Comunicaciones

Trabajo Práctico IPv6

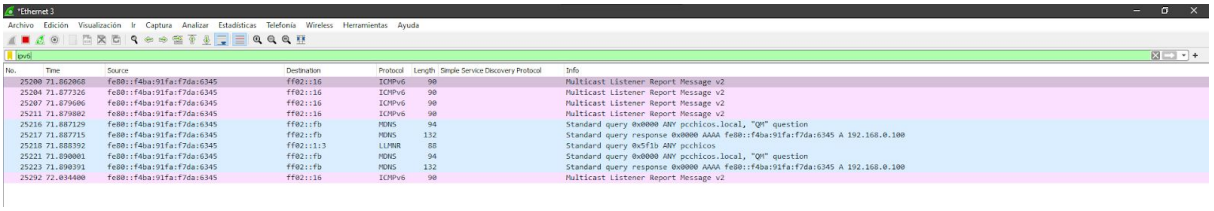
Díaz Agustín

Litmanovich Ignacio

WireShark

Ítem a

Selecciona la interfaz de Ethernet



Ítem c

```
PS C:\Users\Eduardo> ipconfig

Configuración IP de Windows


Adaptador de Ethernet Ethernet 3:

   Sufijo DNS específico para la conexión. . : fibertel.com.ar
   Vínculo: dirección IPv6 local. . . : fe80::f4ba:91fa:f7da:6345%13
   Dirección IPv4. . . . . . . . . . . . . . : 192.168.0.100
   Máscara de subred . . . . . . . . . . . . : 255.255.255.0
   Puerta de enlace predeterminada . . . . . : 192.168.0.3

Adaptador de Ethernet VirtualBox Host-Only Network:

   Sufijo DNS específico para la conexión. . :
   Vínculo: dirección IPv6 local. . . : fe80::24e5:b4af:852d:d910%18
   Dirección IPv4. . . . . . . . . . . . . . : 192.168.56.1
   Máscara de subred . . . . . . . . . . . . : 255.255.255.0
   Puerta de enlace predeterminada . . . . . :
PS C:\Users\Eduardo>
```

Ítem d

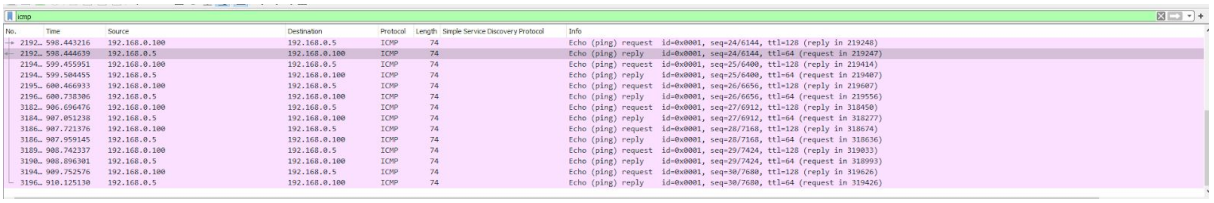
```
PS C:\Users\Eduardo> ping loopback

Haciendo ping a pcchicos [::1] con 32 bytes de datos:
Respuesta desde ::1: tiempo<1m
Respuesta desde ::1: tiempo<1m
Respuesta desde ::1: tiempo<1m
Respuesta desde ::1: tiempo<1m

Estadísticas de ping para ::1:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 0ms, Máximo = 0ms, Media = 0ms
PS C:\Users\Eduardo>
```

Ítem e

```
PS C:\Users\Eduardo> ping 192.168.0.5

Haciendo ping a 192.168.0.5 con 32 bytes de datos:
Respuesta desde 192.168.0.5: bytes=32 tiempo=354ms TTL=64
Respuesta desde 192.168.0.5: bytes=32 tiempo=237ms TTL=64
Respuesta desde 192.168.0.5: bytes=32 tiempo=154ms TTL=64
Respuesta desde 192.168.0.5: bytes=32 tiempo=372ms TTL=64

Estadísticas de ping para 192.168.0.5:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 154ms, Máximo = 372ms, Media = 279ms
```

```
PS C:\Users\Eduardo> ping -6 fe80::f4ba:91fa:f7da:6345%13

Haciendo ping a fe80::f4ba:91fa:f7da:6345%13 con 32 bytes de datos:
Respuesta desde fe80::f4ba:91fa:f7da:6345%13: tiempo<1m
Respuesta desde fe80::f4ba:91fa:f7da:6345%13: tiempo<1m
Respuesta desde fe80::f4ba:91fa:f7da:6345%13: tiempo<1m
Respuesta desde fe80::f4ba:91fa:f7da:6345%13: tiempo<1m

Estadísticas de ping para fe80::f4ba:91fa:f7da:6345%13:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 0ms, Máximo = 0ms, Media = 0ms
PS C:\Users\Eduardo>
```

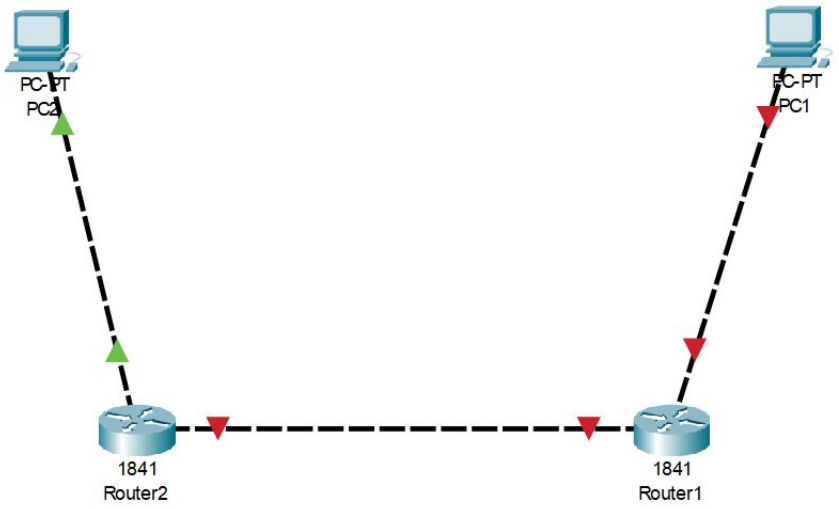
Ítem g



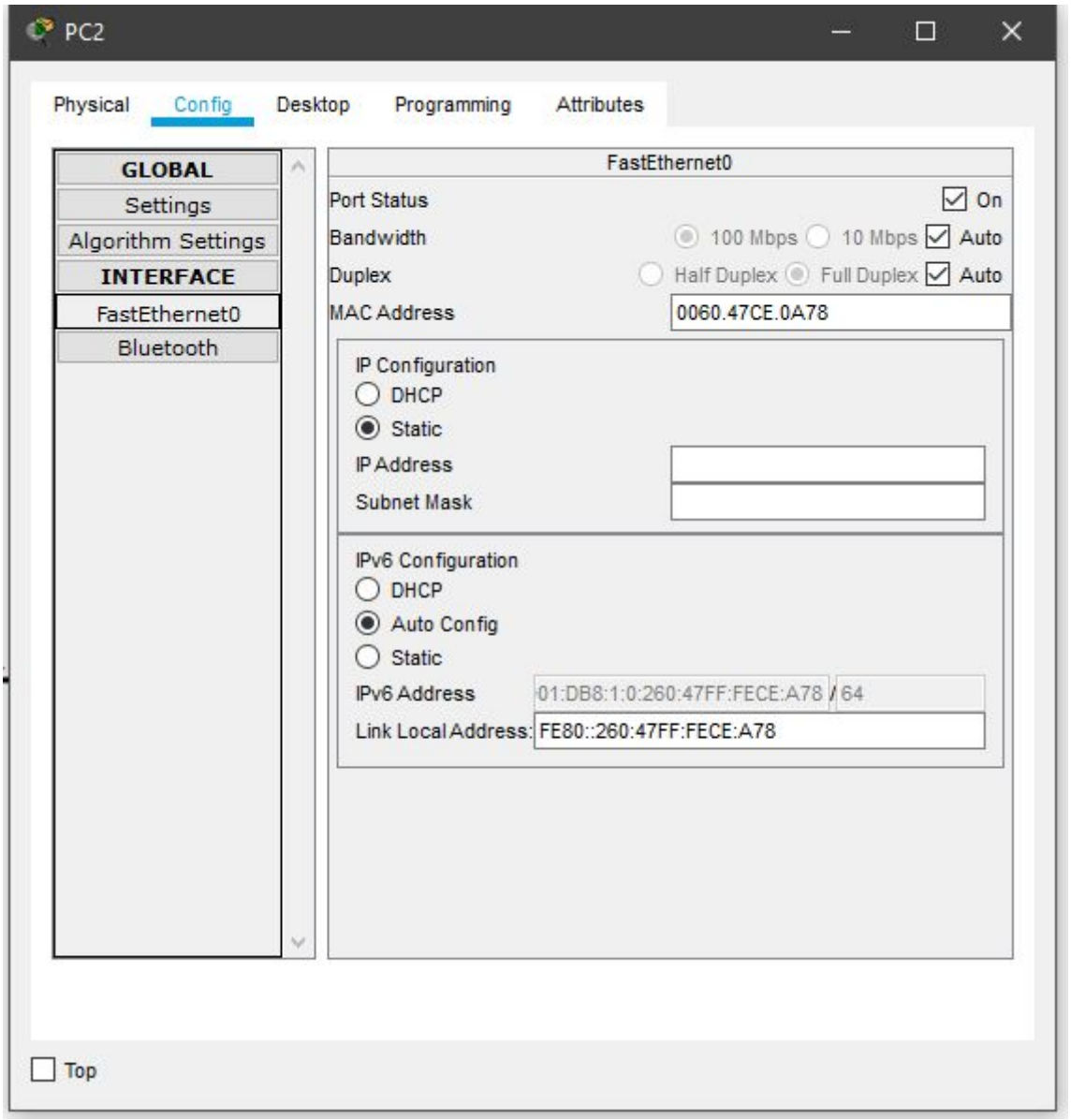
Packet Tracer

Tarea 1

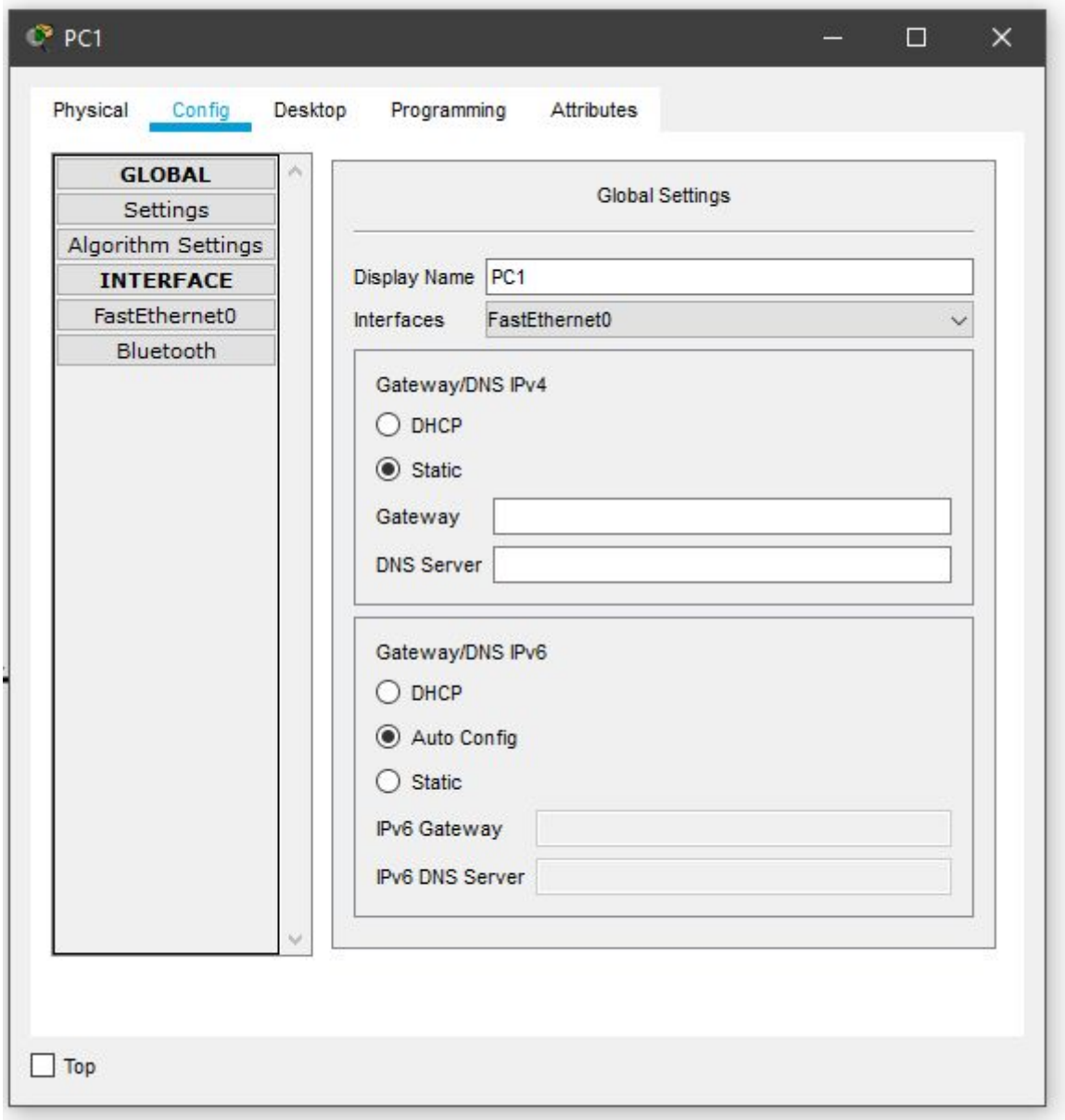
Ítems a y b



Ítem c


PC2
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
FastEthernet0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0060.47CE.0A78
IP Configuration
DHCP
Static
IP Address
Subnet Mask
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
01:DB8:1:0:260:47FF:FECE:A78 / 64
Link Local Address:
FE80::260:47FF:FECE:A78
Top

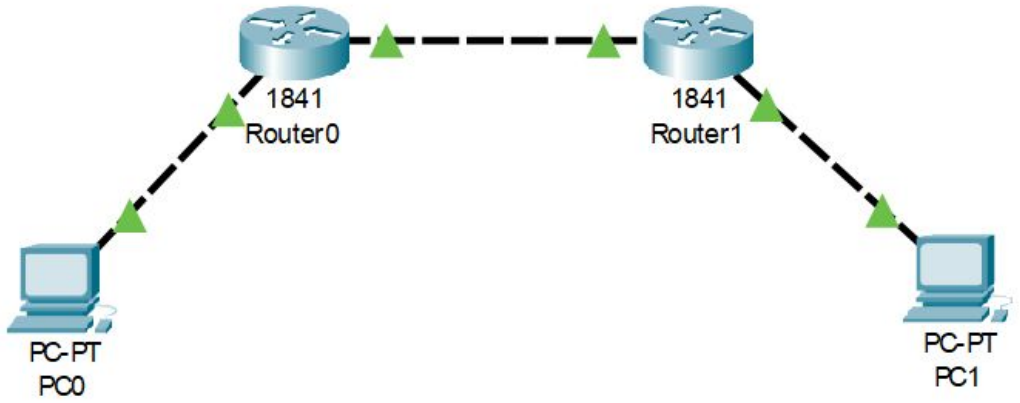
Ítem d


PC1
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
Global Settings
Display Name
PC1
Interfaces
FastEthernet0
Gateway/DNS IPv4
DHCP
Static
Gateway
DNS Server
Gateway/DNS IPv6
DHCP
Auto Config
Static
IPv6 Gateway
IPv6 DNS Server
Top

Ítem e y f

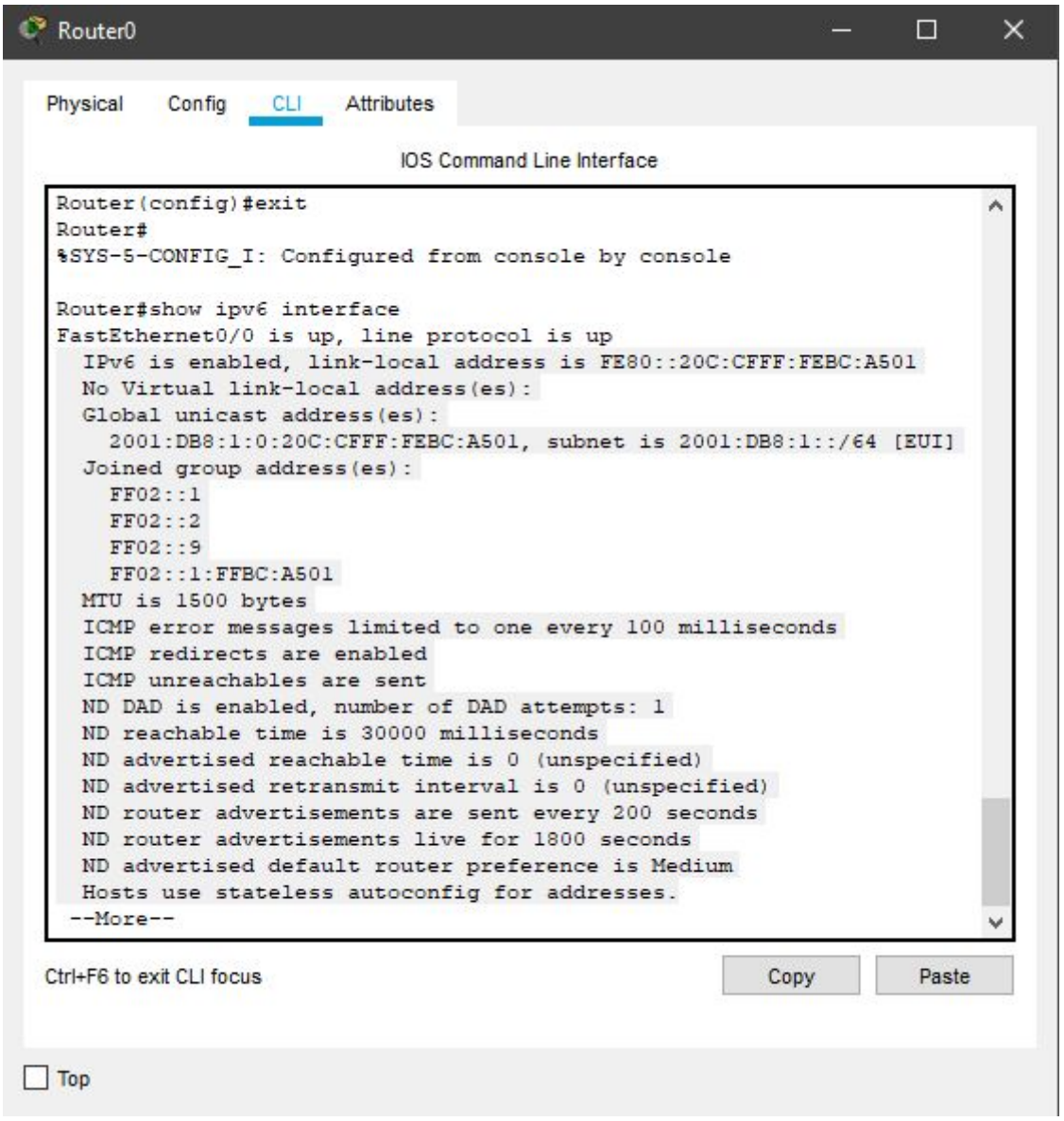

Router2
Physical
Config
CLI
Attributes
IOS Command Line Interface
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
Cisco 1841 (revision 5.0) with 114688K/16384K bytes of memory.
Processor board ID FTX0947Z18E
M860 processor: part number 0, mask 49
2 FastEthernet/IEEE 802.3 interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: n
Press RETURN to get started!
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ipv6 unicast-routing
Router(config)#interface FastEthernet0/0
Router(config-if)#ipv6 address 2001:db8:1::/64 eui-64
Router(config-if)#ipv6 enable
Router(config-if)#ipv6 rip RED enable
Router(config-if)#no shutdown
Router(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
exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ipv6 addres 2001:db8:2::/64 eui-64
Router(config-if)#ivp6 enable
^
% Invalid input detected at '^' marker.
Router(config-if)#ipv6 enable
Router(config-if)#ipv6 rip RED enable
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
exit
Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

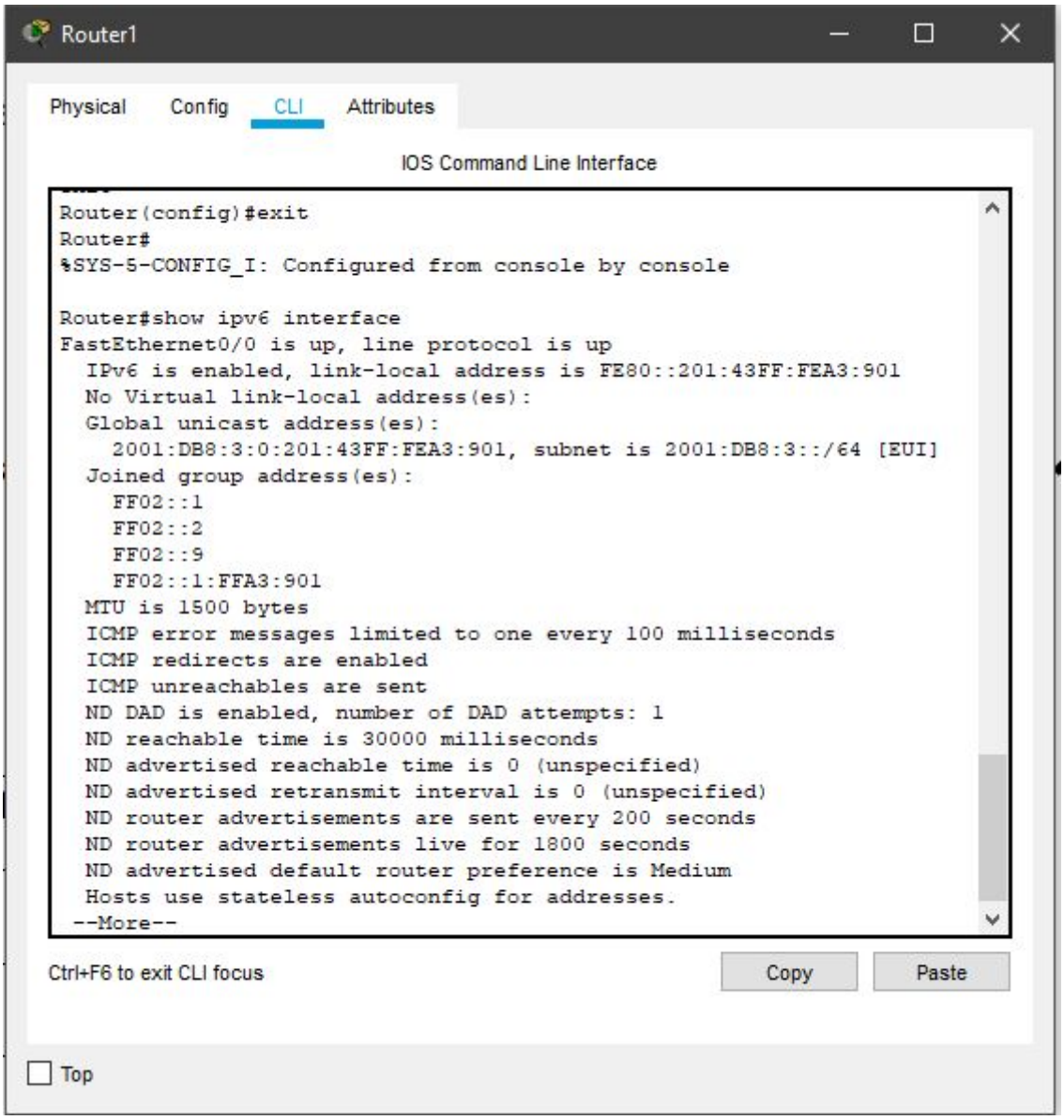
Red final



TAREA 2

Ítem a




Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ipv6 interface
FastEthernet0/0 is up, line protocol is up
IPv6 is enabled, link-local address is FE80::201:43FF:FEA3:901
No Virtual link-local address(es):
Global unicast address(es):
2001:DB8:3:0:201:43FF:FEA3:901, subnet is 2001:DB8:3::/64 [EUI]
Joined group address(es):
FF02::1
FF02::2
FF02::9
FF02::1:FFA3:901
MTU is 1500 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ICMP unreachables are sent
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 (unspecified)
ND advertised retransmit interval is 0 (unspecified)
ND router advertisements are sent every 200 seconds
ND router advertisements live for 1800 seconds
ND advertised default router preference is Medium
Hosts use stateless autoconfig for addresses.
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Ítem b

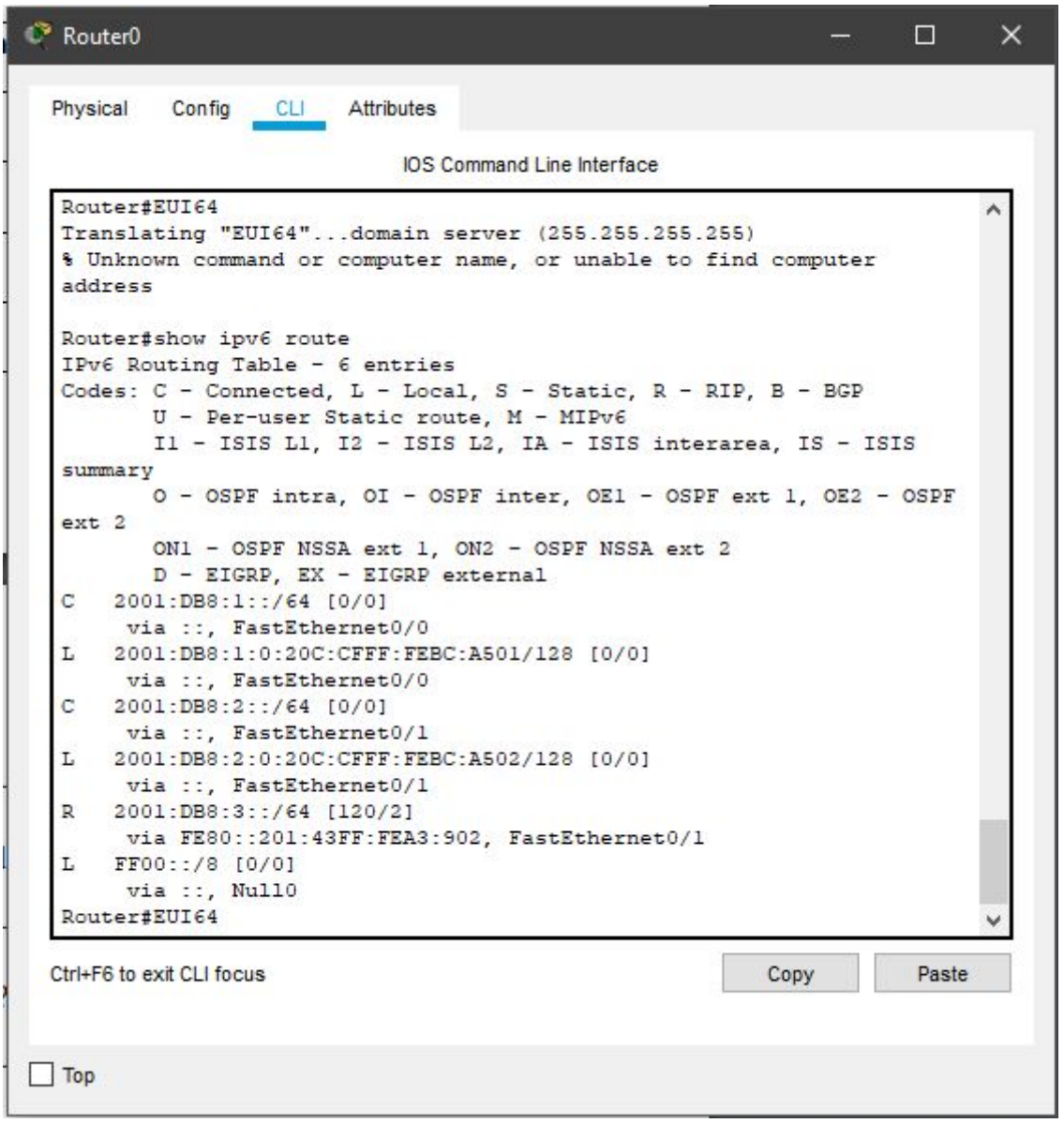
Dispositivo		IPv6	Dir. IP Local	Dir. IP Global
Router0	Fa0/0	SI	FE80::20C:CFFF:FEBC:A501	2001:DB8:1:0:20C:CFFF:FEBC:A501
	Fa0/1	SI	FE80::20C:CFFF:FEBC:A502	2001:DB8:2:0:20C:CFFF:FEBC:A502
Router1	Fa0/0	SI	FE80::201:43FF:FEA3:901	2001:DB8:3:0:201:43FF:FEA3:901
	Fa0/1	SI	FE80::201:43FF:FEA3:902	2001:DB8:2:0:201:43FF:FEA3:902

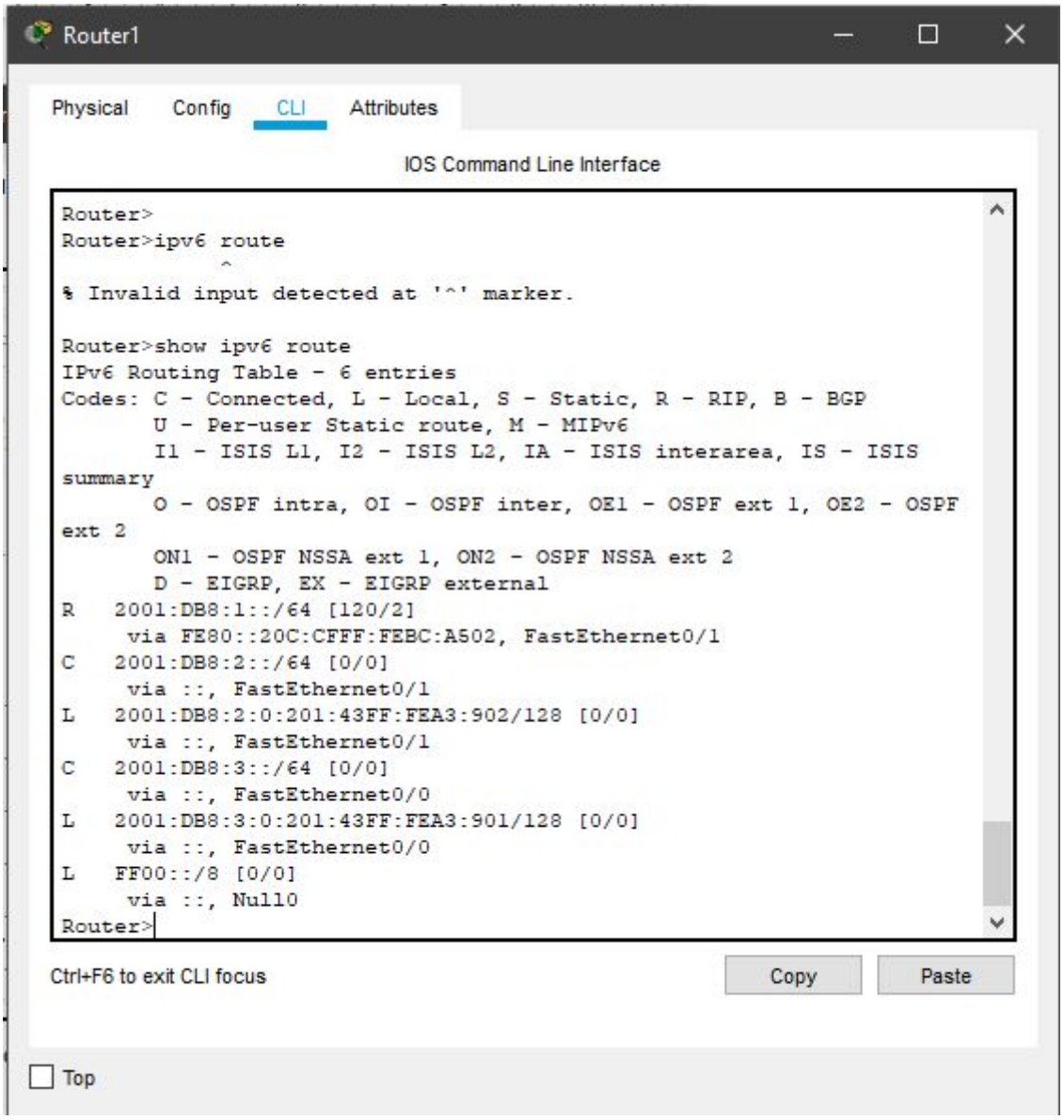
a. Una dirección IPv6 tiene un tamaño de 128 bits y se compone de ocho campos de 16 bits, cada uno de ellos unido por dos puntos. Cada campo debe contener un número hexadecimal, a diferencia de la notación decimal con puntos de las direcciones IPv4

b.
   - Prefijo Subred: 2001:DB8:1
   - ID Subred: 0
   - ID Interface: 20C:CFFF:FEBC:A501

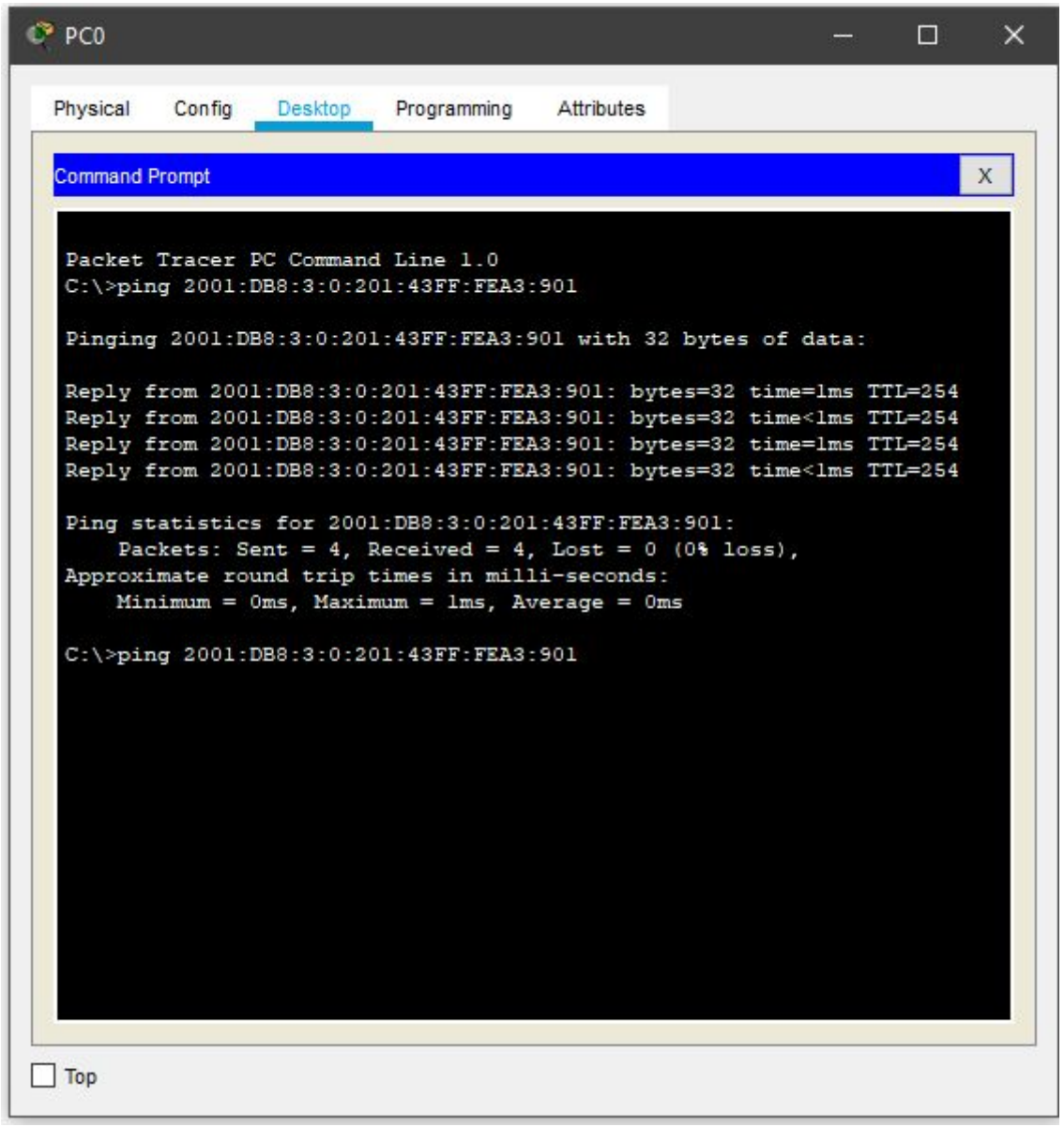
c. La dirección MAC de la interface Fa0/0 del Router0 es 00:0C:CF:BC:A5:01. Se consigue a partir de la aplicación del algoritmo definido por EUI64 sobre la dirección local (FE80::20C:CFFF:FEBC:A501) de la siguiente manera:
   - Quitamos el prefijo FE80
   - Invertimos el 7mo bit
   - Eliminamos el fragmento FFEE del medio
   - Pasamos a la notación de direcciones MAC

Ítem c

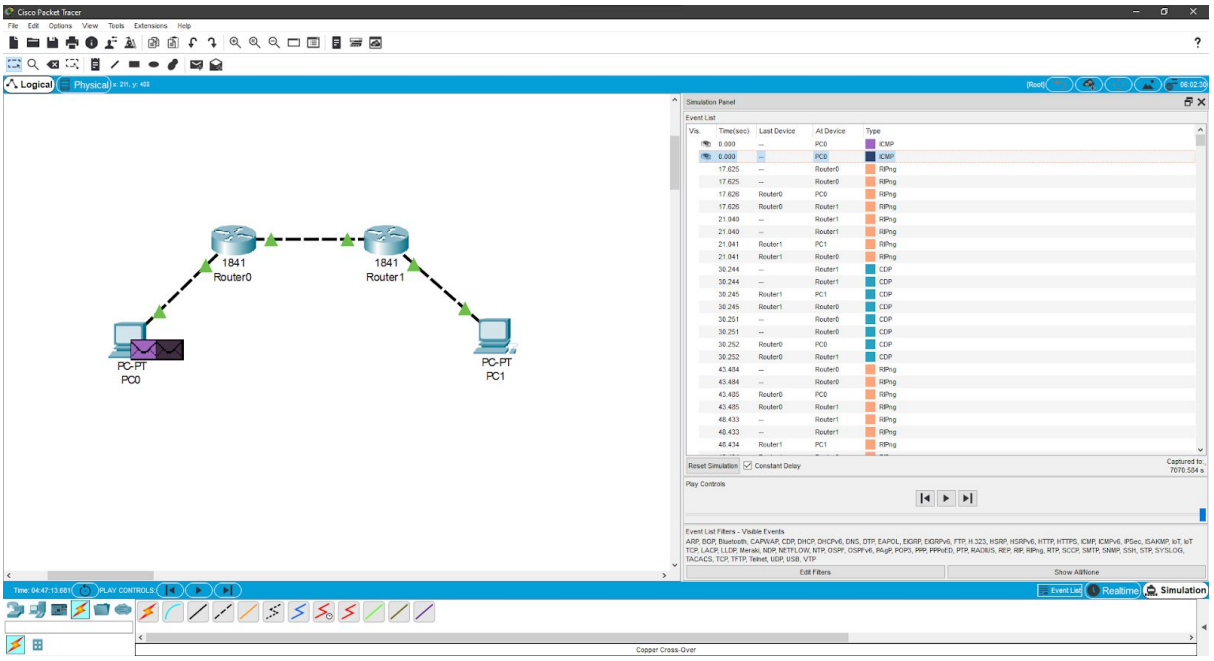

Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#EUI64
Translating "EUI64"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer
address
Router#show ipv6 route
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS
summary
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:DB8:1::/64 [0/0]
via ::, FastEthernet0/0
L 2001:DB8:1:0:20C:CFFF:FEBC:A501/128 [0/0]
via ::, FastEthernet0/0
C 2001:DB8:2::/64 [0/0]
via ::, FastEthernet0/1
L 2001:DB8:2:0:20C:CFFF:FEBC:A502/128 [0/0]
via ::, FastEthernet0/1
R 2001:DB8:3::/64 [120/2]
via FE80::201:43FF:FEA3:902, FastEthernet0/1
L FF00::/8 [0/0]
via ::, Null0
Router#EUI64
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


Router1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>
Router>ipv6 route
^
% Invalid input detected at '^' marker.
Router>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
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:DB8:1::/64 [120/2]
via FE80::20C:CFFF:FEBC:A502, FastEthernet0/1
C 2001:DB8:2::/64 [0/0]
via ::, FastEthernet0/1
L 2001:DB8:2:0:201:43FF:FEA3:902/128 [0/0]
via ::, FastEthernet0/1
C 2001:DB8:3::/64 [0/0]
via ::, FastEthernet0/0
L 2001:DB8:3:0:201:43FF:FEA3:901/128 [0/0]
via ::, FastEthernet0/0
L FF00::/8 [0/0]
via ::, Null0
Router>
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Ítem d

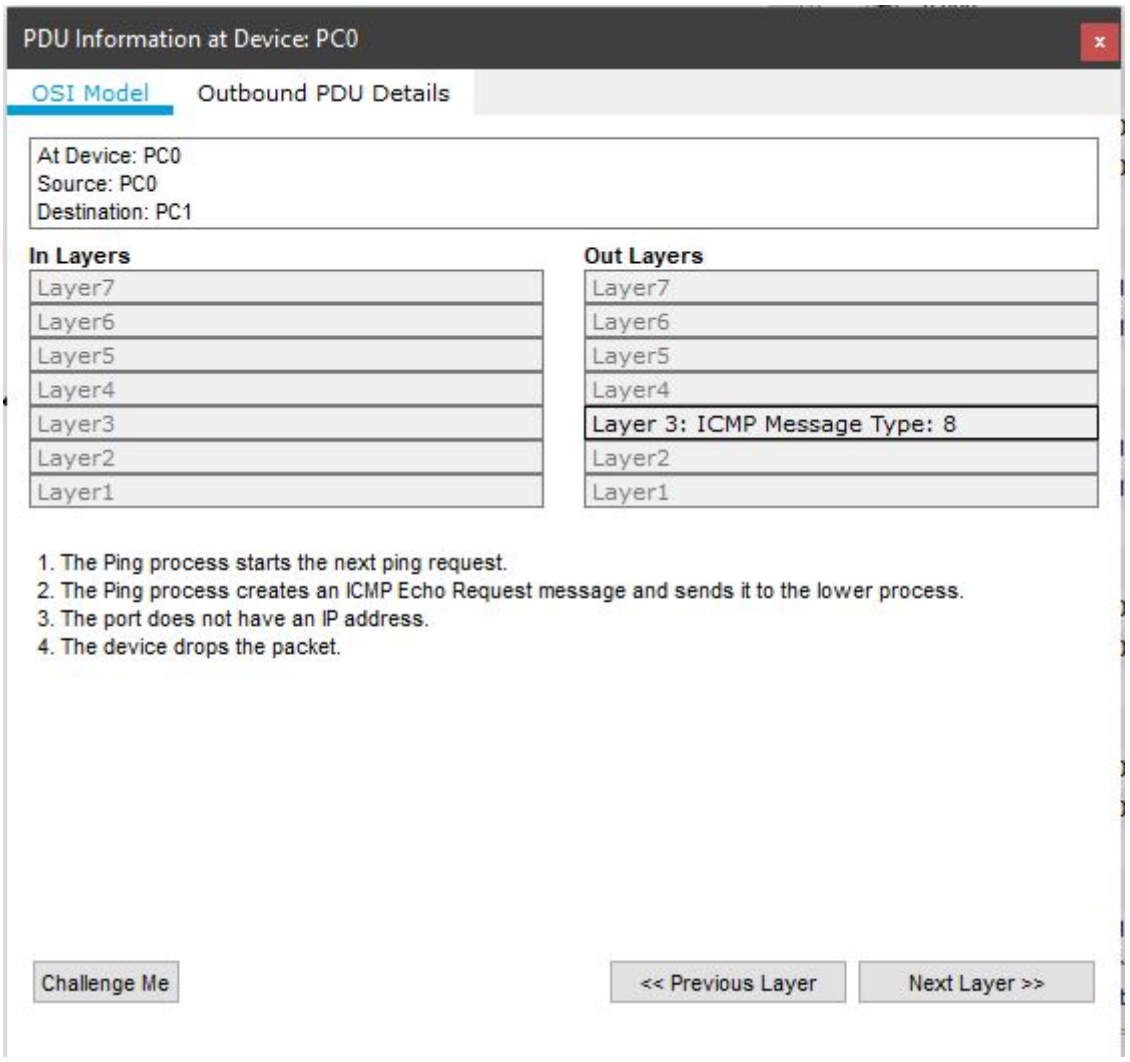

PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 2001:DB8:3:0:201:43FF:FEA3:901
Pinging 2001:DB8:3:0:201:43FF:FEA3:901 with 32 bytes of data:
Reply from 2001:DB8:3:0:201:43FF:FEA3:901: bytes=32 time=1ms TTL=254
Reply from 2001:DB8:3:0:201:43FF:FEA3:901: bytes=32 time<1ms TTL=254
Reply from 2001:DB8:3:0:201:43FF:FEA3:901: bytes=32 time=1ms TTL=254
Reply from 2001:DB8:3:0:201:43FF:FEA3:901: bytes=32 time<1ms TTL=254
Ping statistics for 2001:DB8:3:0:201:43FF:FEA3:901:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 2001:DB8:3:0:201:43FF:FEA3:901
Top

Tarea 3

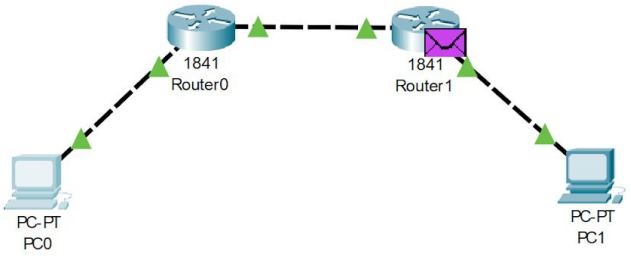

Cisco Packet Tracer
Logical
Physical
1841
Router0
1841
Router1
PC-PT
PC0
PC-PT
PC1
Simulation Panel
Event List
Reset Simulation
Constant Delay
Play Controls
Realtime
Simulation
Copper Cross-Over

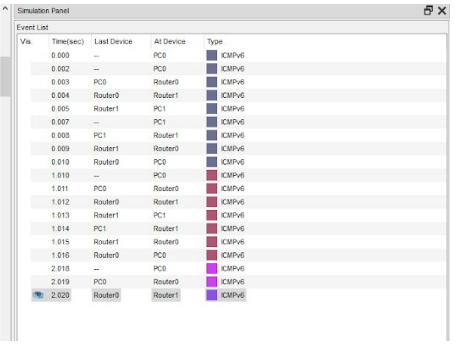
Tarea 4

Ítem a

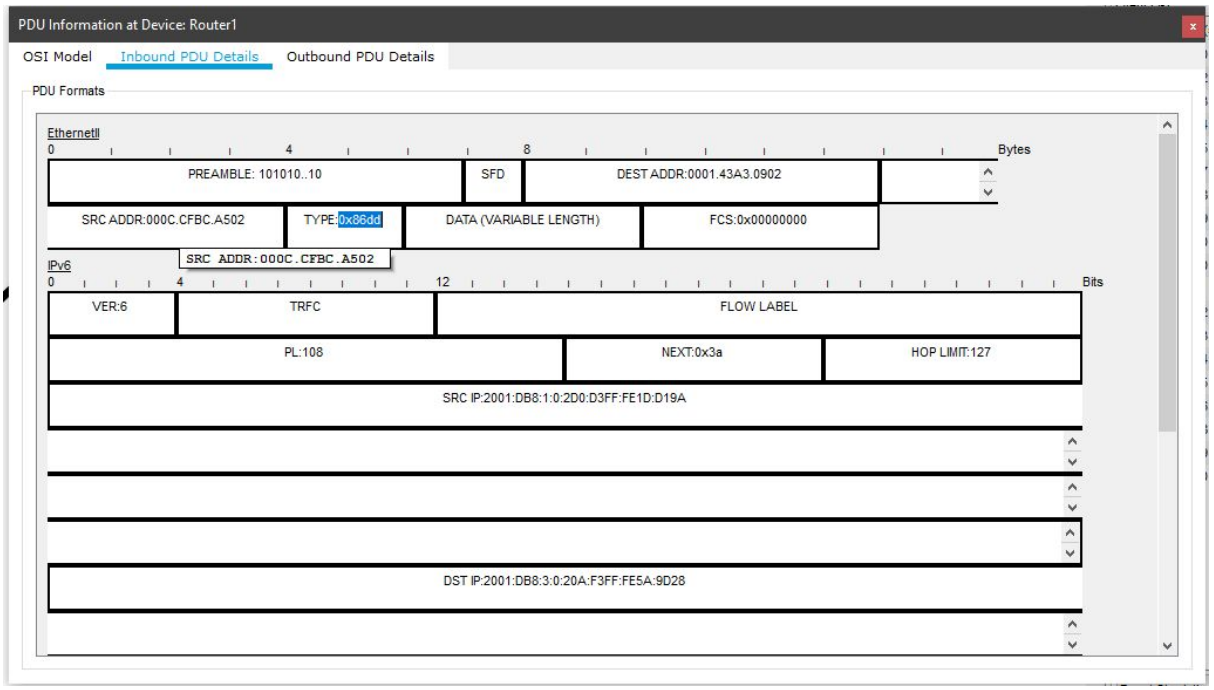


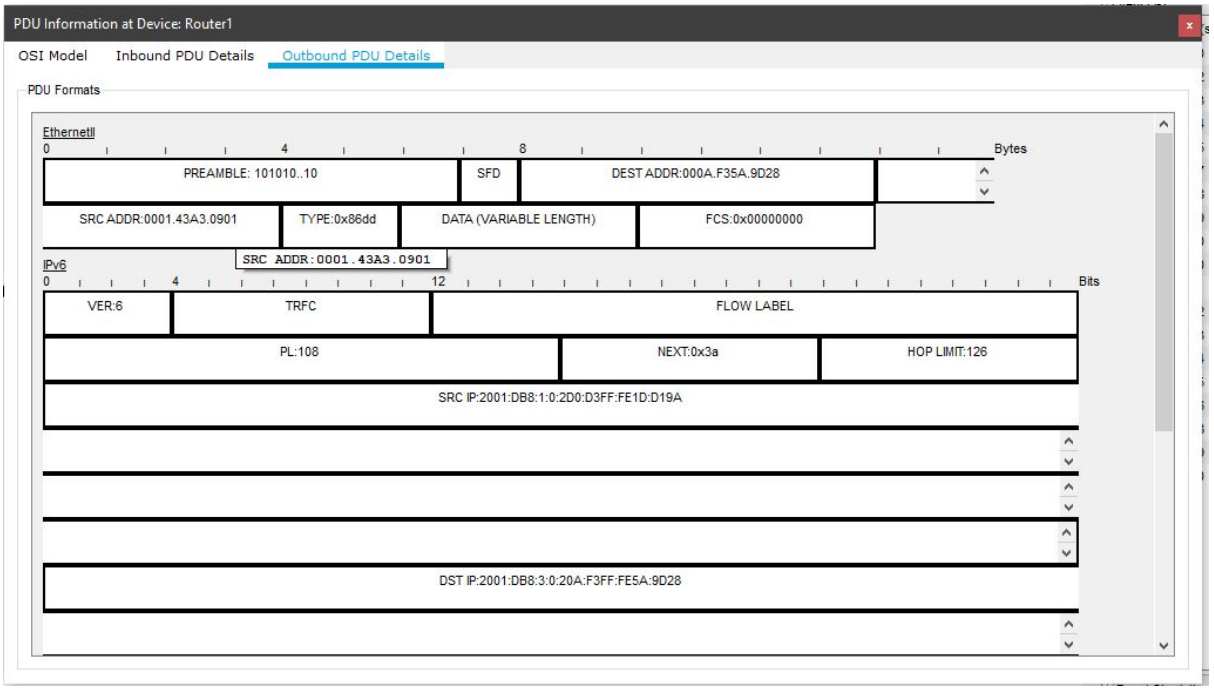
Ítem c





Ítem d





Router0 a Router1:

- Mensaje ICMPv6: Tipo 0x86dd
- Dirección Fuente: 0001.43A3.0901
- Dirección Destin: 000A.F35A.9D28
- Dato: -
-

Router1 a Router0:

- Mensaje ICMPv6: Tipo 0x86dd
- Dirección Fuente: 0001.43A3.0902
- Dirección Destin: 000C.CFBC.A502
- Dato: -

Ítem f

PC0 a PC1:

- Mensaje ICMPv6: Tipo 0x86dd
- Dirección Fuente: 00D0.D31D.D19A
- Dirección Destin: 000C.CFBC.A501
- Dato: -
-

PC1 a PC0:

- Mensaje ICMPv6: Tipo
- Dirección Fuente: 0001.43A3.0901
- Dirección Destin: 000A.F35A.9D28
- Dato: -