

EVALUACION - PRUEBAS DE HABILIDADES PRACTICAS - CCNA

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Trabajo presentado como requisito para optar titulo de Ingeniero
De sistemas

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD
ESCUELA DE CIENCIAS BASICAS TECNOLOGIA E INGENIERIA
PROGRAMA DE INGENIERIA DE SISTEMAS
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2019

NOTA DE ACEPTACIÓN.

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GLOSARIO.

- **ENRUTAMIENTO:** Función de buscar un camino entre todos los posibles en una red de paquetes cuya topología tiene conectividad,
- **ADMINISTRADOR:** Es el encargado de coordinar, controlar y supervisar el procesamiento de los equipos informáticos.
- **PROTOCOLO:** Conjunto de reglas que mediante dos o mas sistemas de red de comunican entre si y estableciendo identificación en la red.
- **TOPOLOGIA:** Se define como el mapa físico de una red para poder intercambiar datos.
- **RIP:** Es un protocolo de encaminamiento cuya función es intercambiar información acerca de redes del internet.
- **ISP:** Es la sigla de Internet Service Provider que en español significa proveedor de servicios de internet.
- **ROUTER:** Dispositivo de red cuya función es interconectar computadoras que trabajan en marco de una red.
- **DHCP:** Es un protocolo de red que permite que algún dispositivo conectado a la red pueda obtener su configuración en forma dinámica.
- **PPP:** Es un protocolo de red que se ubica en la capa de enlace datos del modelo OSI para establecer una conexión directa entre dos nodos.
- **PAT:** Es una sigla Port address translation que significa puerto de translación de dirección.

RESUMEN.

Mediante el desarrollo de la rúbrica de actividad de la prueba de habilidades del Diplomado de Profundización CISCO, se demuestra todo el entendimiento conseguido en apoyo al curso, lo cual por medio del desarrollo de los escenarios por medio de la modalidad práctica, facultando que los estudiantes comprueban sus logros y debilidades frente a esta actividad

En este desarrollo el estudiante realiza todos los procesos de los ejercicios que se deben realizar, gracias a la metodología de estudio de este curso lectivo, permite lograr el desarrollo profesional de cada estudiante de igual modo mediante el uso del software packet tracer, (simulador) se manobra una exploración efectiva con cada uno de los puntos ó elementos de cada escenario, permitiendo adquirir nuevos conocimientos, habilidades y destrezas, para el normal avance académico y profesional.

Dentro de este informe se verá evidenciado que el trabajo realizado destaca que ha logrado el empleo a las diferentes unidades del curso de CISCO, alcanzando una aplicación directa a las condiciones asignadas por la tutoría del curso

INTRODUCCIÓN.

En este informe se intenta fortalecer de manera de manera práctica las capacidades obtenidas por el estudiante en el adelanto de este curso con el fin de colocar el saber y demostrar por parte de los tutores del proceso educativo que estudiante consiguió de manera correcta en sus soporte teóricos en las configuraciones, propiedades y conexiones, también en el manejo de ciertos protocolos y diseño en el simulador de packet tracer.

ESCENARIO 1.

Una empresa posee sucursales distribuidas en las ciudades de Bogotá y Medellín, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO DE LOS DISPOSITIVOS.

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A ISP.

```
Enable
Configure terminal
Hostname ISP
Enable secret jealcao
Password Line Console 0 cabol
Password Line vty 0 15 cisco
Service password-encryption
Banner motd "Solo al personal autorizado"
```

```
Interface s0/0/0
Ip address 209.17.220.1 255.255.255.252
Clock rate 4000000
No shutdown
```

```
Interface s0/0/1
Ip address 209.17.220.5 255.255.255.252
Clock rate 4000000
No shutdown
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A MEDELLIN1.

```
Enable
Configure terminal
Hostname MEDELLIN1
Enable secret jealcao
Password Line Console 0 cabol
Password Line vty 0 15 cisco
Service password-encryption
Banner motd "Solo al personal autorizado"
Interface s0/0/0
```

```
Ip address 209.17.220.2 255.255.255.252  
No shutdown
```

```
Interface s0/0/1  
Ip address 172.29.6.1 255.255.255.252  
Clock rate 4000000  
No shutdown
```

```
Interface s0/1/0  
Ip address 172.29.6.9 255.255.255.252  
Clock rate 4000000  
No shutdown
```

```
Interface s0/1/1  
Ip address 172.29.6.13 255.255.255.252  
Clock rate 4000000  
No shutdown
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A MEDELLIN2.

```
Enable  
Configure terminal  
Hostname MEDELLIN2  
Enable secret jealcao  
Password Line Console 0 cabol  
Password Line vty 0 15 cisco  
Service password-encryption  
Banner motd "Solo al personal autorizado"
```

```
Interface s0/0/0  
Ip address 172.29.6.2 255.255.255.252  
No shutdown
```

```
Interface s0/0/1  
Ip address 172.29.6.5 255.255.255.252  
Clock rate 4000000  
No shutdown
```

```
Interface g0/0  
Ip address 172.29.4.1 255.255.255.128  
No shutdown
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A MEDELLIN3.

```
Enable
Configure terminal
Hostname MEDELLIN3
Enable secret jealcao
Password Line Console 0 cabol
Password Line vty 0 15 cisco
Service password-encryption
Banner motd "Solo al personal autorizado"
```

```
Interface s0/0/0
Ip address 172.29.6.10 255.255.255.252
No shutdown
```

```
Interface s0/0/1
Ip address 172.29.6.14 255.255.255.252
No shutdown
```

```
Interface s0/1/0
Ip address 172.29.6.6 255.255.255.252
No shutdown
```

```
Interface g0/0
Ip address 172.29.4.129 255.255.255.128
No shutdown
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A BOGOTA1.

```
Enable
Configure terminal
Hostname BOGOTA1
Enable secret jealcao
Password Line Console 0 cabol
Password Line vty 0 15 cisco
Service password-encryption
Banner motd "Solo al personal autorizado"
```

```
Interface s0/0/0
Ip address 209.17.220.6 255.255.255.252
No shutdown
```

```
Interface s0/0/1
Ip address 172.29.3.9 255.255.255.252
```

```
Clock rate 4000000
No shutdown
Interface s0/1/0
Ip address 172.29.3.1 255.255.255.252
Clock rate 4000000
No shutdown
```

```
Interface s0/1/1
Ip address 172.29.3.5 255.255.255.252
Clock rate 4000000
No shutdown
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A BOGOTA2.

```
Enable
Configure terminal
Hostname BOGOTA2
Enable secret jealcao
Password Line Console 0 cabol
Password Line vty 0 15 cisco
Service password-encryption
Banner motd "Solo al personal autorizado"
```

```
Interface s0/0/0
Ip address 172.29.3.10 255.255.255.252
No shutdown
```

```
Interface s0/0/1
Ip address 172.29.3.13 255.255.255.252
Clock rate 4000000
No shutdown
```

```
Interface g0/0
Ip address 172.29.1.1 255.255.255.0
No shutdown
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO A BOGOTA3.

```
Enable
Configure terminal
Hostname BOGOTA3
Enable secret jealcao
Password Line Console 0 cabol
Password Line vty 0 15 cisco
Service password-encryption
```

Banner motd "Solo al personal autorizado"

```
Interface s0/0/0  
Ip address 172.29.3.2 255.255.255.252  
No shutdown
```

```
Interface s0/0/1  
Ip address 172.29.3.6 255.255.255.252  
No shutdown
```

```
Interface s0/1/0  
Ip address 172.29.3.14 255.255.255.252  
No shutdown  
Interface g0/0  
Ip address 172.29.0.1 255.255.255.0  
No shutdown
```

CONFIGURACIÓN DEL PROTOCOLO RIPV2.

CONFIGURACIÓN RIPV2 EN MEDELLIN1.

```
Enable  
Configure terminal  
Router rip  
Version 2  
No auto-summary  
Network 172.29.6.0  
Network 172.29.6.8  
Network 172.29.6.12  
Passive-interface s0/0/0 (WAN A ISP).
```

CONFIGURACIÓN RIPV2 EN MEDELLIN2.

```
Enable  
Configure terminal  
Router rip  
Version 2  
No auto-summary  
Network 172.29.4.0  
Network 172.29.6.0  
Network 172.29.6.4  
Passive-interface g0/0
```

CONFIGURACIÓN RIPV2 EN MEDELLIN3.

```
Enable
Configure terminal
Router rip
Version 2
No auto-summary
Network 172.29.4.128
Network 172.29.6.4
Network 172.29.6.8
Network 172.29.6.12
Passive-interface g0/0
```

CONFIGURACIÓN RIPV2 EN BOGOTA1.

```
Enable
Configure terminal
Router rip
Version 2
No auto-summary
Network 172.29.3.0
Network 172.29.3.4
Network 172.29.3.8
Passive-interface s0/0/0
```

CONFIGURACIÓN RIPV2 EN BOGOTA2.

```
Enable
Configure terminal
Router rip
Version 2
No auto-summary
Network 172.29.1.0
Network 172.29.3.8
Network 172.29.3.12
Passive-interface g0/0
```

CONFIGURACIÓN RIPV2 EN BOGOTA3.

```
Enable
Configure terminal
Router rip
Version 2
No auto-summary
Network 172.29.0.0
```

```
Network 172.29.3.0
Network 172.29.3.4
Network 172.29.3.12
Passive-interface g0/0
```

CONFIGURACIÓN DE RUTAS ESTÁTICAS.

CONFIGURACIÓN DE RUTAS ESTÁTICAS DE MEDELLIN1 A ISP.

```
enable
Configure terminal
Ip route 0.0.0.0 0.0.0.0 209.17.220.1
Router rip
Default-information originate
```

CONFIGURACIÓN DE RUTAS ESTÁTICAS DE BOGOTA1 A ISP.

```
enable
Configure terminal
Ip route 0.0.0.0 0.0.0.0 209.17.220.5
Router rip
Default-information originate
```

CONFIGURACIÓN DE RUTAS ESTÁTICAS DE ISP.

```
Ip route 172.29.4.0 255.255.252.0 209.17.220.2
Ip route 172.29.0.0 255.255.252.0 209.17.220.6
```

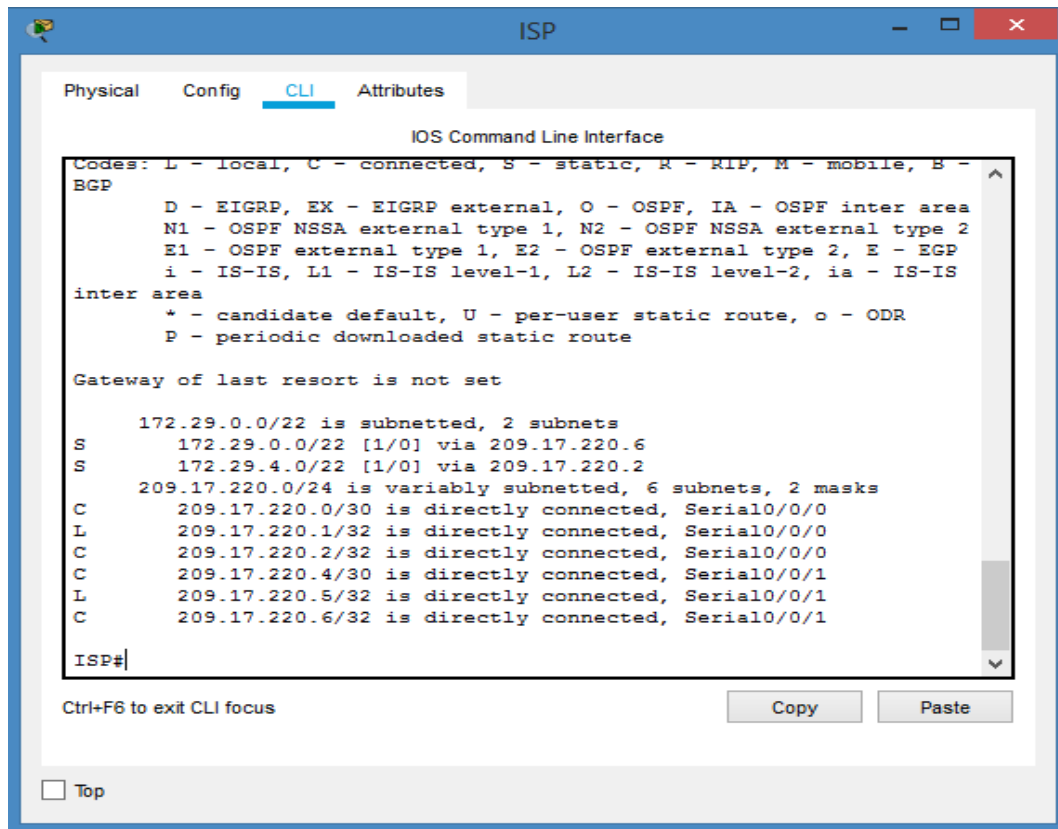
CONFIGURACIÓN DE RUTAS ESTÁTICAS DE ISP, DIRIGIDAS HACIA CADA RED INTERNA DE BOGOTA Y MEDELLIN.

```
Ip route 172.29.4.0 255.255.252.0 209.17.220.2 (Para Medellín).
```

```
Ip route 172.29.0.0 255.255.252.0 209.17.220.6 (Para Bogotá).
```

RUTAS CONECTADAS DIRECTAMENTE A CADA ROUTER.

RUTAS CONECTADAS DIRECTAMENTE A ISP.



Physical Config **CLI** Attributes

IOS Command Line Interface

```
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

172.29.0.0/22 is subnetted, 2 subnets
S    172.29.0.0/22 [1/0] via 209.17.220.6
S    172.29.4.0/22 [1/0] via 209.17.220.2
209.17.220.0/24 is variably subnetted, 6 subnets, 2 masks
C    209.17.220.0/30 is directly connected, Serial0/0/0
L    209.17.220.1/32 is directly connected, Serial0/0/0
C    209.17.220.2/32 is directly connected, Serial0/0/0
C    209.17.220.4/30 is directly connected, Serial0/0/1
L    209.17.220.5/32 is directly connected, Serial0/0/1
C    209.17.220.6/32 is directly connected, Serial0/0/1

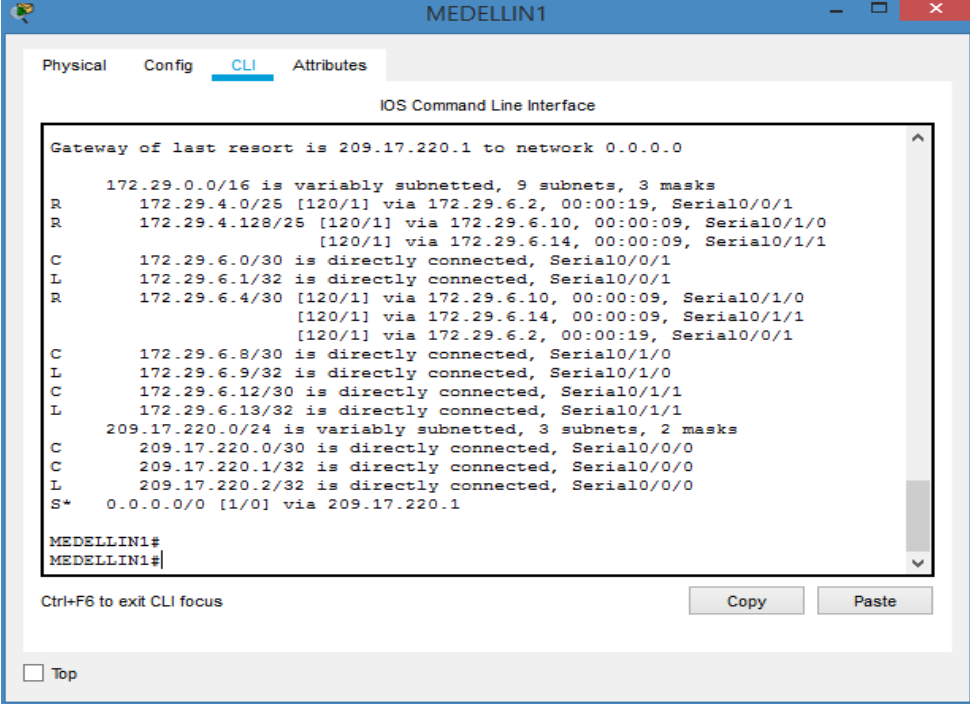
ISP#
```

Ctrl+F6 to exit CLI focus

Copy Paste

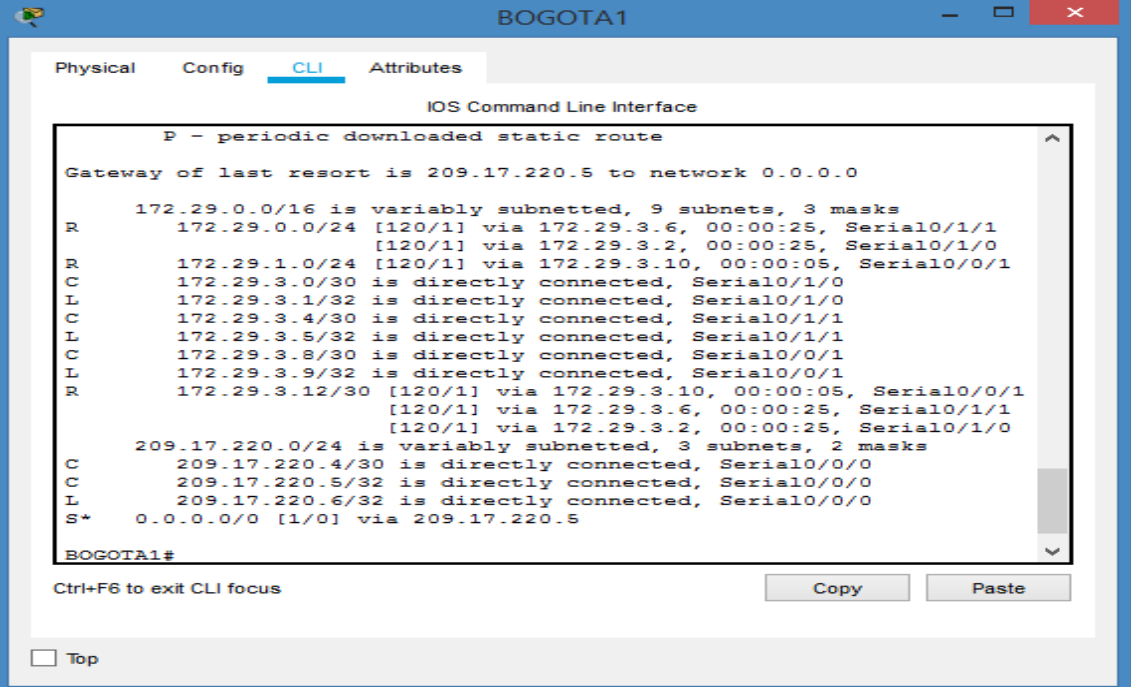
Top

RUTAS CONECTADAS DIRECTAMENTE A MEDELLIN1.



```
MEDELLIN1
Physical Config CLI Attributes
IOS Command Line Interface
Gateway of last resort is 209.17.220.1 to network 0.0.0.0
      172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks
R       172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:19, Serial0/0/1
R       172.29.4.128/25 [120/1] via 172.29.6.10, 00:00:09, Serial0/1/0
          [120/1] via 172.29.6.14, 00:00:09, Serial0/1/1
C       172.29.6.0/30 is directly connected, Serial0/0/1
L       172.29.6.1/32 is directly connected, Serial0/0/1
R       172.29.6.4/30 [120/1] via 172.29.6.10, 00:00:09, Serial0/1/0
          [120/1] via 172.29.6.14, 00:00:09, Serial0/1/1
          [120/1] via 172.29.6.2, 00:00:19, Serial0/0/1
C       172.29.6.8/30 is directly connected, Serial0/1/0
L       172.29.6.9/32 is directly connected, Serial0/1/0
C       172.29.6.12/30 is directly connected, Serial0/1/1
L       172.29.6.13/32 is directly connected, Serial0/1/1
C       209.17.220.0/24 is variably subnetted, 3 subnets, 2 masks
C       209.17.220.0/30 is directly connected, Serial0/0/0
C       209.17.220.1/32 is directly connected, Serial0/0/0
L       209.17.220.2/32 is directly connected, Serial0/0/0
S*    0.0.0.0/0 [1/0] via 209.17.220.1
MEDELLIN1#
MEDELLIN1#
```

RUTAS CONECTADAS DIRECTAMENTE a BOGOTA1.



```
BOGOTA1
Physical Config CLI Attributes
IOS Command Line Interface
P - periodic downloaded static route
Gateway of last resort is 209.17.220.5 to network 0.0.0.0
      172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks
R       172.29.0.0/24 [120/1] via 172.29.3.6, 00:00:25, Serial0/1/1
          [120/1] via 172.29.3.2, 00:00:25, Serial0/1/0
R       172.29.1.0/24 [120/1] via 172.29.3.10, 00:00:05, Serial0/0/1
C       172.29.3.0/30 is directly connected, Serial0/1/0
L       172.29.3.1/32 is directly connected, Serial0/1/0
C       172.29.3.4/30 is directly connected, Serial0/1/1
L       172.29.3.5/32 is directly connected, Serial0/1/1
C       172.29.3.8/30 is directly connected, Serial0/0/1
L       172.29.3.9/32 is directly connected, Serial0/0/1
R       172.29.3.12/30 [120/1] via 172.29.3.10, 00:00:05, Serial0/0/1
          [120/1] via 172.29.3.6, 00:00:25, Serial0/1/1
          [120/1] via 172.29.3.2, 00:00:25, Serial0/1/0
C       209.17.220.0/24 is variably subnetted, 3 subnets, 2 masks
C       209.17.220.4/30 is directly connected, Serial0/0/0
C       209.17.220.5/32 is directly connected, Serial0/0/0
L       209.17.220.6/32 is directly connected, Serial0/0/0
S*    0.0.0.0/0 [1/0] via 209.17.220.5
BOGOTA1#
```

CONFIGURACIÓN DE AUTENTICACIÓN PAP.

CONFIGURACIÓN BÁSICA ISP.

Hostname ISP

CONFIGURACIÓN BÁSICA MEDELLIN1.

Hostname MEDELLIN

CONFIGURACIÓN BÁSICA BOGOTA1.

Hostname BOGOTA

AUTENTICACIÓN PPP PAP EN ISP.

```
Username MEDELLIN password cisco
Interface s0/0/0
Encapsulation ppp
Ppp authentication pap
Ppp pap sent-username ISP password cisco
```

AUTENTICACIÓN PPP PAP EN MEDELLIN1.

```
Username ISP password cisco
Interface s0/0/0
Encapsulation ppp
Ppp authentication pap
Ppp pap sent-username MEDELLIN password cisco
```

CONFIGURACIÓN DE AUTENTICACIÓN CHAP.

AUTENTICACIÓN PPP CHAP EN ISP.

```
Username BOGOTA password cisco
Interface s0/0/1
Encapsulation ppp
Ppp authentication chap
```

AUTENTICACIÓN PPP CHAP EN BOGOTA1.

```
Username ISP password cisco
Interface s0/0/0
Encapsulation ppp
Ppp authentication chap
```

CONFIGURACIÓN DEL SERVICIO DHCP.

CONFIGURACIÓN DHCP EN MEDELLIN2.

```
Ip dhcp excluded-address 172.29.4.1 172.29.4.5  
Ip dhcp excluded-address 172.29.4.129 172.29.4.133
```

Ip dhcp pool MED2

```
Network 172.29.4.0 255.255.255.128  
Default-router 172.29.4.1  
Dns-server 8.8.8.8
```

Ip dhcp pool MED3

```
Network 172.29.4.128 255.255.255.128  
Default-router 172.29.4.129  
Dns-server 8.8.8.8
```

CONFIGURACIÓN DHCP EN MEDELLIN3.

```
Configure terminal  
Interface g0/0  
Ip helper-address 172.29.6.5
```

CONFIGURACIÓN DHCP EN BOGOTA2.

```
Ip dhcp excluded-address 172.29.1.1 172.29.1.5  
Ip dhcp excluded-address 172.29.0.1 172.29.0.5  
|  
p dhcp pool BOG2  
Network 172.29.1.0 255.255.255.0  
Default-router 172.29.1.1  
Dns-server 8.8.8.8
```

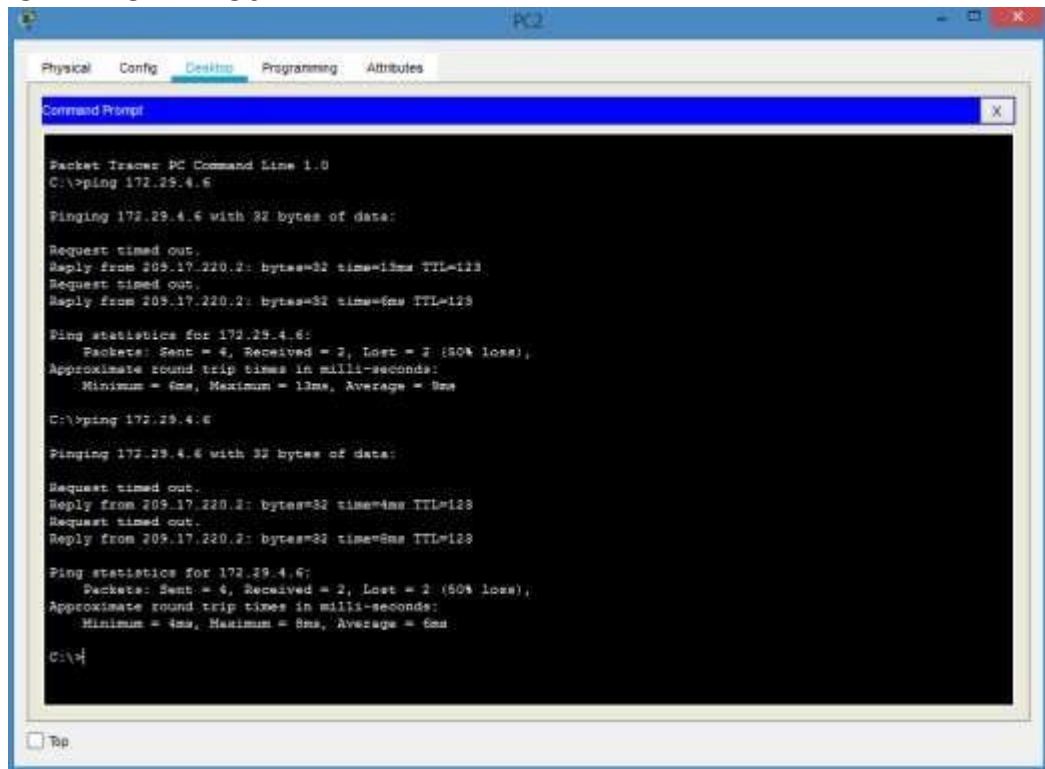
```
Ip dhcp pool BOG3  
Network 172.29.0.0 255.255.255.0  
Default-router 172.29.0.1  
Dns-server 8.8.8.8
```

CONFIGURACIÓN DHCP EN BOGOTA3.

```
Configure terminal  
Interface g0/0  
Ip helper-address 172.29.3.13
```

PRUEBAS DE CONECTIVIDAD (EXTREMO A EXTREMO).

PING DE PC2 A PC0.



```
Packet Tracer PC Command Line 1.0
C:\>ping 172.29.4.6

Pinging 172.29.4.6 with 32 bytes of data:

Request timed out.
Reply from 209.17.220.2: bytes=32 time=13ms TTL=123
Request timed out.
Reply from 209.17.220.2: bytes=32 time=6ms TTL=123

Ping statistics for 172.29.4.6:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 13ms, Average = 9ms

C:\>ping 172.29.4.6

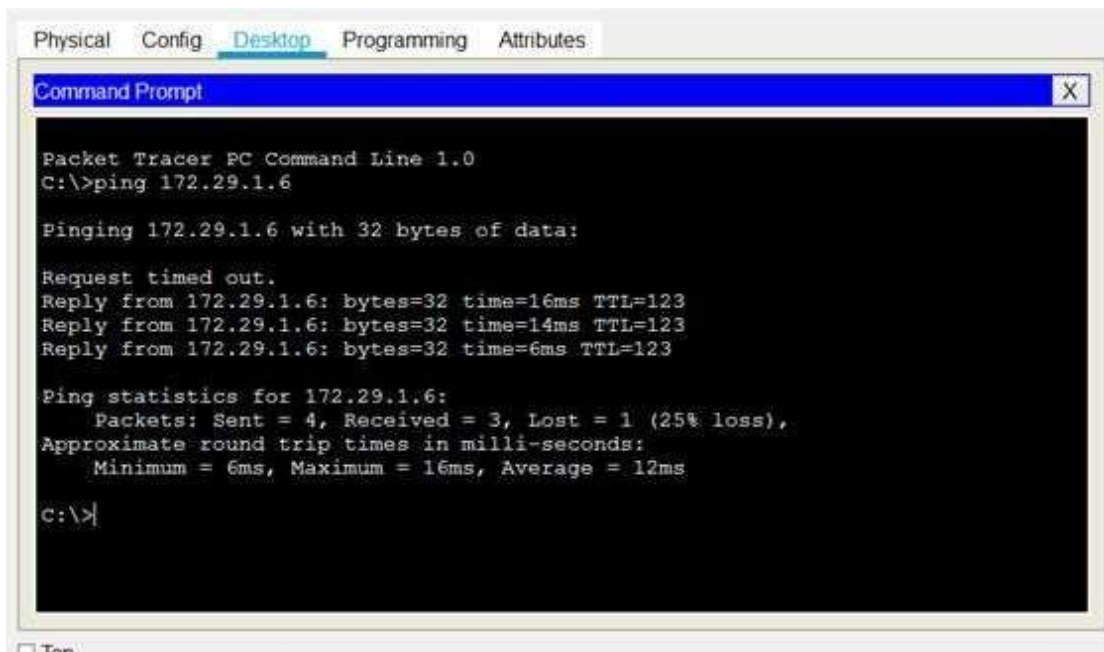
Pinging 172.29.4.6 with 32 bytes of data:

Request timed out.
Reply from 209.17.220.2: bytes=32 time=4ms TTL=123
Request timed out.
Reply from 209.17.220.2: bytes=32 time=8ms TTL=123

Ping statistics for 172.29.4.6:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 8ms, Average = 6ms

C:\>
```

PING DE PC1 A PC3.



```
Physical Config Desktop Programming Attributes
Command Prompt

Packet Tracer PC Command Line 1.0
C:\>ping 172.29.1.6

Pinging 172.29.1.6 with 32 bytes of data:

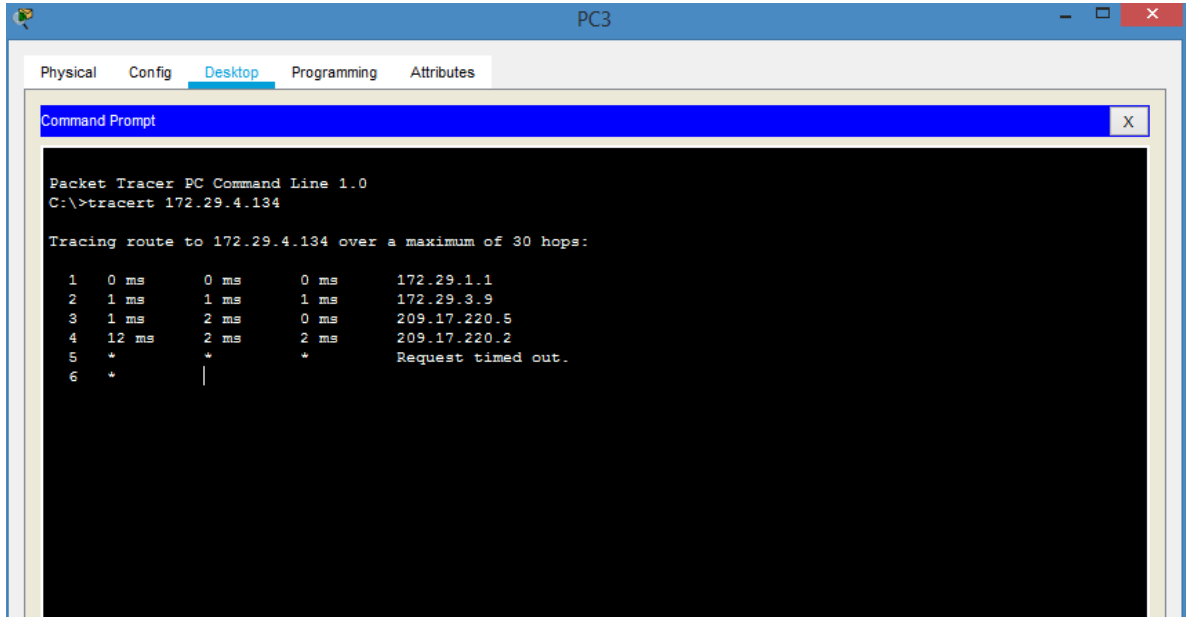
Request timed out.
Reply from 172.29.1.6: bytes=32 time=16ms TTL=123
Reply from 172.29.1.6: bytes=32 time=14ms TTL=123
Reply from 172.29.1.6: bytes=32 time=6ms TTL=123

Ping statistics for 172.29.1.6:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 16ms, Average = 12ms

C:\>
```

TRACERT ROUTE (PRUEBAS DE EXTREMO A EXTREMO).

TRACERT ROUTE DE PC3 A PC1.

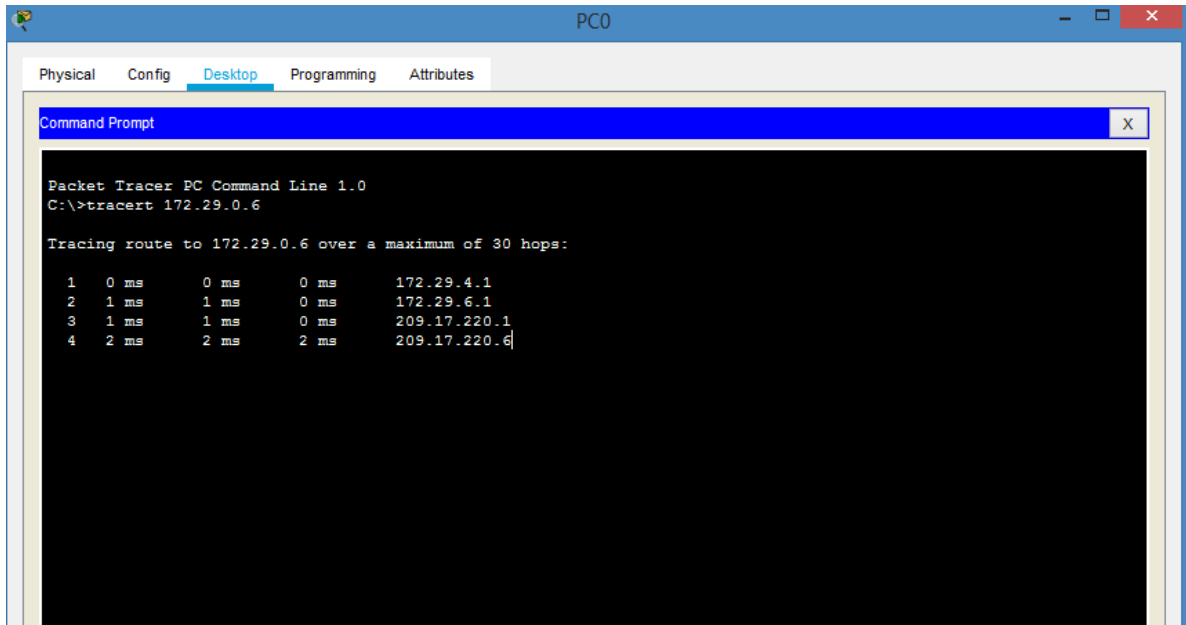


```
Packet Tracer PC Command Line 1.0
C:\>tracert 172.29.4.134

Tracing route to 172.29.4.134 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms    172.29.1.1
  1  1 ms    1 ms    1 ms    172.29.3.9
  2  1 ms    2 ms    0 ms    209.17.220.5
  3  12 ms   2 ms    2 ms    209.17.220.2
  4  *        *        *        Request timed out.
  5  *        *        *
  6  *        *        *
```

TRACERT ROUTE DE PC0 A PC2.



```
Packet Tracer PC Command Line 1.0
C:\>tracert 172.29.0.6

Tracing route to 172.29.0.6 over a maximum of 30 hops:

  0  0 ms    0 ms    0 ms    172.29.4.1
  1  1 ms    1 ms    0 ms    172.29.6.1
  2  1 ms    1 ms    0 ms    209.17.220.1
  3  2 ms    2 ms    2 ms    209.17.220.6
```

CONFIGURACIÓN DE NAT.

NAT EN MEDELLIN1.

```
Enable
Configure terminal
Ip nat inside source list 1 interface s0/0/0 overload
Access-list 1 permit 172.29.4.0 0.0.3.255
Int s0/0/0
Ip nat outside
Int s0/0/1
Ip nat inside
Int s0/1/0
Ip nat inside
Int s0/1/1
Ip nat inside
```

NAT EN BOGOTA1.

```
enable
Configure terminal
Ip nat inside source list 1 interface s0/0/0 overload
Access-list 1 permit 172.29.0.0 0.0.3.255
Int s0/0/0
Ip nat outside
Int s0/0/1
Ip nat inside
Int s0/1/0
Ip nat inside
Int s0/1/1
Ip nat inside
```

ESCENARIO 2.

Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá, y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

CONFIGURACIÓN BÁSICA DE DISPOSITIVOS Y DIRECCIONAMIENTO.

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO PARA EL ROUTER R1

```
Enable
Configure terminal
Hostname R1
Enable secret jealcao
Service password-encryption
Banner motd "Solo personal autorizado"
Password Línea de consola: cabol
Password Líneas VTY: cisco
```

```
Interface s0/0/0
Description Bogota
Ip address 172.31.21.0/30
Clock rate 128000
No shutdown
```

```
Interface F0/0.
Interface F0/0
Ip address 192.168.99.1
No shutdown
Ip route 0.0.0.0 0.0.0.0 s0/0/0/
```

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO PARA EL ROUTER R2.

```
Enable
Configure terminal
Hostname R1
Enable secret jealcao
Service password-encryption
Banner motd "Solo personal autorizado"
Password Línea de consola: cabol
Password Líneas VTY: cisco
```


Interface fa0/0 (interface g0/0 – Internet).
Description Internet
Ip address 209.165.200.225 255.255.255.248
Dúplex auto
Speed auto
No shutdown

Interface Lo0 (WEB SERVER).
Configure terminal
Interface f0/1 (interface g0/1-Web server).
Ip address 10.10.10.1 255.255.255.0
Description connection to Web Server.
No shutdown.

Interface s0/0/0.
Ip address 172.31.23.2 255.255.255.252
Clock rate 128000
No shutdown.

Interface s0/0/1.
Ip address 172.31.21.2 255.255.255.252
No shutdown

Ip route 0.0.0.0 0.0.0.0 s0/0/0 (Ruta por defecto al Router Buenos Aires).
Ip route 0.0.0.0 0.0.0.0 s0/0/1 (Ruta por defecto al Router Bogotá).

CONFIGURACIÓN BÁSICA Y DE DIRECCIONAMIENTO PARA EL ROUTER R3.

Enable
Configure terminal
Hostname R1
Enable secret jealcao
Service password-encryption
Banner motd "Solo personal autorizado"
Password Línea de consola: cabol
Password Líneas VTY: cisco

Interface s0/0/1
Ip address 172.31.23.1 255.255.255.252
Ip route 0.0.0.0 0.0.0.0 s0/0/1 (Ruta por defecto al Router Miami).
Interface loopback4.
Ip address 192.168.4.1 255.255.255.0
Exit

```
Interface loopback5.  
Ip address 192.168.5.1 255.255.255.0  
Exit.
```

```
Interface loopback6.  
Ip address 192.168.6.1 255.255.255.0  
Exit
```

CONFIGURACIÓN BÁSICA SWITCH S1.

```
Enable  
Configure terminal  
Hostname R1  
Enable secret jealcao  
Service password-encryption  
Banner motd "Solo personal autorizado"  
Password Línea de consola: cabol  
Password Líneas VTY: cisco
```

CONFIGURACIÓN BÁSICA SWITCH S3.

```
Enable  
Configure terminal  
Hostname R1  
Enable secret jealcao  
Service password-encryption  
Banner motd "Solo personal autorizado"  
Password Línea de consola: cabol  
Password Líneas VTY: cisco
```

CONFIGURACIÓN DEL PROTOCOLO DE ENRUTAMIENTO OSPFV2.

ROUTER R1.

```
enable  
Configure terminal  
Router ospf 2  
Network 172.31.21.0 0.0.0.3 area 0  
Network 192.168.30.0 0.0.0.255 area 0  
Network 192.168.40.0 0.0.0.255 area 0  
Network 192.168.200.0 0.0.0.255 area 0
```

Router-id 1.1.1.1 – luego se recarga el dispositivo para que los cambios surjan efectos.

CONFIGURACIÓN PASIVA DE LA LAN.

```
enable
Configure terminal
Router ospf 2
Passive-interface g0/0
Passive-interface g0/0.30
Passive-interface g0/0.40
Passive-interface g0/0.200
```

ANCHO DE BANDA DE ENLACE SERIAL DE 256 KB/S.

```
Interface s0/0/0
Bandwidth 256
Interface s0/0/1
Bandwidth 256
```

COSTO DE LA MÉTRICA.

```
int s0/0/0
ip ospf cost 9500
```

ROUTER R2.

```
enable
Configure terminal
Router ospf2
Network 172.31.23.0 0.0.0.255 area 0
Network 172.31.21.0 0.0.0.255 area 0
Network 209.165.200.225 255.255.255.248 area 0
Network 10.10.10.0 0.0.0.255 area 0
Router-id 5.5.5.5
```

CONFIGURACIÓN PASIVA DE LA LAN.

```
Router ospf 2
Passive-interface g0/0
Passive-interface g0/1
```

ANCHO DE BANDA DE ENLACE SERIAL DE 256 KB/S.

```
Interface s0/0/0
Bandwidth 256
Interface s0/0/1
Bandwidth 256
```

COSTO DE LA MÉTRICA.

```
Interface s0/0/0  
Ip ospf cost 9500
```

ROUTER R3.

```
enable  
Configure terminal  
Router ospf2  
Network 172.31.23.0 0.0.0.3 area 0  
Network 192.168.4.0 255.255.255.0 area 0  
Network 192.168.5.0 255.255.255.0 area 0  
Network 192.168.6.0 255.255.255.0 area 0  
Router-id 8.8.8.8
```

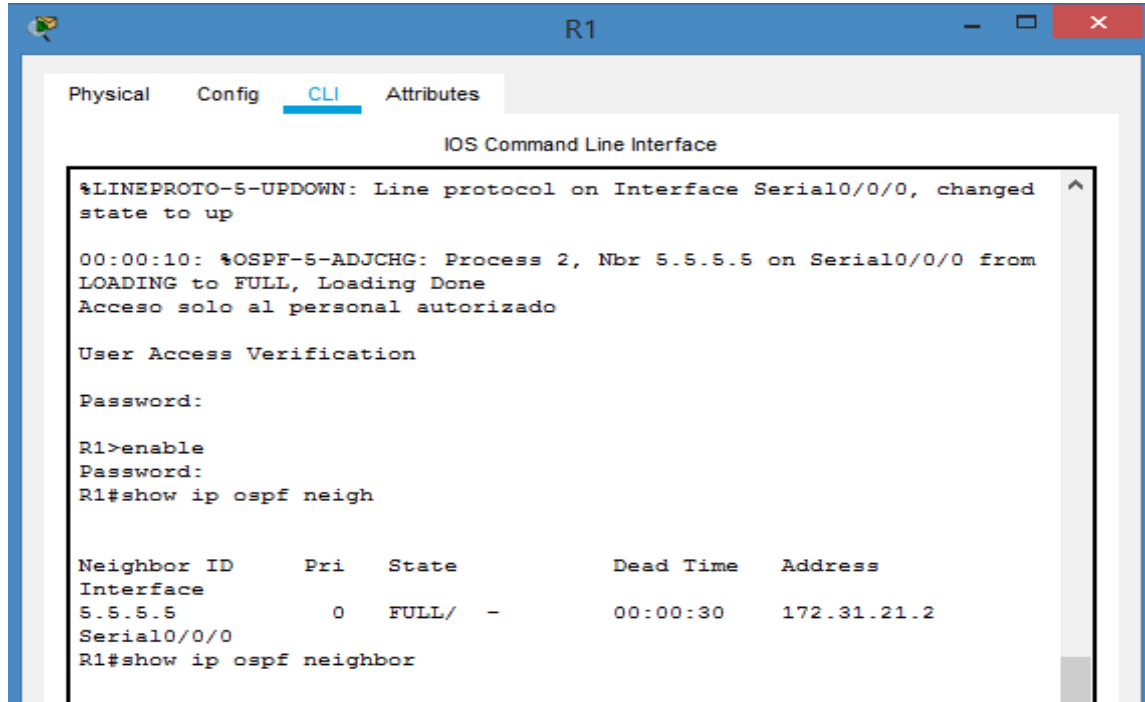
CONFIGURACIÓN PASIVA DE LA LAN.

```
Router ospf 2  
Passive-interface g0/0  
Passive-interface g0/1
```

ANCHO DE BANDA DE ENLACE SERIAL DE 256 KB/S.

```
Interface s0/0/0  
Bandwidth 256  
Interface s0/0/1  
Bandwidth 256
```

VISUALIZACIÓN DE TABLAS DE ENRUTAMIENTO Y RUTERS CONECTADOS POR OSPFV2.



The screenshot shows the CLI of router R1. It displays system messages about OSPF process 2 reaching the FULL state on Serial0/0/0. The user enters 'enable' and then 'show ip ospf neigh'. The output shows a single neighbor with ID 5.5.5.5 on Serial0/0/0, in a FULL state.

```
IOS Command Line Interface

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

00:00:10: %OSPF-5-ADJCHG: Process 2, Nbr 5.5.5.5 on Serial0/0/0 from
LOADING to FULL, Loading Done
Acceso solo al personal autorizado

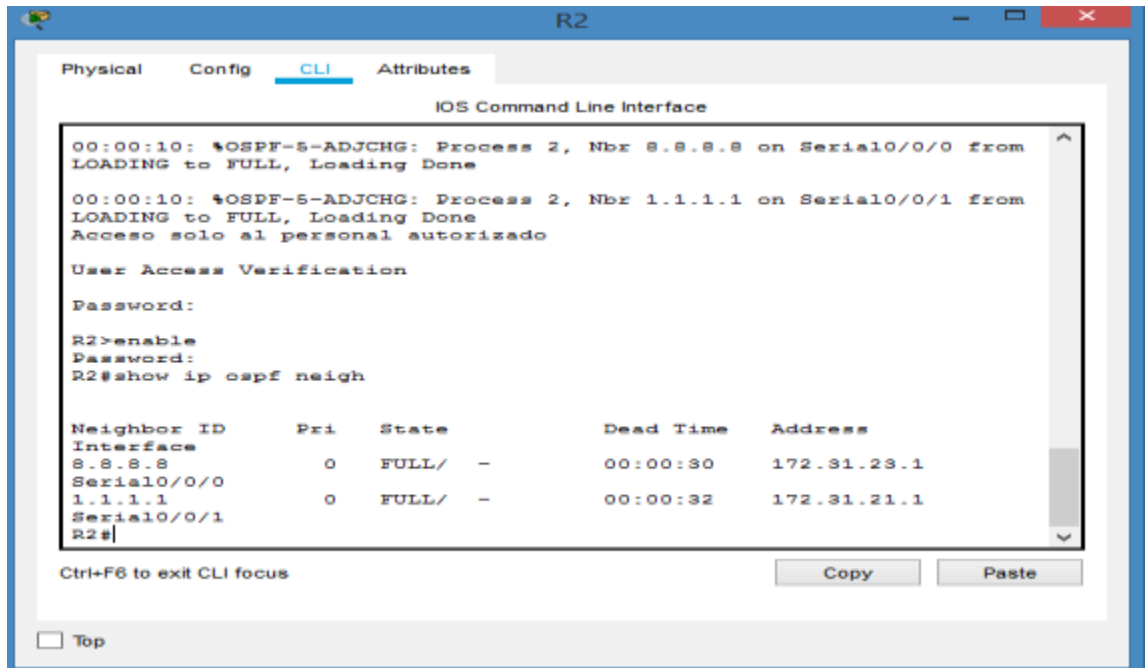
User Access Verification

Password:

R1>enable
Password:
R1#show ip ospf neigh

Neighbor ID      Pri   State           Dead Time   Address
Interface
5.5.5.5          0    FULL/ -         00:00:30   172.31.21.2
Serial0/0/0
R1#show ip ospf neighbor
```

En R2.



The screenshot shows the CLI of router R2. It displays system messages about OSPF process 2 reaching the FULL state on Serial0/0/0 and Serial0/0/1. The user enters 'enable' and then 'show ip ospf neigh'. The output shows two neighbors: 8.8.8.8 on Serial0/0/0 and 1.1.1.1 on Serial0/0/1, both in a FULL state.

```
IOS Command Line Interface

00:00:10: %OSPF-5-ADJCHG: Process 2, Nbr 8.8.8.8 on Serial0/0/0 from
LOADING to FULL, Loading Done

00:00:10: %OSPF-5-ADJCHG: Process 2, Nbr 1.1.1.1 on Serial0/0/1 from
LOADING to FULL, Loading Done
Acceso solo al personal autorizado

User Access Verification

Password:

R2>enable
Password:
R2#show ip ospf neigh

Neighbor ID      Pri   State           Dead Time   Address
Interface
8.8.8.8          0    FULL/ -         00:00:30   172.31.23.1
Serial0/0/0
1.1.1.1          0    FULL/ -         00:00:32   172.31.21.1
Serial0/0/1
R2#
```

EN R3.

```
IOS Command Line Interface

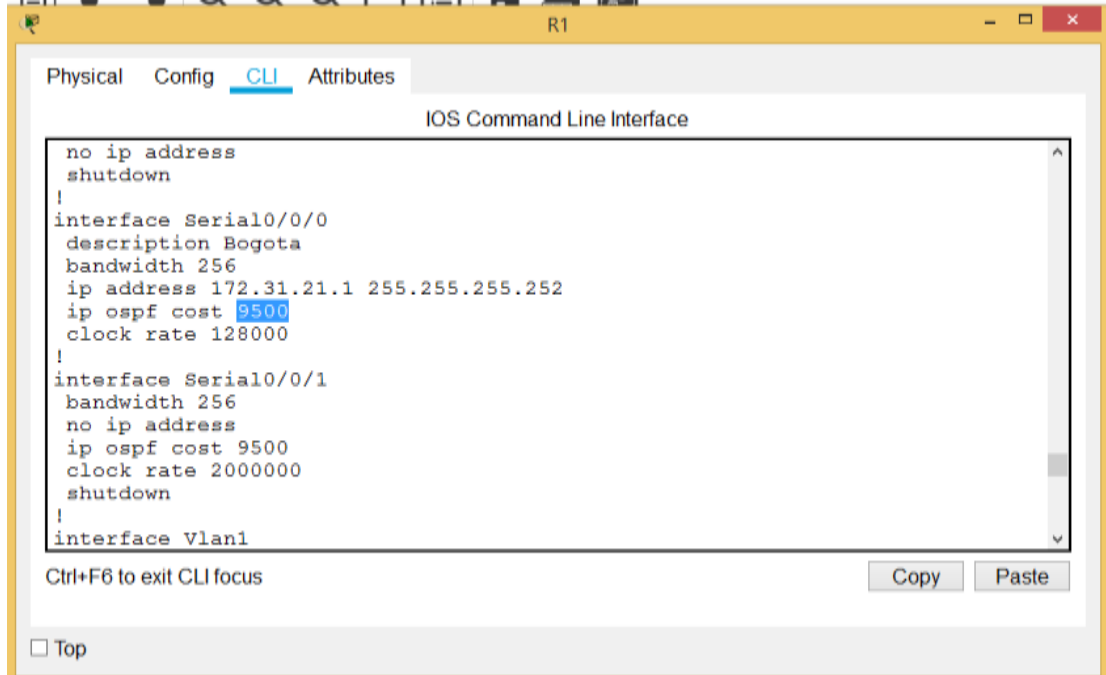
Acceso solo al personal autorizado
User Access Verification
Password:
R3>enable
Password:
R3#show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address
Interface
5.5.5.5          0    FULL/ -         00:00:31   172.31.23.2
Serial0/0/1
R3#
```

VISUALIZAR LISTA RESUMIDA DE INTERFACES POR OSPF EN DONDE SE ILUSTRE EL COSTO DE CADA INTERFACE.

El costo de las métricas fue aplicado a las interfaces s0/0/0 de cada router, como lo solicita la guía.

EN R1.



The screenshot shows a window titled 'R1' with tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The configuration text is as follows:

```
no ip address
shutdown
!
interface Serial0/0/0
description Bogota
bandwidth 256
ip address 172.31.21.1 255.255.255.252
ip ospf cost 9500
clock rate 128000
!
interface Serial0/0/1
bandwidth 256
no ip address
ip ospf cost 9500
clock rate 2000000
shutdown
!
interface Vlan1
```

Below the text area, there is a prompt 'Ctrl+F6 to exit CLI focus' and two buttons: 'Copy' and 'Paste'. At the bottom left, there is a checkbox labeled 'Top'.

EN R2.

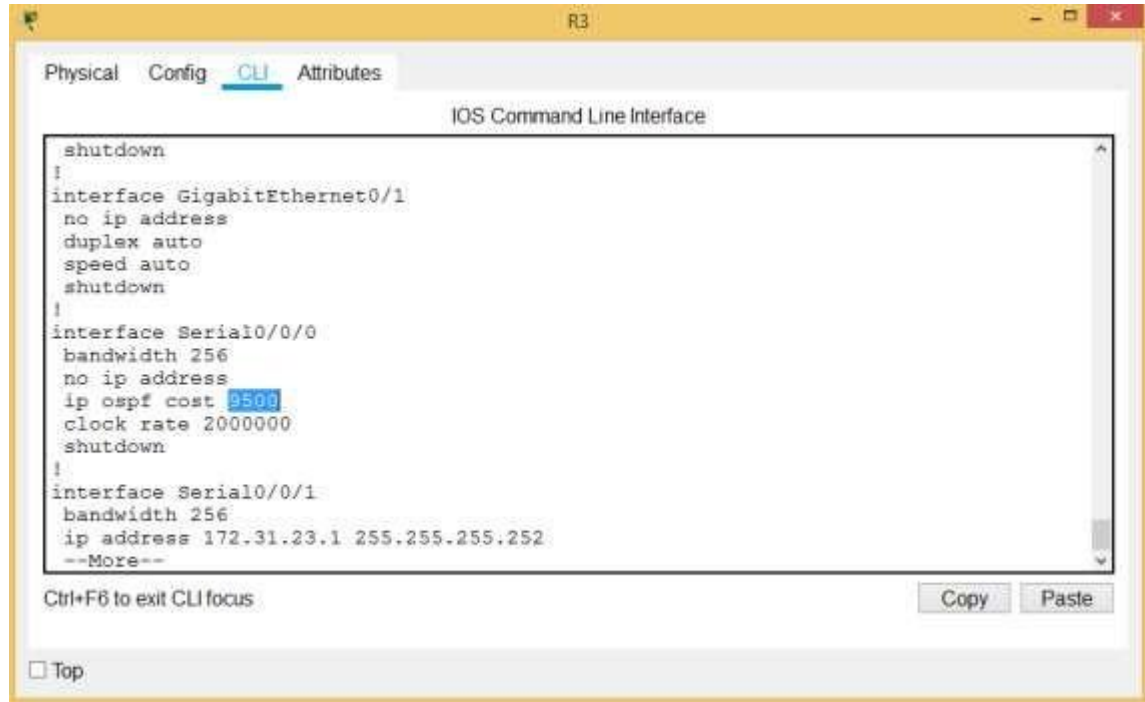


The screenshot shows a window titled 'R2' with tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The configuration text is as follows:

```
ip nat inside
duplex auto
speed auto
!
interface GigabitEthernet0/1
description connection to Web Server
ip address 10.10.10.1 255.255.255.0
duplex auto
speed auto
!
interface Serial0/0/0
bandwidth 256
ip address 172.31.23.2 255.255.255.252
ip ospf cost 6500
ip nat inside
clock rate 128000
!
--More--
```

Below the text area, there is a prompt 'Ctrl+F6 to exit CLI focus' and two buttons: 'Copy' and 'Paste'. At the bottom left, there is a checkbox labeled 'Top'.

EN R3.

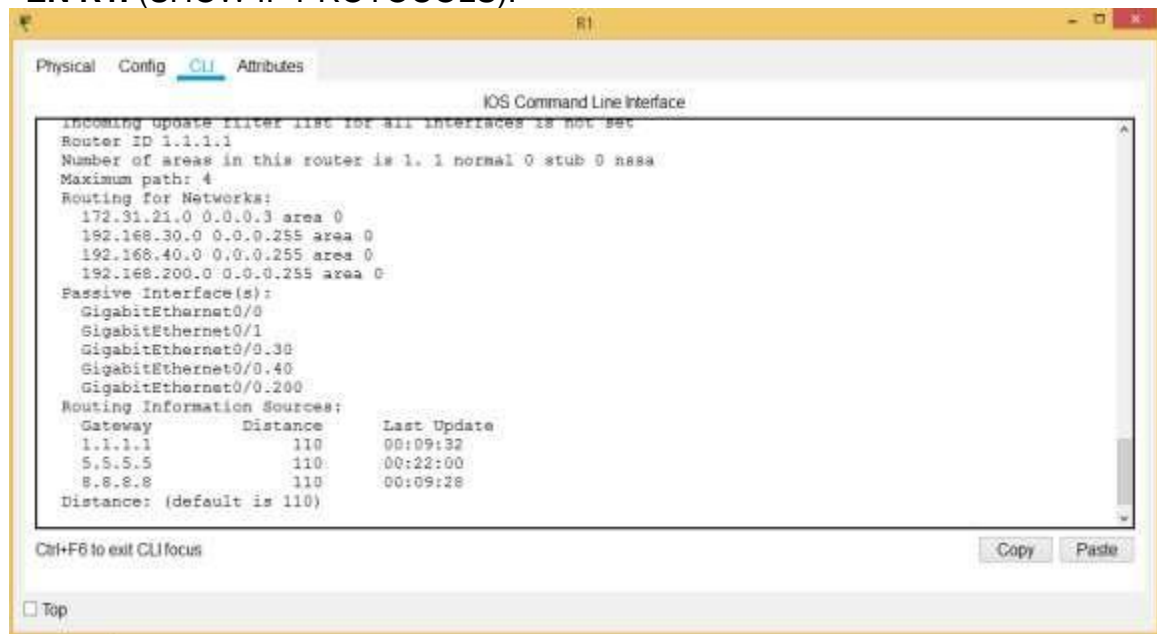


The screenshot shows the CLI of router R3. The configuration includes three interfaces: GigabitEthernet0/1, Serial0/0/0, and Serial0/0/1. GigabitEthernet0/1 is configured with 'no ip address', 'duplex auto', 'speed auto', and 'shutdown'. Serial0/0/0 is configured with 'bandwidth 256', 'no ip address', 'ip ospf cost 9500', 'clock rate 2000000', and 'shutdown'. Serial0/0/1 is configured with 'bandwidth 256' and 'ip address 172.31.23.1 255.255.255.252'. The window title is 'R3' and the tabs are 'Physical', 'Config', 'CLI', and 'Attributes'. The text 'IOS Command Line Interface' is centered above the terminal area. At the bottom, there are 'Copy' and 'Paste' buttons, and a 'Top' button with a checkbox.

```
shutdown
!
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
bandwidth 256
no ip address
ip ospf cost 9500
clock rate 2000000
shutdown
!
interface Serial0/0/1
bandwidth 256
ip address 172.31.23.1 255.255.255.252
--More--
```

VISUALIZAR EL OSPF PROCESS ID, ROUTER ID, ADDRESS SUMMARIZATIONS, ROUTING NETWORKS, AND PASSIVE INTERFACES CONFIGURADAS EN CADA ROUTER.

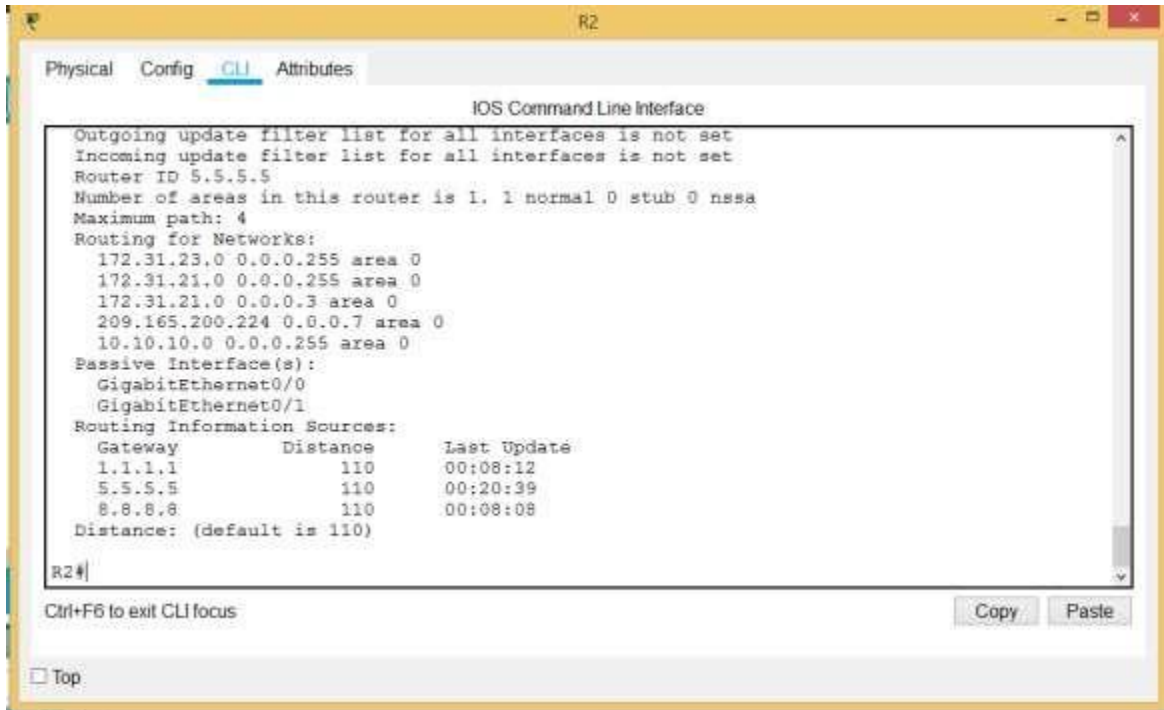
EN R1. (SHOW IP PROTOCOLS).



The screenshot shows the CLI of router R1 displaying the output of the 'show ip protocols' command. The output includes: 'Incoming update filter list for all interfaces is not set', 'Router ID 1.1.1.1', 'Number of areas in this router is 1. 1 normal 0 stub 0 nssa', 'Maximum path: 4', 'Routing for Networks:' with a list of networks and areas, 'Passive Interface(s):' with a list of interfaces, and 'Routing Information Sources:' with a table of gateways, distances, and last update times. The window title is 'R1' and the tabs are 'Physical', 'Config', 'CLI', and 'Attributes'. The text 'IOS Command Line Interface' is centered above the terminal area. At the bottom, there are 'Copy' and 'Paste' buttons, and a 'Top' button with a checkbox.

```
Incoming update filter list for all interfaces is not set
Router ID 1.1.1.1
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
 172.31.21.0 0.0.0.3 area 0
 192.168.30.0 0.0.0.255 area 0
 192.168.40.0 0.0.0.255 area 0
 192.168.200.0 0.0.0.255 area 0
Passive Interface(s):
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/0.30
GigabitEthernet0/0.40
GigabitEthernet0/0.200
Routing Information Sources:
Gateway         Distance      Last Update
1.1.1.1         110           00:09:32
5.5.5.5         110           00:22:00
8.8.8.8         110           00:09:28
Distance: (default is 110)
```


EN R2. (SHOW IP PROTOCOLS).

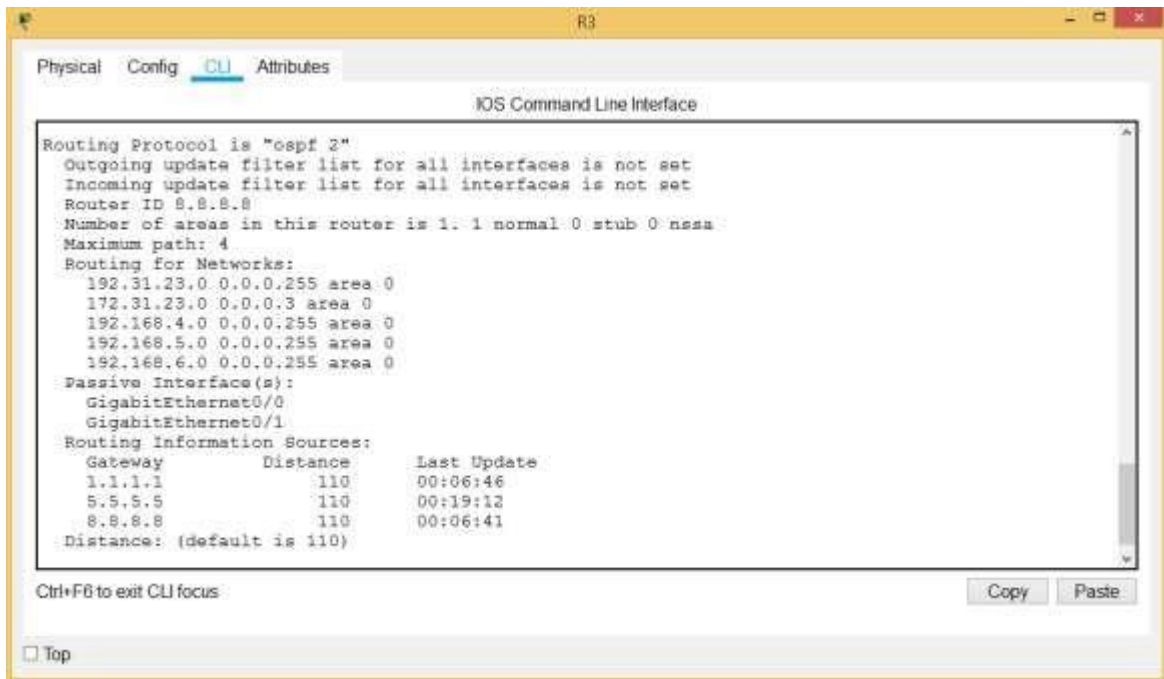


The screenshot shows the CLI of router R2. The output of the 'show ip protocols' command is as follows:

```
IOS Command Line Interface
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 5.5.5.5
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
 172.31.23.0 0.0.0.255 area 0
 172.31.21.0 0.0.0.255 area 0
 172.31.21.0 0.0.0.3 area 0
 209.165.200.224 0.0.0.7 area 0
 10.10.10.0 0.0.0.255 area 0
Passive Interface(s):
 GigabitEthernet0/0
 GigabitEthernet0/1
Routing Information Sources:
 Gateway      Distance    Last Update
 1.1.1.1      110         00:08:12
 5.5.5.5      110         00:20:39
 8.8.8.8      110         00:08:08
Distance: (default is 110)
R2#
```

Below the terminal window, there are buttons for 'Copy' and 'Paste', and a 'Top' button at the bottom left.

EN R3. (SHOW IP PROTOCOLS).



The screenshot shows the CLI of router R3. The output of the 'show ip protocols' command is as follows:

```
IOS Command Line Interface
Routing Protocol is "ospf 2"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 8.8.8.8
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
 192.31.23.0 0.0.0.255 area 0
 172.31.23.0 0.0.0.3 area 0
 192.168.4.0 0.0.0.255 area 0
 192.168.5.0 0.0.0.255 area 0
 192.168.6.0 0.0.0.255 area 0
Passive Interface(s):
 GigabitEthernet0/0
 GigabitEthernet0/1
Routing Information Sources:
 Gateway      Distance    Last Update
 1.1.1.1      110         00:06:46
 5.5.5.5      110         00:19:12
 8.8.8.8      110         00:06:41
Distance: (default is 110)
R3#
```

Below the terminal window, there are buttons for 'Copy' and 'Paste', and a 'Top' button at the bottom left.

CONFIGURACIÓN DE PUERTOS TRONCALES.

SWITCH S3

S3: En el puerto fa 0/3 del S3, estableciendo un enlace troncal con el Switch S2.
Interface fa 0/3
Switchport mode trunk
Switchport trunk native vlan 1

SWITCH S1

S1: En el puerto fa 0/3 del S1, estableciendo un enlace troncal con el Switch S3.
Interface fa 0/3
Switchport mode trunk
Switchport trunk native vlan 1

S1: En el puerto fa 0/24 del S1, estableciendo un enlace troncal con el Router R1.
Interface fa 0/24
Switchport mode trunk
Switchport trunk native vlan 1

CONFIGURACIÓN DE VLANS.

EN S1.
Configure terminal
Vlan 30
Name Administracion
Exit
Vlan 40
Name Mercadeo
Exit
Vlan 200
Name Mantenimiento
Exit

Interface fa 0/1
Switchport mode Access
Switchport Access vlan 30
Ip default-gateway 192.168.99.1

```
EN S3.  
Configure terminal  
Vlan 30  
Name Administracion  
Exit  
Vlan 40  
Name Mercadeo  
Exit  
Vlan 200  
Name Mantenimiento  
Exit
```

```
Interface fa 0/1  
Switchport mode Access  
Switchport Access vlan 40  
Ip default-gateway 192.168.99.1
```

```
EN R1.  
Configure terminal  
Interface fa 0/0.30  
Encapsulation dot1q 30  
Ip address 192.168.30.1 255.255.255.0
```

```
Interface fa 0/0.40  
Encapsulation dot1q 40  
Ip address 192.168.40.1 255.255.255.0
```

```
Interface fa 0/0.200  
Encapsulation dot1q 200  
Ip address 192.168.200.1 255.255.255.0
```

SEGURIDAD EN LOS SWITCHES.

```
S1.  
Interface fa 0/1.  
Switchport mode Access  
Switchport port-security  
Switchport port-security máximo 3  
Switchport port-security violation shutdown  
Switchport port-security mac-address sticky
```

```
Interface fa 0/3.
```

```
Switchport mode Access
Switchport port-security
Switchport port-security máximo 3
Switchport port-security violation shutdown
Switchport port-security mac-address sticky
```

```
Interface fa 0/24.
Switchport mode Access
Switchport port-security
Switchport port-security máximo 3
Switchport port-security violation shutdown
Switchport port-security mac-address sticky
```

```
S3.
Interface fa 0/1.
Switchport mode Access
Switchport port-security
Switchport port-security máximo 3
Switchport port-security violation shutdown
Switchport port-security mac-address sticky
```

```
Interface fa 0/3.
Switchport mode Access
Switchport port-security
Switchport port-security máximo 3
Switchport port-security violation shutdown
Switchport port-security mac-address sticky
```

Deshabilitación DNS lookup en Switch3.

```
Config t
No ip domain-lookup
```

Asignar direcciones IP a los switches acorde a los lineamientos.

```
S1.
Interface vlan 1
Ip address 192.168.99.2 255.255.255.0
Ip default-gateway 192.168.99.1
```

S3.
Interface vlan 1
Ip address 192.168.99.3 255.255.255.0
Ip default-gateway 192.168.99.1

DESACTIVAR TODAS LAS INTERFACES QUE NO SEAN UTILIZADAS EN EL ESQUEMA DE RED.

S3.

Interface ra fa 0/2
Sh
Interface ra fa 04/-24
Sh

S1.

Interface f0/2
Sh
Interface ra fa 04/-23
Sh

CONFIGURAR R1 COMO SERVIDOR DHCP PARA LAS VLANS 30 Y 40.

Ip dhcp excluded-address 192.168.30.1
Ip dhcp excluded-address 192.168.40.1
Ip dhcp pool Administracion
Network 192.168.30.0 255.255.255.0
default-router 192.168.30.1 255.255.255.0
dns-server 10.10.10.11
Ip dhcp pool Mercadeo
Network 192.168.40.0 255.255.255.0
default-router 192.168.40.1 255.255.255.0
dns-server 10.10.10.11
ip domain-name ccna-unad.com

RESERVAR LAS PRIMERAS 30 DIRECCIONES IP DE LAS VLANS 30 Y 40 PARA CONFIGURACIONES ESTATICAS.

Ip dhcp excluded-address 192.168.30.1 192.168.30.30
Ip dhcp excluded-address 192.168.40.1 192.168.40.30
CONFIGURAR DHCP POOL PARA VLAN 30

```
Ip dhcp pool ADMINISTRACION
Network 192.168.30.0 255.255.255.0
dns-server 10.10.10.11
Domain-Name: ccna-unad.com
default-router 192.168.30.1
```

CONFIGURAR DHCP POOL PARA VLAN 40

```
Ip dhcp pool MERCADEO
Network 192.168.40.0 255.255.255.0
dns-server 10.10.10.11
Domain-Name: ccna-unad.com
default-router 192.168.40.1
```

CONFIGURAR NAT EN R2 PARA PERMITIR QUE LOS HOSTS PUEDAN SALIR A INTERNET.

```
Interface g0/0
Ip nat inside
```

```
Interface s0/0/0
Ip nat inside
```

```
Interface s0/0/1
Ip nat inside
```

```
Ip Access-list extended nat
Permit ip host 0.0.0.0 any
Ip nat inside source list NAT int g0/0 overload
```

CONFIGURAR AL MENOS DOS LISTAS DE ACCESO DE TIPO ESTÁNDAR A SU CRITERIO EN PARA RESTRINGIR O PERMITIR TRÁFICO DESDE R1 O R3 HACIA R2.

R2 (Se permite el tráfico de las interfaces loopback 4 y 5, se niega el tráfico para la loopback 6).

```
Configure terminal
Access-list 1 permit 192.168.4.0 0.0.0.255
Access-list 1 permit 192.168.5.0 0.0.0.255
Access-list 1 deny 192.168.6.0 0.0.0.255
```

CONFIGURAR AL MENOS DOS LISTAS DE ACCESO DE TIPO EXTENDIDO A SU CRITERIO EN PARA RESTRINGIR O PERMITIR TRÁFICO DESDE R1 O R3 HACIA R2.

R2 (Se permiten las VLANs 30 y 40, y la interface g0/0 del R1).

Configure terminal

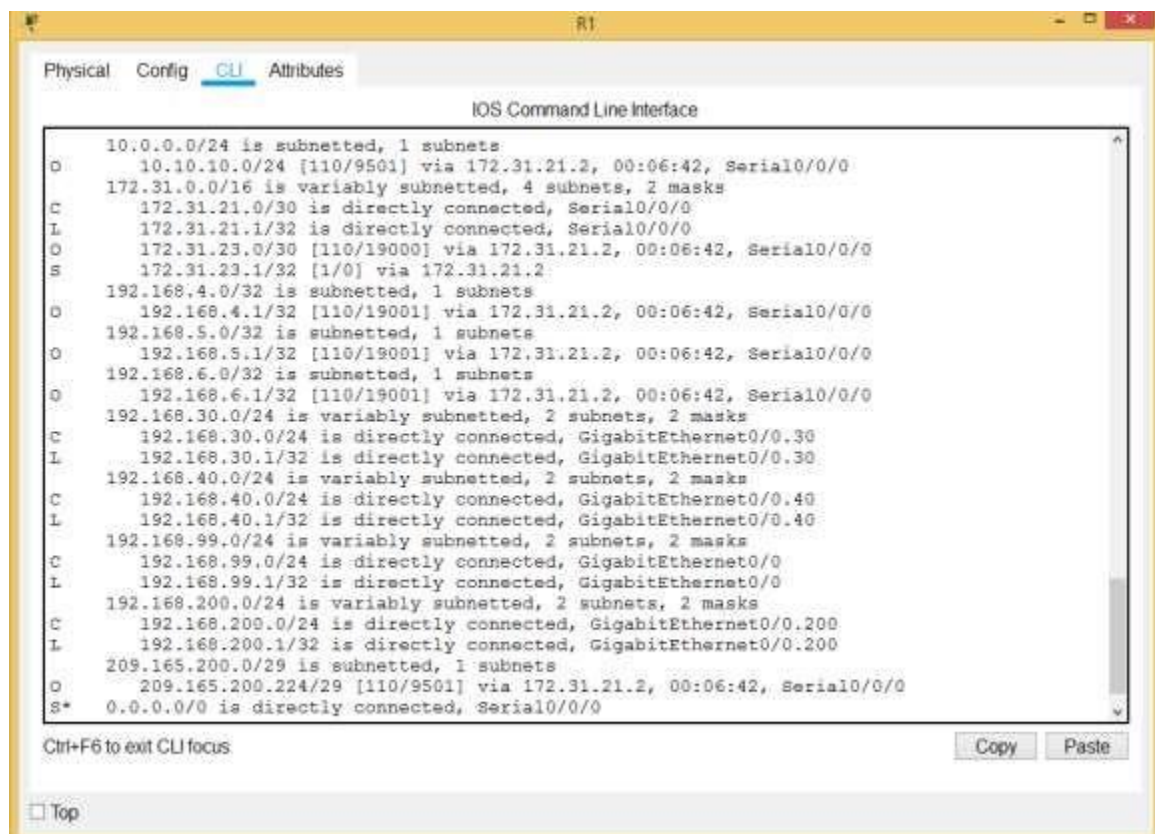
Access-list 1 permit 192.168.30.0 0.0.0.255

Access-list 1 permit 192.168.40.0 0.0.0.255

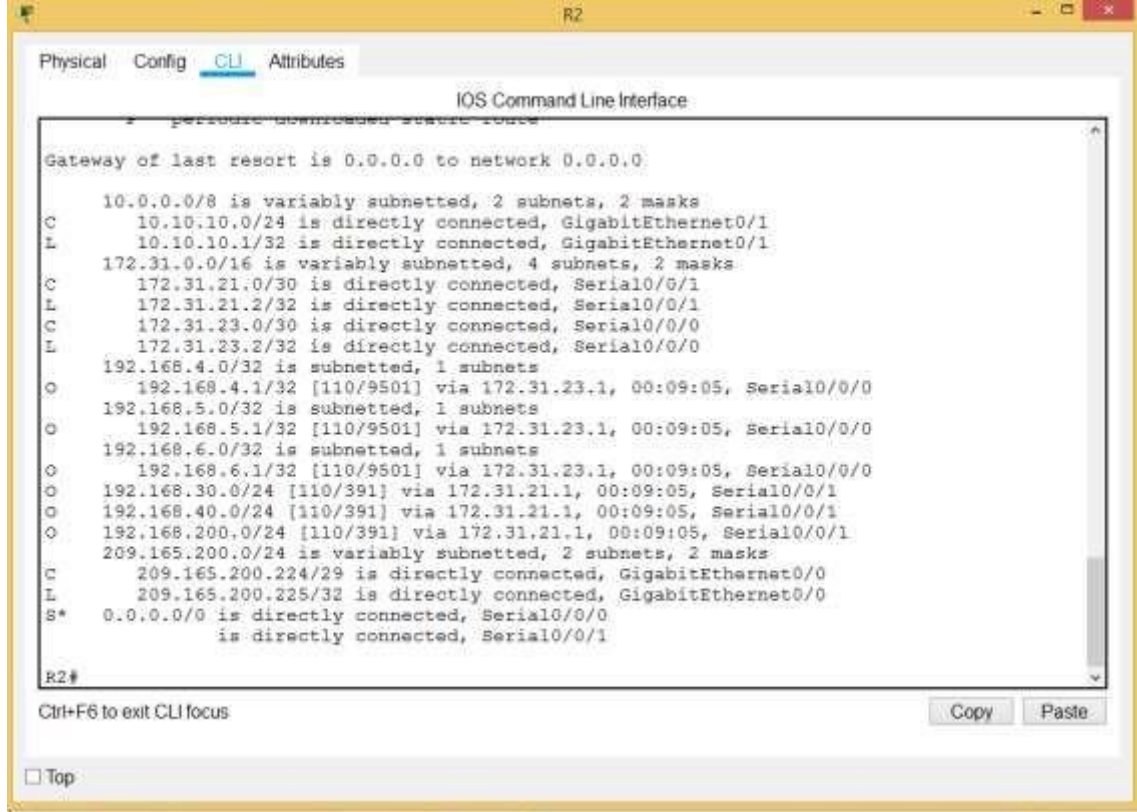
Access-list 1 permit 192.168.99.0 0.0.0.255

MOSTRAR RUTA IP.

R1.



R2.



The screenshot shows the CLI of router R2. The output of a command lists various network configurations, including subnets and connections to other routers. The text is as follows:

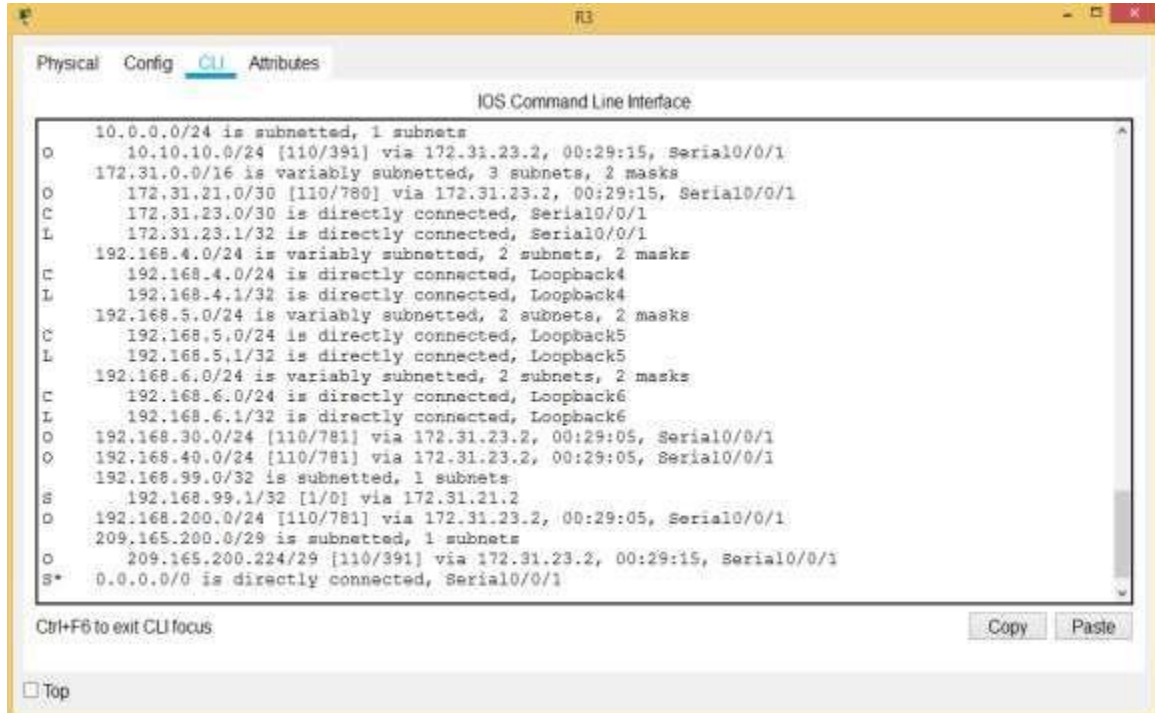
```
Gateway of last resort is 0.0.0.0 to network 0.0.0.0

 10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C   10.10.10.0/24 is directly connected, GigabitEthernet0/1
L   10.10.10.1/32 is directly connected, GigabitEthernet0/1
 172.31.0.0/16 is variably subnetted, 4 subnets, 2 masks
C   172.31.21.0/30 is directly connected, Serial0/0/1
L   172.31.21.2/32 is directly connected, Serial0/0/1
C   172.31.23.0/30 is directly connected, Serial0/0/0
L   172.31.23.2/32 is directly connected, Serial0/0/0
 192.168.4.0/32 is subnetted, 1 subnets
O   192.168.4.1/32 [110/9501] via 172.31.23.1, 00:09:05, Serial0/0/0
 192.168.5.0/32 is subnetted, 1 subnets
O   192.168.5.1/32 [110/9501] via 172.31.23.1, 00:09:05, Serial0/0/0
 192.168.6.0/32 is subnetted, 1 subnets
O   192.168.6.1/32 [110/9501] via 172.31.23.1, 00:09:05, Serial0/0/0
 192.168.30.0/24 [110/391] via 172.31.21.1, 00:09:05, Serial0/0/1
O   192.168.40.0/24 [110/391] via 172.31.21.1, 00:09:05, Serial0/0/1
O   192.168.200.0/24 [110/391] via 172.31.21.1, 00:09:05, Serial0/0/1
 209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C   209.165.200.224/29 is directly connected, GigabitEthernet0/0
L   209.165.200.225/32 is directly connected, GigabitEthernet0/0
S*  0.0.0.0/0 is directly connected, Serial0/0/0
    is directly connected, Serial0/0/1

R2#
```

Buttons for Copy and Paste are visible at the bottom right of the CLI window.

R3.



The screenshot shows the CLI of router R3. The output of a command lists various network configurations, including subnets and connections to other routers. The text is as follows:

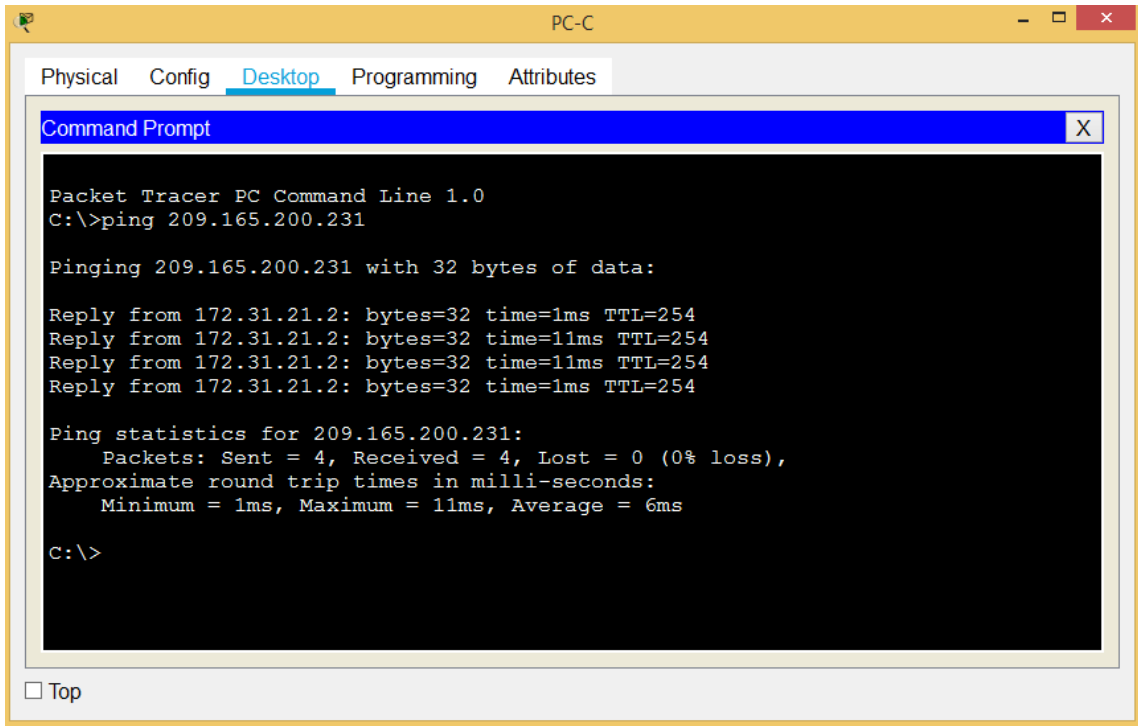
```
 10.0.0.0/24 is subnetted, 1 subnets
O   10.10.10.0/24 [110/391] via 172.31.23.2, 00:29:15, Serial0/0/1
 172.31.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   172.31.21.0/30 [110/780] via 172.31.23.2, 00:29:15, Serial0/0/1
C   172.31.23.0/30 is directly connected, Serial0/0/1
L   172.31.23.1/32 is directly connected, Serial0/0/1
 192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.4.0/24 is directly connected, Loopback4
L   192.168.4.1/32 is directly connected, Loopback4
 192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.5.0/24 is directly connected, Loopback5
L   192.168.5.1/32 is directly connected, Loopback5
 192.168.6.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.6.0/24 is directly connected, Loopback6
L   192.168.6.1/32 is directly connected, Loopback6
O   192.168.30.0/24 [110/781] via 172.31.23.2, 00:29:05, Serial0/0/1
O   192.168.40.0/24 [110/781] via 172.31.23.2, 00:29:05, Serial0/0/1
 192.168.99.0/32 is subnetted, 1 subnets
S   192.168.99.1/32 [1/0] via 172.31.21.2
O   192.168.200.0/24 [110/781] via 172.31.23.2, 00:29:05, Serial0/0/1
 209.165.200.0/29 is subnetted, 1 subnets
O   209.165.200.224/29 [110/391] via 172.31.23.2, 00:29:15, Serial0/0/1
S*  0.0.0.0/0 is directly connected, Serial0/0/1

R3#
```

Buttons for Copy and Paste are visible at the bottom right of the CLI window.

PRUEBAS DE CONECTIVIDAD (Extremo a Extremo).

PING DE PC-C a INTERNET-PC



```
Packet Tracer PC Command Line 1.0
C:\>ping 209.165.200.231

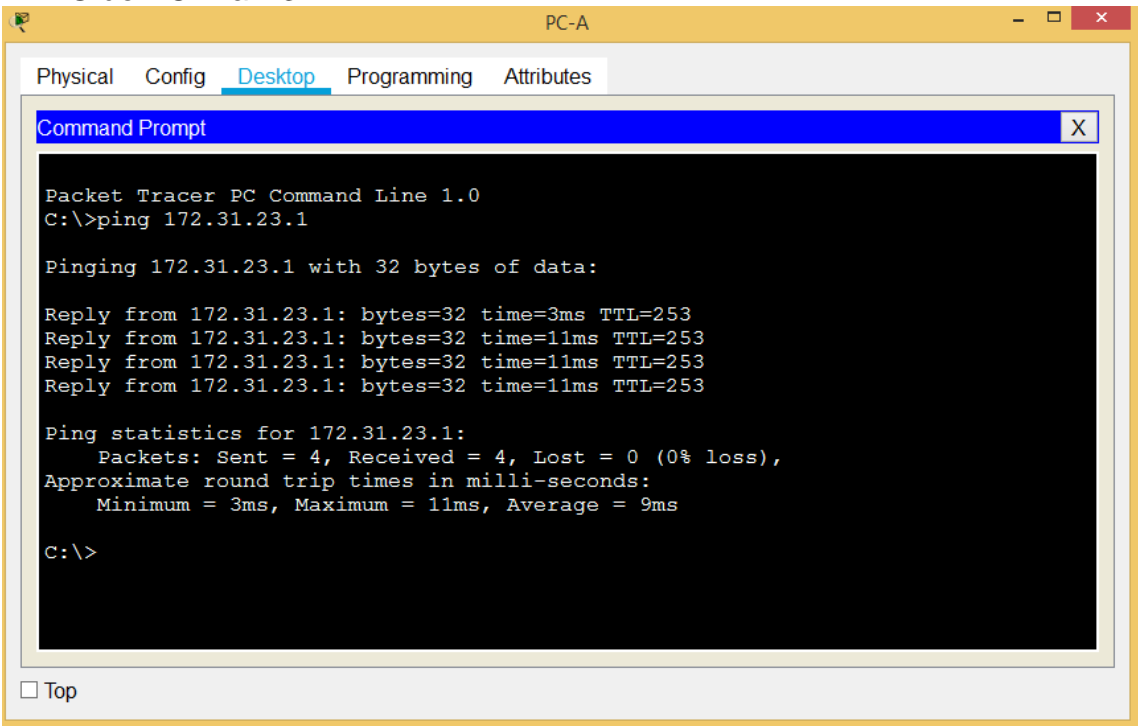
Pinging 209.165.200.231 with 32 bytes of data:

Reply from 172.31.21.2: bytes=32 time=1ms TTL=254
Reply from 172.31.21.2: bytes=32 time=11ms TTL=254
Reply from 172.31.21.2: bytes=32 time=11ms TTL=254
Reply from 172.31.21.2: bytes=32 time=1ms TTL=254

Ping statistics for 209.165.200.231:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 11ms, Average = 6ms

C:\>
```

PING de PC-A a R3.



```
Packet Tracer PC Command Line 1.0
C:\>ping 172.31.23.1

Pinging 172.31.23.1 with 32 bytes of data:

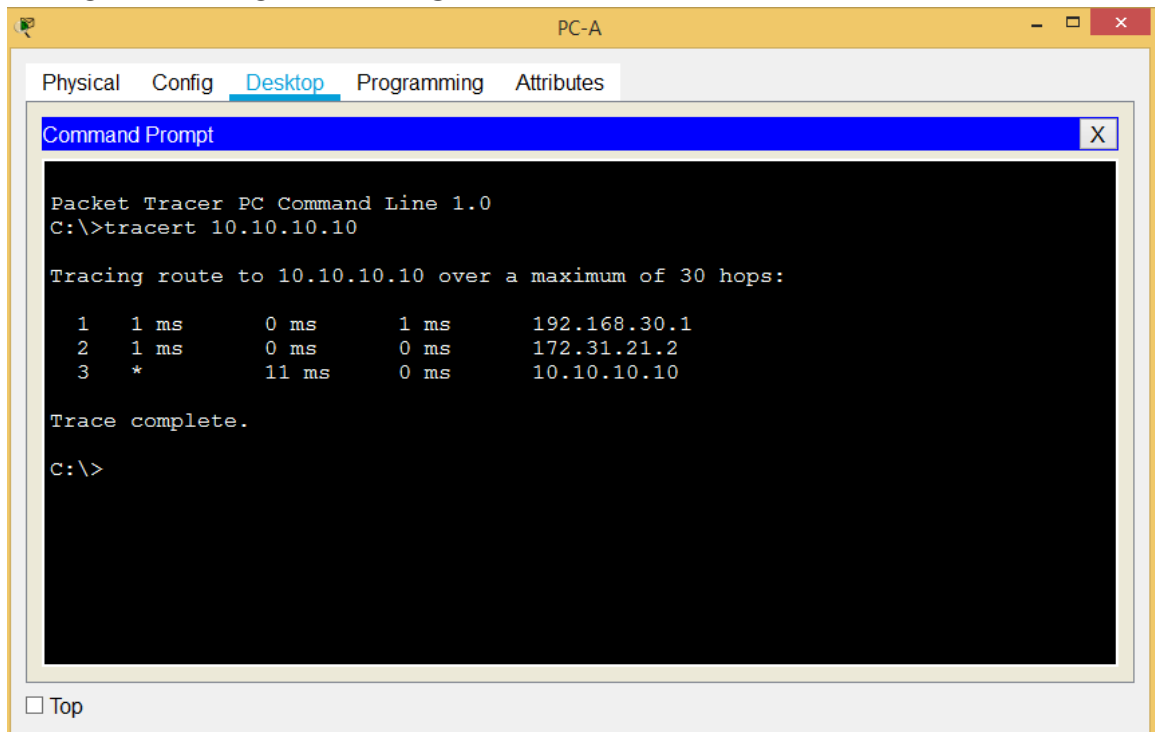
Reply from 172.31.23.1: bytes=32 time=3ms TTL=253
Reply from 172.31.23.1: bytes=32 time=11ms TTL=253
Reply from 172.31.23.1: bytes=32 time=11ms TTL=253
Reply from 172.31.23.1: bytes=32 time=11ms TTL=253

Ping statistics for 172.31.23.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 11ms, Average = 9ms

C:\>
```

TRACERT ROUTE (Extremo a Extremo).

TRACERT DE PC-A A WEB-SERVER.



The screenshot shows a Packet Tracer PC window for PC-A. The 'Desktop' tab is active, displaying a Command Prompt window. The command prompt shows the execution of the 'tracert 10.10.10.10' command. The output displays a three-hop route with IP addresses 192.168.30.1, 172.31.21.2, and 10.10.10.10. The trace is complete.

```
Packet Tracer PC Command Line 1.0
C:\>tracert 10.10.10.10

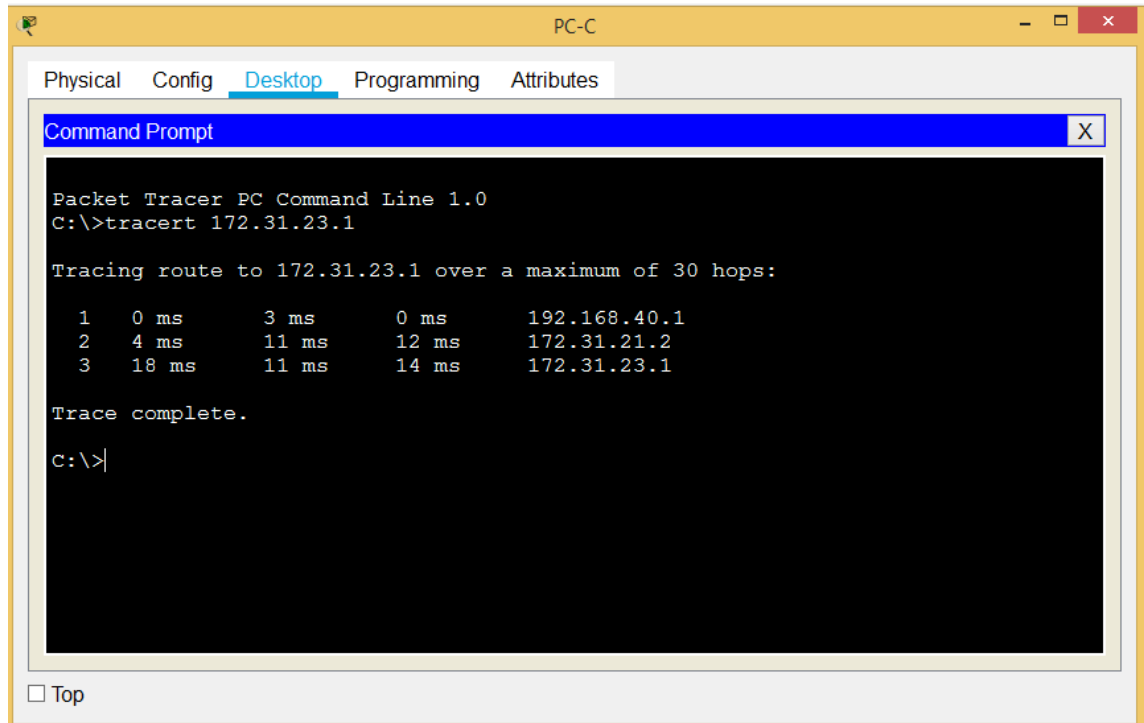
Tracing route to 10.10.10.10 over a maximum of 30 hops:

  1  1 ms      0 ms      1 ms      192.168.30.1
  2  1 ms      0 ms      0 ms      172.31.21.2
  3  *          11 ms     0 ms      10.10.10.10

Trace complete.

C:\>
```

TRACER DE PC-C A R3.



The screenshot shows a Packet Tracer PC window for PC-C. The 'Desktop' tab is active, displaying a Command Prompt window. The command prompt shows the execution of the 'tracert 172.31.23.1' command. The output displays a three-hop route with IP addresses 192.168.40.1, 172.31.21.2, and 172.31.23.1. The trace is complete.

```
Packet Tracer PC Command Line 1.0
C:\>tracert 172.31.23.1

Tracing route to 172.31.23.1 over a maximum of 30 hops:

  1  0 ms      3 ms      0 ms      192.168.40.1
  2  4 ms      11 ms     12 ms     172.31.21.2
  3  18 ms     11 ms     14 ms     172.31.23.1

Trace complete.

C:\>
```

CONCLUSIÓN.

En esta presentación del informe detallado se presenta y realiza cada uno de los ítems solicitados en la guía de actividades prácticas de este curso con el objetivo de dar el mejor manejo de los equipos y dispositivos tecnológicos pedidos, como la integración de un archivo de extensión. pkt donde se puede ver las respectivas configuraciones y acciones ejecutadas sobre su correcto funcionamiento.

Al aplicar los protocolos de conexión solicitados en la actividad, podemos identificar la conceptualización teórica adquirida en el desarrollo del curso, así como las características de configuración permitidas por cada uno de los equipos en un ambiente virtual que se simula de la mejor manera a uno real de laboratorio.

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