Desarrollo y Aplicación de una Red Segura en Simulador Cisco Packet Tracer

Presentado por:
Siomara Johanna Serrato Ortiz
Código: 1.075.244.282

Grupo: 203092_30

Presentado a:
Efraín Alejandro Pérez

Universidad Nacional Abierta y a Distancia “Unad”
Escuela de Ciencias Básicas, Tecnología e Ingeniería “Ecbti”
Cead: Florencia Caquetá
Fecha: 25-mayo-2017

Tabla de Contenido

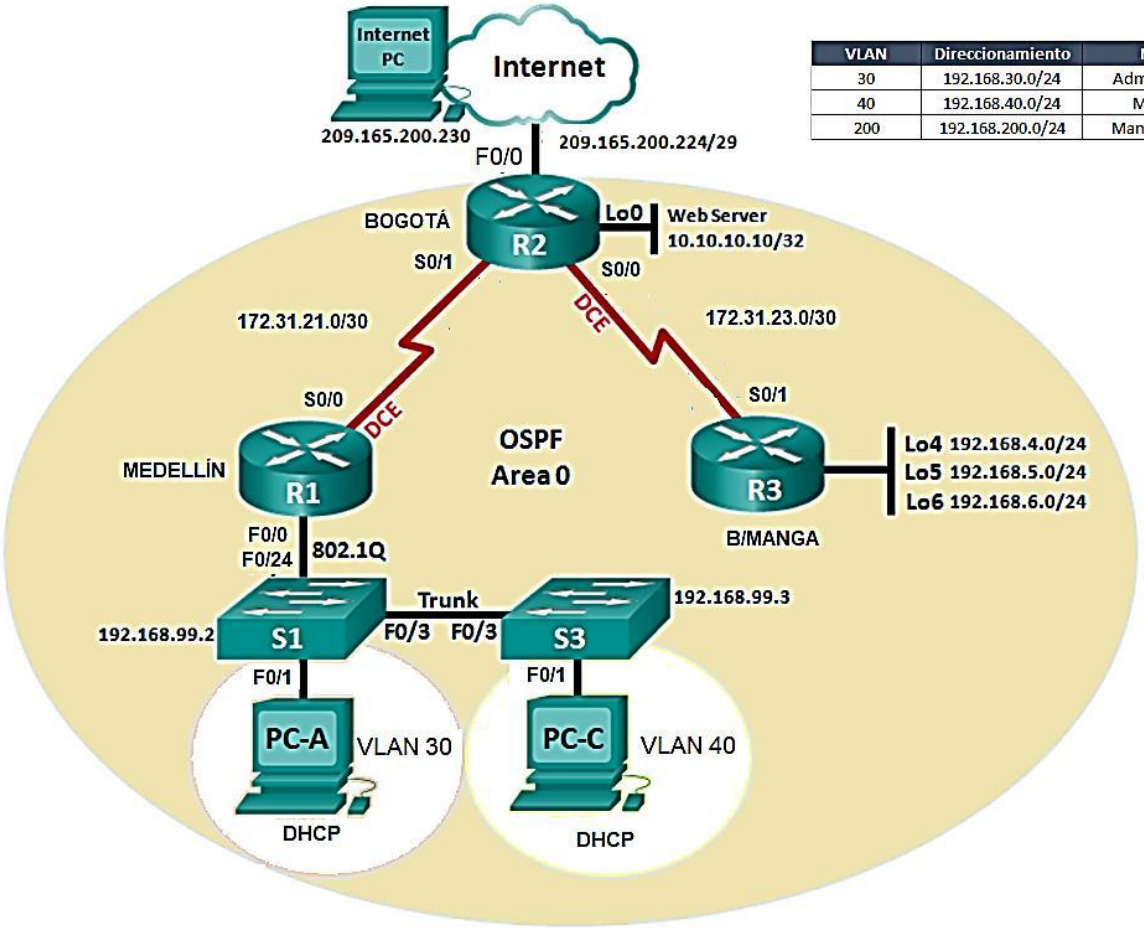
Introducción

En la actividad presente se desarrolla y analiza las temáticas de cisco CCNA1 y CCNA2 enfocadas en la identificación y solución de un problema planteado y relacionado con el enrutamiento mediante comandos ios. Se conocen los diferentes protocolos de routing, la implementación y configuración básica de OSPF, se analizan y desarrollaran las instrucciones necesarias para utilizar las ACL estándar y extendidas en un router Cisco, implementaremos cada una de las funciones de DHCPv4 y se analizara la implementación de NAT con el fin de usar de forma más eficaz las direcciones IPv4, lo anterior se ejecuta utilizando la información contenida en la prueba de habilidades prácticas de la plataforma de Cisco Networking Academy, poniendo en práctica el desarrollo un con la ayuda del software Packet Tracer.

Desarrollo y Aplicación de una Red Segura en Simulador Cisco Packet Tracer

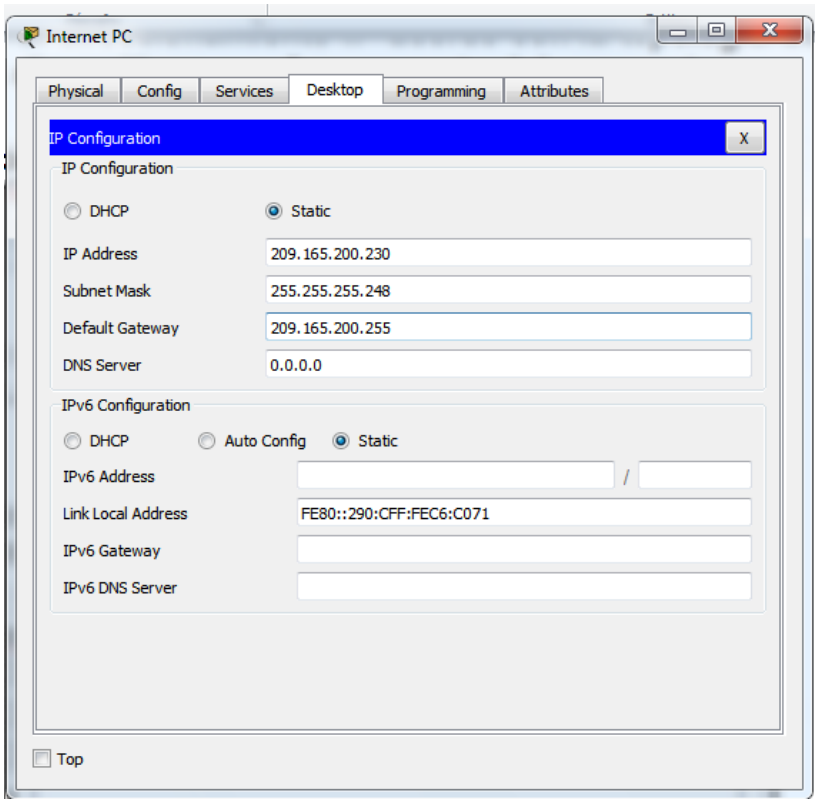
Escenario: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Bogotá, Medellín y Bucaramanga, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con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

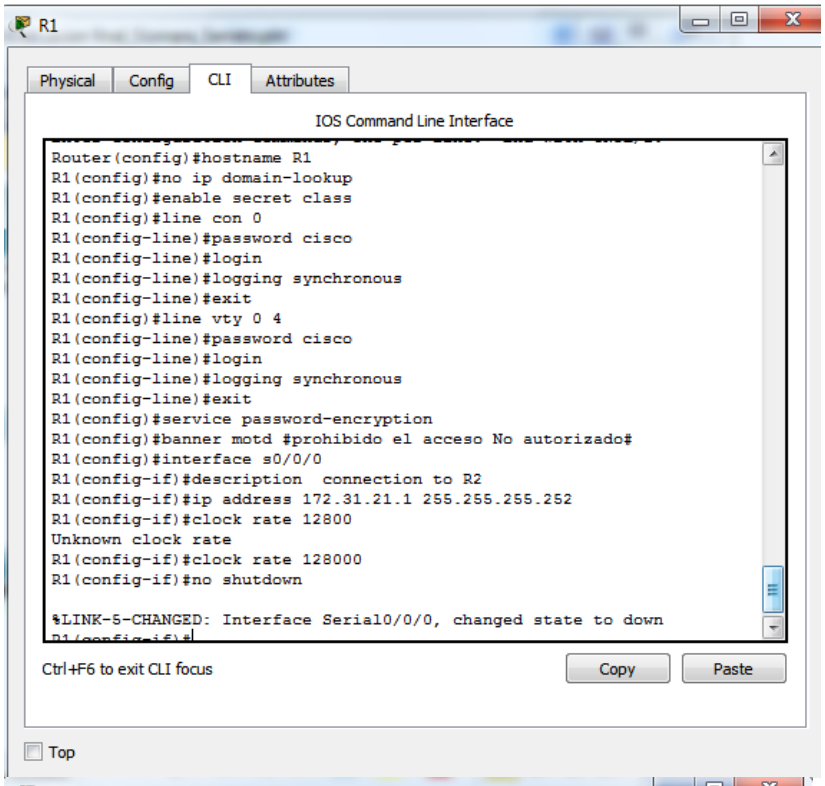
Topología de red

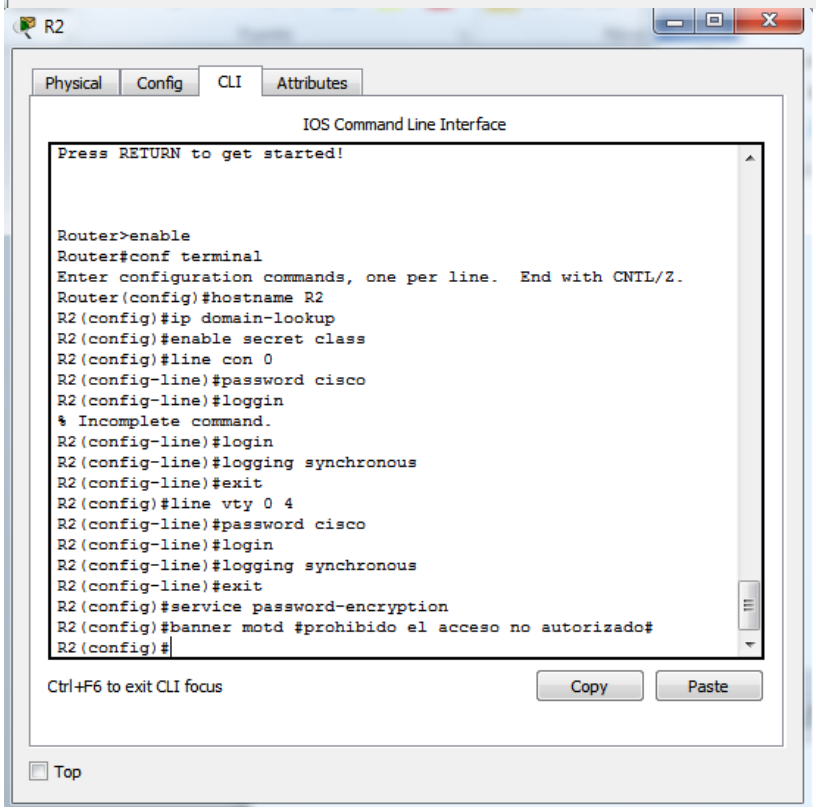


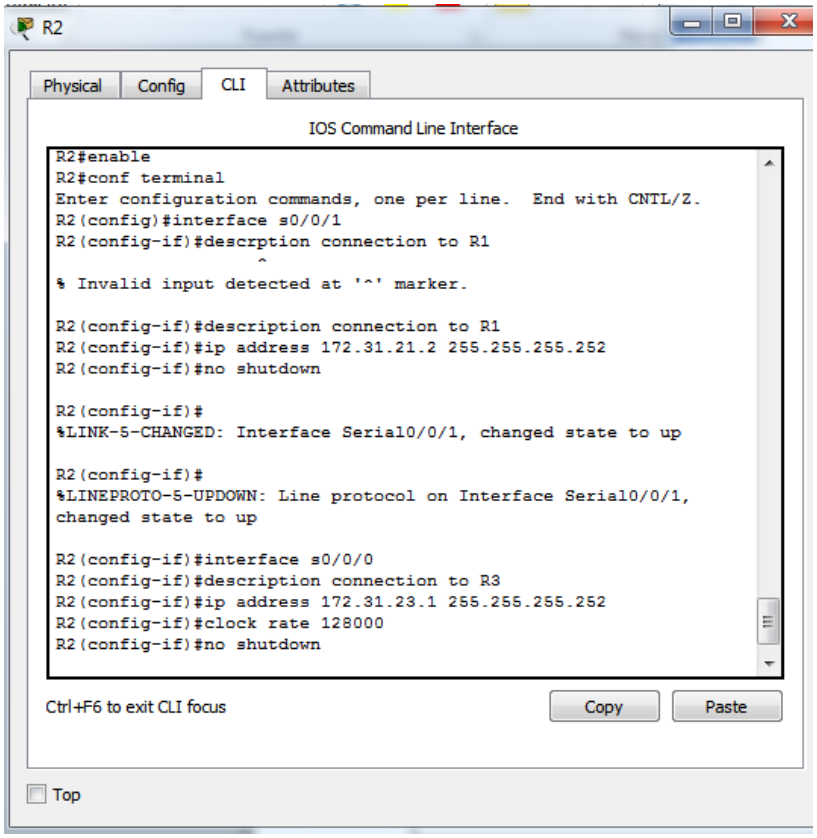
VLAN	Direccionamiento	Nombre
30	192.168.30.0/24	Administración
40	192.168.40.0/24	Mercadeo
200	192.168.200.0/24	Mantenimiento

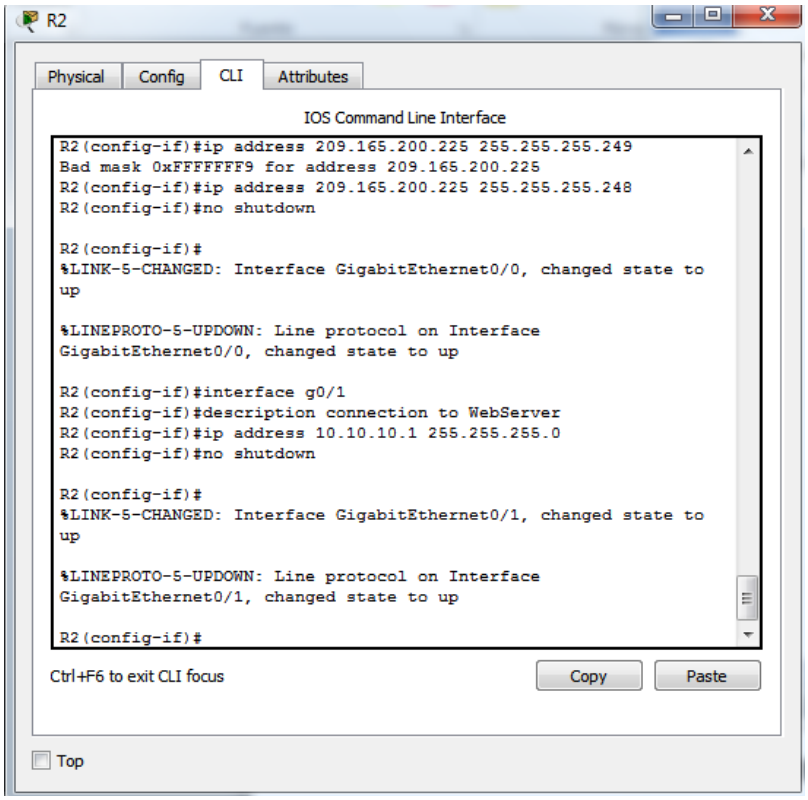
1. Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario

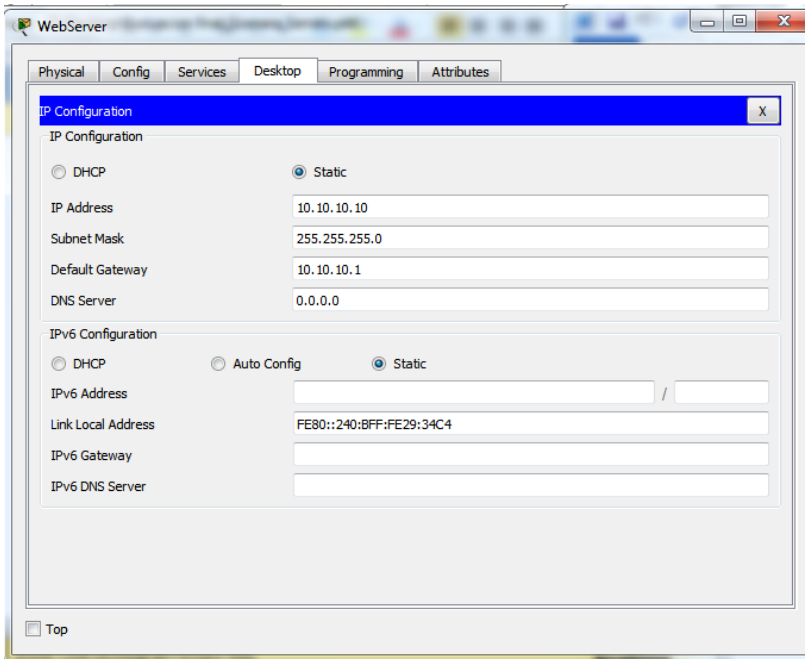



R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config)#hostname R1
R1(config)#no ip domain-lookup
R1(config)#enable secret class
R1(config)#line con 0
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#logging synchronous
R1(config-line)#exit
R1(config)#line vty 0 4
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#logging synchronous
R1(config-line)#exit
R1(config)#service password-encryption
R1(config)#banner motd #prohibido el acceso No autorizado#
R1(config)#interface s0/0/0
R1(config-if)#description connection to R2
R1(config-if)#ip address 172.31.21.1 255.255.255.252
R1(config-if)#clock rate 12800
Unknown clock rate
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

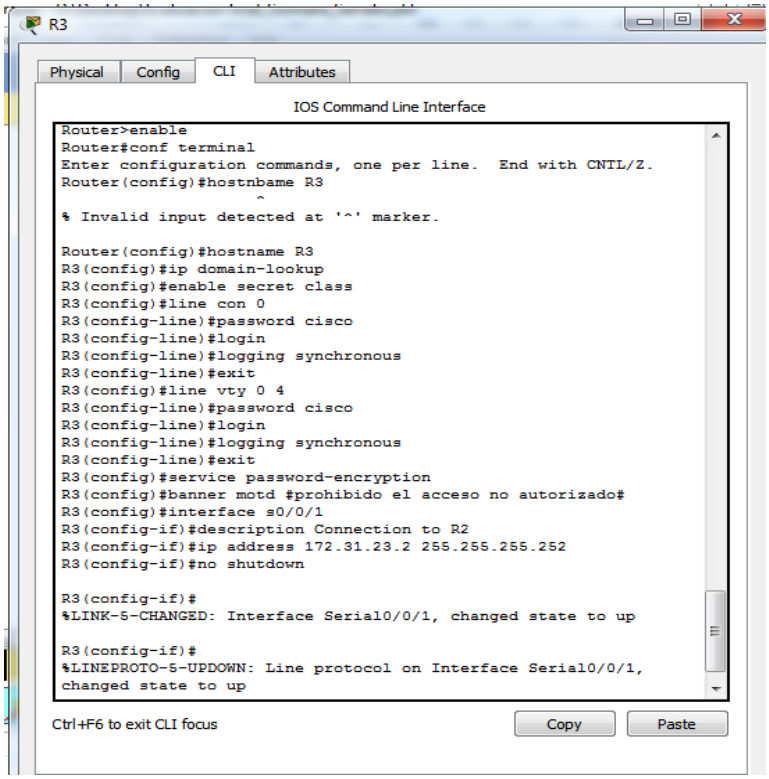

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started!
Router>enable
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#ip domain-lookup
R2(config)#enable secret class
R2(config)#line con 0
R2(config-line)#password cisco
R2(config-line)#loggin
% Incomplete command.
R2(config-line)#login
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#line vty 0 4
R2(config-line)#password cisco
R2(config-line)#login
R2(config-line)#logging synchronous
R2(config-line)#exit
R2(config)#service password-encryption
R2(config)#banner motd #prohibido el acceso no autorizado#
R2(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

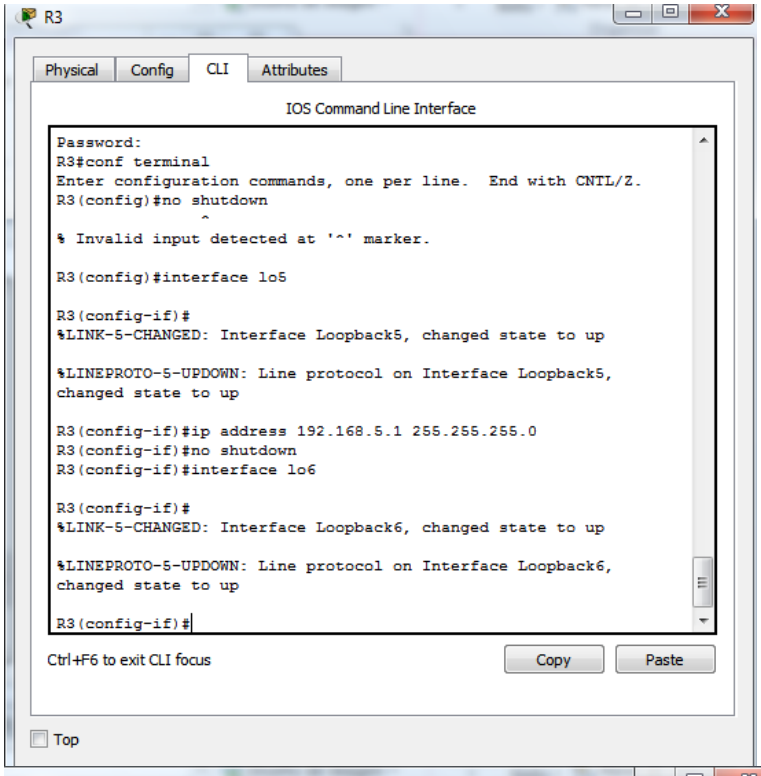

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
R2#enable
R2#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface s0/0/1
R2(config-if)#descrption connection to R1
^
% Invalid input detected at '^' marker.
R2(config-if)#description connection to R1
R2(config-if)#ip address 172.31.21.2 255.255.255.252
R2(config-if)#no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1,
changed state to up
R2(config-if)#interface s0/0/0
R2(config-if)#description connection to R3
R2(config-if)#ip address 172.31.23.1 255.255.255.252
R2(config-if)#clock rate 128000
R2(config-if)#no shutdown
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

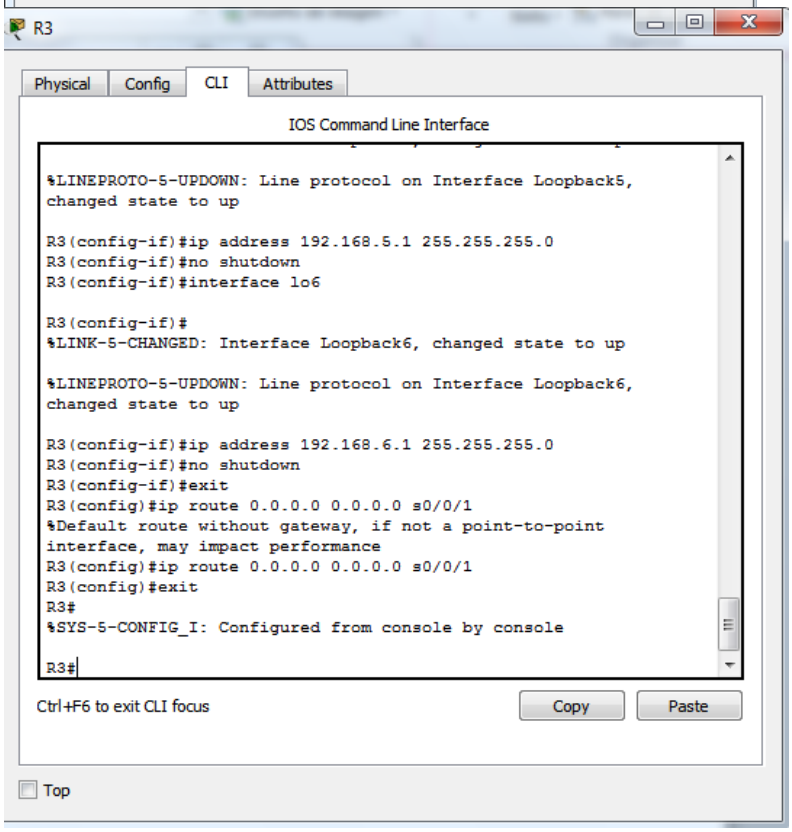

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
R2(config-if)#ip address 209.165.200.225 255.255.255.249
Bad mask 0xFFFFFFF9 for address 209.165.200.225
R2(config-if)#ip address 209.165.200.225 255.255.255.248
R2(config-if)#no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0, changed state to up
R2(config-if)#interface g0/1
R2(config-if)#description connection to WebServer
R2(config-if)#ip address 10.10.10.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1, changed state to up
R2(config-if)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top



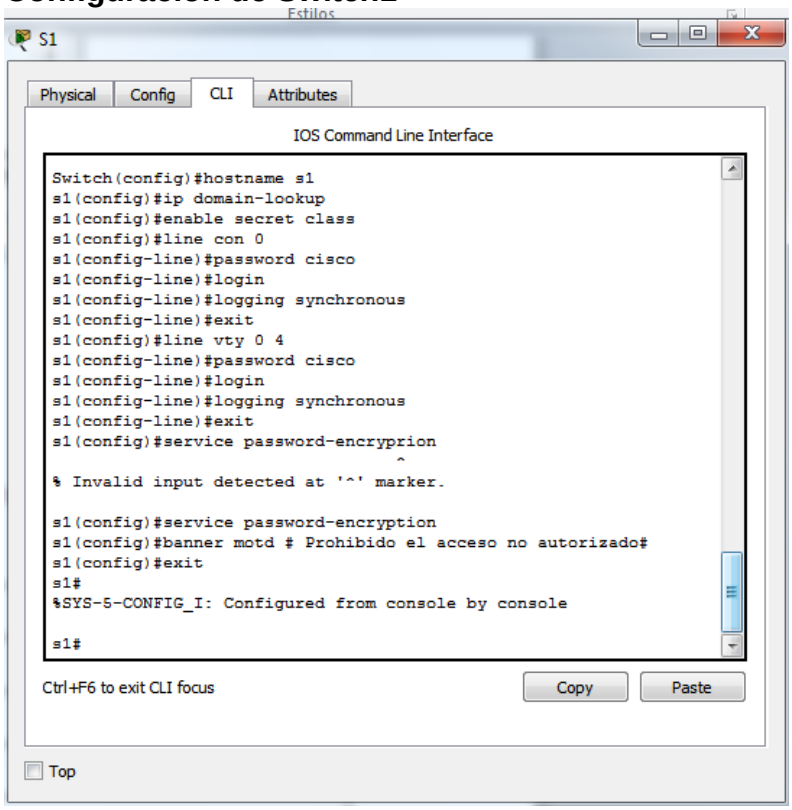
Configuracion de Router 3



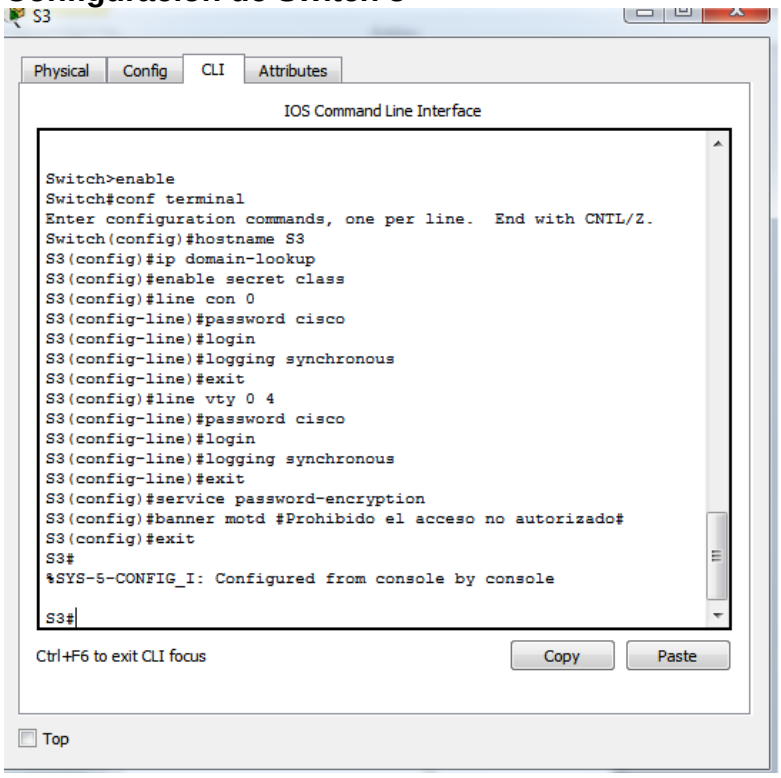

R3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Password:
R3#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#no shutdown
                ^
% Invalid input detected at '^' marker.
R3(config)#interface lo5
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5,
changed state to up
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#interface lo6
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6,
changed state to up
R3(config-if)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


R3
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5,
changed state to up
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#interface lo6
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6,
changed state to up
R3(config-if)#ip address 192.168.6.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1
%Default route without gateway, if not a point-to-point
interface, may impact performance
R3(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console
R3#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

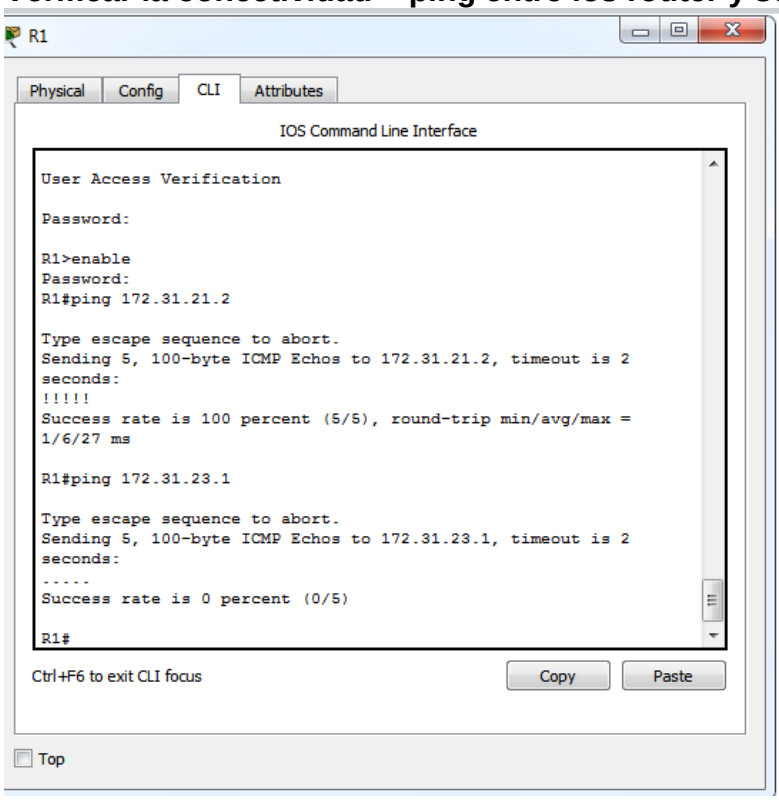
Configuración de Switch1

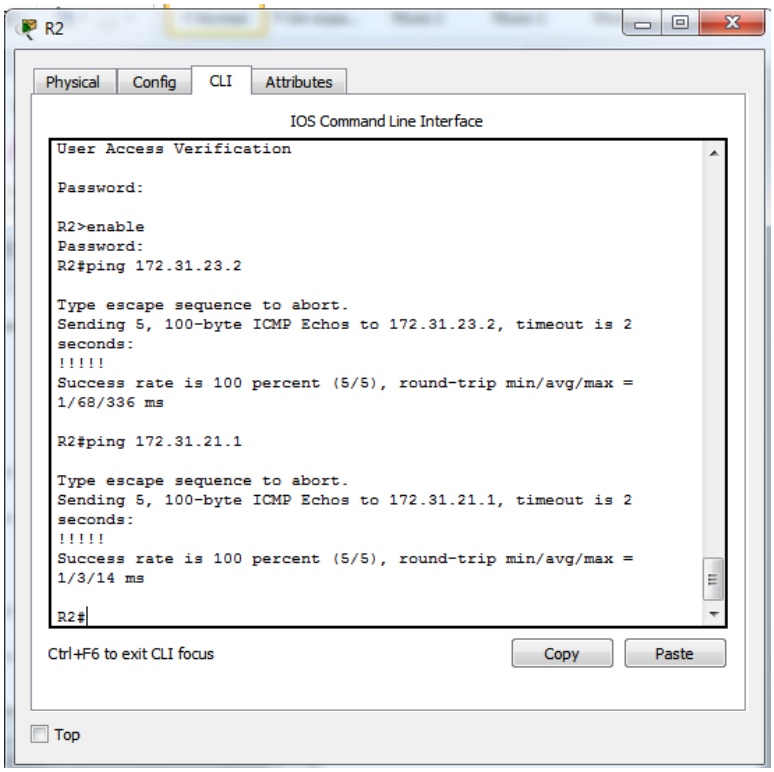


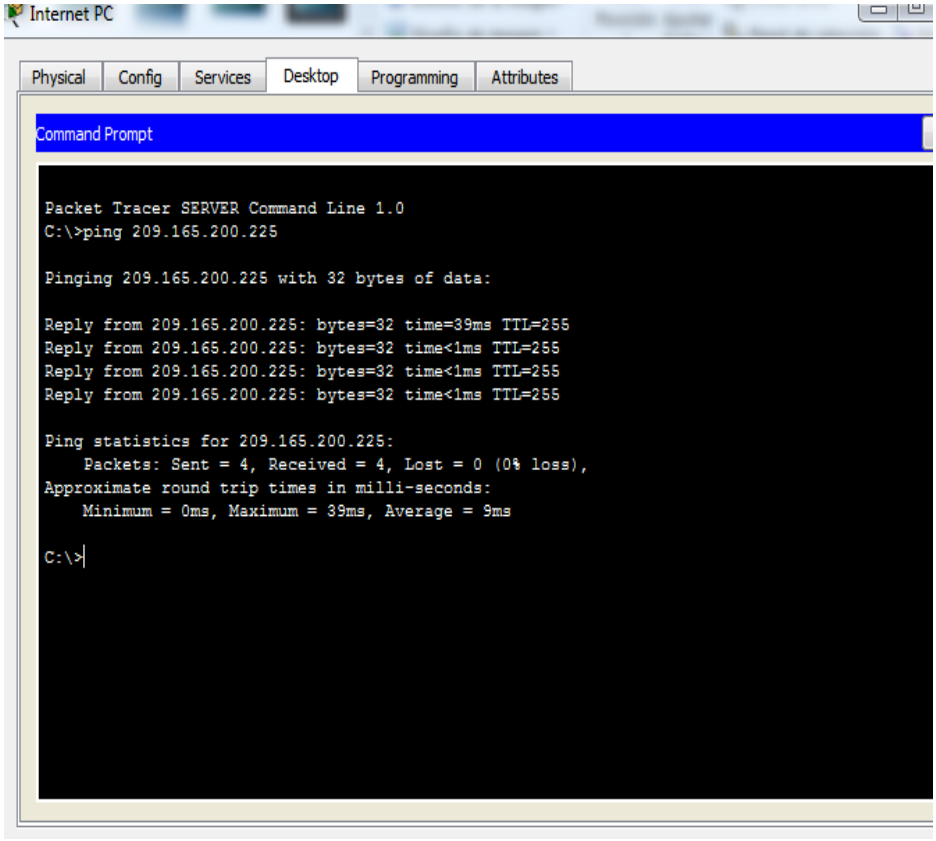
Configuracion de Switch 3

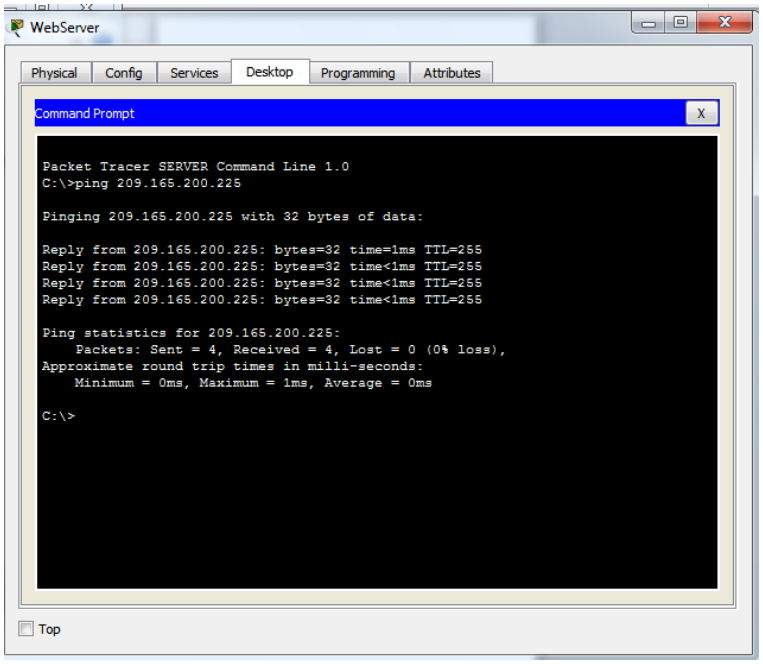


Verificar la conectividad – ping entre los router y servidores





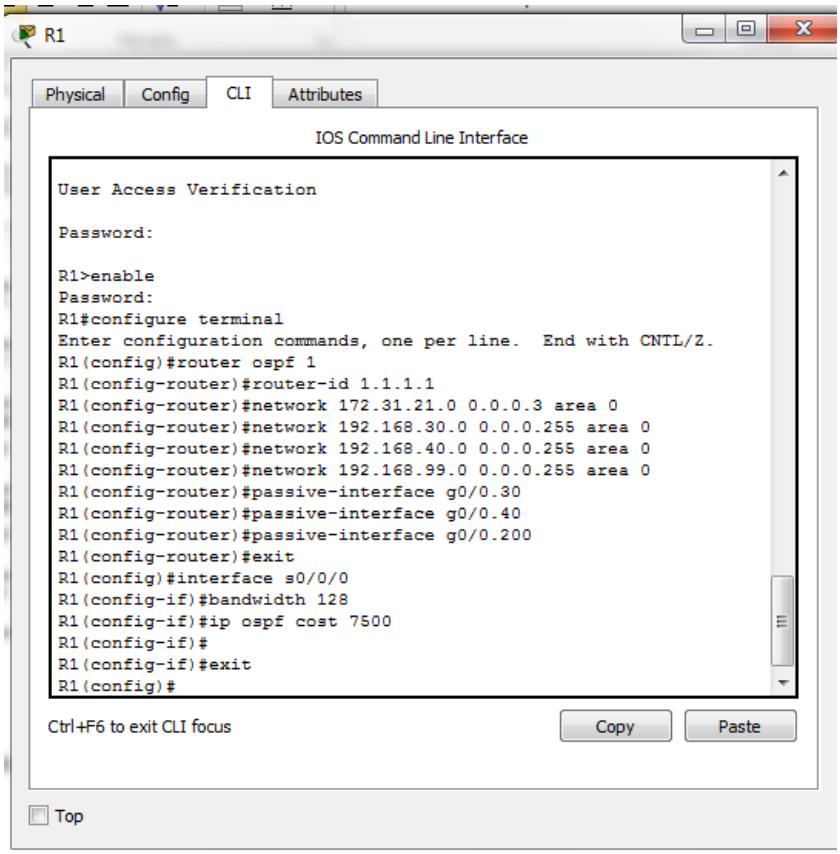

Internet PC
Physical
Config
Services
Desktop
Programming
Attributes
Command Prompt
Packet Tracer SERVER Command Line 1.0
C:\>ping 209.165.200.225
Pinging 209.165.200.225 with 32 bytes of data:
Reply from 209.165.200.225: bytes=32 time=39ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Ping statistics for 209.165.200.225:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 39ms, Average = 9ms
C:\>

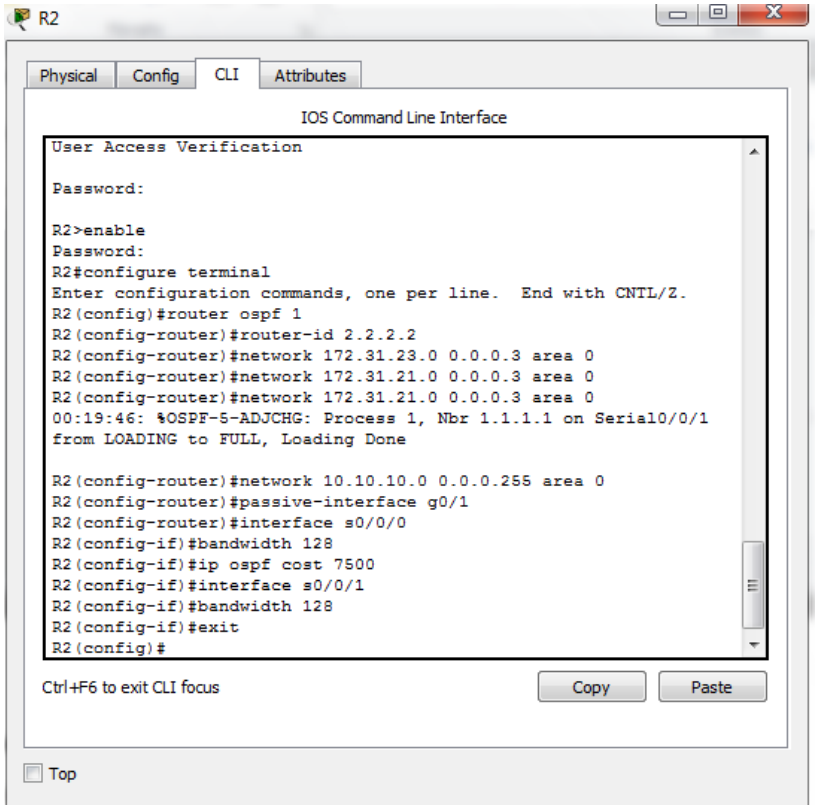

WebServer
Physical
Config
Services
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer SERVER Command Line 1.0
C:\>ping 209.165.200.225
Pinging 209.165.200.225 with 32 bytes of data:
Reply from 209.165.200.225: bytes=32 time=1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Ping statistics for 209.165.200.225:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>
Top

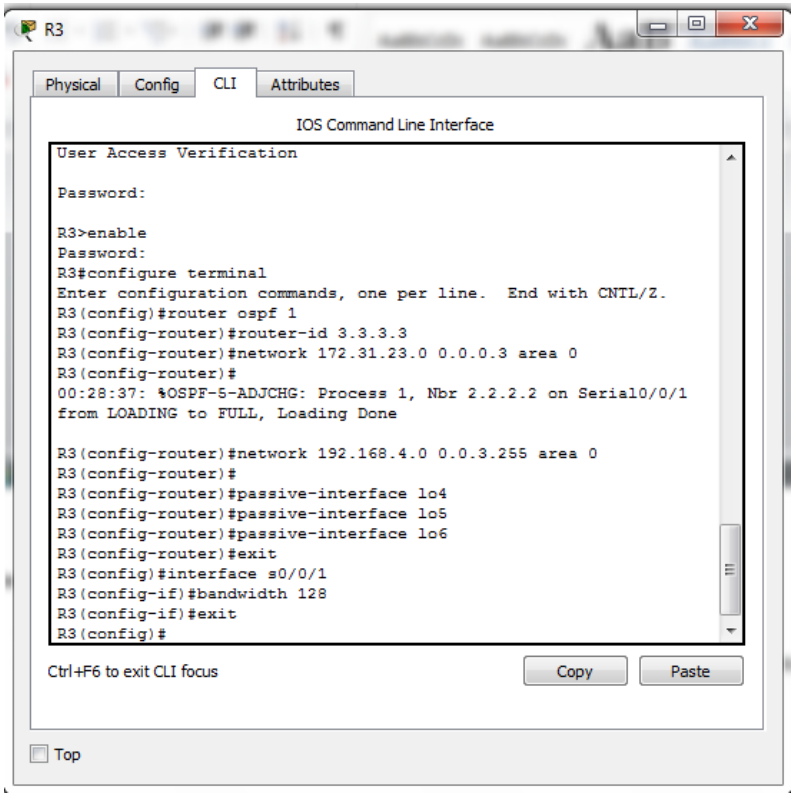
2. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 área 0

Configuration Item or Task	Specification
Router ID R1	1.1.1.1
Router ID R2	2.2.2.2
Router ID R3	3.3.3.3
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	128 Kb/s
Ajustar el costo en la métrica de S0/0 a	7500

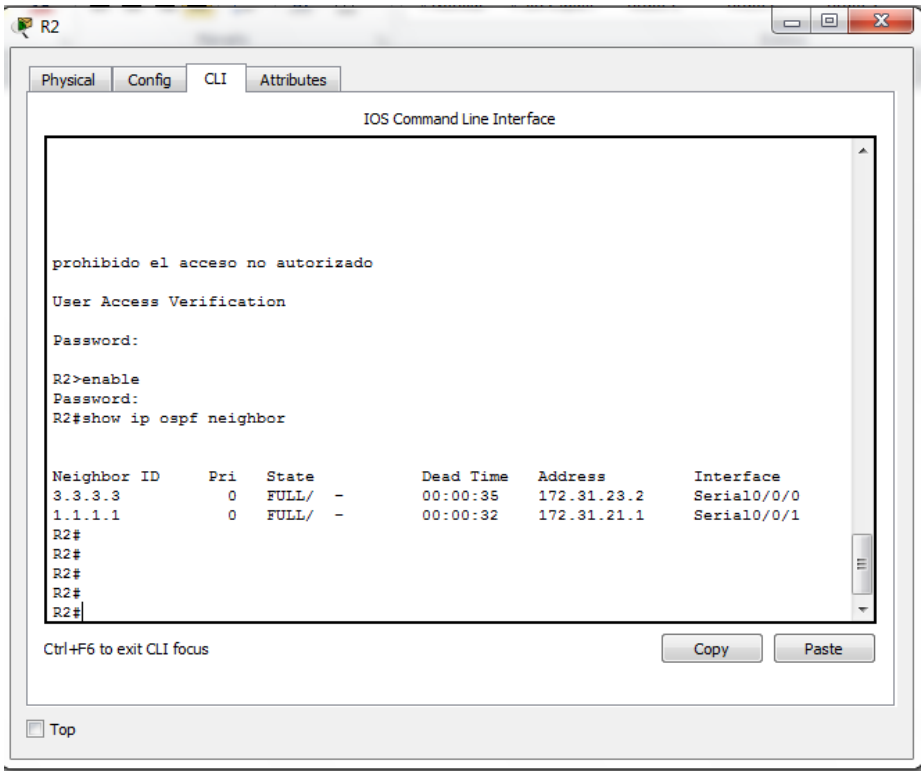


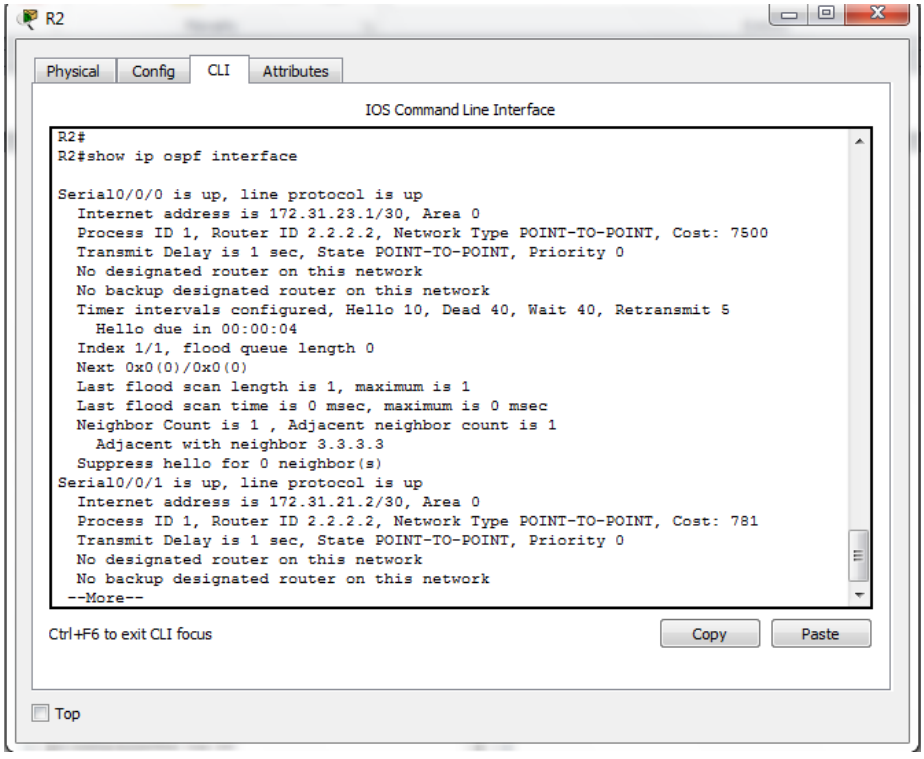

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
User Access Verification
Password:
R2>enable
Password:
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#router-id 2.2.2.2
R2(config-router)#network 172.31.23.0 0.0.0.3 area 0
R2(config-router)#network 172.31.21.0 0.0.0.3 area 0
R2(config-router)#network 172.31.21.0 0.0.0.3 area 0
00:19:46: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/1
from LOADING to FULL, Loading Done
R2(config-router)#network 10.10.10.0 0.0.0.255 area 0
R2(config-router)#passive-interface g0/1
R2(config-router)#interface s0/0/0
R2(config-if)#bandwidth 128
R2(config-if)#ip ospf cost 7500
R2(config-if)#interface s0/0/1
R2(config-if)#bandwidth 128
R2(config-if)#exit
R2(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

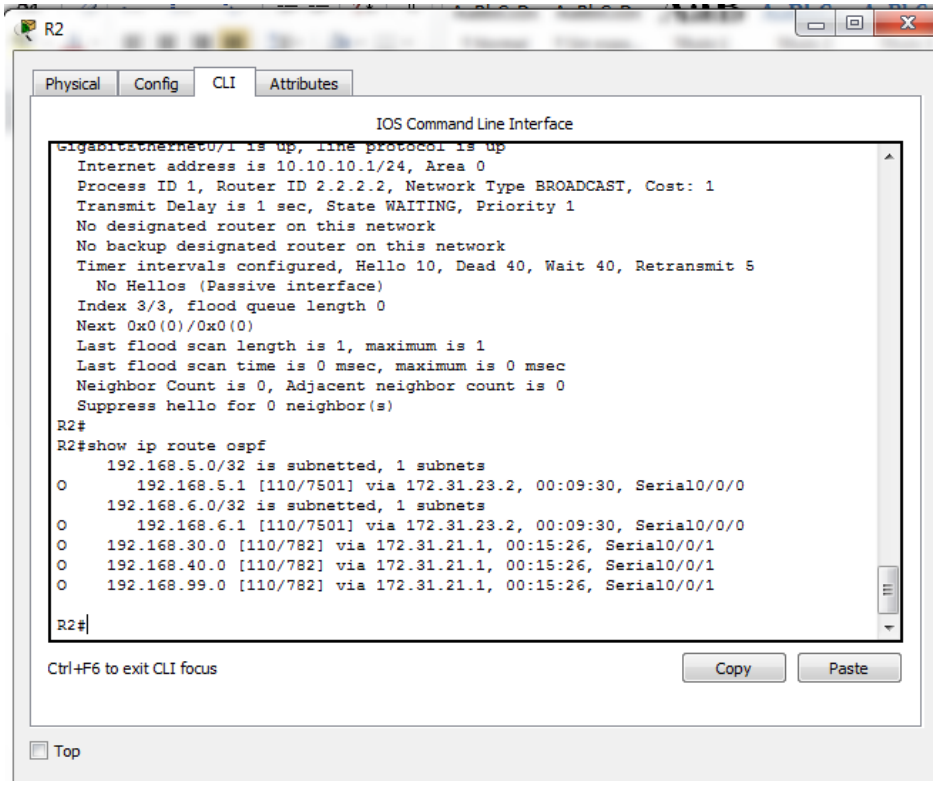


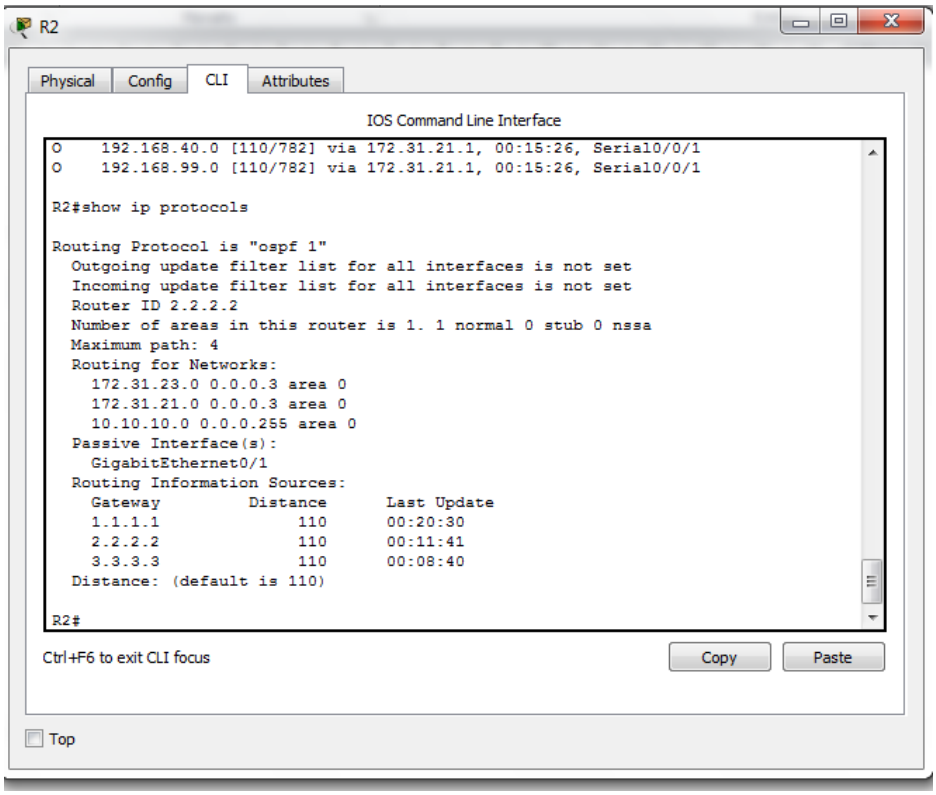
Verificar información de OSPF

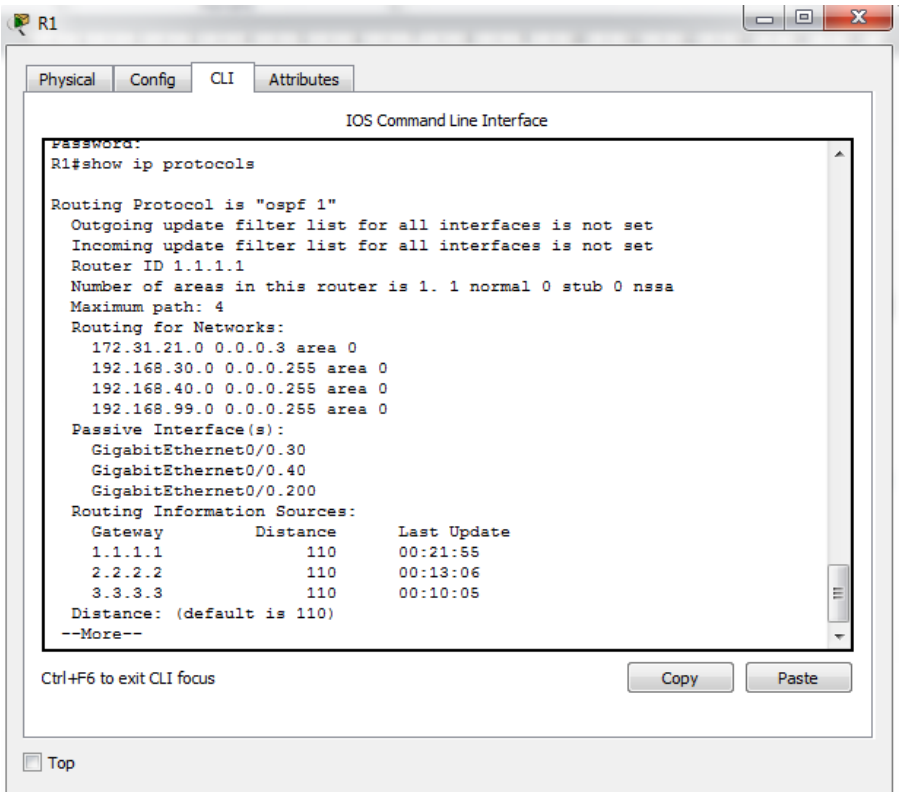
- Visualizar tablas de enrutamiento y routers conectados por OSPFv2
- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface
- Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.

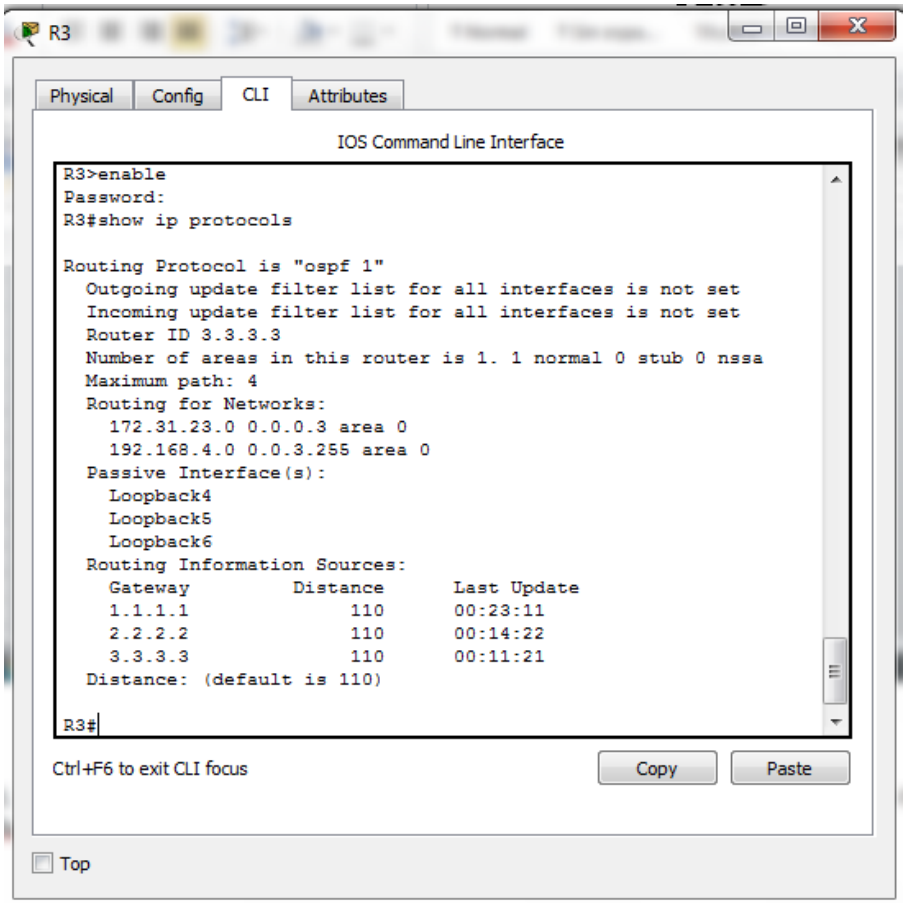

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
prohibido el acceso no autorizado
User Access Verification
Password:
R2>enable
Password:
R2#show ip ospf neighbor
Neighbor ID Pri State Dead Time Address Interface
3.3.3.3 0 FULL/ - 00:00:35 172.31.23.2 Serial0/0/0
1.1.1.1 0 FULL/ - 00:00:32 172.31.21.1 Serial0/0/1
R2#
R2#
R2#
R2#
R2#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
R2#
R2#show ip ospf interface
Serial0/0/0 is up, line protocol is up
Internet address is 172.31.23.1/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:04
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1 , Adjacent neighbor count is 1
Adjacent with neighbor 3.3.3.3
Suppress hello for 0 neighbor(s)
Serial0/0/1 is up, line protocol is up
Internet address is 172.31.21.2/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 781
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

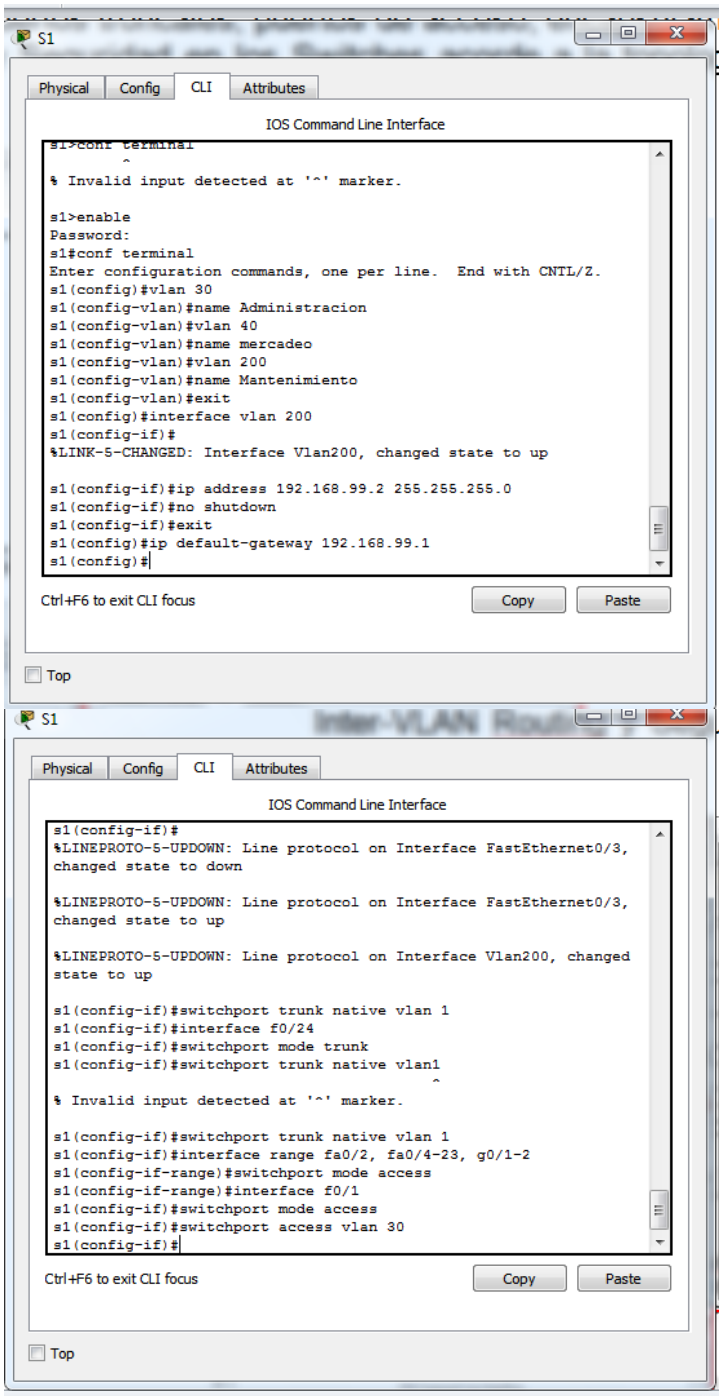

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
GigabitEthernet0/1 is up, line protocol is up
Internet address is 10.10.10.1/24, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State WAITING, Priority 1
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
No Hellos (Passive interface)
Index 3/3, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
R2#
R2#show ip route ospf
192.168.5.0/32 is subnetted, 1 subnets
O 192.168.5.1 [110/7501] via 172.31.23.2, 00:09:30, Serial0/0/0
192.168.6.0/32 is subnetted, 1 subnets
O 192.168.6.1 [110/7501] via 172.31.23.2, 00:09:30, Serial0/0/0
O 192.168.30.0 [110/782] via 172.31.21.1, 00:15:26, Serial0/0/1
O 192.168.40.0 [110/782] via 172.31.21.1, 00:15:26, Serial0/0/1
O 192.168.99.0 [110/782] via 172.31.21.1, 00:15:26, Serial0/0/1
R2#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

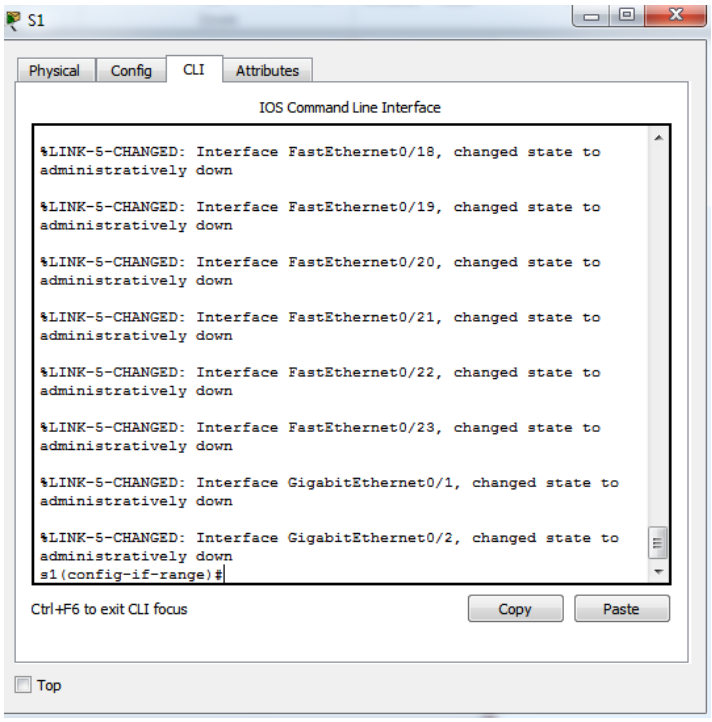

R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
O 192.168.40.0 [110/782] via 172.31.21.1, 00:15:26, Serial0/0/1
O 192.168.99.0 [110/782] via 172.31.21.1, 00:15:26, Serial0/0/1
R2#show ip protocols
Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 2.2.2.2
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
172.31.23.0 0.0.0.3 area 0
172.31.21.0 0.0.0.3 area 0
10.10.10.0 0.0.0.255 area 0
Passive Interface(s):
GigabitEthernet0/1
Routing Information Sources:
Gateway Distance Last Update
1.1.1.1 110 00:20:30
2.2.2.2 110 00:11:41
3.3.3.3 110 00:08:40
Distance: (default is 110)
R2#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

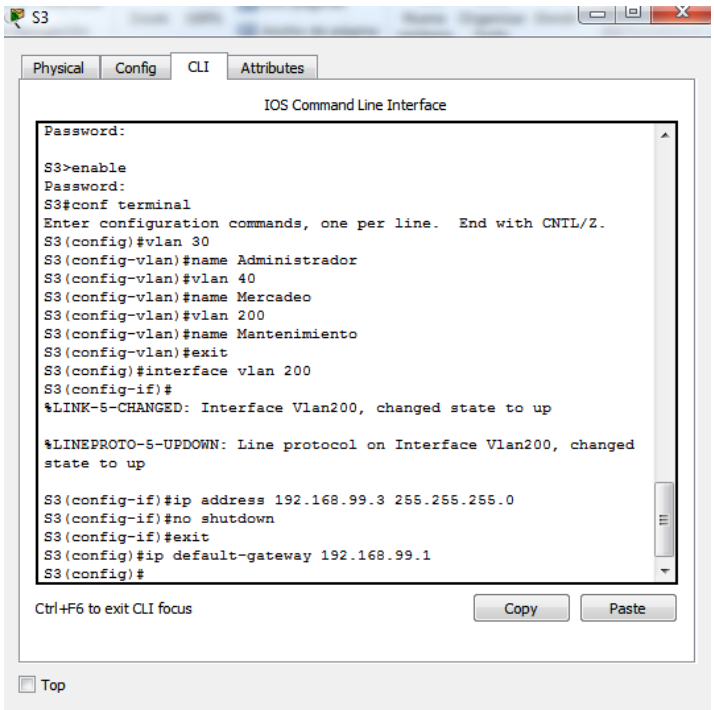

R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Password:
R1#show ip protocols
Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 1.1.1.1
Number of areas in this router is 1. 1 normal 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
192.168.99.0 0.0.0.255 area 0
Passive Interface(s):
GigabitEthernet0/0.30
GigabitEthernet0/0.40
GigabitEthernet0/0.200
Routing Information Sources:
Gateway Distance Last Update
1.1.1.1 110 00:21:55
2.2.2.2 110 00:13:06
3.3.3.3 110 00:10:05
Distance: (default is 110)
--More--
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

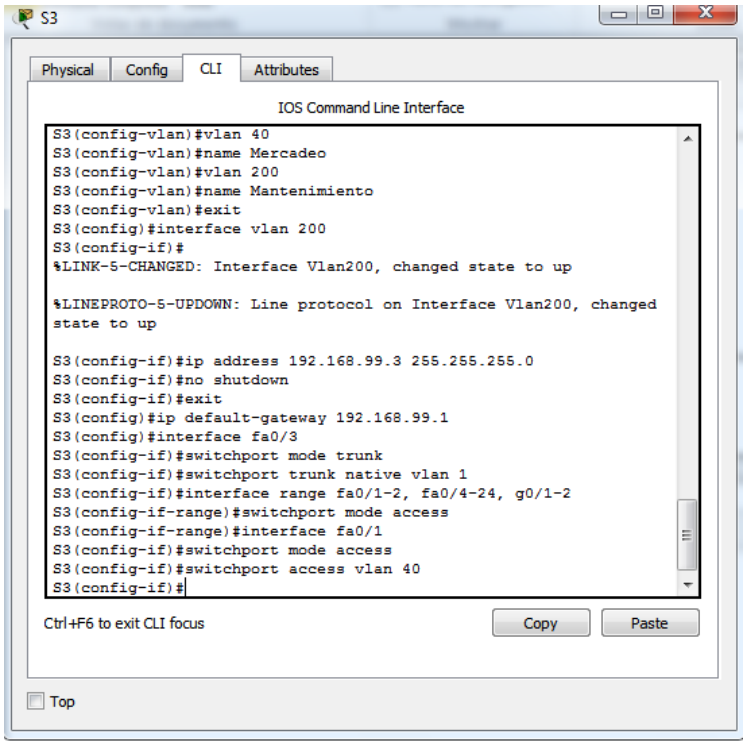

R3
Physical
Config
CLI
Attributes
IOS Command Line Interface
R3>enable
Password:
R3#show ip protocols
Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 3.3.3.3
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
172.31.23.0 0.0.0.3 area 0
192.168.4.0 0.0.3.255 area 0
Passive Interface(s):
Loopback4
Loopback5
Loopback6
Routing Information Sources:
Gateway Distance Last Update
1.1.1.1 110 00:23:11
2.2.2.2 110 00:14:22
3.3.3.3 110 00:11:21
Distance: (default is 110)
R3#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

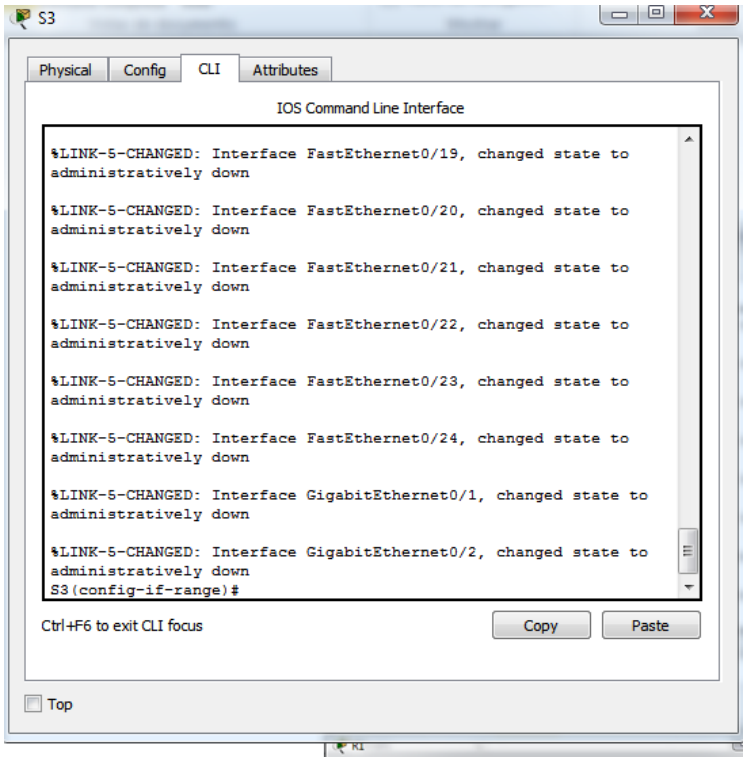
3. Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.

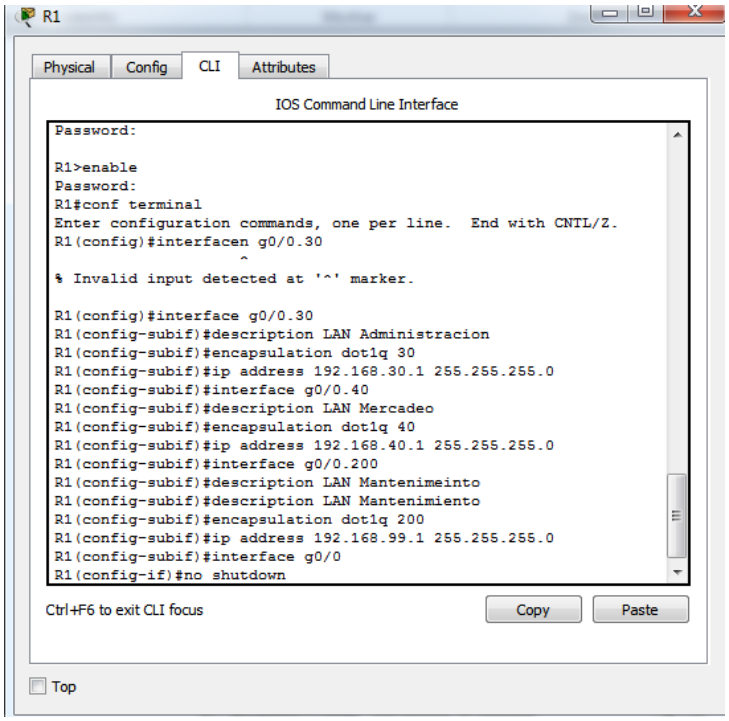


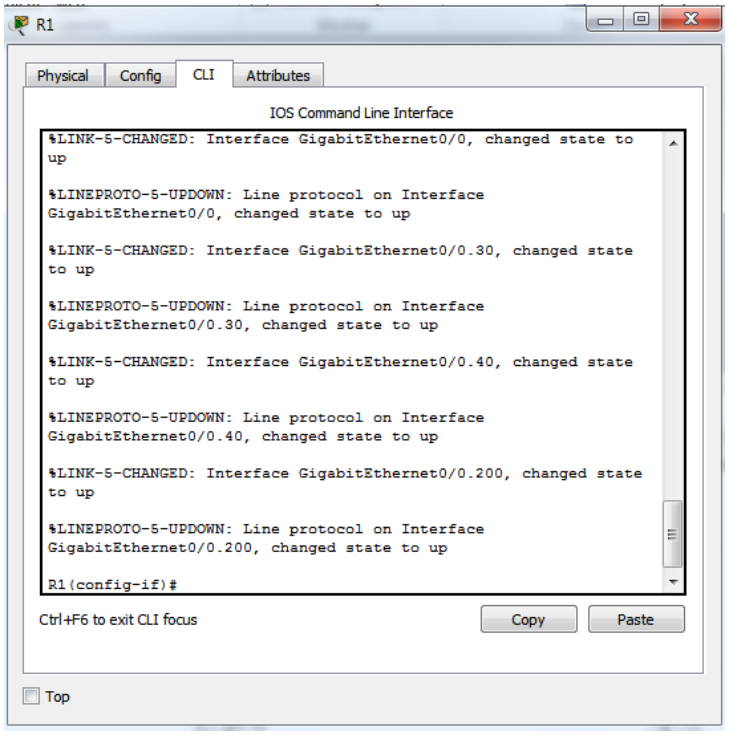

S1
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to administratively down
s1(config-if-range)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

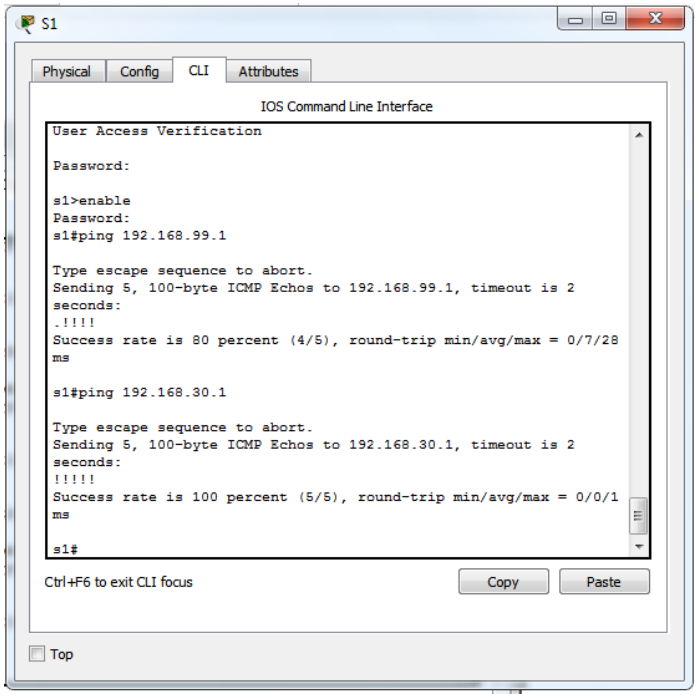

S3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Password:
S3>enable
Password:
S3#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#vlan 30
S3(config-vlan)#name Administrador
S3(config-vlan)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#exit
S3(config)#interface vlan 200
S3(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed state to up
S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.99.1
S3(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


S3
Physical
Config
CLI
Attributes
IOS Command Line Interface
S3(config-vlan)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#exit
S3(config)#interface vlan 200
S3(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed state to up
S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.99.1
S3(config)#interface fa0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#interface range fa0/1-2, fa0/4-24, g0/1-2
S3(config-if-range)#switchport mode access
S3(config-if-range)#interface fa0/1
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

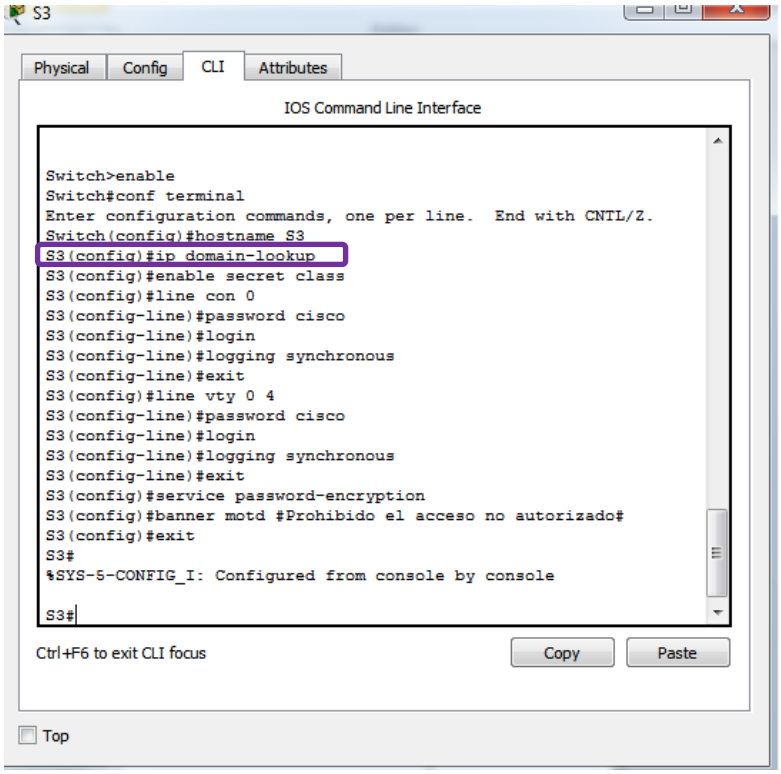

S3
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to administratively down
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to administratively down
S3(config-if-range)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Password:
R1>enable
Password:
R1#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interfacen g0/0.30
^
% Invalid input detected at '^' marker.
R1(config)#interface g0/0.30
R1(config-subif)#description LAN Administracion
R1(config-subif)#encapsulation dot1q 30
R1(config-subif)#ip address 192.168.30.1 255.255.255.0
R1(config-subif)#interface g0/0.40
R1(config-subif)#description LAN Mercadeo
R1(config-subif)#encapsulation dot1q 40
R1(config-subif)#ip address 192.168.40.1 255.255.255.0
R1(config-subif)#interface g0/0.200
R1(config-subif)#description LAN Mantenimeinto
R1(config-subif)#description LAN Mantenimiento
R1(config-subif)#encapsulation dot1q 200
R1(config-subif)#ip address 192.168.99.1 255.255.255.0
R1(config-subif)#interface g0/0
R1(config-if)#no shutdown
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0.30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0.40, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.40, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0.200, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.200, changed state to up
R1(config-if)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top



4. En el Switch 3 deshabilitar DNS lookup

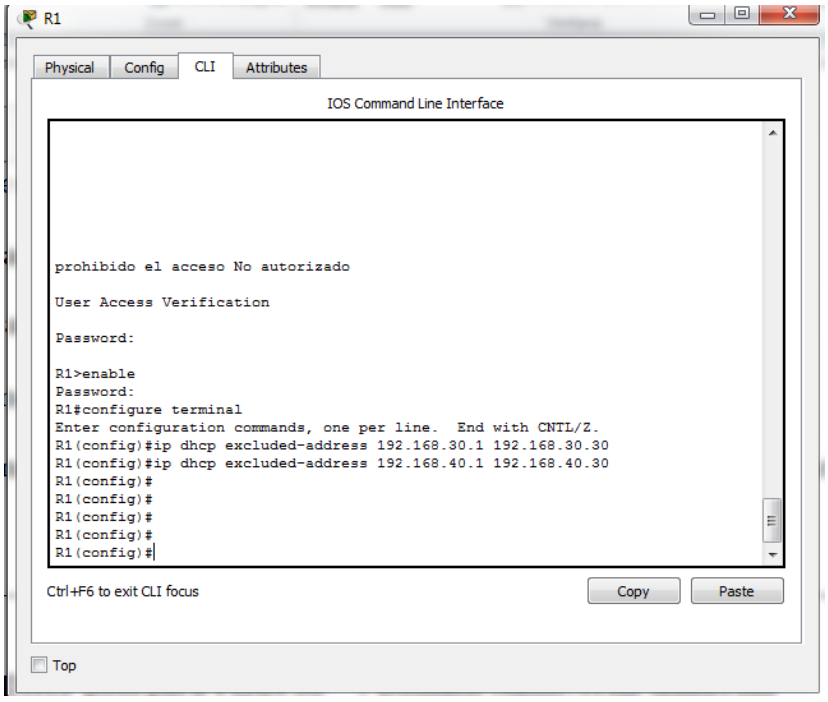


5. Asignar direcciones IP a los Switches acorde a los lineamientos.
Configuración realizada en los puntos 1 y 3

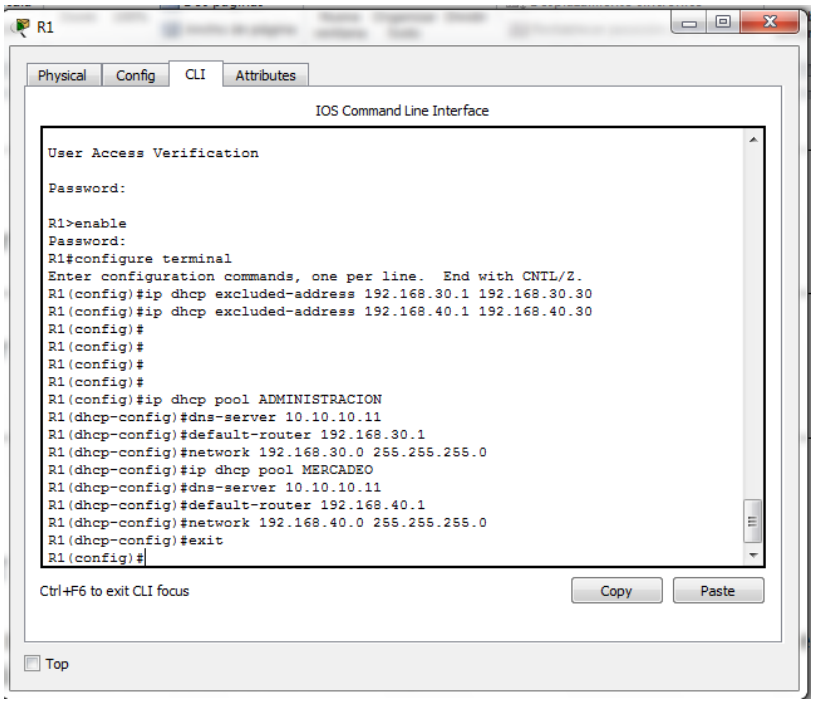
6. Desactivar todas las interfaces que no sean utilizadas en el esquema de red.

Configuración realizada en el punto 3

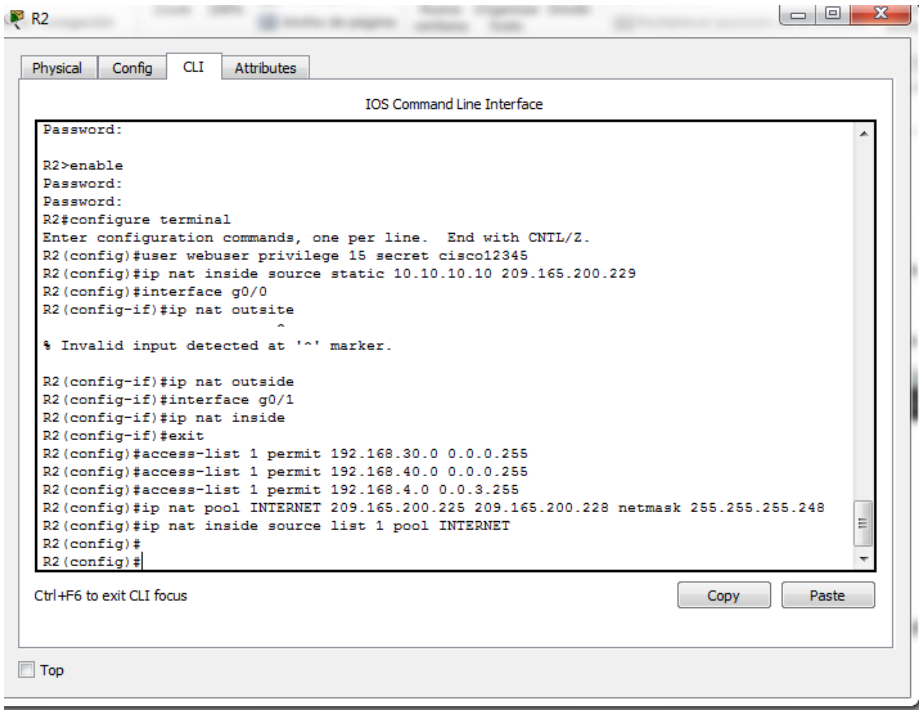
7. Implement DHCP and NAT for IPv4
- Configurar R1 como servidor DHCP para las VLANs 30 y 40.
- Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

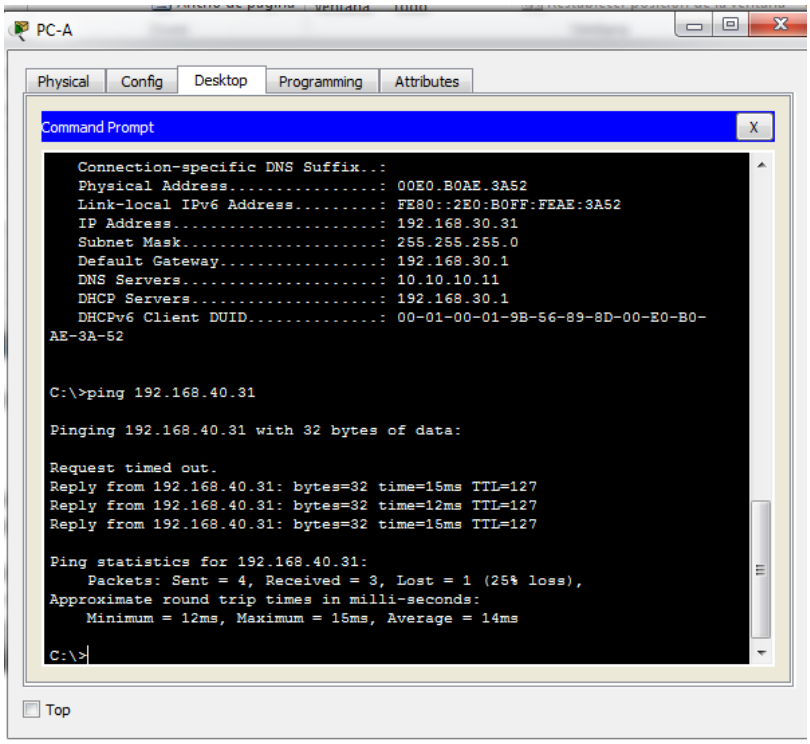


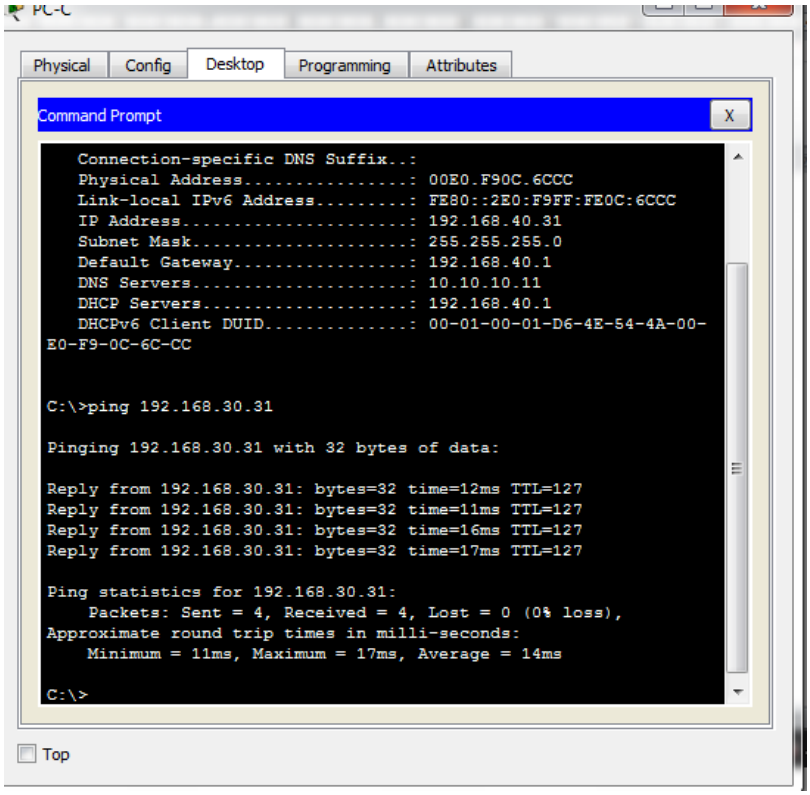
Configurar DHCP pool para VLAN 30	Name: ADMINISTRACION DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default Gateway.
Configurar DHCP pool para VLAN 40	Name: MERCADEO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default Gateway.



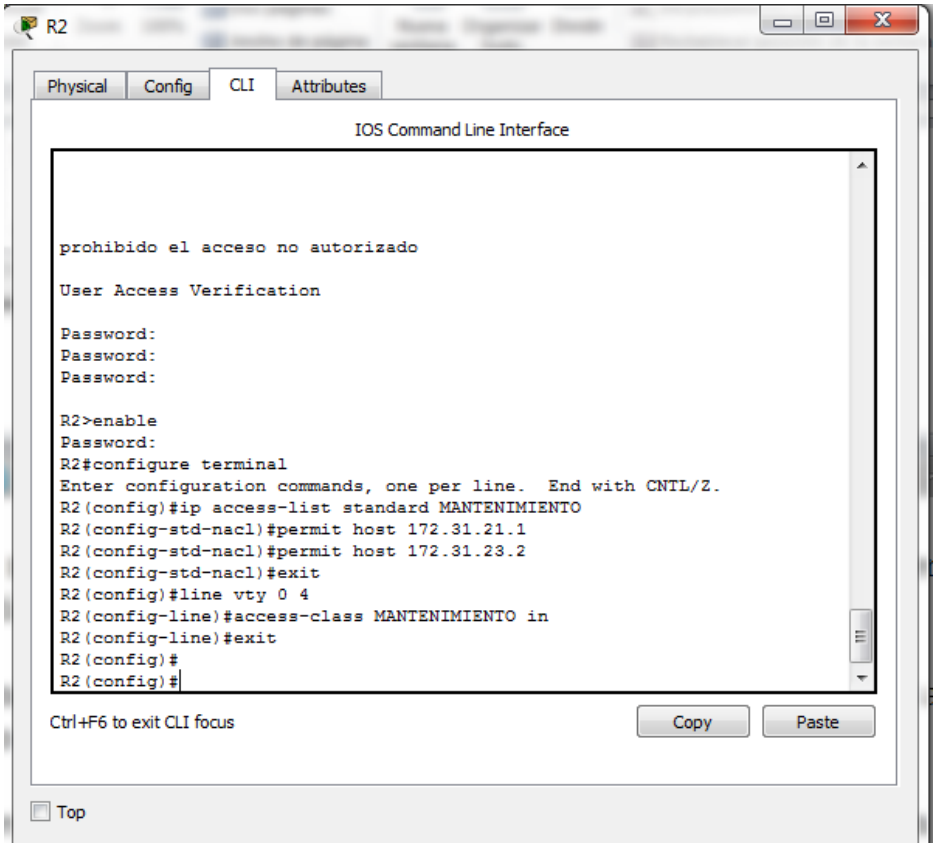
8. Configurar NAT en R2 para permitir que los host puedan salir a internet



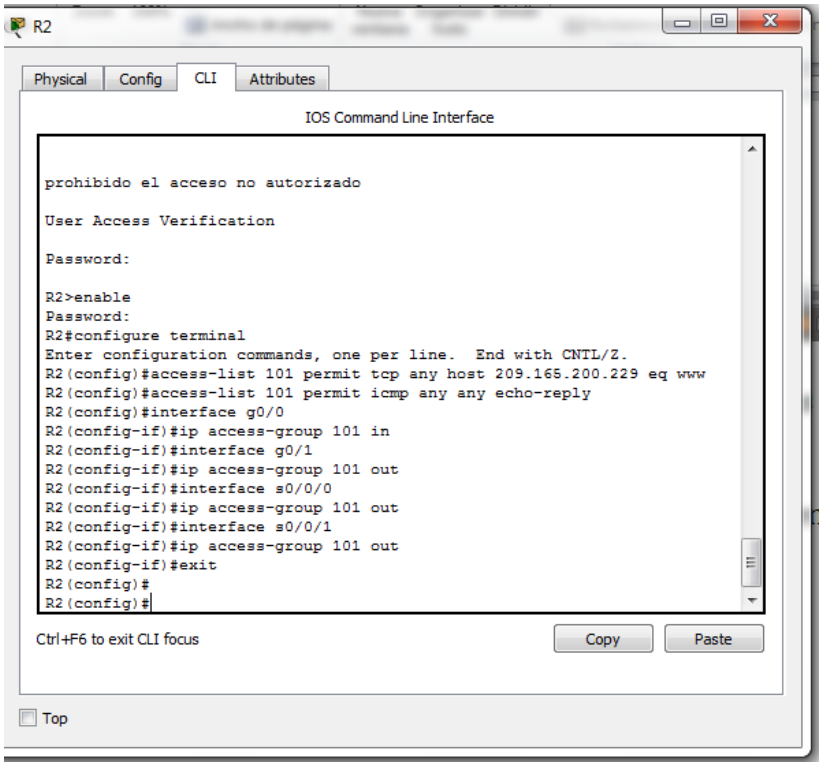

PC-A
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Connection-specific DNS Suffix..:
Physical Address.....: 00E0.B0AE.3A52
Link-local IPv6 Address.....: FE80::2E0:B0FF:FEAE:3A52
IP Address.....: 192.168.30.31
Subnet Mask.....: 255.255.255.0
Default Gateway.....: 192.168.30.1
DNS Servers.....: 10.10.10.11
DHCP Servers.....: 192.168.30.1
DHCPv6 Client DUID.....: 00-01-00-01-9B-56-89-8D-00-E0-B0-AE-3A-52
C:\>ping 192.168.40.31
Pinging 192.168.40.31 with 32 bytes of data:
Request timed out.
Reply from 192.168.40.31: bytes=32 time=15ms TTL=127
Reply from 192.168.40.31: bytes=32 time=12ms TTL=127
Reply from 192.168.40.31: bytes=32 time=15ms TTL=127
Ping statistics for 192.168.40.31:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 12ms, Maximum = 15ms, Average = 14ms
C:\>
Top


PC-C
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Connection-specific DNS Suffix..:
Physical Address.....: 00E0.F90C.6CCC
Link-local IPv6 Address.....: FE80::2E0:F9FF:FE0C:6CCC
IP Address.....: 192.168.40.31
Subnet Mask.....: 255.255.255.0
Default Gateway.....: 192.168.40.1
DNS Servers.....: 10.10.10.11
DHCP Servers.....: 192.168.40.1
DHCPv6 Client DUID.....: 00-01-00-01-D6-4E-54-4A-00-E0-F9-0C-6C-CC
C:\>ping 192.168.30.31
Pinging 192.168.30.31 with 32 bytes of data:
Reply from 192.168.30.31: bytes=32 time=12ms TTL=127
Reply from 192.168.30.31: bytes=32 time=11ms TTL=127
Reply from 192.168.30.31: bytes=32 time=16ms TTL=127
Reply from 192.168.30.31: bytes=32 time=17ms TTL=127
Ping statistics for 192.168.30.31:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 11ms, Maximum = 17ms, Average = 14ms
C:\>
Top

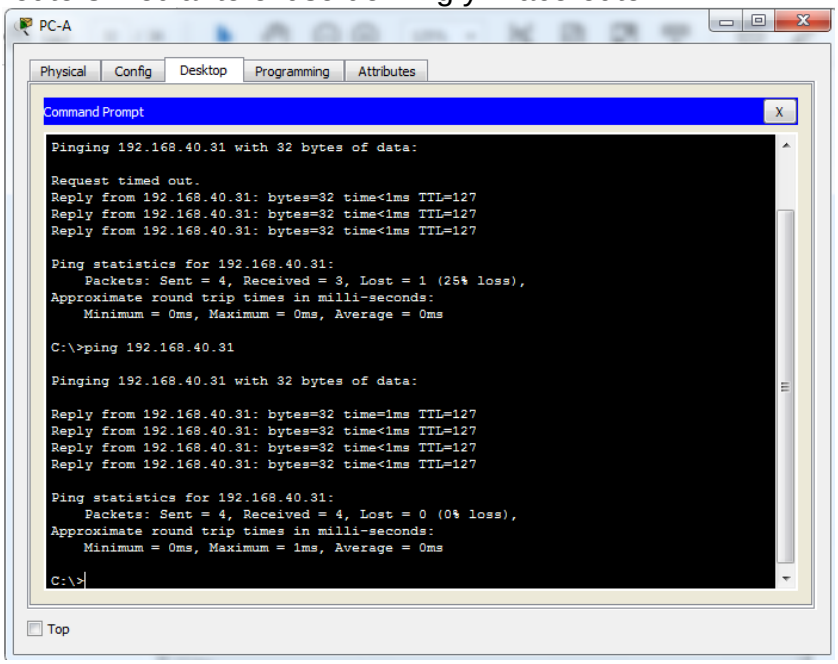
9. Configurar al menos dos listas de acceso de tipo estándar a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

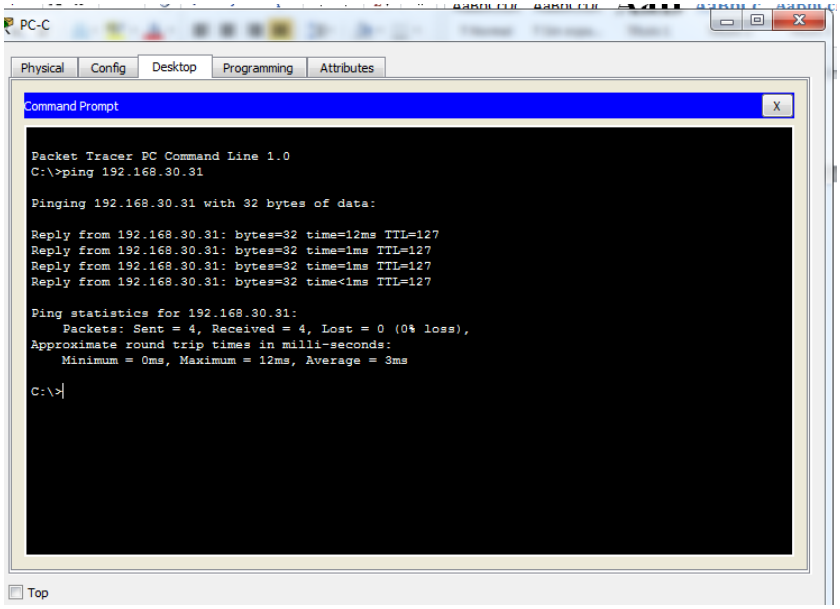


10. Configurar al menos dos listas de acceso de tipo extendido o nombradas a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.



11. Verificar procesos de comunicación y re direccionamiento de tráfico en los routers mediante el uso de Ping y Traceroute.





Conclusiones

- Se logra comprender y utilizar los diferentes protocolos de routing disponibles dependiendo de las necesidades de la red.

- Se conoció y desarrollo la implementación y configuración básica de OSPF de área única.

- Se analizaron y ejecutaron las instrucciones necesarias para utilizar las ACL estándar y extendida en un router Cisco.

- Se identificó cada una de las funciones, la configuración y la aplicación de DHCPv4.

- Se estudió la implementación de NAT combinada sobre la red configurada con direcciones IPv4.

Bibliografía

CISCO. (2014). Enrutamiento Dinámico. Principios de Enrutamiento y Conmutación. Recuperado de: https://static-course-assets.s3.amazonaws.com/RSE50ES/module7/index.html#7.0.1.1

CISCO. (2014). OSPF de una sola área. Principios de Enrutamiento y Conmutación. Recuperado de: https://static-course-assets.s3.amazonaws.com/RSE50ES/module8/index.html#8.0.1.1

CISCO. (2014). Listas de control de acceso. Principios de Enrutamiento y Conmutación. Recuperado de: https://static-course-assets.s3.amazonaws.com/RSE50ES/module9/index.html#9.0.1.1

CISCO. (2014). DHCP. Principios de Enrutamiento y Conmutación. Recuperado de: https://static-course-assets.s3.amazonaws.com/RSE50ES/module10/index.html#10.0.1.1

CISCO. (2014). Traducción de direcciones IP para IPv4. Principios de Enrutamiento y Conmutación. Recuperado de: https://static-course-assets.s3.amazonaws.com/RSE50ES/module11/index.html#11.0.1.1