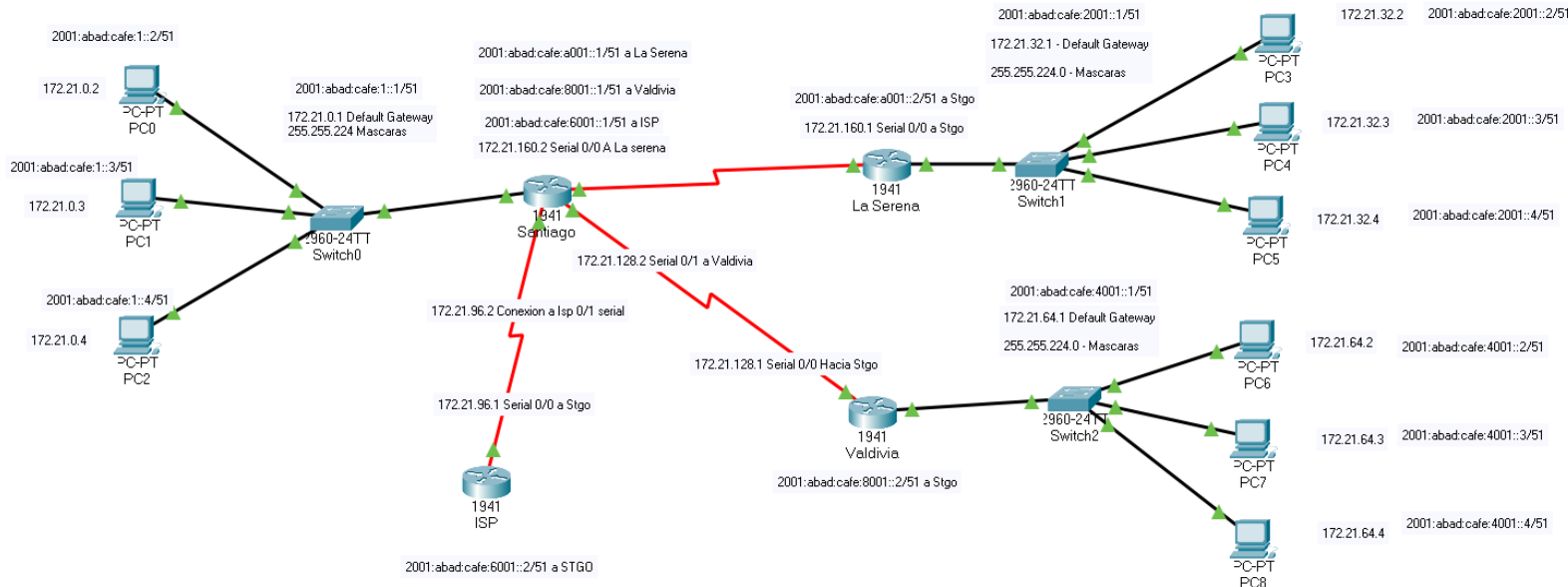


- 1- Para poder indicar determinar el prefijo necesario de la dirección 2001:abad:cafe:: correspondiente a ipv6, tenemos que contar la cantidad de bits que se utilizaron para el enrutamiento global, en este caso se utilizaron los primeros 3 cuartetos, es decir, 16 bits para 2001, otros 16 bits para abad y por ultimo otros 16 bits para cafe, haciendo esta suma, tenemos un prefijo de 48 para esta dirección, utilizando una calculadora ipv6 proporcionada por la página <https://www.site24x7.com/es/tools/ipv6-subredes-calculadora.html>, podemos obtener el prefijo necesario para trabajar el tema de las subredes en ipv6, introduciendo los valores, obtenemos el rango de direcciones valido entre las 8 subredes posibles (en este caso solo utilizaremos 6), dando la información de la siguiente tabla:

Interface	Subred	Rango de direcciones primera IP	Rango de direcciones Ultima IP
Ethernet	Subred Santiago	2001:abad:cafe::	2001:abad:cafe:1ffff::
Ethernet	Subred Santiago	2001:abad:cafe::	2001:abad:cafe:1ffff::
Ethernet	Subred Santiago	2001:abad:cafe::	2001:abad:cafe:1ffff::
GigabitEthernet	Subred Santiago		
Serial DTE	*		
Ethernet	Subred La Serena	2001:abad:cafe:2000::	2001:abad:cafe:3fff::
Ethernet	Subred La Serena	2001:abad:cafe:2000::	2001:abad:cafe:3fff::
Ethernet	Subred La Serena	2001:abad:cafe:2000::	2001:abad:cafe:3fff::
GigabitEthernet	Subred La Serena		
Serial DTE	*		
Ethernet	Subred Valdivia	2001:abad:cafe:4000::	2001:abad:cafe:5fff::
Ethernet	Subred Valdivia	2001:abad:cafe:4000::	2001:abad:cafe:5fff::
Ethernet	Subred Valdivia	2001:abad:cafe:4000::	2001:abad:cafe:5fff::
GigabitEthernet	Subred Valdivia		
Serial DTE	*		
Serial DTE	Subred "Internet"	2001:abad:cafe:6000::	2001:abad:cafe:7fff::
Serial DTE	Subred Conexión VAL-STGO	2001:abad:cafe:8000::	2001:abad:cafe:9fff::
Serial DTE	Subred Conexión LS-STGO	2001:abad:cafe:a000::	2001:abad:cafe:bfff::
2001:abad:cafe::/48	2001:abad:cafe::/51	Para temas de sub red se ocupa /51	

Finalmente el prefijo necesario para trabajar la dirección ip será de /51

2-



Para verificar si los dispositivos están correctamente conectados de manera “local” (haciendo referencia a la misma ciudad), se harán pings entre computadores dando los siguientes resultados:

Para el caso del área local de Santiago tenemos que:

De PC0 (2001:abad:cafe:1::2)

```
C:\>ping 2001:abad:cafe:1::3

Pinging 2001:abad:cafe:1::3 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:1::3: bytes=32 time<lms TTL=128
Reply from 2001:ABAD:CAFE:1::3: bytes=32 time<lms TTL=128
Reply from 2001:ABAD:CAFE:1::3: bytes=32 time=17ms TTL=128
Reply from 2001:ABAD:CAFE:1::3: bytes=32 time<lms TTL=128

Ping statistics for 2001:ABAD:CAFE:1::3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 17ms, Average = 4ms
```

(PC1: 2001:abad:cafe:1::3)

```
C:\>ping 2001:abad:cafe:1::4

Pinging 2001:abad:cafe:1::4 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<lms TTL=128
Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<lms TTL=128
Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<lms TTL=128
Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<lms TTL=128

Ping statistics for 2001:ABAD:CAFE:1::4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

(PC2: 2001:abad:cafe:1::4)

Y el último caso de PC1 A PC2:

```
C:\>ping 2001:abad:cafe:1::4

Pinging 2001:abad:cafe:1::4 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:1::4: bytes=32 time<1ms TTL=128

Ping statistics for 2001:ABAD:CAFE:1::4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Para el caso de La Serena tenemos que desde el PC3 (2001:abad:cafe:2001:2):

```
C:\>ping 2001:abad:cafe:2001::3

Pinging 2001:abad:cafe:2001::3 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:2001::3: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::3: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::3: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::3: bytes=32 time=32ms TTL=128

Ping statistics for 2001:ABAD:CAFE:2001::3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 32ms, Average = 8ms
```

(PC4: 2001:abad:cafe:2001::3)

```
C:\>ping 2001:abad:cafe:2001::4

Pinging 2001:abad:cafe:2001::4 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128

Ping statistics for 2001:ABAD:CAFE:2001::4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

(PC5: 2001:abad:cafe:2001::4)

Y el último caso de PC4 A PC5:

```
C:\>ping 2001:abad:cafe:2001::4

Pinging 2001:abad:cafe:2001::4 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:2001::4: bytes=32 time<1ms TTL=128

Ping statistics for 2001:ABAD:CAFE:2001::4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Mientras que para el caso de Valdivia desde el PC6(2001:abad:café:4001::2) tenemos que:

```
C:\>ping 2001:abad:cafe:4001::3

Pinging 2001:abad:cafe:4001::3 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:4001::3: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::3: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::3: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::3: bytes=32 time=18ms TTL=128

Ping statistics for 2001:ABAD:CAFE:4001::3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 18ms, Average = 4ms
```

(PC7: 2001:abad:cafe:4001::3)

```
C:\>ping 2001:abad:cafe:4001::4

Pinging 2001:abad:cafe:4001::4 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128

Ping statistics for 2001:ABAD:CAFE:4001::4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

(PC8: 2001:abad:cafe:4001::4)

Y el último caso de PC7 y PC8 es de:

```
C:\>ping 2001:abad:cafe:4001::4













Pinging 2001:abad:cafe:4001::4 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128
Reply from 2001:ABAD:CAFE:4001::4: bytes=32 time<1ms TTL=128

Ping statistics for 2001:ABAD:CAFE:4001::4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Como podemos apreciar, la conexión entre los computadores de las respectivas ciudades funciona entre cada una, debido a que los pings relacionados si pueden enviar y recibir paquetes, estableciendo una ruta para el envío de datos.

Para el caso de los routers conectados directamente, aplicando un PDU, tenemos que:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	Santiago	La Serena	ICMP		0.000	N	0	(edit)	
	Failed	Santiago	Valdivia	ICMP		0.000	N	1	(edit)	
	Failed	Santiago	ISP	ICMP		0.000	N	2	(edit)	
	Failed	Valdivia	La Serena	ICMP		0.000	N	3	(edit)	
	Failed	Valdivia	ISP	ICMP		0.000	N	4	(edit)	
	Failed	La Serena	ISP	ICMP		0.000	N	5	(edit)	

Podemos notar claramente que la conexión entre enrutadores falla, esto quiere decir que no hay una ruta establecida entre los diversos enrutadores de las diversas localidades. Puede ser solucionado implementando protocolos de enrutamiento.

Ahora para el caso entre conexión entre las distintas localidades, aplicando un ping entre un PC de cada localidad, tenemos que:

De PC0 (2001:abad:cafe:1::2 , Santiago) a PC3 (2001:abad:cafe:2001::2, La Serena)

```
C:\>ping 2001:abad:cafe:2001::2

Pinging 2001:abad:cafe:2001::2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2001:ABAD:CAFE:2001::2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

De PC0 (2001:abad:cafe:1::2 , Santiago) a PC6 (2001:abad:cafe:4001::2, Valdivia)

```
C:\>ping 2001:abad:cafe:4001::2

Pinging 2001:abad:cafe:4001::2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2001:ABAD:CAFE:4001::2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Finalmente el último caso de prueba PC3 (2001:abad:cafe:2001::2, La Serena) a PC6 (2001:abad:cafe:4001::2, Valdivia)

```
C:\>ping 2001:abad:cafe:4001::2

Pinging 2001:abad:cafe:4001::2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

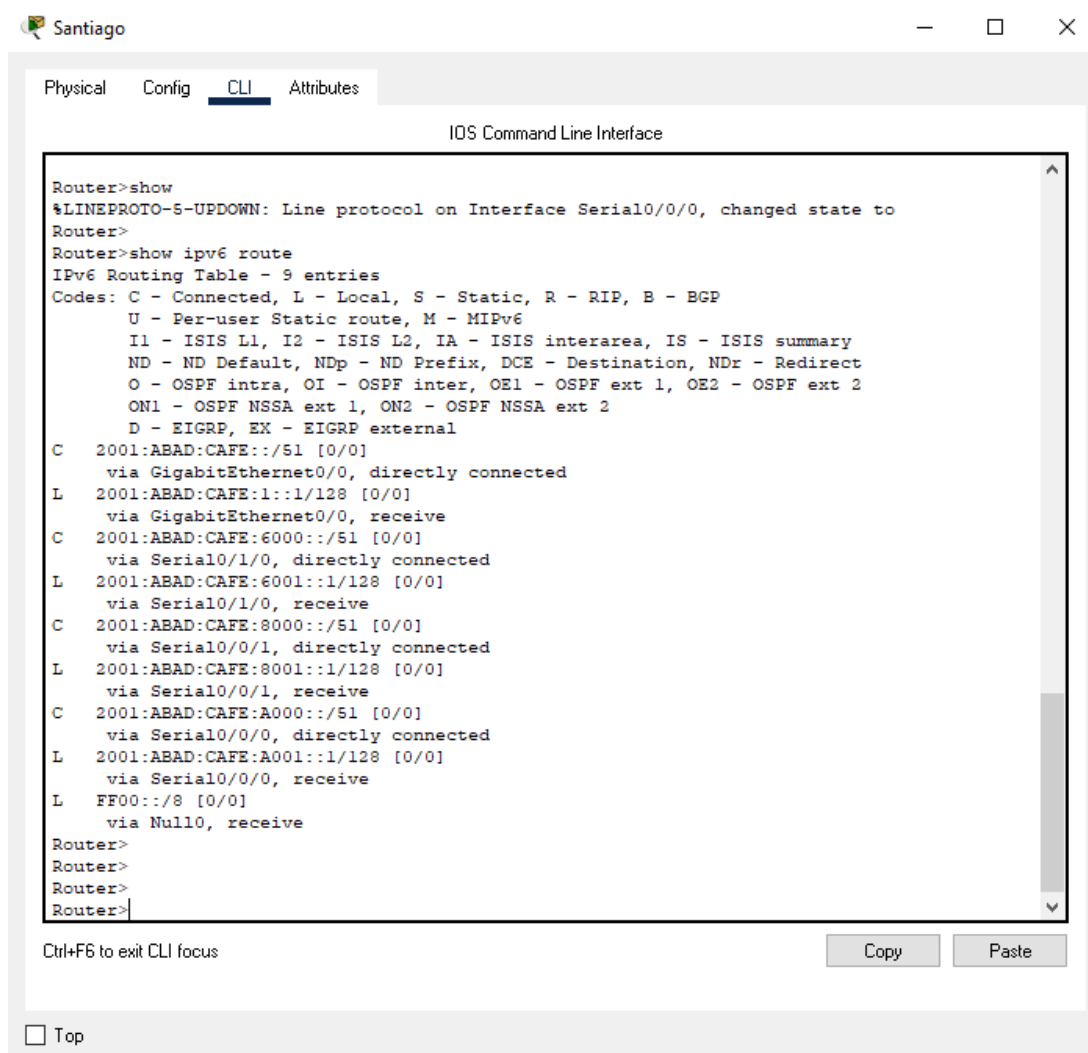
Ping statistics for 2001:ABAD:CAFE:4001::2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Como podemos apreciar, no existe una conexión posible entre las distintas localidades, solo de manera “local”, esto, debido a que cuando se mandan los paquetes por parte del usuario, se demora bastante en mandarlos, por lo que el destinatario interrumpe esta solicitud, logrando pérdida de paquetes.

Concluyendo la pregunta, podemos apreciar que los casos de manera directa si funciona la conexión, esto debido a que localmente tienen unas rutas ya establecidas, que permiten la transferencia de paquetes. Mientras que para el caso “exterior”, no se logra establecer el envío de datos por parte del usuario, esto debido a que, al momento de establecer conexión, el período para buscar una ruta adecuada es bastante extenso, dando como resultado “Request timed out”. Lo anterior descrito, puede ser solucionado configurando y aplicando protocolos de enrutamiento.

3-

Para el caso de la tabla de enrutamiento de Santiago tenemos que:



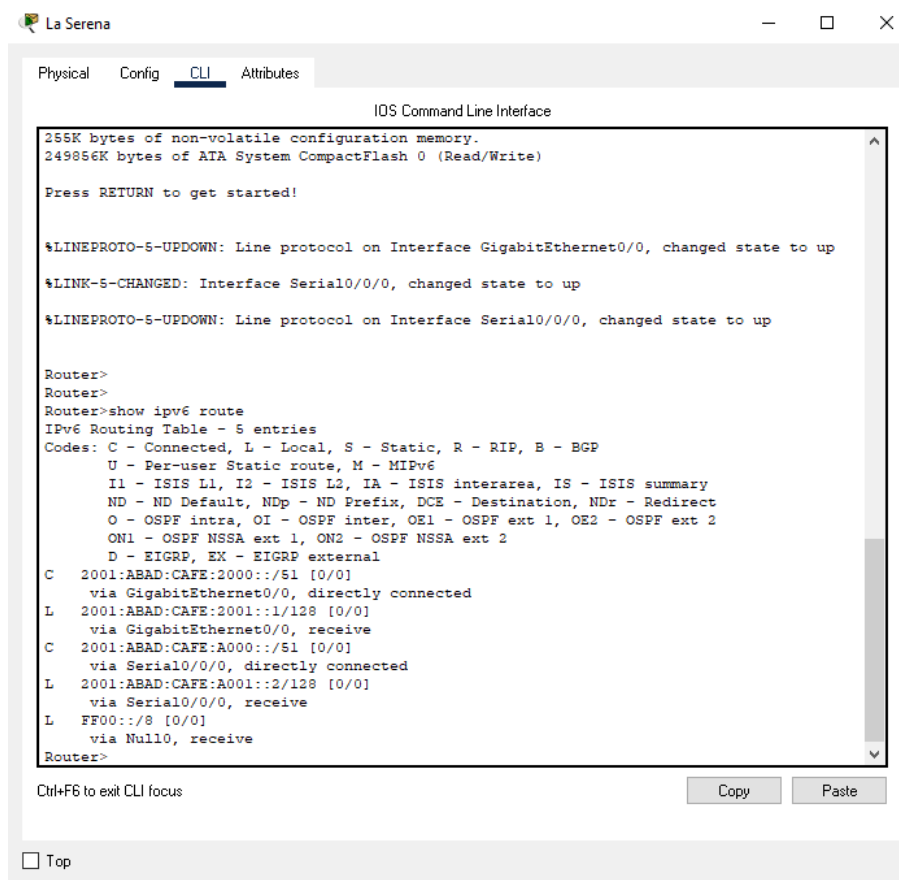
```
Router>show
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to
Router>
Router>show ipv6 route
IPv6 Routing Table - 9 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - 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:ABAD:CAFE::/51 [0/0]
   via GigabitEthernet0/0, directly connected
L 2001:ABAD:CAFE:1::1/128 [0/0]
   via GigabitEthernet0/0, receive
C 2001:ABAD:CAFE:6000::/51 [0/0]
   via Serial0/0/0, directly connected
L 2001:ABAD:CAFE:6001::1/128 [0/0]
   via Serial0/0/0, receive
C 2001:ABAD:CAFE:8000::/51 [0/0]
   via Serial0/0/1, directly connected
L 2001:ABAD:CAFE:8001::1/128 [0/0]
   via Serial0/0/1, receive
C 2001:ABAD:CAFE:A000::/51 [0/0]
   via Serial0/0/0, directly connected
L 2001:ABAD:CAFE:A001::1/128 [0/0]
   via Serial0/0/0, receive
L FF00::/8 [0/0]
   via Null0, receive
Router>
Router>
Router>
Router>
```

Ctrl+F5 to exit CLI focus

Copy Paste

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Tabla de enrutamiento de La Serena:



The screenshot shows a window titled "La Serena" with a tabbed interface. The "CLI" tab is active, displaying the "IOS Command Line Interface". The text in the CLI window is as follows:

```
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

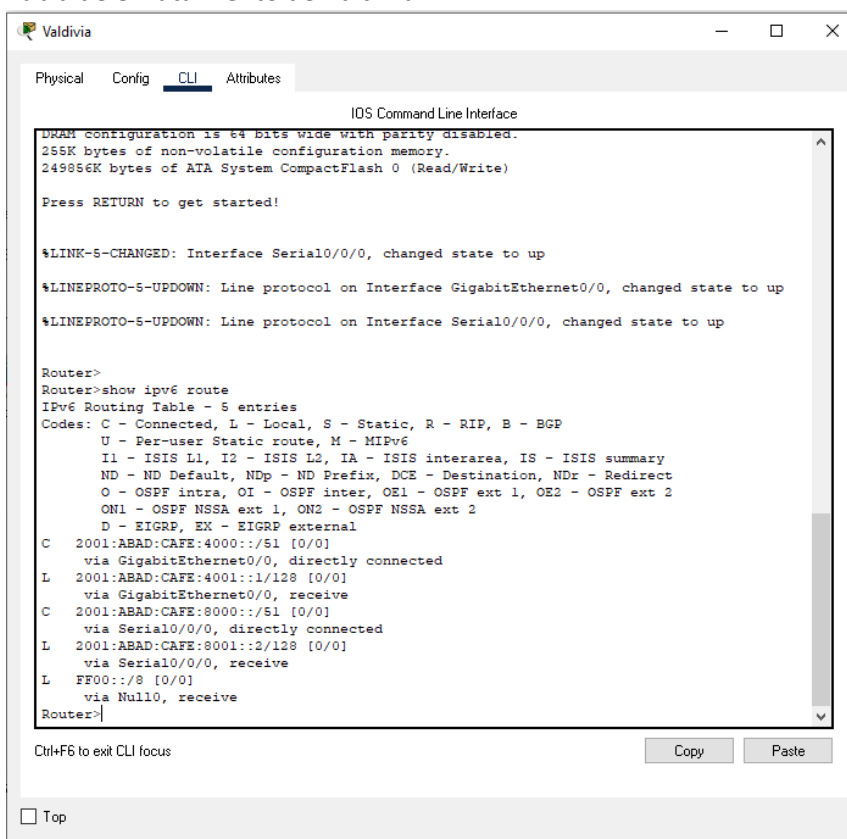
Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>
Router>
Router>show ipv6 route
IPv6 Routing Table - 5 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:ABAD:CAFE:2000::/51 [0/0]
    via GigabitEthernet0/0, directly connected
L    2001:ABAD:CAFE:2001::1/128 [0/0]
    via GigabitEthernet0/0, receive
C    2001:ABAD:CAFE:A000::/51 [0/0]
    via Serial0/0/0, directly connected
L    2001:ABAD:CAFE:A001::2/128 [0/0]
    via Serial0/0/0, receive
L    FF00::/8 [0/0]
    via Null0, receive
Router>
```

Below the CLI window, there is a text label "Ctrl+F6 to exit CLI focus" and two buttons: "Copy" and "Paste". At the bottom left of the window, there is a checkbox labeled "Top".

Tabla de enrutamiento de Valdivia:



The screenshot shows the Valdivia CLI interface with the following content:

```
Valdivia
Physical Config CLI Attributes
IOS Command Line Interface

DRAM configuration is 64 bits wide with parity disabled.
265K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

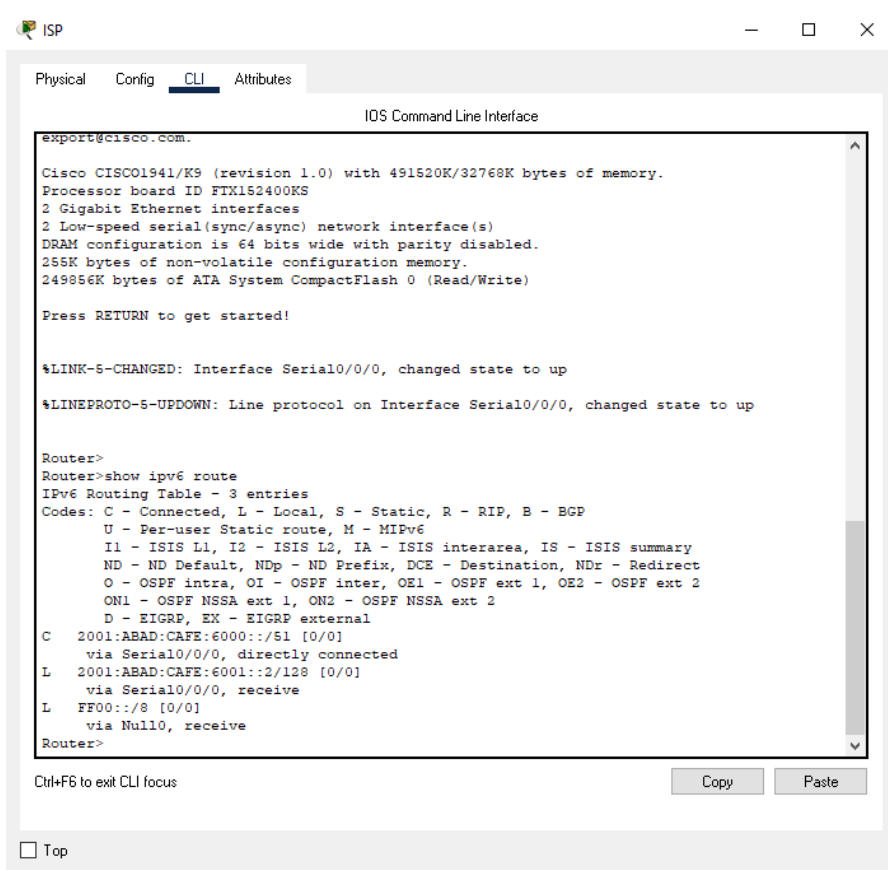
Router>
Router>show ipv6 route
IPv6 Routing Table - 5 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        ND - ND Default, NDp - ND Prefix, DCE - Destination, 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:ABAD:CAFE:4000::/51 [0/0]
    via GigabitEthernet0/0, directly connected
L 2001:ABAD:CAFE:4001::1/128 [0/0]
    via GigabitEthernet0/0, receive
C 2001:ABAD:CAFE:8000::/51 [0/0]
    via Serial0/0/0, directly connected
L 2001:ABAD:CAFE:8001::2/128 [0/0]
    via Serial0/0/0, receive
L FF00::/8 [0/0]
    via Null0, receive
Router>
```

Ctrl+F5 to exit CLI focus

Copy Paste

☐ Top

Tabla de enrutamiento ISP:



The screenshot shows the ISP CLI interface with the following content:

```
ISP
Physical Config CLI Attributes
IOS Command Line Interface

export@cisco.com.

Cisco CISC01941/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400KS
2 Gigabit Ethernet interfaces
2 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
265K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>
Router>show ipv6 route
IPv6 Routing Table - 3 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:ABAD:CAFE:6000::/51 [0/0]
    via Serial0/0/0, directly connected
L 2001:ABAD:CAFE:6001::2/128 [0/0]
    via Serial0/0/0, receive
L FF00::/8 [0/0]
    via Null0, receive
Router>
```

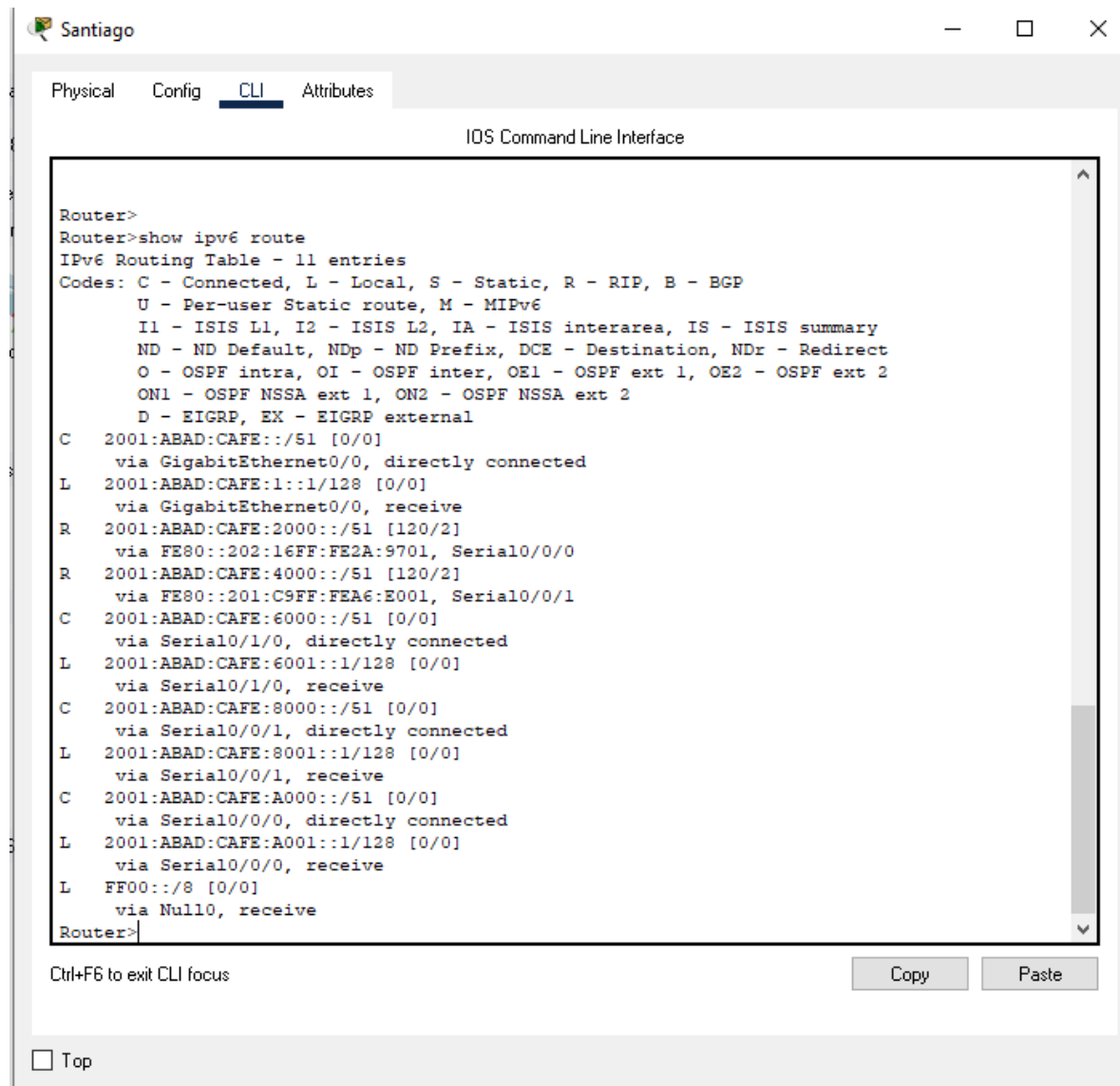
Ctrl+F5 to exit CLI focus

Copy Paste

☐ Top

Como podemos apreciar, el diseño del enrutamiento del router de Santiago tiene algún grado de coherencia, debido a que desde el enrutador podemos ver las diversas direcciones ipv6 que toman los paquetes, podemos notar que todas las conexiones derivan hacia Santiago (viendo las direcciones), además se puede apreciar lo que está directamente conectado hacia el enrutador, y como está conectado (localmente o sencillamente conectado), también podemos deducir las rutas que pueden tomar los paquetes para llegar a su destino.

3c)



```
Router>
Router>show ipv6 route
IPv6 Routing Table - 11 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:ABAD:CAFE::/51 [0/0]
    via GigabitEthernet0/0, directly connected
L    2001:ABAD:CAFE:1::1/128 [0/0]
    via GigabitEthernet0/0, receive
R    2001:ABAD:CAFE:2000::/51 [120/2]
    via FE80::202:16FF:FE2A:9701, Serial0/0/0
R    2001:ABAD:CAFE:4000::/51 [120/2]
    via FE80::201:C9FF:FEA6:E001, Serial0/0/1
C    2001:ABAD:CAFE:6000::/51 [0/0]
    via Serial0/1/0, directly connected
L    2001:ABAD:CAFE:6001::1/128 [0/0]
    via Serial0/1/0, receive
C    2001:ABAD:CAFE:8000::/51 [0/0]
    via Serial0/0/1, directly connected
L    2001:ABAD:CAFE:8001::1/128 [0/0]
    via Serial0/0/1, receive
C    2001:ABAD:CAFE:A000::/51 [0/0]
    via Serial0/0/0, directly connected
L    2001:ABAD:CAFE:A001::1/128 [0/0]
    via Serial0/0/0, receive
L    FF00::/8 [0/0]
    via Null0, receive
Router>
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

IOS Command Line Interface

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>

Router>

Router>show ipv6 route

IPv6 Routing Table - 9 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

R 2001:ABAD:CAFE::/51 [120/2]

via FE80::240:BFF:FE81:5701, Serial0/0/0

C 2001:ABAD:CAFE:2000::/51 [0/0]

via GigabitEthernet0/0, directly connected

L 2001:ABAD:CAFE:2001::1/128 [0/0]

via GigabitEthernet0/0, receive

R 2001:ABAD:CAFE:4000::/51 [120/3]

via FE80::240:BFF:FE81:5701, Serial0/0/0

R 2001:ABAD:CAFE:6000::/51 [120/2]

via FE80::240:BFF:FE81:5701, Serial0/0/0

R 2001:ABAD:CAFE:8000::/51 [120/2]

via FE80::240:BFF:FE81:5701, Serial0/0/0

C 2001:ABAD:CAFE:A000::/51 [0/0]

via Serial0/0/0, directly connected

L 2001:ABAD:CAFE:A001::2/128 [0/0]

via Serial0/0/0, receive

L FF00::/8 [0/0]

via Null0, receive

Router>

Router>

Ctrl+F6 to exit CLI focus

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Valdivia

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>
Router>
Router>show ipv6 route
IPv6 Routing Table - 9 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
R   2001:ABAD:CAFE::/51 [120/2]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
R   2001:ABAD:CAFE:2000::/51 [120/3]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
C   2001:ABAD:CAFE:4000::/51 [0/0]
    via GigabitEthernet0/0, directly connected
L   2001:ABAD:CAFE:4001::1/128 [0/0]
    via GigabitEthernet0/0, receive
R   2001:ABAD:CAFE:6000::/51 [120/2]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
C   2001:ABAD:CAFE:8000::/51 [0/0]
    via Serial0/0/0, directly connected
L   2001:ABAD:CAFE:8001::2/128 [0/0]
    via Serial0/0/0, receive
R   2001:ABAD:CAFE:A000::/51 [120/2]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
L   FF00::/8 [0/0]
    via Null0, receive
Router>
Router>
```

Ctrl+F6 to exit CLI focus

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ISP

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>
Router>
Router>show ipv6 route
IPv6 Routing Table - 8 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
R   2001:ABAD:CAFE::/51 [120/2]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
R   2001:ABAD:CAFE:2000::/51 [120/3]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
R   2001:ABAD:CAFE:4000::/51 [120/3]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
C   2001:ABAD:CAFE:6000::/51 [0/0]
    via Serial0/0/0, directly connected
L   2001:ABAD:CAFE:6001::2/128 [0/0]
    via Serial0/0/0, receive
R   2001:ABAD:CAFE:8000::/51 [120/2]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
R   2001:ABAD:CAFE:A000::/51 [120/2]
    via FE80::240:BFF:FE81:5701, Serial0/0/0
L   FF00::/8 [0/0]
    via Null0, receive
Router>
Router>
Router>
```

Ctrl+F6 to exit CLI focus

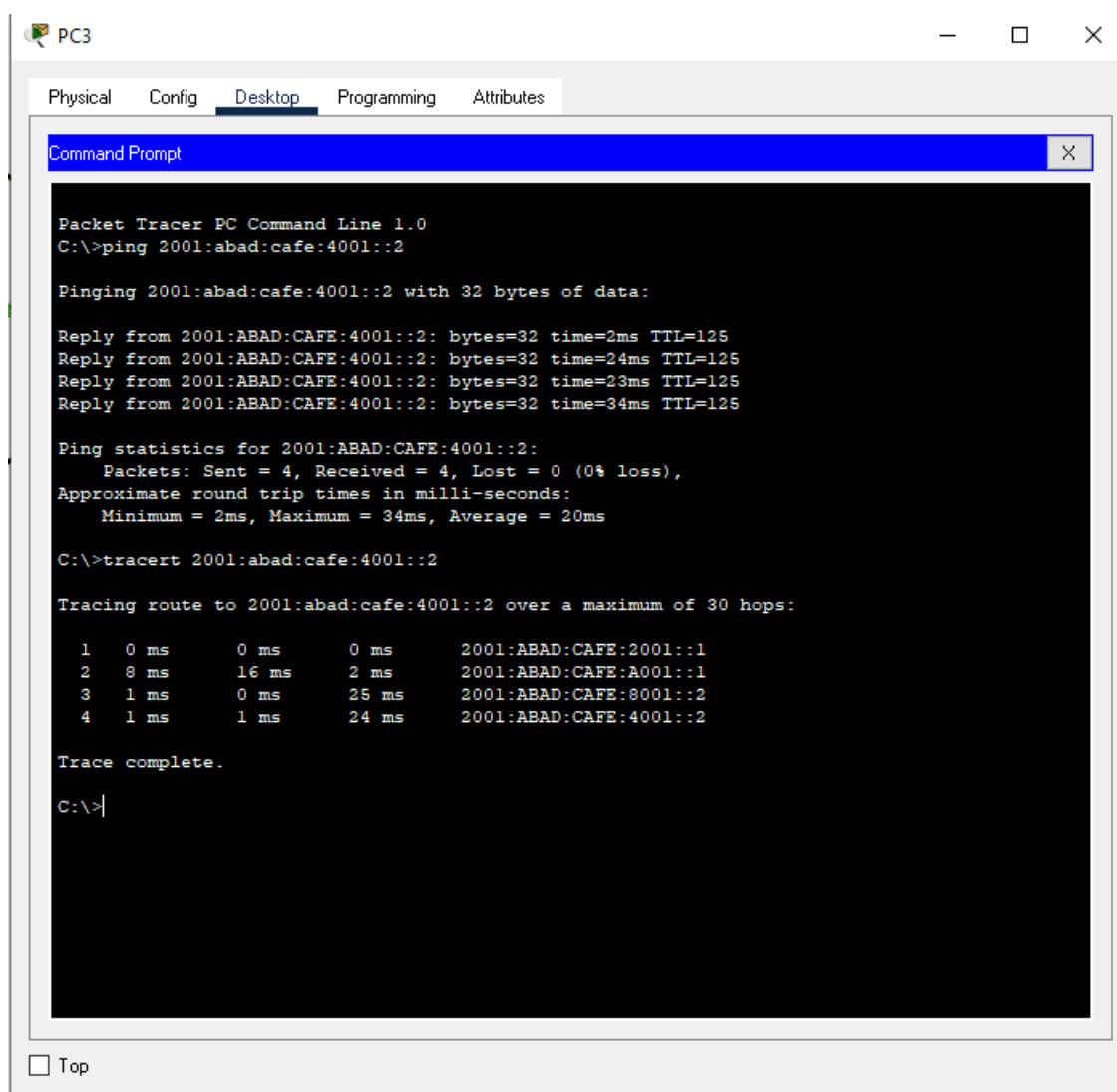
Copy Paste

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Agregando el protocolo, podemos ver que en las tablas de enrutamiento poseen una nueva entrada “R”, que implica que el protocolo de enrutamiento RIPv6 fue aplicado, por lo que cada router conoce nuevas rutas para enviar paquetes, estas nuevas rutas son generadas producto del “intercambio de información” producida por el protocolo, por lo que, al configurar los enrutadores, logramos notar el cambio en el diseño de envío de la información, por lo que la conexión entre computadores de distintas localidades puede ser finalmente, posible. En resumidas cuentas, la principal diferencia en comparación a las tablas de enrutamiento anteriores, es el listado de nuevas rutas proporcionadas por el protocolo.

3d)

Probando conectividad entre el PC3 (2001:abad:cafe:2001::2, La Serena) y el PC6 (2001:abad:cafe:4001::2, Valdivia), con el protocolo ya aplicado, tenemos que:



```
PC3
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 2001:abad:cafe:4001::2

Pinging 2001:abad:cafe:4001::2 with 32 bytes of data:

Reply from 2001:ABAD:CAFE:4001::2: bytes=32 time=2ms TTL=125
Reply from 2001:ABAD:CAFE:4001::2: bytes=32 time=24ms TTL=125
Reply from 2001:ABAD:CAFE:4001::2: bytes=32 time=23ms TTL=125
Reply from 2001:ABAD:CAFE:4001::2: bytes=32 time=34ms TTL=125

Ping statistics for 2001:ABAD:CAFE:4001::2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 34ms, Average = 20ms

C:\>tracert 2001:abad:cafe:4001::2

Tracing route to 2001:abad:cafe:4001::2 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms    2001:ABAD:CAFE:2001::1
  1  8 ms    16 ms   2 ms    2001:ABAD:CAFE:A001::1
  2  1 ms    0 ms    25 ms   2001:ABAD:CAFE:8001::2
  3  1 ms    1 ms    24 ms   2001:ABAD:CAFE:4001::2

Trace complete.

C:\>
```

Como podemos apreciar en la imagen anterior, la prueba de conectividad se realiza mediante un ping desde el pc de la Serena (2001:abad:cafe:2001::2, La Serena) y el PC6 (2001:abad:cafe:4001::2, Valdivia), donde se mandan 4 paquetes y se reciben 4 paquetes, esto indica que la conexión entre ambos computadores fue exitosa, en suma, podemos ver que no se perdieron paquetes durante el traslado, teniendo un tiempo promedio de envío de 20 milisegundos. Ahora aplicando el comando tracert, podemos determinar la cantidad de saltos y de qué forma se envían los paquetes (por los routers que pasan), podemos notar que desde PC3 de la Serena, se dirige al router de la Serena, posteriormente pasa al de Santiago, después desde el de Santiago lo redirige hacia Valdivia, y finalmente desde el router de Valdivia lo destina al PC6, todo lo anterior resumido en 4 hops como lo explica la imagen.