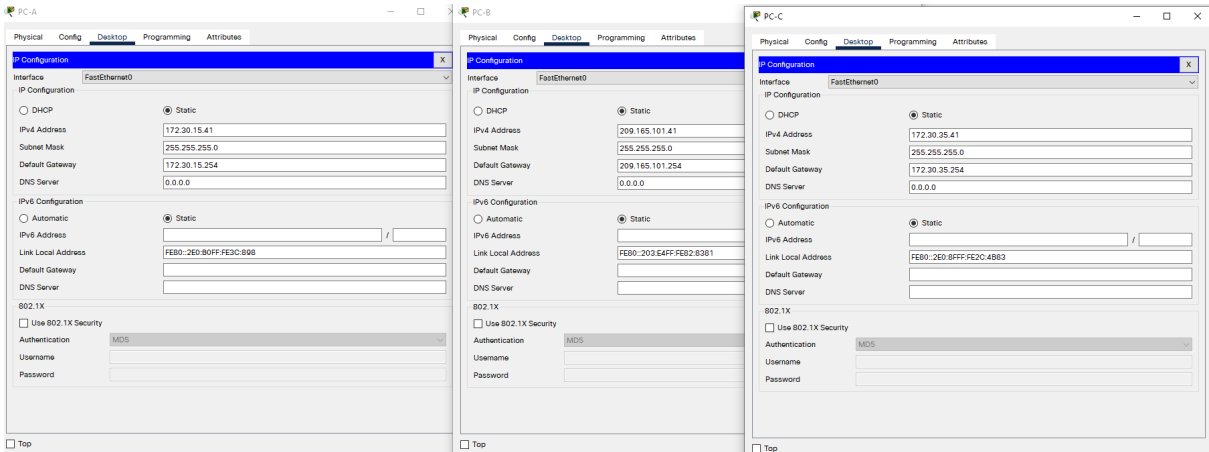




### 4.3.2.7 Copie la configuración en ejecución en la configuración de inicio.



### 4.3.2.8. Configure las direcciones IP en las estaciones de trabajo. Consulte la Tabla 2 para obtener esta información.



### 4.3.2.9. Realizar pruebas de conectividad

#### 4.3.2. Configuración básica de enrutadores

Luego de haber creado la topología de red, ahora procederá a configurar los equipos de host y los routers.

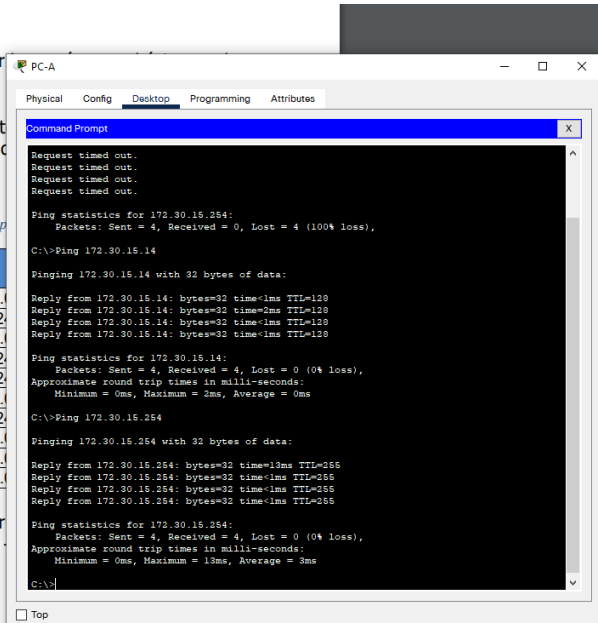
Configure los parámetros que se detallan a continuación para cada router de direccionamiento que encuentra en la Tabla 2 para la configuración de las interfaces.

Tabla 2. Tabla de direccionamiento para Actividad de configuración de p

Dispositivo	Interfaz	Dirección IP	Máscara de subred
R1	F0/0	172.30.15.254	255.255.255.0
R1	S2/0 (DCE)	10.1.1.Y	255.255.255.22
R2	F0/0	209.165.101.254	255.255.255.0
R2	S2/0	10.1.1.Y+1	255.255.255.22
R2	S3/0 (DCE)	10.2.2.Y+1	255.255.255.22
R3	F0/0	172.30.35.254	255.255.255.0
R3	S3/0	10.2.2.Y	255.255.255.22
PC-A	NIC	172.30.15.YX	255.255.255.0
PC-B	NIC	209.165.101.YX	255.255.255.0
PC-C	NIC	172.30.35.YX	255.255.255.0

**Nota:** La X y Y que aparecen en la tabla de direccionamiento debe ser de la sección y el número de grupo respectivamente. Ejemplo Sección 5 y Grupo 1.

- Dirección R1 – S2/0: 10.1.1.1
- Dirección R2 – S2/0: 10.1.1.2
- Dirección R2 – S3/0: 10.2.2.2



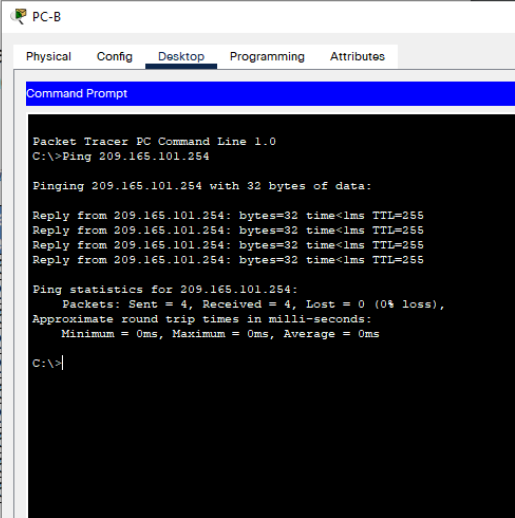
### 4.3.2. Configuración básica de enrutadores

Luego de haber creado la topología de red, ahora procederá a configurar los parámetros básicos en los equipos de host y los routers.

Configure los parámetros que se detallan a continuación para cada de direccionamiento que encuentra en la Tabla 2 para la configuración de las interfaces.

Tabla 2. Tabla de direccionamiento para Actividad de configuración

Dispositivo	Interfaz	Dirección IP	Máscara de subred
R1	F0/0	172.30.15.254	255.255.255.0
R1	S2/0 (DCE)	10.1.1.Y	255.255.255.224
R2	F0/0	209.165.101.254	255.255.255.0
R2	S2/0	10.1.1.Y+1	255.255.255.224
R2	S3/0 (DCE)	10.2.2.Y+1	255.255.255.224
R3	F0/0	172.30.35.254	255.255.255.0
R3	S3/0	10.2.2.Y	255.255.255.224
PC-A	NIC	172.30.15.YX	255.255.255.0
PC-B	NIC	209.165.101.YX	255.255.255.0
PC-C	NIC	172.30.35.YX	255.255.255.0



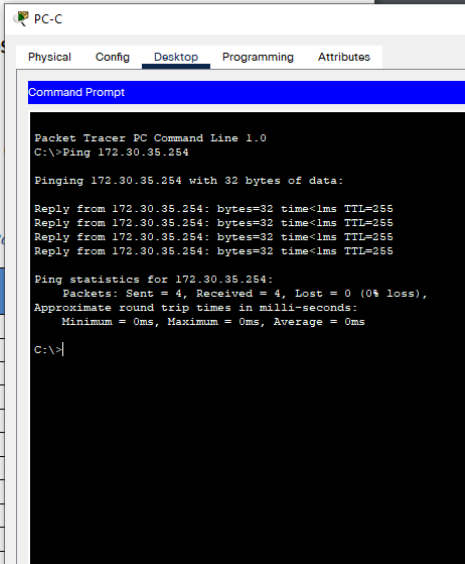
### 4.3.2. Configuración básica de enrutadores

Luego de haber creado la topología de red, ahora procederá a configurar los equipos de host y los routers.

Configure los parámetros que se detallan a continuación para cada router de direccionamiento que encuentra en la Tabla 2 para la configuración de las interfaces.

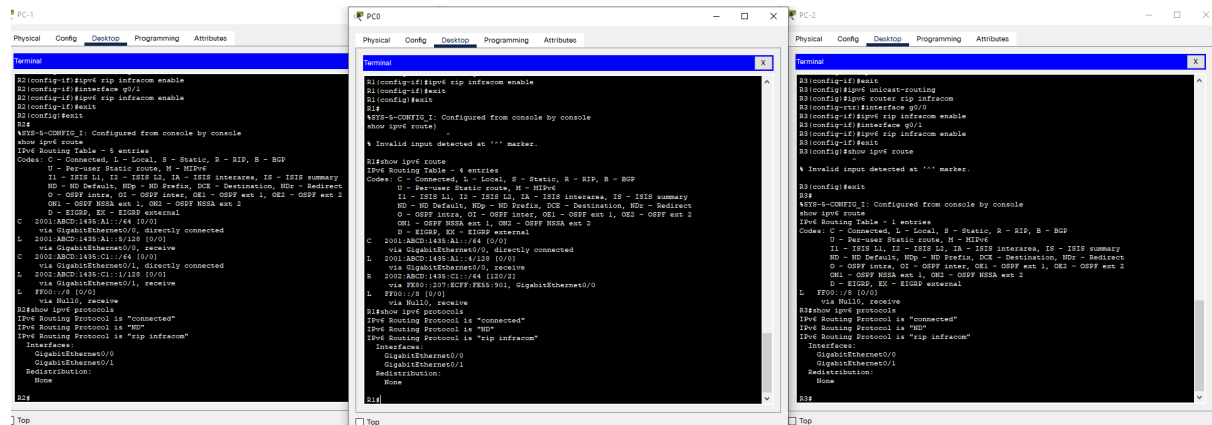
Tabla 2. Tabla de direccionamiento para Actividad de configuración de protección

Dispositivo	Interfaz	Dirección IP	Máscara de subred
R1	F0/0	172.30.15.254	255.255.255.0
R1	S2/0 (DCE)	10.1.1.Y	255.255.255.224
R2	F0/0	209.165.101.254	255.255.255.0
R2	S2/0	10.1.1.Y+1	255.255.255.224
R2	S3/0 (DCE)	10.2.2.Y+1	255.255.255.224
R3	F0/0	172.30.35.254	255.255.255.0
R3	S3/0	10.2.2.Y	255.255.255.224
PC-A	NIC	172.30.15.YX	255.255.255.0
PC-B	NIC	209.165.101.YX	255.255.255.0
PC-C	NIC	172.30.35.YX	255.255.255.0



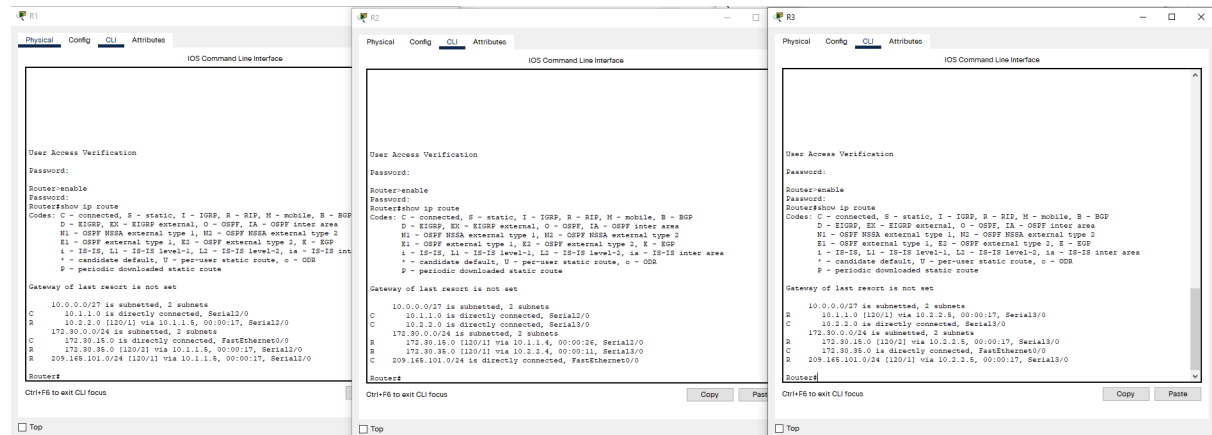
### 4.3.3. Configuración del protocolo de enrutamiento RIPv2

#### 4.3.3.1. configuración del proceso de enrutamiento RIPv2 para el escenario propuesto

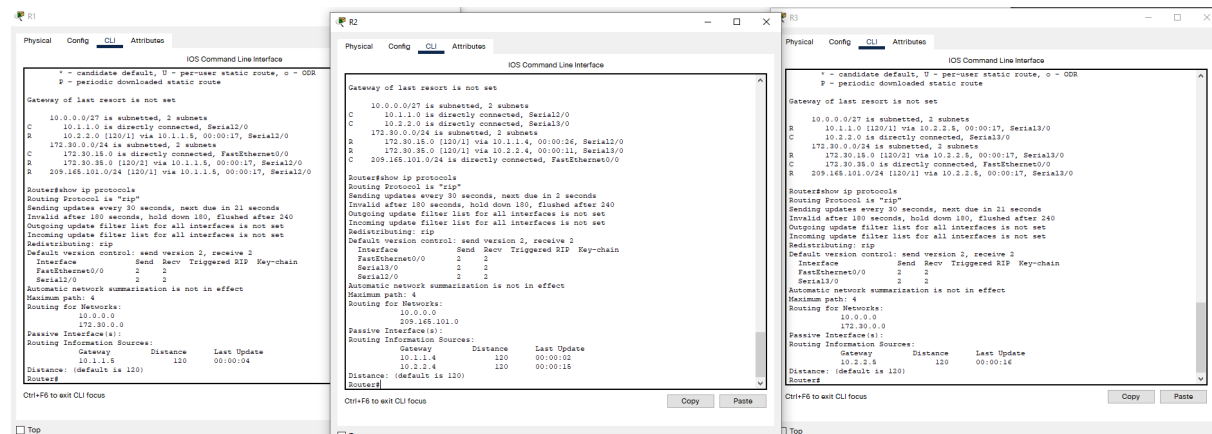


## 4.3.3.2 Verificación de la correcta actualización de las tablas de enrutamiento

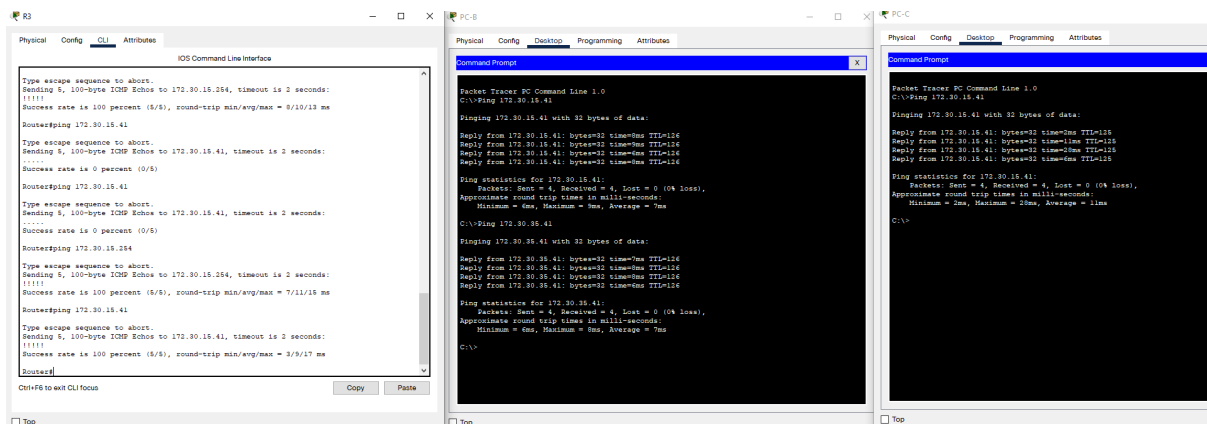
### Show ip route



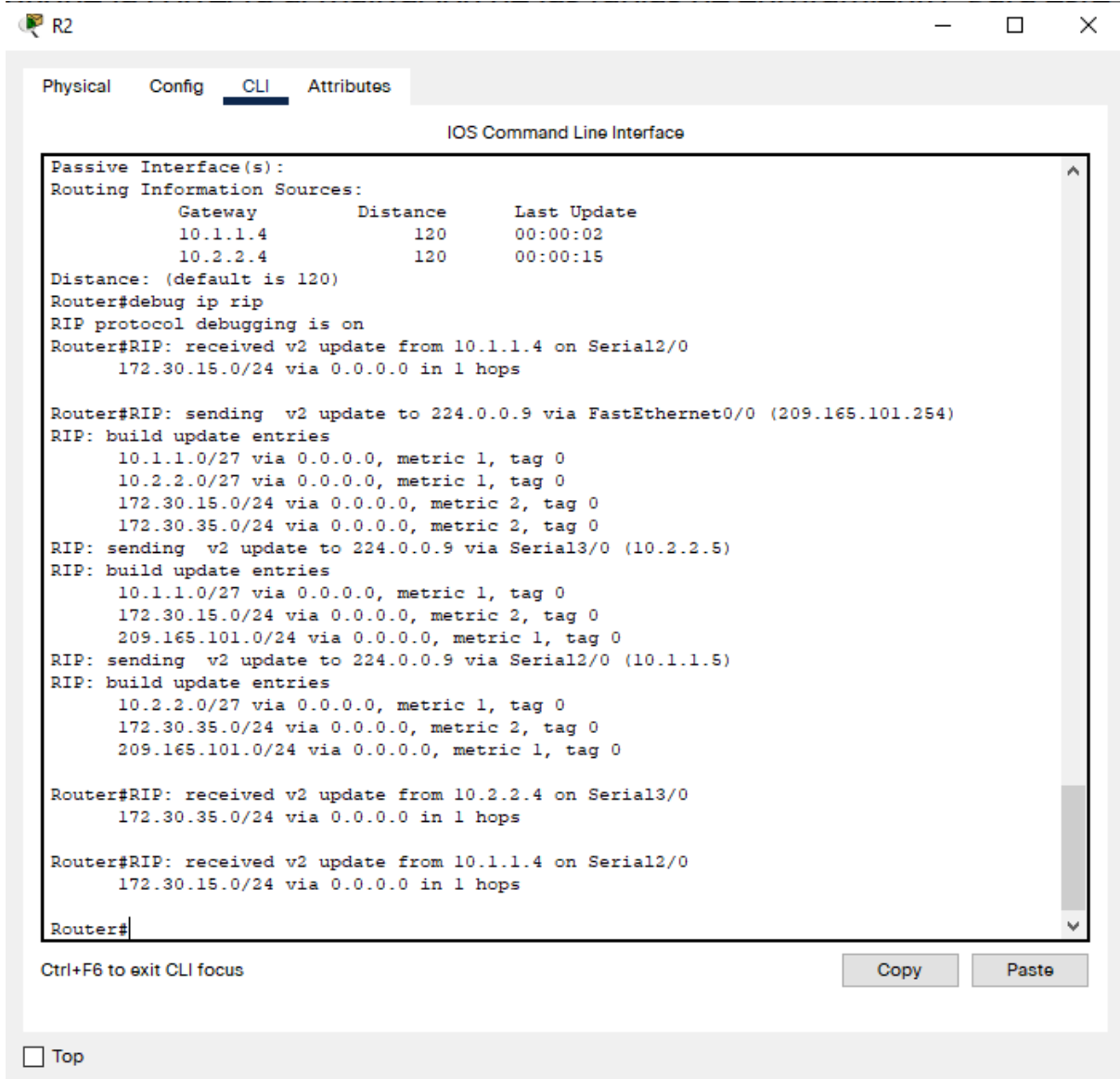
### Show ip protocols



## 4.3.3.3 Prueba de conectividad entre las estaciones de trabajo



#### 4.3.3.4 Al emitir el comando debug ip rip en el R2, ¿qué información se proporciona que confirma que RIPv2 está en ejecución?



Ahí dice RIP sending v2 update.

#### 4.3.3.5 Ejecutar comando undebug:

Physical Config **CLI** Attributes

IOS Command Line Interface

```
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0

Router#RIP: received v2 update from 10.2.2.4 on Serial3/0
172.30.35.0/24 via 0.0.0.0 in 1 hops

Router#RIP: received v2 update from 10.1.1.4 on Serial2/0
172.30.15.0/24 via 0.0.0.0 in 1 hops

Router#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (209.165.101.254)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial3/0 (10.2.2.5)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0

Router#undebug all
All possible debugging has been turned off
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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#### 4.3.4. Examinar la summarización automática de las rutas

##### 4.3.4.1

R2

Physical Config CLI Attributes

IOS Command Line Interface

```
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0

Router#undebug all
All possible debugging has been turned off
Router#debug ip rip
RIP protocol debugging is on
Router#RIP: received v2 update from 10.1.1.4 on Serial2/0
172.30.15.0/24 via 0.0.0.0 in 1 hops

Router#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (209.165.101.254)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial3/0 (10.2.2.5)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0

Router#RIP: received v2 update from 10.2.2.4 on Serial3/0
172.30.35.0/24 via 0.0.0.0 in 1 hops

Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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#### 4.3.4.2

R1 R2 R3

Physical Config CLI Attributes

IOS Command Line Interface

```
Router con0 is now available.

Press RETURN to get started.

User Access Verification
Password:
Router>enable
Password:
Router#conf t
Enter configuration commands, one per line. End with CTRL-Z.
Router(config)#router rip
Router(config-router)#no auto-summary
Router(config-router)#

Ctrl+F6 to exit CLI focus
```

Physical Config CLI Attributes

IOS Command Line Interface

```
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
Router(config-router)#RIP: received v2 update from 10.2.2.4 on Serial3/0
172.30.35.0/24 via 0.0.0.0 in 1 hops
Router(config-router)#RIP: received v2 update from 10.1.1.4 on Serial2/0
172.30.15.0/24 via 0.0.0.0 in 1 hops
Router(config-router)#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (209.165.101.254)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial3/0 (10.2.2.5)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
Router(config-router)#

Ctrl+F6 to exit CLI focus
```

Physical Config CLI Attributes

IOS Command Line Interface

```
10.2.2.5 120 00:00:14
Distance: (default is 120)
Router#

Router con0 is now available.

Press RETURN to get started.

User Access Verification
Password:

Ctrl+F6 to exit CLI focus
```

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#### 4.3.4.3



Physical Config CLI Attributes

## IOS Command Line Interface

### User Access Verification

Password:

Router>enable

Password:

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#router rip

Router(config-router)#no auto-summary

Router(config-router)#clear ip route \*

% Invalid input detected at '^' marker.

Router(config-router)#exit

Router(config)#clear ip route \*

% Invalid input detected at '^' marker.

Router(config)#router rip

Router(config-router)#clear ip route \*

% Invalid input detected at '^' marker.

Router(config-router)#end

Router#

%SYS-5-CONFIG\_I: Configured from console by console

Router#clear ip router \*

% Invalid input detected at '^' marker.

Router#clear ip route \*

Router#

Ctrl+F6 to exit CLI focus

Copy

Paste

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## 4.3.4.4

Physical Config CLI Attributes

IOS Command Line Interface

Router#clear ip route \*  
% Invalid input detected at '^' marker.  
Router#show ip route  
Codes: C - connected, S - static, I - IGMP, B - BGP, 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, IS - 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  
10.0.0.0/24 is subnetted, 2 subnets  
C 10.1.1.0 is directly connected, Serial2/0  
R 10.2.0.0/24 via 10.1.1.4, 00:00:09, Serial2/0  
R 172.30.0.0/24 is subnetted, 2 subnets  
C 172.30.10.0 is directly connected, FastEthernet0/0  
C 172.30.20.0/24 via 10.1.1.4, 00:00:09, Serial2/0  
R 209.165.101.0/24 via 10.1.1.4, 00:00:09, Serial2/0  
Router#show ip protocols  
Routing Protocol is "rip"  
Sending updates every 30 seconds, next due in 24 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:  
10.0.0.0  
172.30.0.0  
Passive Interface(s):  
Routing Information Sources:  
Gateway Distance Last Update  
10.1.1.4 120 00:00:12  
Distance: (default is 120)  
Router#

Physical Config CLI Attributes

IOS Command Line Interface

10.2.0.0/24 via 0.0.0.0, metric 1, tag 0  
172.30.20.0/24 via 0.0.0.0, metric 1, tag 0  
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0  
Router#show ip route  
Codes: C - connected, S - static, I - IGMP, B - BGP, 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, IS - 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  
10.0.0.0/24 is subnetted, 2 subnets  
C 10.1.1.0 is directly connected, Serial2/0  
C 10.2.0.0 is directly connected, Serial2/0  
R 172.30.0.0/24 via 10.1.1.4, 00:00:21, Serial2/0  
R 172.30.20.0/24 via 10.2.2.4, 00:00:20, Serial3/0  
C 209.165.101.0/24 is directly connected, FastEthernet0/0  
Router#show ip protocols  
Routing Protocol is "rip"  
Sending updates every 30 seconds, next due in 21 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  
Serial3/0 2 2  
Serial2/0 2 2  
Automatic network summarization is not in effect  
Maximum path: 4  
Routing for Networks:  
10.0.0.0  
209.165.101.0  
Passive Interface(s):  
FastEthernet0/0 2 2  
Serial3/0 2 2  
Serial2/0 2 2  
Automatic network summarization is not in effect  
Maximum path: 4  
Routing for Networks:  
10.0.0.0  
209.165.101.0  
Routing Information Sources:  
Gateway Distance Last Update  
10.1.1.4 120 00:00:24  
10.2.2.4 120 00:00:23  
Distance: (default is 120)  
Router#

Physical Config CLI Attributes

IOS Command Line Interface

User Access Verification  
Password:  
Router#enable  
Password:  
Router#clear ip route  
Codes: C - connected, S - static, I - IGMP, B - BGP, 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, IS - 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  
10.0.0.0/24 is subnetted, 2 subnets  
C 10.1.1.0 is directly connected, Serial2/0  
C 10.2.0.0 is directly connected, Serial2/0  
R 172.30.0.0/24 via 10.2.2.4, 00:00:23, Serial3/0  
R 172.30.10.0/24 via 10.2.2.4, 00:00:23, Serial3/0  
C 172.30.20.0 is directly connected, FastEthernet0/0  
R 209.165.101.0/24 via 10.2.2.4, 00:00:23, Serial3/0  
Router#show ip protocols  
Routing Protocol is "rip"  
Sending updates every 30 seconds, next due in 13 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  
Serial3/0 2 2  
Serial2/0 2 2  
Automatic network summarization is not in effect  
Maximum path: 4  
Routing for Networks:  
10.0.0.0  
172.30.0.0  
Passive Interface(s):  
Routing Information Sources:  
Gateway Distance Last Update  
10.2.2.4 120 00:00:24  
Distance: (default is 120)  
Router#



## 4.3.4.5

The image displays three screenshots of a Cisco IOS Command Line Interface (CLI) showing the configuration and status of a router. The screenshots are labeled R1, R2, and R3.

**R1:** Shows the configuration of the router. The configuration includes the hostname 'R1', the configuration mode, and the configuration of the interfaces. The configuration is as follows:

```
Router#clear ip router *
% Invalid input detected at '' marker.
Router#clear ip route *
Router#show ip route
Codes: C - connected, S - static, I - ISDP, 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, S - SGP
       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

10.0.0.0/24 is subnetted, 2 subnets
C    10.1.1.0 is directly connected, Serial1/0
C    10.2.2.0/24 is directly connected, Serial2/0
R    172.30.0.0/24 is subnetted, 2 subnets
R    172.30.16.0 (120/2) via 10.1.1.5, 00:00:08, Serial1/0
R    172.30.36.0 (120/2) via 10.1.1.5, 00:00:08, Serial1/0
R    209.148.101.0/24 (120/2) via 10.1.1.5, 00:00:08, Serial1/0

Router#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 24 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
Serial1/0          2      2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  10.0.0.0
  172.30.0.0
Passive Interface(s):
  10.1.1.5
Routing Information Sources:
  Gateway         Distance      Last Update
  10.1.1.5         120           00:00:13
Distance: (default is 120)
Routers
```

**R2:** Shows the configuration of the router. The configuration includes the hostname 'R2', the configuration mode, and the configuration of the interfaces. The configuration is as follows:

```
Router#show ip route
Codes: C - connected, S - static, I - ISDP, 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, S - SGP
       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

10.0.0.0/24 is subnetted, 2 subnets
C    10.1.1.0 is directly connected, Serial1/0
C    10.2.2.0 is directly connected, Serial2/0
R    172.30.0.0/24 is subnetted, 2 subnets
R    172.30.16.0 (120/1) via 10.1.1.4, 00:00:21, Serial1/0
R    172.30.36.0 (120/1) via 10.2.2.4, 00:00:20, Serial2/0
R    209.148.101.0/24 is directly connected, FastEthernet0/0

Router#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 21 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
Serial1/0          2      2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  10.0.0.0
  209.148.101.0
Passive Interface(s):
  10.0.0.0
Routing Information Sources:
  Gateway         Distance      Last Update
  10.1.1.4         120           00:00:24
  10.2.2.4         120           00:00:23
Router#RIP: received v0 update from 10.2.2.4 on Serial1/0
Router#RIP: received v0 update from 10.1.1.4 on Serial1/0
Router#RIP: received v0 update from 10.0.0.0 on 1. hops
```

**R3:** Shows the configuration of the router. The configuration includes the hostname 'R3', the configuration mode, and the configuration of the interfaces. The configuration is as follows:

```
Router#show ip route
Codes: C - connected, S - static, I - ISDP, 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, S - SGP
       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

10.0.0.0/24 is subnetted, 2 subnets
C    10.1.1.0 (120/1) via 10.2.2.5, 00:00:23, Serial1/0
C    10.2.2.0 is directly connected, Serial2/0
R    172.30.0.0/24 is subnetted, 2 subnets
R    172.30.16.0 (120/2) via 10.2.2.5, 00:00:23, Serial1/0
R    172.30.36.0 is directly connected, FastEthernet0/0
R    209.148.101.0/24 (120/1) via 10.2.2.5, 00:00:23, Serial1/0

Router#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 13 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
Serial1/0          2      2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  10.0.0.0
  172.30.0.0
Passive Interface(s):
  10.2.2.5
Routing Information Sources:
  Gateway         Distance      Last Update
  10.2.2.5         120           00:00:26
Distance: (default is 120)
Routers
```

## 4.3.4.6



Physical Config CLI Attributes

## IOS Command Line Interface

```
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial3/0 (10.2.2.5)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0

Router#RIP: received v2 update from 10.2.2.4 on Serial3/0
172.30.35.0/24 via 0.0.0.0 in 1 hops

Router#RIP: received v2 update from 10.1.1.4 on Serial2/0
172.30.15.0/24 via 0.0.0.0 in 1 hops

Router#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (209.165.101.254)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial3/0 (10.2.2.5)
RIP: build update entries
10.1.1.0/27 via 0.0.0.0, metric 1, tag 0
172.30.15.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (10.1.1.5)
RIP: build update entries
10.2.2.0/27 via 0.0.0.0, metric 1, tag 0
172.30.35.0/24 via 0.0.0.0, metric 2, tag 0
209.165.101.0/24 via 0.0.0.0, metric 1, tag 0

Router#RIP: received v2 update from 10.2.2.4 on Serial3/0
172.30.35.0/24 via 0.0.0.0 in 1 hops

Router#RIP: received v2 update from 10.1.1.4 on Serial2/0
172.30.15.0/24 via 0.0.0.0 in 1 hops

Router#no debug ip rip
RIP protocol debugging is off
Router#
```

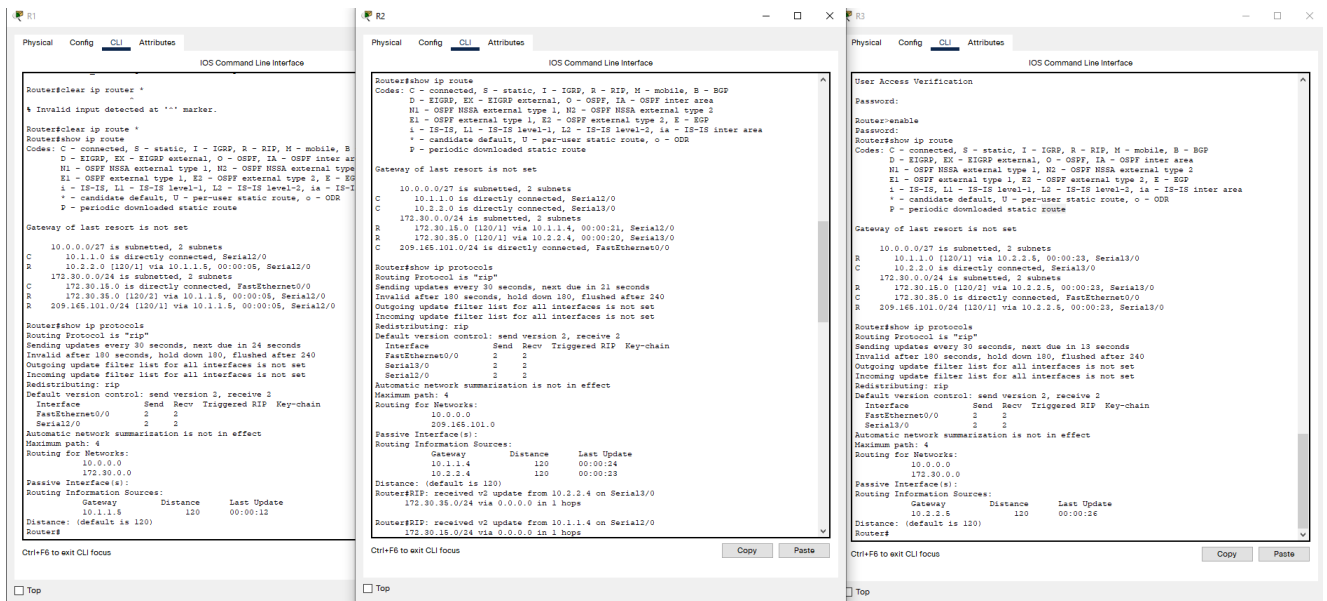
Ctrl+F6 to exit CLI focus

Copy

Paste

## 4.3.5

## 4.3.5.1 y 4.3.5.2 y 4.3.5.3

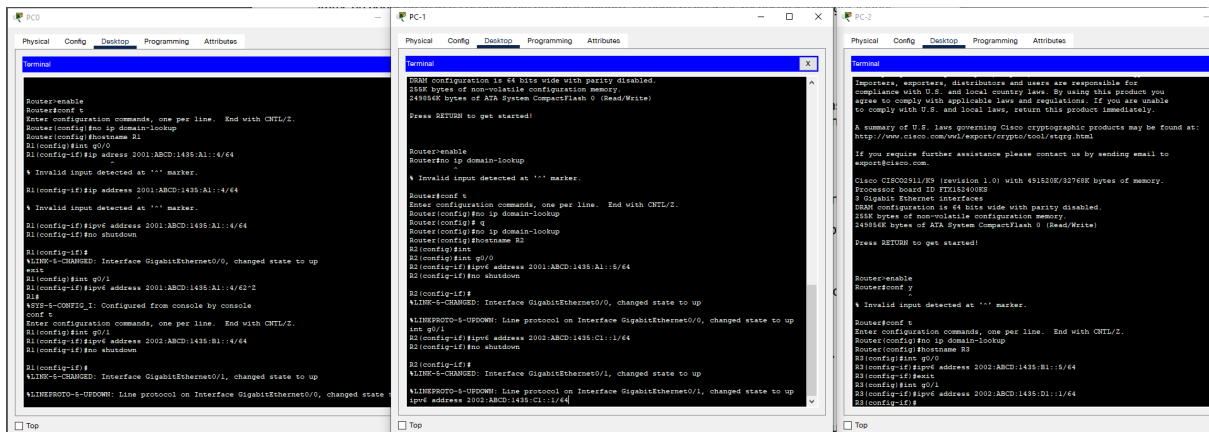


¿Qué rutas que se reciben del enrutador R2 se encuentran en las actualizaciones RIP?

## 4.4 Configuración de RIPng (RIP con soporte IPv6)

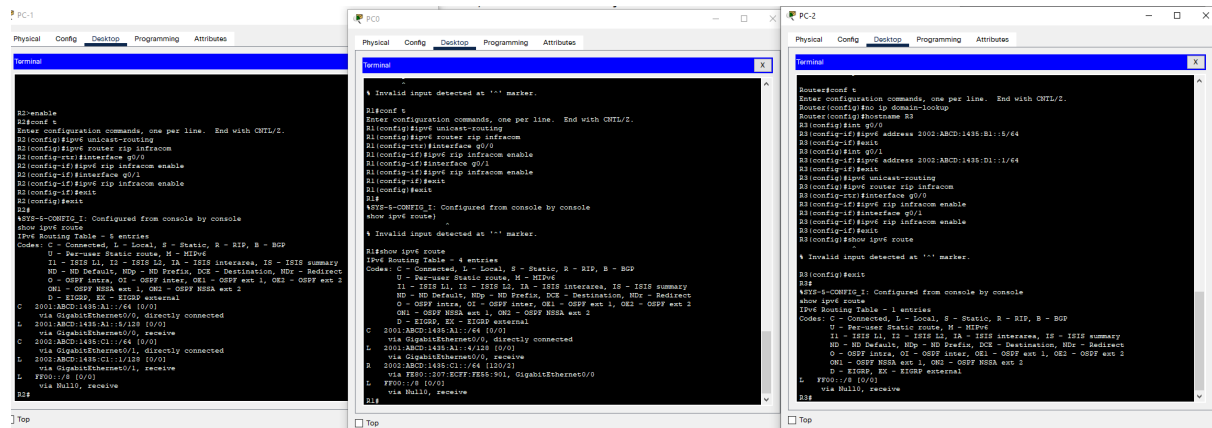
### 4.4.1.1. Desactive la búsqueda del DNS utilizando el comando no ip domain-lookup y 4.4.1.2.

### Establezca los nombres de los dispositivos como se muestra en la Figura 3

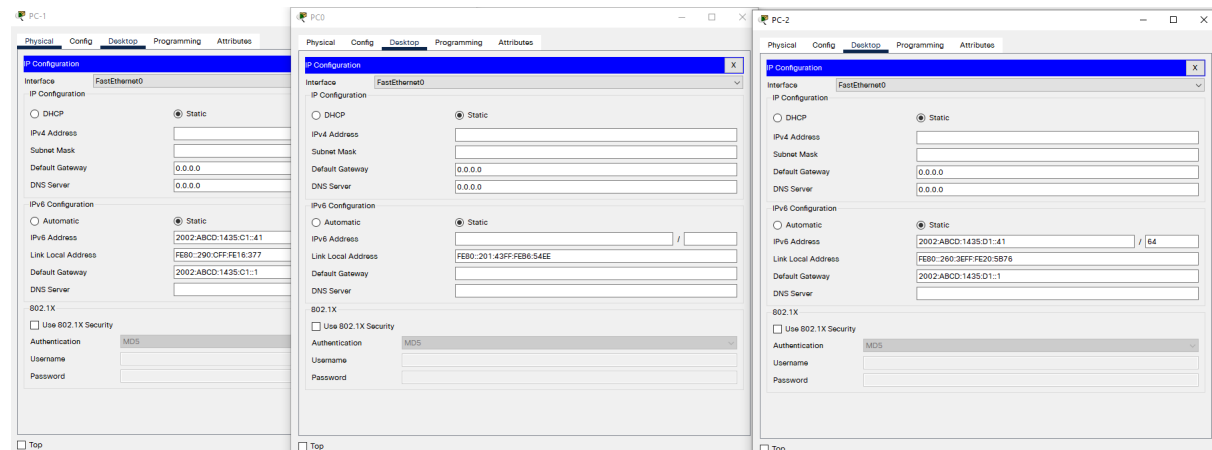


### 4.4.1.3. Configure la dirección IP que se indica en la Tabla 2 para cada una de las interfaces en todos los enrutadores.

ipv6

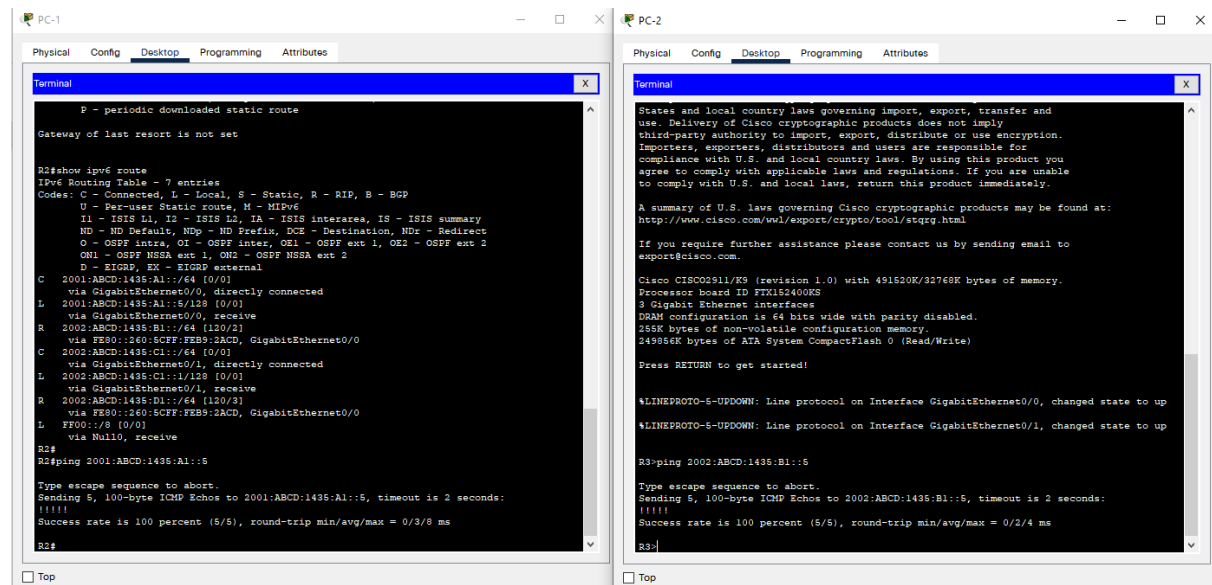


#### 4.4.1.4. Configure las direcciones IP en las estaciones de trabajo. Consulte la Tabla 3 para obtener esta información.



#### 4.4.1.6. Realice las siguientes pruebas de conectividad:

Entre cada estación de trabajo y el router al cual se encuentra directamente conectado. Verifique y resuelva los problemas, si es necesario.



Entre los routers. Compruebe y resuelva los problemas, si es necesario.

PC-1

Physical Config **Desktop** Programming Attributes

Terminal

```
R 2002:ABCD:1435:B1::/64 [120/2]
  via FE80::260:5CFF:FEB9:2ACD, GigabitEthernet0/0
C 2002:ABCD:1435:C1::/64 [0/0]
  via GigabitEthernet0/1, directly connected
L 2002:ABCD:1435:C1::1/128 [0/0]
  via GigabitEthernet0/1, receive
R 2002:ABCD:1435:D1::/64 [120/3]
  via FE80::260:5CFF:FEB9:2ACD, GigabitEthernet0/0
L FF00::/8 [0/0]
  via Null0, receive
R2#
R2#ping 2001:ABCD:1435:A1::5

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:ABCD:1435:A1::5, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/3/8 ms

R2#unable
Translating "unable"
% Unknown command or computer name, or unable to find computer address

R2#ping 2002:ABCD:1435:B1::5

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2002:ABCD:1435:B1::5, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

R2#ping 2002:ABCD:1435:C1::1

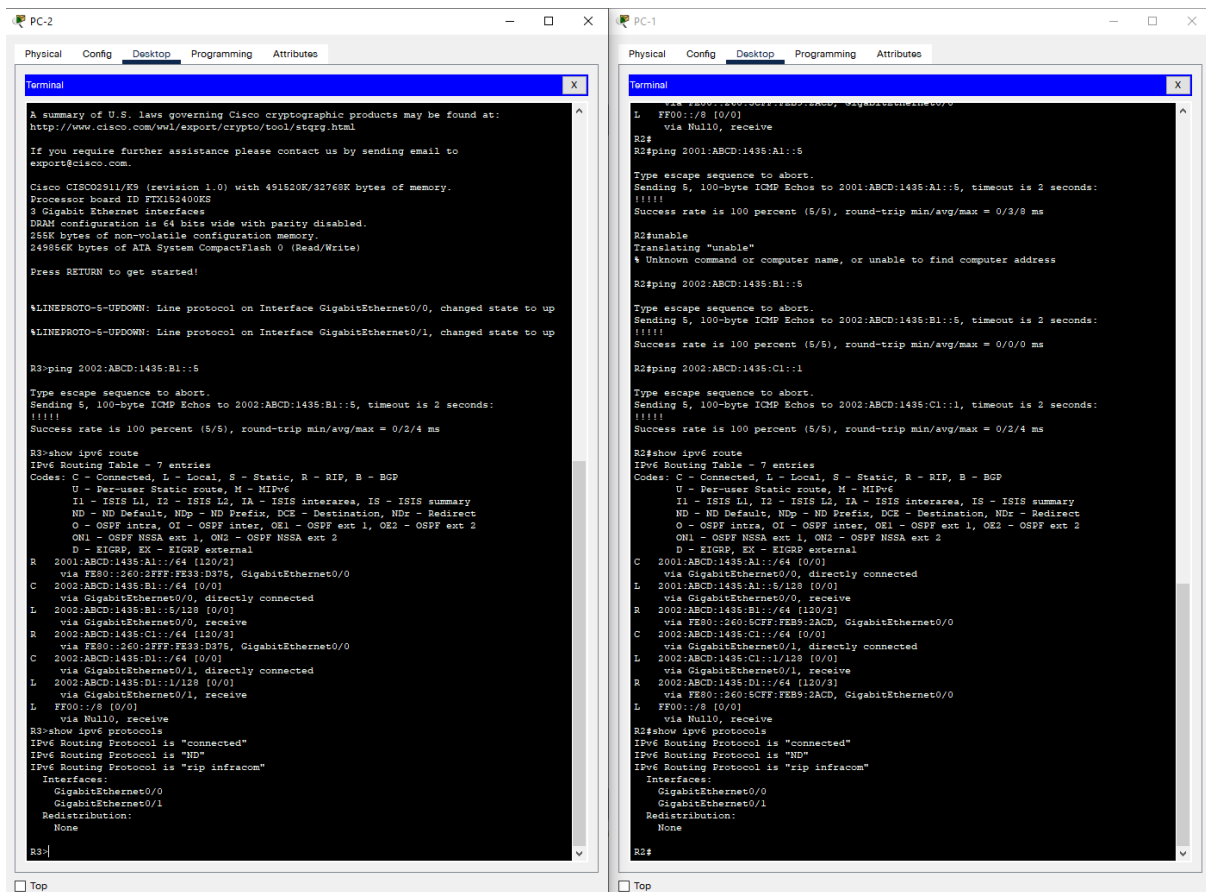
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2002:ABCD:1435:C1::1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/2/4 ms

R2#
```

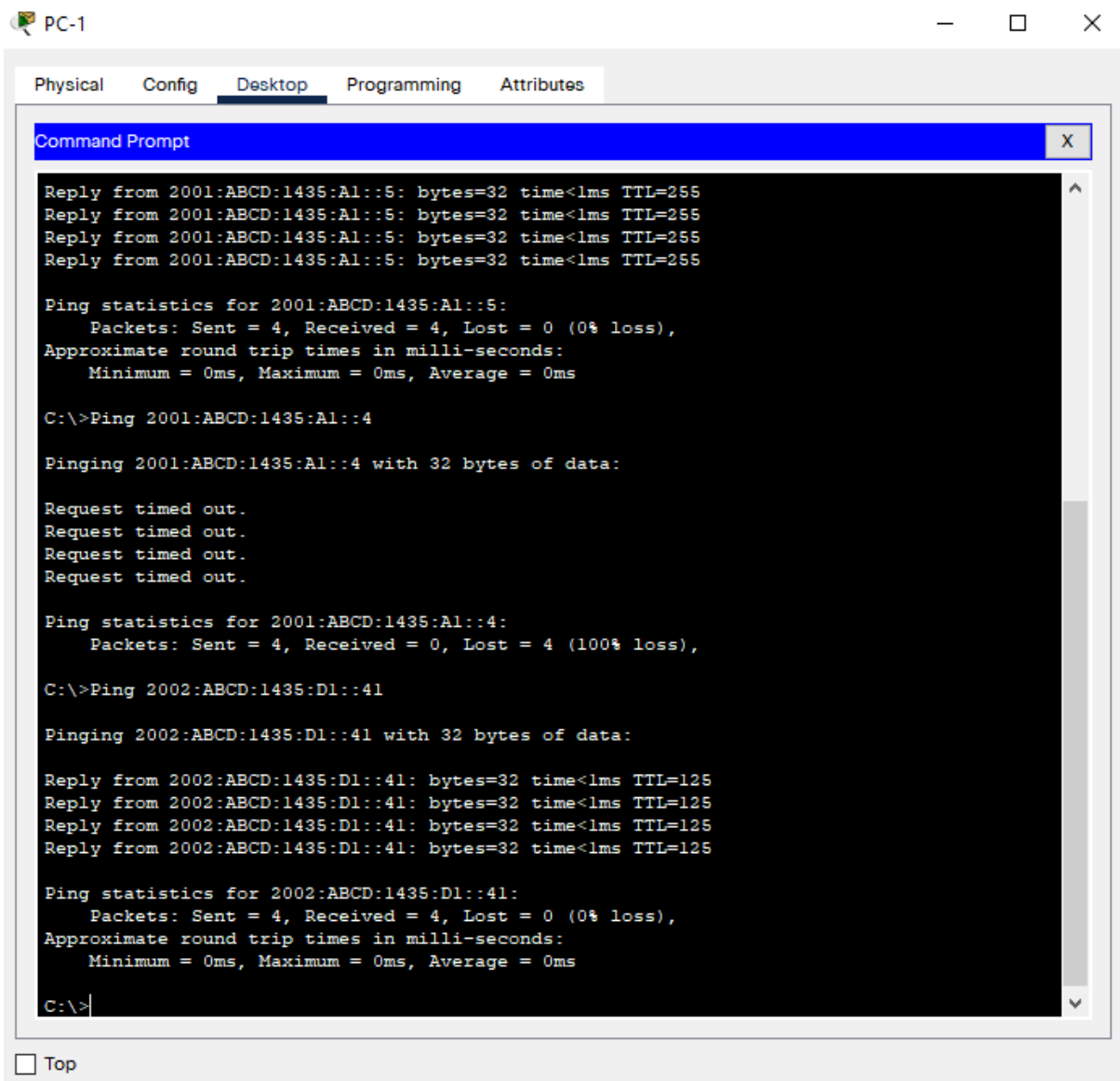
☐ Top

#### 4.4.2. Configuración de protocolo RIPng

4.4.2.1. Realice la configuración del proceso de enrutamiento RIPng para el escenario propuesto y 4.4.2.2. Verifique la correcta actualización de las tablas de enrutamiento. Para este paso utilice los comandos `show ipv6 route` y `show ipv6 protocols`

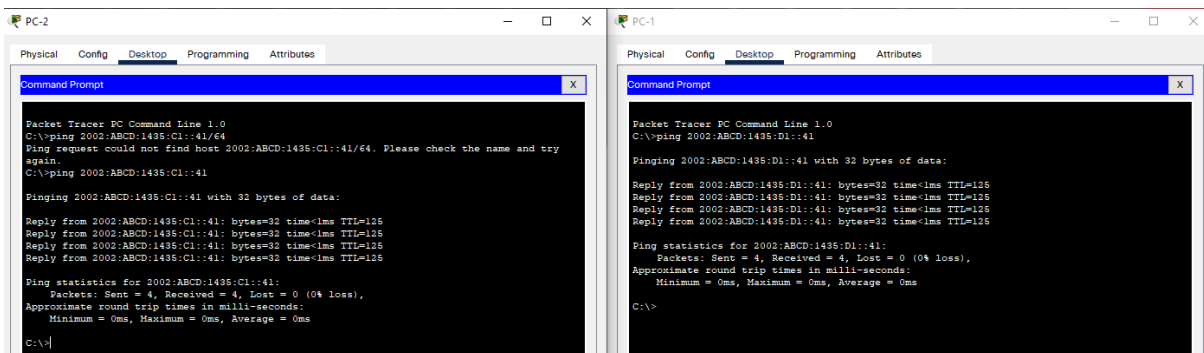


**4.4.2.3. Realice la prueba de conectividad entre las estaciones de trabajo. Verifique y resuelva los problemas, si es necesario.**

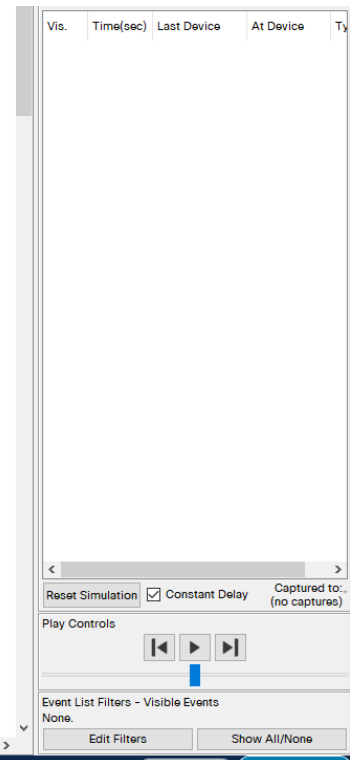
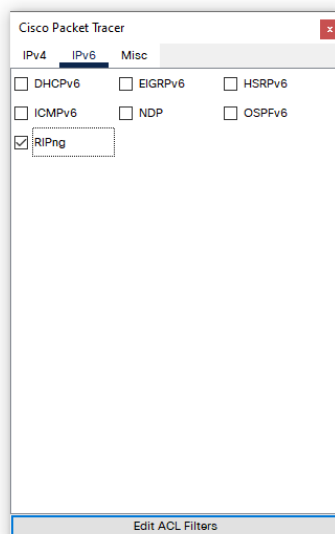


#### 4.4.3. Verificación de tráfico del protocolo de enrutamiento

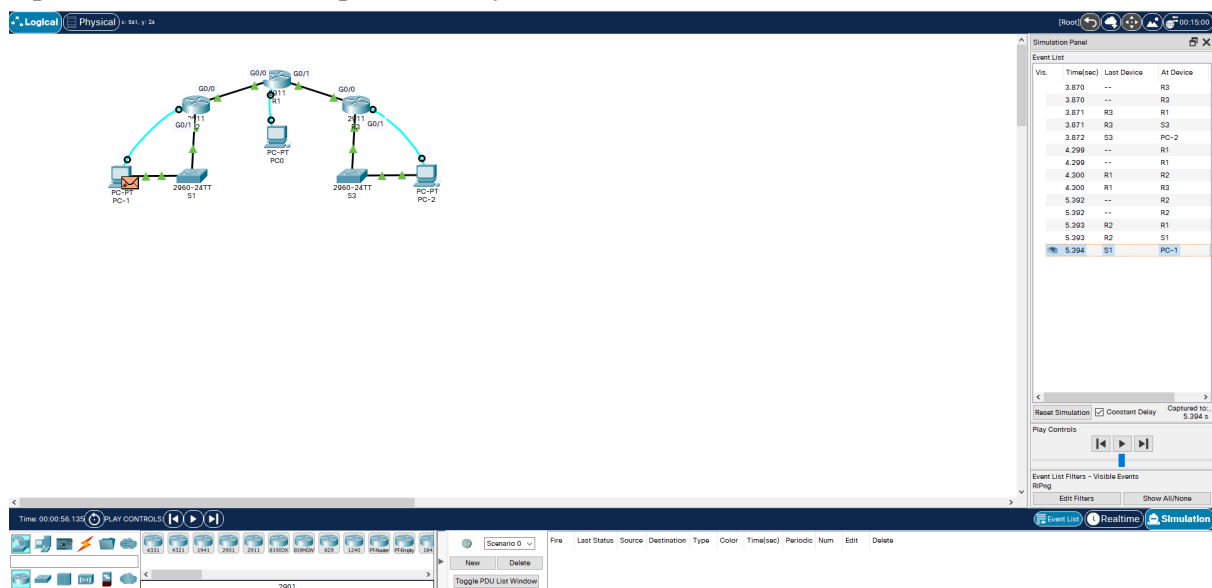
4.4.3.1. Realice una vez más una prueba de conectividad entre las estaciones utilizando la herramienta disponible en Packet Tracer para esta prueba.



4.4.3.2. Reinicie la simulación, y agregue un filtro para ver sólo el tráfico del protocolo RIPng



**4.4.3.3. Analice los mensajes que son intercambiados entre los enrutadores y responda a la siguiente pregunta: o ¿Qué variación encuentra en los mensajes intercambiados con los capturados anteriormente para RIPv1 y RIPv2?**

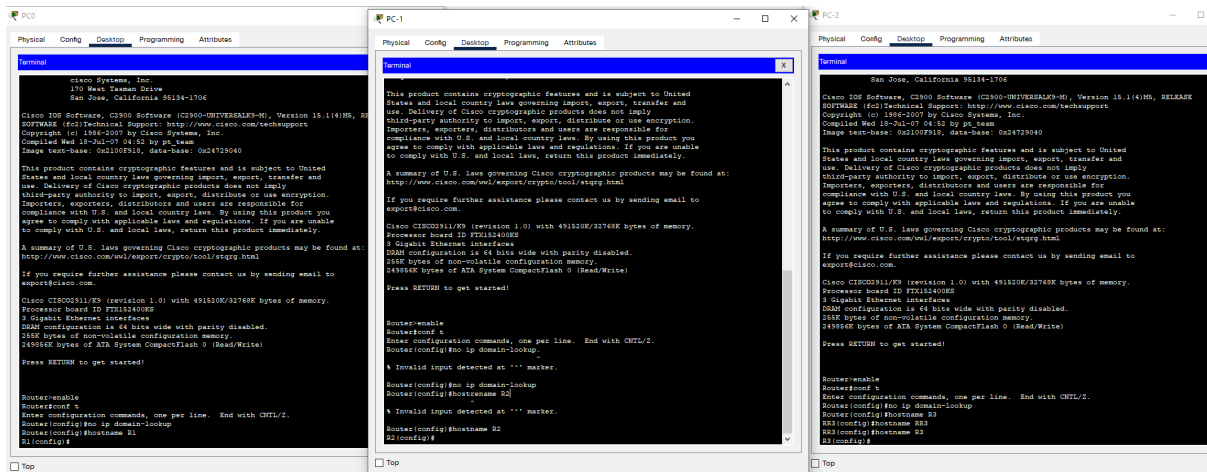


## 4.5 Configuración de OSPFv3 (OSPF soporte IPv6)

### 4.5.1. Configuración básica de enrutadores

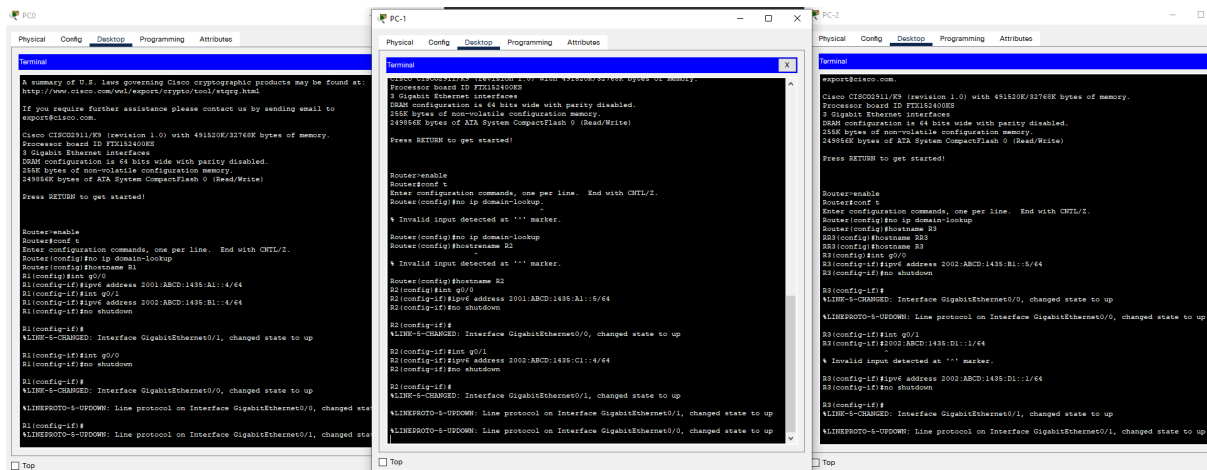
**4.5.1.1. Desactive la búsqueda del DNS utilizando el comando no ip domain-lookup.**

**4.5.1.2. Establezca los nombres de los dispositivos como se muestra en la Figura 3.**



**4.5.1.3. Configure la dirección IP que se indica en la Tabla 3 para cada una de las interfaces en todos los enrutadores.**

**4.5.1.4. Configure las direcciones IP en las estaciones de trabajo. Consulte la Tabla 3 para obtener esta información.**



**4.5.1.5. Copie la configuración en ejecución en la configuración de inicio.**

**4.5.1.6. Realizar pruebas de conectividad**



PC-2

Physical Config Desktop Programming Attributes

Command Prompt

```
again.  
C:\>Ping 2002:ABCD:1435:B1::5  
  
Pinging 2002:ABCD:1435:B1::5 with 32 bytes of data:  
  
Request timed out.  
Request timed out.  
Request timed out.  
Request timed out.  
  
Ping statistics for 2002:ABCD:1435:B1::5:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),  
  
C:\>Ping 2002:ABCD:1435:B1::5  
  
Pinging 2002:ABCD:1435:B1::5 with 32 bytes of data:  
  
Reply from 2002:ABCD:1435:B1::5: bytes=32 time<1ms TTL=255  
Reply from 2002:ABCD:1435:B1::5: bytes=32 time<1ms TTL=255  
Reply from 2002:ABCD:1435:B1::5: bytes=32 time<1ms TTL=255  
Reply from 2002:ABCD:1435:B1::5: bytes=32 time=5ms TTL=255  
  
Ping statistics for 2002:ABCD:1435:B1::5:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 5ms, Average = 1ms  
  
C:\>Ping 2002:ABCD:1435:D1::1  
  
Pinging 2002:ABCD:1435:D1::1 with 32 bytes of data:  
  
Reply from 2002:ABCD:1435:D1::1: bytes=32 time=6ms TTL=255  
Reply from 2002:ABCD:1435:D1::1: bytes=32 time<1ms TTL=255  
Reply from 2002:ABCD:1435:D1::1: bytes=32 time<1ms TTL=255  
Reply from 2002:ABCD:1435:D1::1: bytes=32 time<1ms TTL=255  
  
Ping statistics for 2002:ABCD:1435:D1::1:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 0ms, Maximum = 6ms, Average = 1ms  
  
C:\>
```

☐ Top

de Pc2 a R3

PC-1

Physical Config Desktop Programming Attributes

Terminal

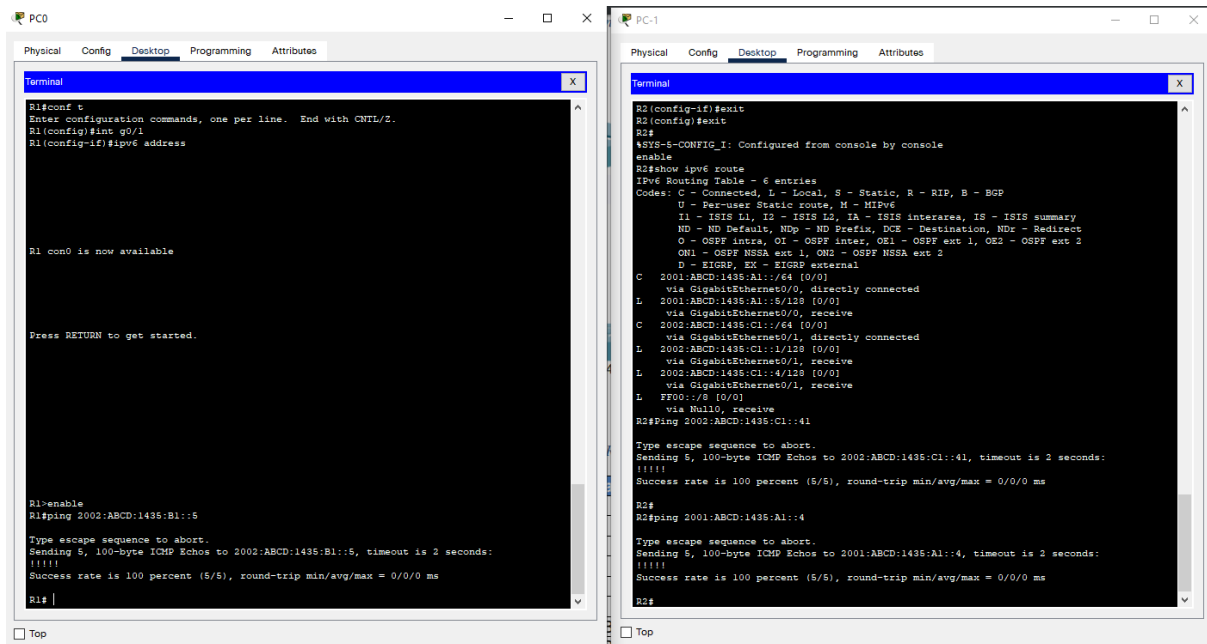
```
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int g0/0
R2(config-if)#ipv6 address 2001:ABCD:1435:A1::5/64
R2(config-if)#no shutdown
R2(config-if)#int g0/1
R2(config-if)#ipv6 address 2002:ABCD:1435:C1::1/64
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console
enable
R2#show ipv6 route
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
       D - EIGRP, EX - EIGRP external
C 2001:ABCD:1435:A1::/64 [0/0]
   via GigabitEthernet0/0, directly connected
L 2001:ABCD:1435:A1::5/128 [0/0]
   via GigabitEthernet0/0, receive
C 2002:ABCD:1435:C1::/64 [0/0]
   via GigabitEthernet0/1, directly connected
L 2002:ABCD:1435:C1::1/128 [0/0]
   via GigabitEthernet0/1, receive
L 2002:ABCD:1435:C1::4/128 [0/0]
   via GigabitEthernet0/1, receive
L FF00::/8 [0/0]
   via Null0, receive
R2#ping 2002:ABCD:1435:C1::41

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2002:ABCD:1435:C1::41, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

R2#
```

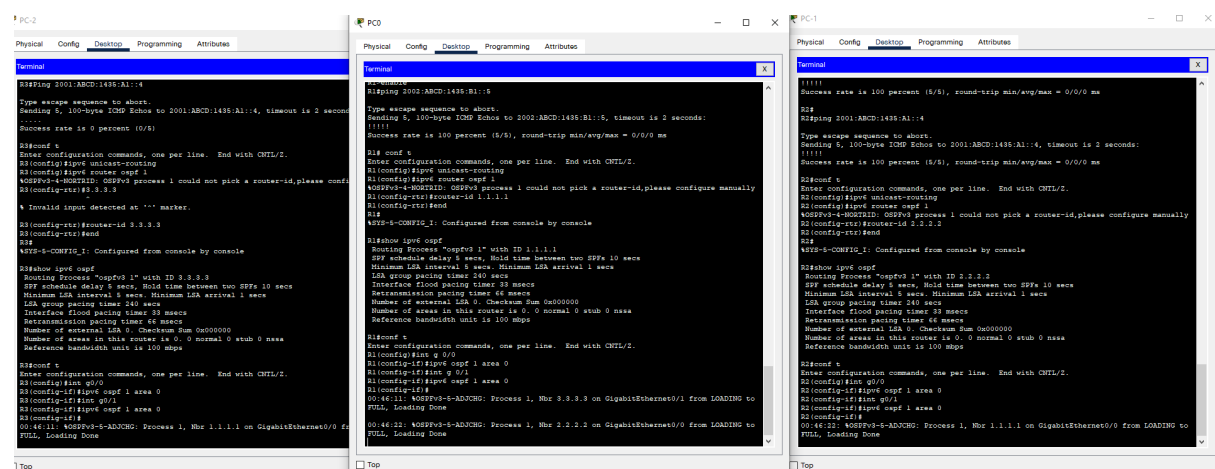
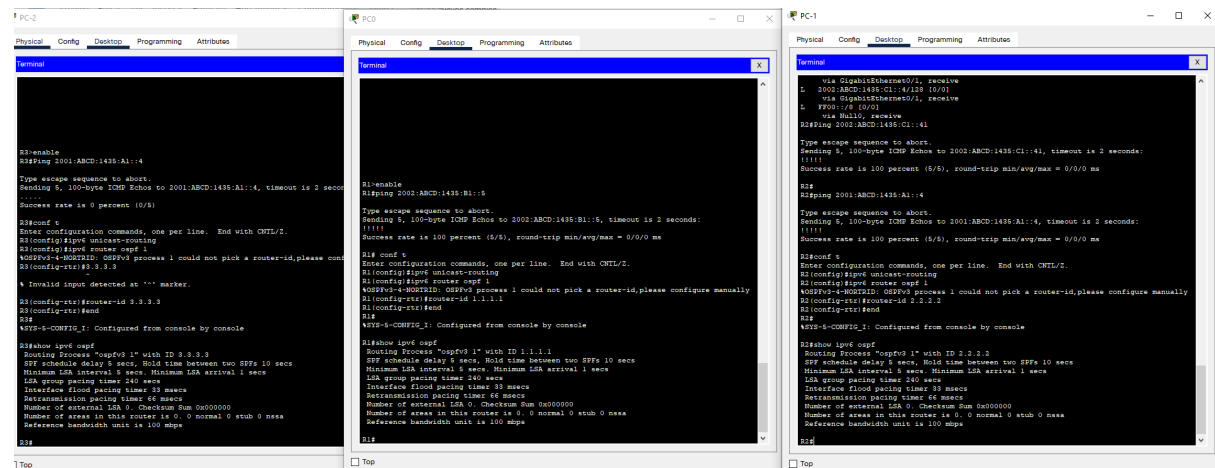
☐ Top

R2 a PC1

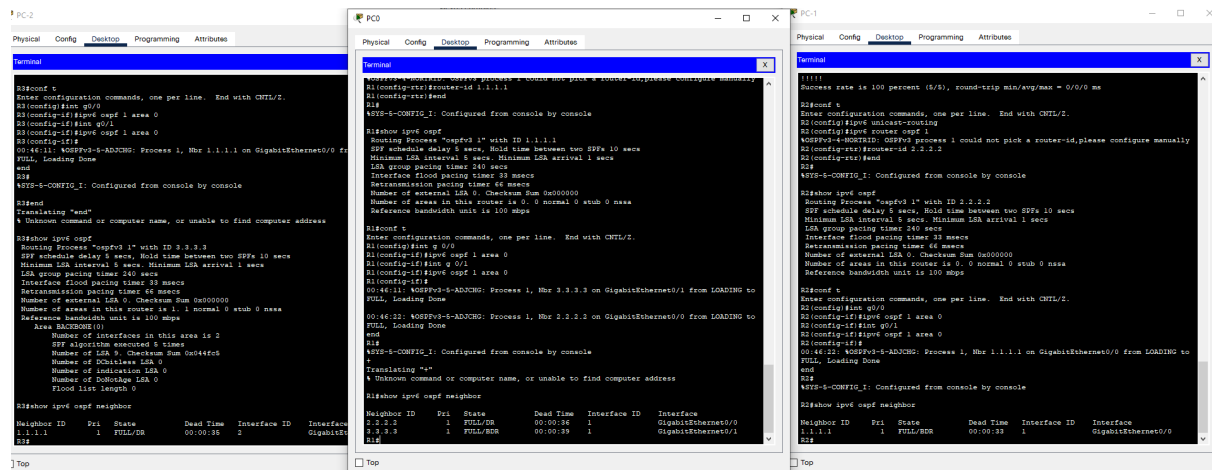


## R1 a R3; R2 a R1

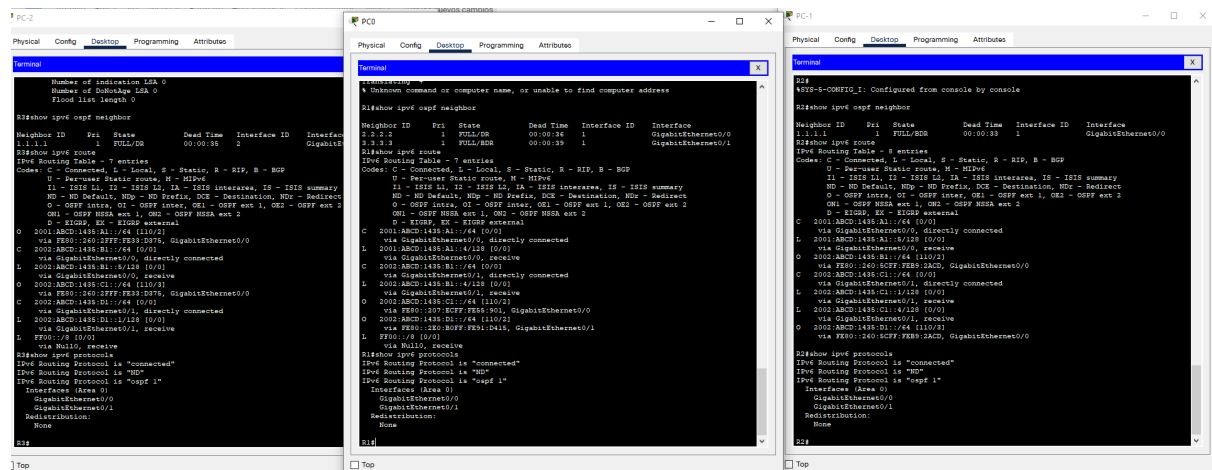
## 4.5.2 Configuración de protocolo OSPFv3



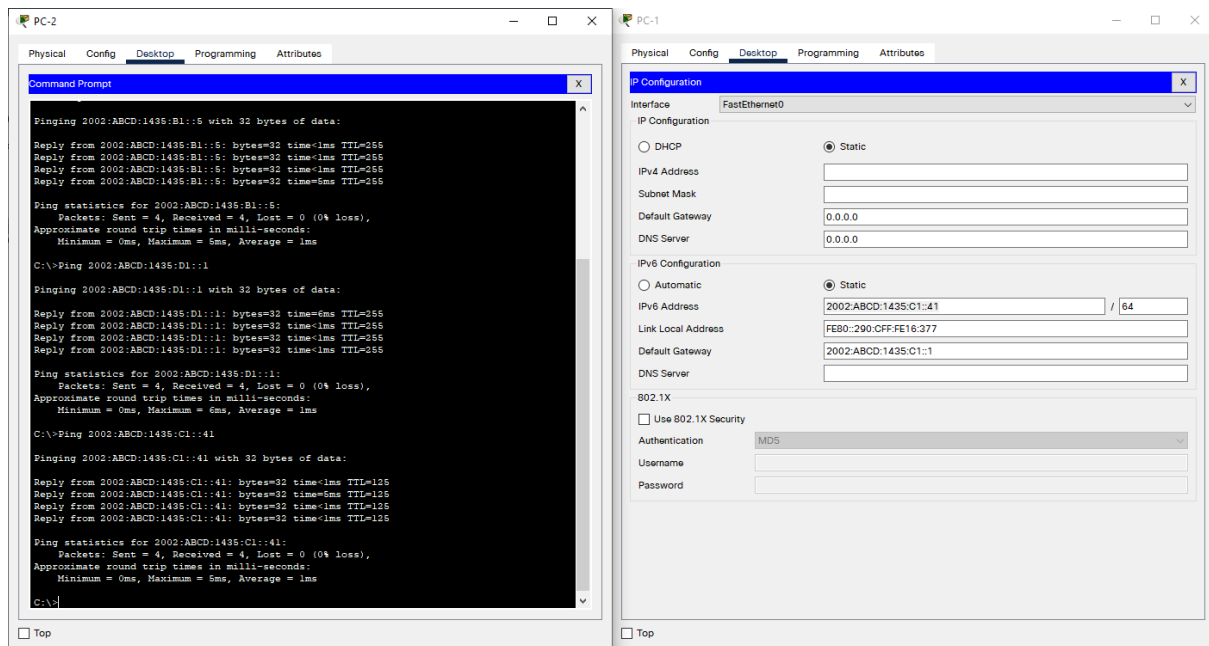
### 4.5.2.1. Realice la configuración del proceso de enrutamiento OSPFv3 para el escenario propuesto



## 4.5.2.2. Verifique la correcta actualización de las tablas de enrutamiento. Para este paso utilice los comandos `show ipv6 route` y `show ipv6 protocols`



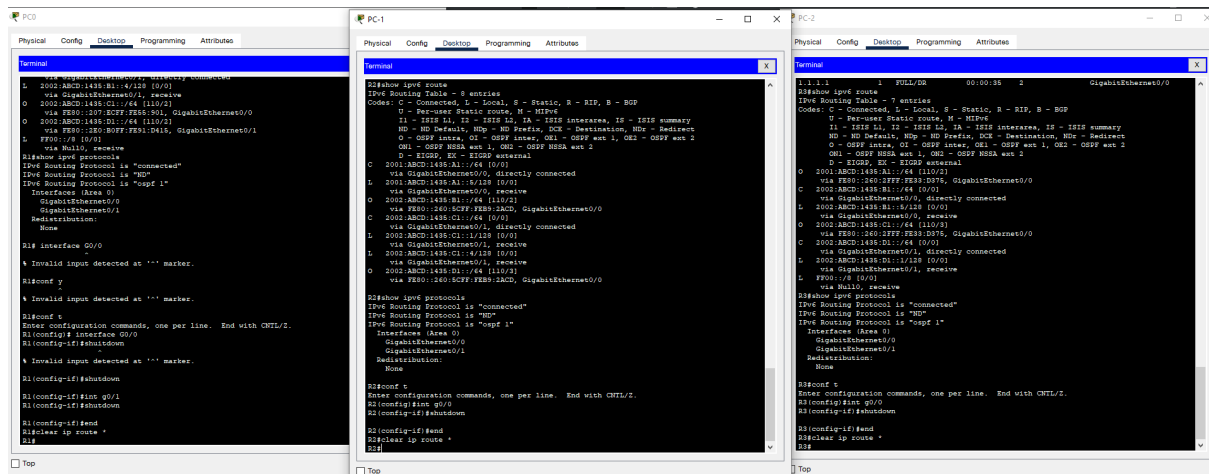
## 4.5.2.3. Realice la prueba de conectividad entre las estaciones de trabajo. Verifique y resuelva los problemas, si es necesario.



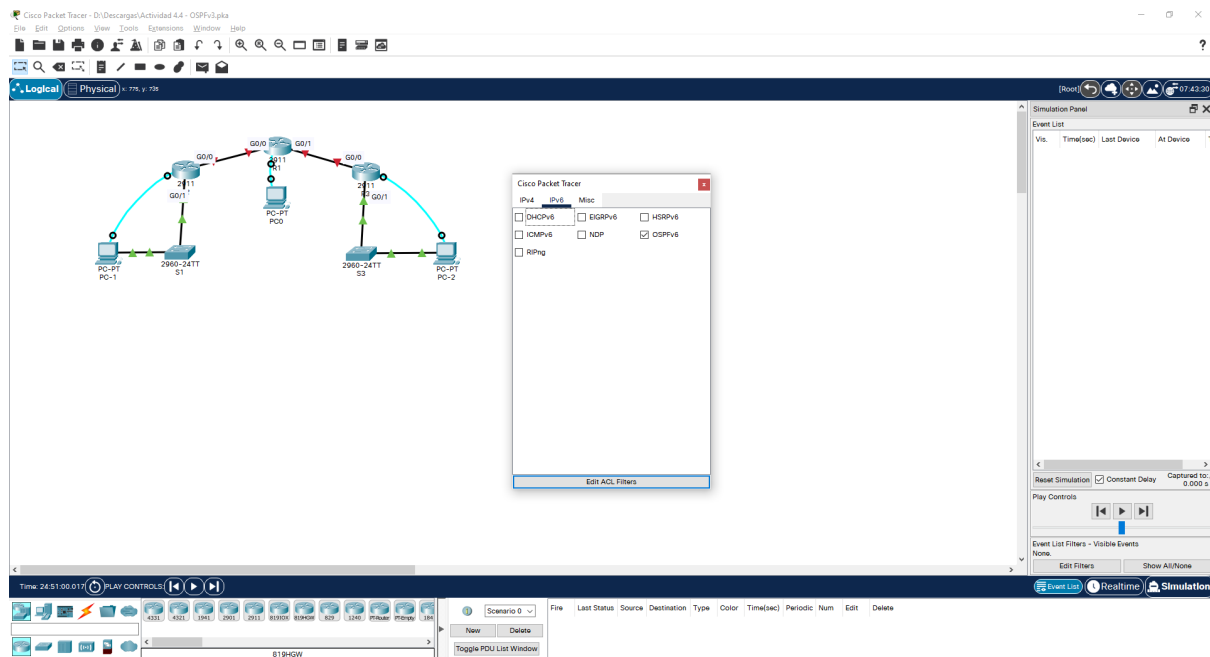
## 4.5.3 Simulación de convergencia del protocolo de enrutamiento

### 4.5.3.1. Apague las interfaces que interconectan los routers, utilizando el comando shutdown.

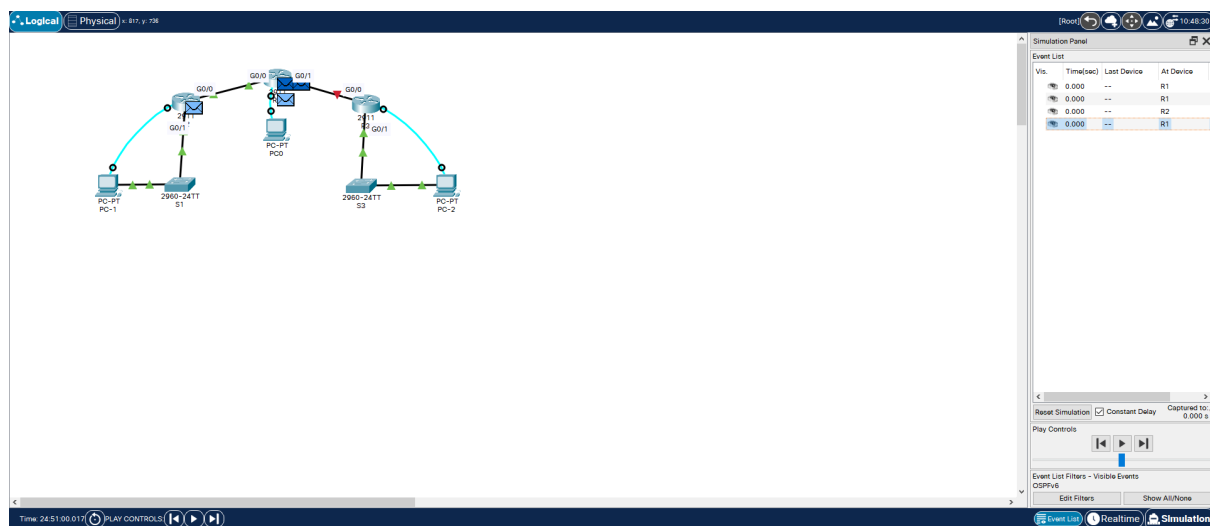
### 4.5.3.2. Elimine la información de enrutamiento de cada router, esto lo puede realizar utilizando el comando clear ip route \*.



### 4.5.3.3. Active el modo de simulación en packet tracer y configure un filtro solo para ver el tráfico OSPF, no genere tráfico de ningún tipo en ambos equipos.



#### 4.5.3.4.Active las interfaces de red de los tres routers



#### 4.5.3.5.Analice los mensajes que son intercambiados entre los enrutadores y responda a las siguientes preguntas:

##### ¿Qué información puede identificar en la simulación?

En primera instancia, los enrutadores confirman con sus vecinos la posibilidad de conectar y enviar información. Seguido a esto se genera el envío de información y por último se da el intercambio para que la información sea transmitida a los pcs a través de los swift.

##### ¿Cómo son los paquetes OSPF?

Hay diferentes tipos para que se de la conexión, como se explicó anteriormente se hace una especie de saludo en la que se verifican vecinos para llevar a cabo la conexión, otro tipo de paquete es el de envío de información, el cual puede ser de DB o de solicitud de enlace.