Trabajo de Grado-Diplomado De Profundización Cisco (Diseño E Implementación De Soluciones Integradas Lan / Wan)

Prueba Final De Habilidades Prácticas-CCNA 1 y 2

Luis Felipe Campo Gallego
CC. 1113653833

Universidad Nacional Abierta Y A Distancia

Facultad de Ciencias Básicas, Tecnología e Ingeniería

Ingeniería de Sistemas

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Trabajo De Grado Para Optar el Título de Ingeniero de Sistemas

Tutor:
Giovanni Alberto Bracho

Universidad Nacional Abierta Y A Distancia

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Resumen

El CCNA significa cisco Certified Network Associated que alude a un programa de certificación para ingenieros de redes de nivel básico que ayuda a aumentar su inversión en conocimiento de redes fundacional y aumenta el valor de la red de su empleador. Mediante la certificación CCNA, el ingeniero estará en la capacidad de instalar, configurar, operar y solucionar problemas de mediano tamaño y router de redes de conmutación, incluyendo la implementación y verificación de conexiones a sitios remotos en una WAN.

Introducción

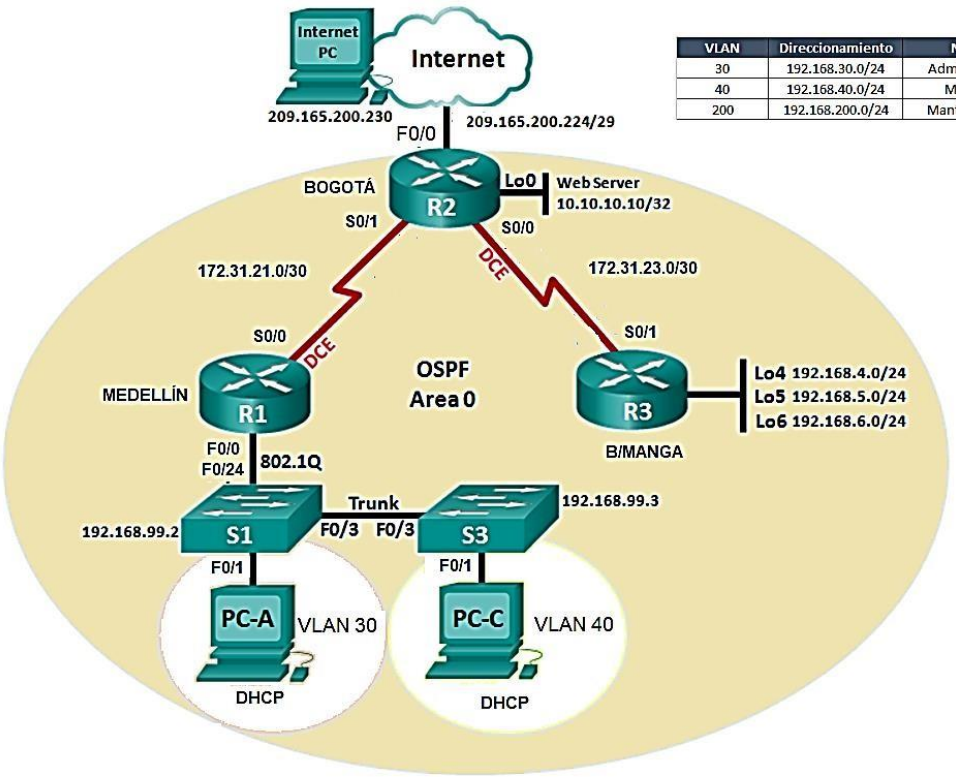
En el presente trabajo se desarrollan las actividades propuestas en el documento “Evaluación – Prueba de habilidades prácticas CCNA” dentro del Diplomado de Profundización CCNA. El desarrollo práctico de las actividades propuestas se llevó a cabo por medio del simulador Packet Tracer, mediante la cual se identificaron los temas de switching, routing y configuración básica de redes.

1. Desarrollo Prueba Final De Habilidades Prácticas-CCNA 1 y 2

Descripción del escenario propuesto para la prueba de habilidades

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.

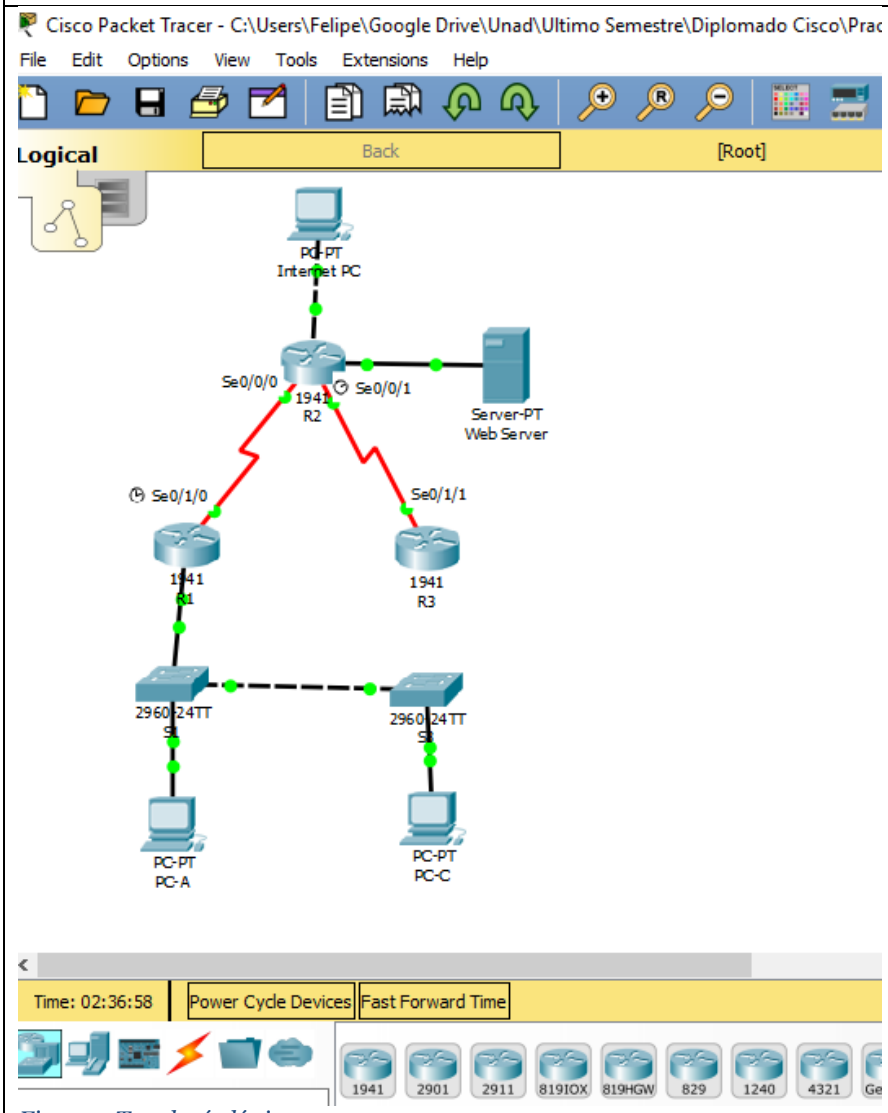
Topología de red



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

Figure 1 topología de red

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

RED
 *Figure 2 Topología lógica*
PC-A

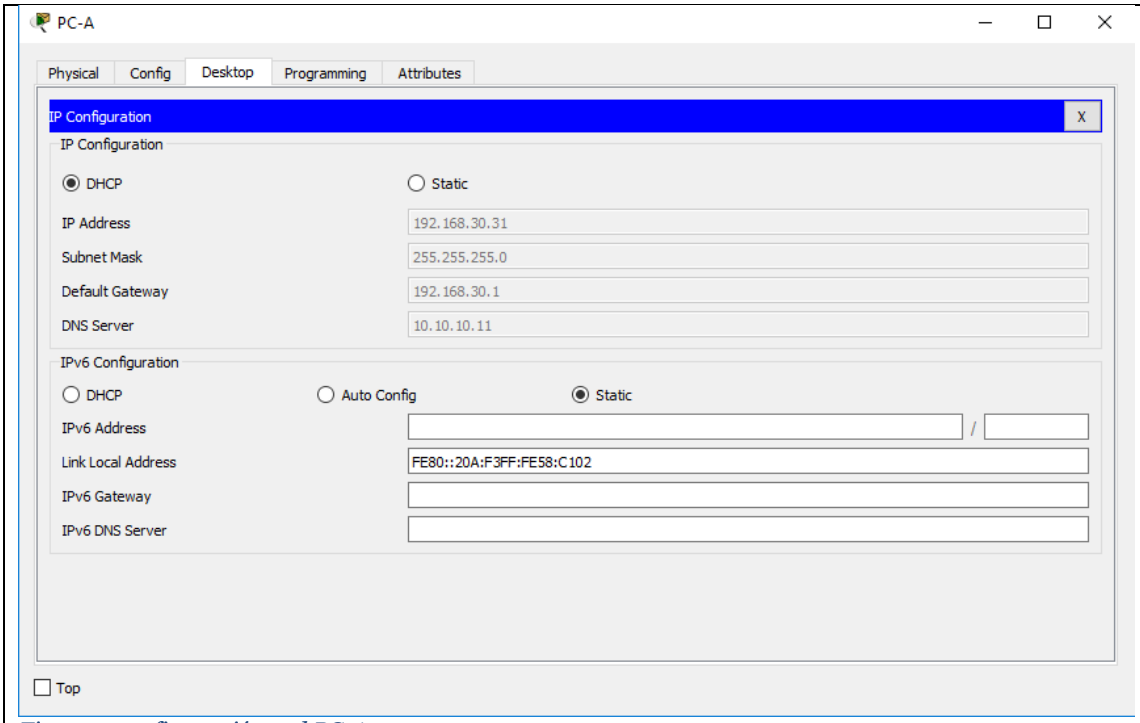


Figure 3 configuración red PC-A

PC-C

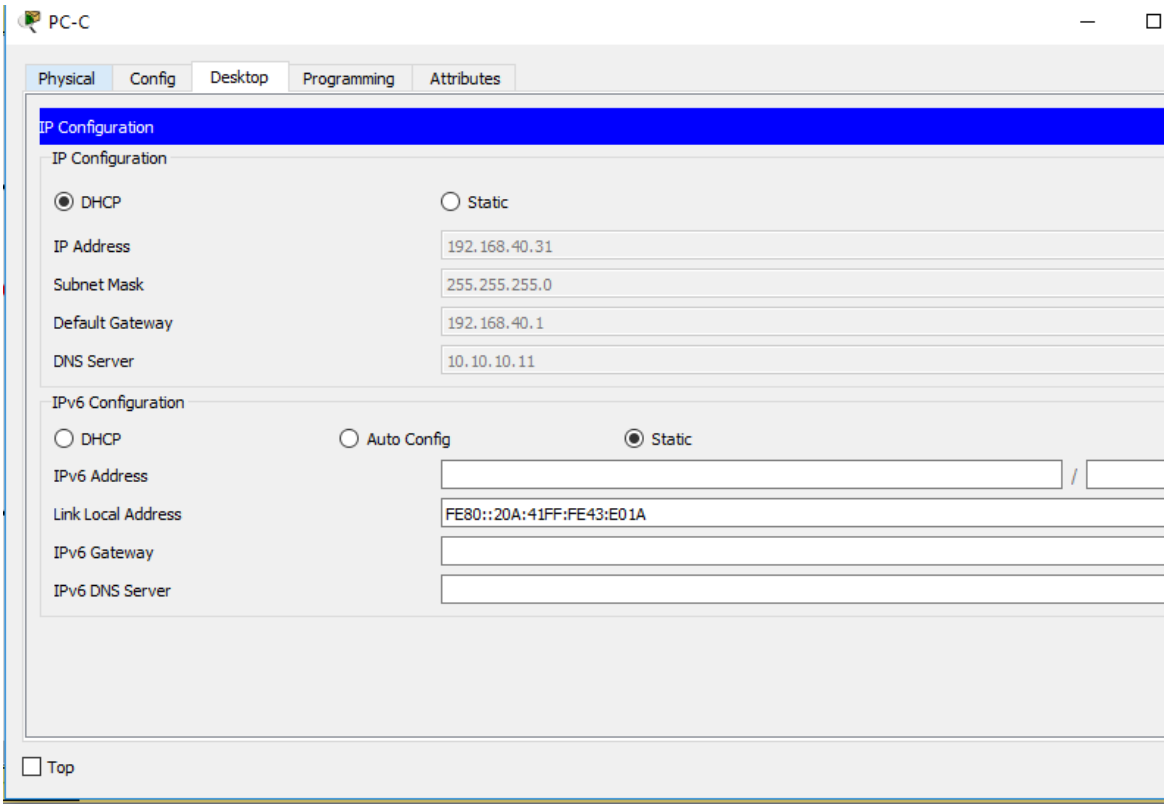


Figure 4 Configuración red PC-C

INTERNET-PC

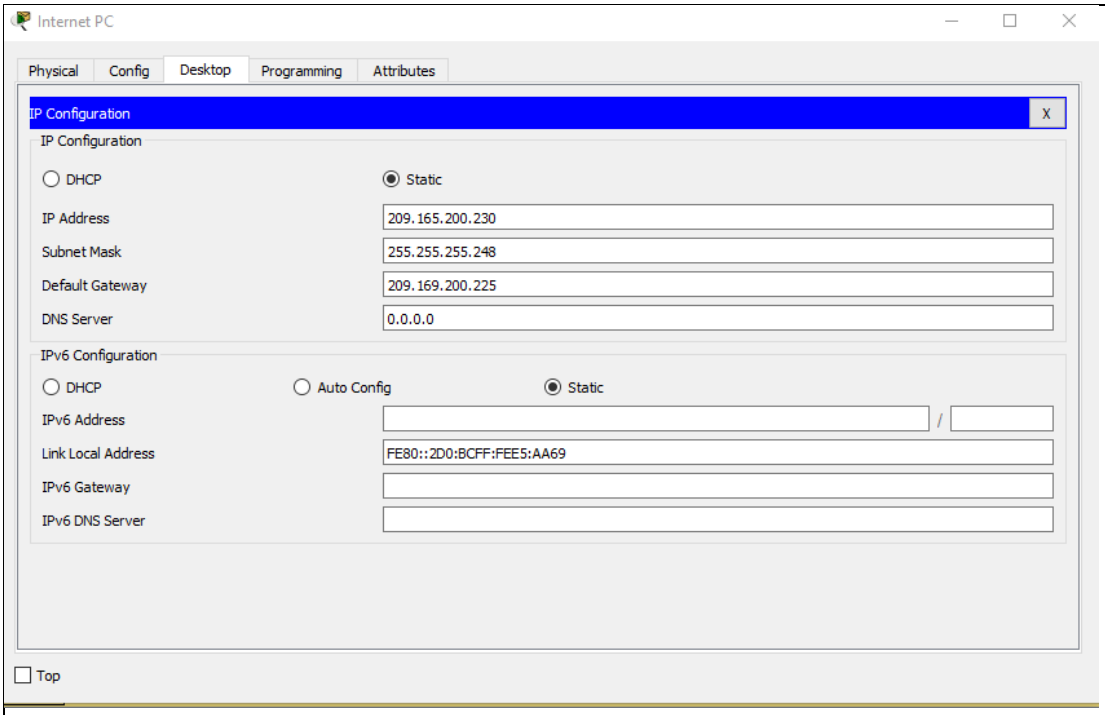


Figure 5 Configuración red Intrernet-PC

WEBSERVER

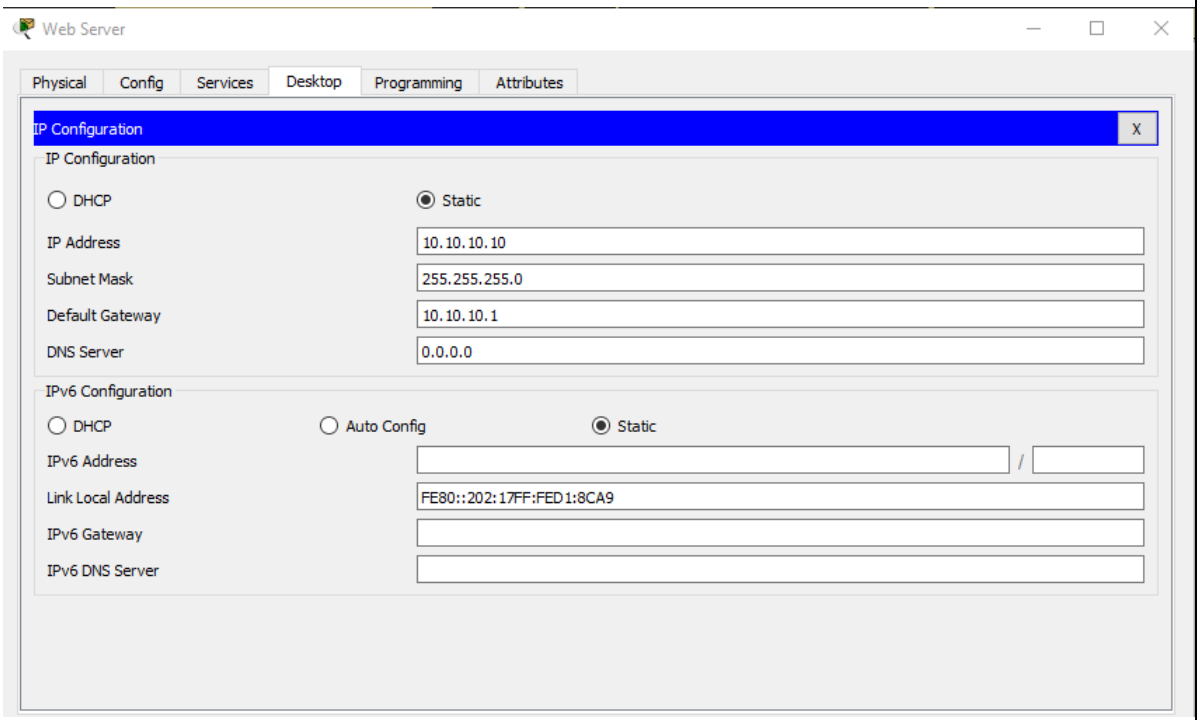


Figure 6 Configuración red Web Server

Configuración R1

```
Router>en
Router#hostname R1
^
% Invalid input detected at '^' marker.
Router#conft
Translating "conft"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Router#no ip dom
Router#no ip domain-lookup
^
% Invalid input detected at '^' marker.
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domian-lookup
^
% Invalid input detected at '^' marker.
Router(config)#no ip domain-lookup
Router(config)#hostname R1
R1(config)#enable secret class
R1(config)#line con 0
R1(config-line)#pass cisco
R1(config-line)#login
R1(config-line)#line vty 0 4
R1(config-line)#pass cisco
R1(config-line)#login
R1(config-line)#service
^
% Invalid input detected at '^' marker.
R1(config-line)#exit
R1(config)#service
R1(config)#service p
R1(config)#service password-encryption
R1(config)#int s0/1/0
R1(config-if)#description conexion con R2
R1(config-if)#ip address 172.31.21.1 255.255.255.252
R1(config-if)#clock rate 128000
R1(config-if)#no shu

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R1(config-if)#
```

```
R1(config-if)#exit
R1(config)#ip route 0.0.0.0 0.0.0.0 s0/1/0
%Default route without gateway, if not a point-to-point interface, may impact
performance
```

Configuración router 2

```
Router>conf t
^
% Invalid input detected at '^' marker.
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R2
R2(config)#enable secret class
R2(config)#line con 0
R2(config-line)#pass cisco
R2(config-line)#login
R2(config-line)#line vty 0 4
R2(config-line)#pass cisco
R2(config-line)#login
R2(config-line)#exit
R2(config)#service
R2(config)#service p
R2(config)#service password-encryption
R2(config)#int s0/0/0
R2(config-if)#description conexion con R1
R2(config-if)#ip address 172.31.21.2 255.255.255.252
R2(config-if)#no shu

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
to up
exit
R2(config)#int s0/0/1
R2(config-if)#description conexion con R3
R2(config-if)#ip address 172.31.23.1 255.255.255.252
R2(config-if)#clock rate 128000
R2(config-if)#no shu
```

```
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#int g0/0
R2(config-if)#descrip conexion a isp
R2(config-if)#ip address 209.165.200.225 255.255.255.248
R2(config-if)#no shu

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)#int g0/1
R2(config-if)#ip address 10.10.10.1 255.255.255.0
R2(config-if)#no shu

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)#descrip conexion a webserver
R2(config-if)#exit
R2(config)#ip route 0.0.0.0 0.0.0.0 g0/0
%Default route without gateway, if not a point-to-point interface, may impact
performance
R2(config)#
R2#
%SYS-5-CONFIG_I: Configured from console by console
```

Configuración router 3

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip damain-lookup
^
% Invalid input detected at '^' marker.
Router(config)#no ip domain-lookup
Router(config)#hostname R3
```

```
R3(config)#enable secret class
R3(config)#line con 0
R3(config-line)#pass cisco
R3(config-line)#login
R3(config-line)#line vty 0 4
R3(config-line)#pass cisco
R3(config-line)#login
R3(config-line)#exit
R3(config)#serv
R3(config)#service p
R3(config)#service password-encryption
R3(config)#

R3>en
Password:
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int s0/1/1
R3(config-if)#descrip conexion a R2
R3(config-if)#ip address 172.31.23.2 255.255.255.252
R3(config-if)#no shu

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state
to up

R3(config-if)#int lo4

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state
to up

R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#no shu
R3(config-if)#
R3(config-if)#int 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 shu
R3(config-if)#int 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)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 s0/1/1
%Default route without gateway, if not a point-to-point interface, may impact performance

R3(config)#

Configuración S1

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S1
S1(config)#enable secret class
S1(config)#no ip domain-lookup
S1(config)#line con 0
S1(config-line)#pass cisco
S1(config-line)#line vty 0 4
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#line con 0
S1(config-line)#login
S1(config-line)#ser
S1(config-line)#serv
S1(config-line)#exit
S1(config)#serv
S1(config)#service p
S1(config)#service password-encryption
S1(config)#
S1#

```
%SYS-5-CONFIG_I: Configured from console by console
```

Configuración S3
Switch>EN Switch#conf t Enter configuration commands, one per line. End with CNTL/Z. Switch(config)#no ip domain-lookup Switch(config)#hostname S3 S3(config)#enable secret class S3(config)#line con 0 S3(config-line)#pass cisco S3(config-line)#login S3(config-line)#line vty 0 4 S3(config-line)#pass cisco S3(config-line)#login S3(config-line)#exit S3(config)#serv S3(config)#service p S3(config)#service password-encryption S3(config)#

1.2 Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 area 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

R1
R1#conf t Enter configuration commands, one per line. End with CNTL/Z.

```
R1(config)#router ospf 1
R1(config-router)#router-id 1.1.1.1
R1(config-router)#network 172.31.21.0 0.0.0.3 area 0
R1(config-router)#network 192.168.30.0 0.0.0.255 area 0
R1(config-router)#network 192.168.40.0 0.0.0.255 area 0
R1(config-router)#network 192.168.200.0 0.0.0.255 area 0
R1(config-router)#passive-interface g0/1.30
R1(config-router)#passive-interface g0/1.40
R1(config-router)#passive-interface g0/1.200
R1(config-router)#exit
R1(config)#int s0/1/0
R1(config-if)#ban
R1(config-if)#bandwidth 128
R1(config-if)#ip ospf cost 7500
R1(config-if)#
```

R2

```
R2>en
Password:
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#router id 2.2.2.2
^
% Invalid input detected at '^' marker.
R2(config-router)#router-id 2.2.2.2
R2(config-router)#network 172.31.21.0 0.0.0.3 area 0
R2(config-router)#
04:29:30: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/0 from
LOADING to FULL, Loading Done

R2(config-router)#network 172.31.23.0 0.0.0.3 area 0
R2(config-router)#network 10.10.10.0 0.0.0.255 area 0
R2(config-router)#pas
R2(config-router)#passive-interface g0/1
R2(config-router)#int s0/0/0
R2(config-if)#band
R2(config-if)#bandwidth 128
R2(config-if)#int s0/0/1
R2(config-if)#bandwidth 128
R2(config-if)#int s0/0/0
R2(config-if)#ip ospf cost 7500
R2(config-if)#
```

R3
R3>en Password: R3#conf t Enter configuration commands, one per line. End with CNTL/Z. R3(config)#router ospf 1 R3(config-router)#router-id 3.3.3.3 R3(config-router)#network 172.31.23.0 0.0.0.3 area 0 R3(config-router)# 04:39:01: %OSPF-5-ADJCHG: Process 1, Nbr 2.2.2.2 on Serial0/1/1 from LOADING to FULL, Loading Done R3(config-router)#network 192.168.4.0 0.0.3.255 area 0 R3(config-router)#pa R3(config-router)#passive-interface lo4 R3(config-router)#passive-interface lo5 R3(config-router)#passive-interface lo6 R3(config-router)#exit R3(config)#int s0/1/1 R3(config-if)# R3(config-if)#ba R3(config-if)#bandwidth 128 R3(config-if)#ip ospf cost 7500 R3(config-if)#

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2

R1	R1>en Password: R1#show ip ospf neighbor Neighbor ID Pri State Dead Time Address Interface 2.2.2.2 0 FULL/ - 00:00:38 172.31.21.2 Serial0/1/0 R1#

R2

```
R2#show ip ospf n
R2#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address
Interface
1.1.1.1           0   FULL/  -        00:00:30    172.31.21.1
Serial0/0/0
3.3.3.3           0   FULL/  -        00:00:31    172.31.23.2
Serial0/0/1
R2#
```

R3

```
R3#show ip ospf n
R3#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address
Interface
2.2.2.2           0   FULL/  -        00:00:37    172.31.23.1
Serial0/1/1
R3#
```

- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface

R1

```
R1#show iP ospf interface

Serial0/1/0 is up, line protocol is up
  Internet address is 172.31.21.1/30, Area 0
  Process ID 1, Router ID 1.1.1.1, 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 2.2.2.2
  Suppress hello for 0 neighbor(s)
GigabitEthernet0/1.30 is up, line protocol is up
  Internet address is 192.168.30.1/24, Area 0
  Process ID 1, Router ID 1.1.1.1, 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
 --More--
```

R2

```
R2#show ip ospf interface

Serial0/0/0 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: 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 00:00:05
  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 1.1.1.1
  Suppress hello for 0 neighbor(s)
Serial0/0/1 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: 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--
```

R3

```
R3#show ip ospf interface

Serial0/1/1 is up, line protocol is up
  Internet address is 172.31.23.2/30, Area 0
  Process ID 1, Router ID 3.3.3.3, 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 00:00:06
  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 2.2.2.2
  Suppress hello for 0 neighbor(s)
Loopback4 is up, line protocol is up
  Internet address is 192.168.4.1/24, Area 0
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback5 is up, line protocol is up
  Internet address is 192.168.5.1/24, Area 0
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback6 is up, line protocol is up
  Internet address is 192.168.6.1/24, Area 0
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
R3#
```

- Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.

R1

```
R1#show ip protocol

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
    192.168.200.0 0.0.0.255 area 0
  Passive Interface(s):
    GigabitEthernet0/1.30
    GigabitEthernet0/1.40
    GigabitEthernet0/1.200
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1              110      00:25:25
    2.2.2.2              110      00:15:30
    3.3.3.3              110      00:10:08
  Distance: (default is 110)

R1#
R1#
R1#
```

R2

```
R2#show ip protocol

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:
    172.31.21.0 0.0.0.3 area 0
    172.31.23.0 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      00:27:48
    2.2.2.2              110      00:17:54
    3.3.3.3              110      00:12:32
  Distance: (default is 110)

R2#
```

R
3
	R3#show ip protocol
	
	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 00:28:09
	  2.2.2.2 110 00:18:15
	  3.3.3.3 110 00:12:53
	  Distance: (default is 110)
	
	R3#

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

R1
R1#conf t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#int g0/1.30 R1(config-subif)#descrip Administracion R1(config-subif)#en R1(config-subif)#encapsulation d R1(config-subif)#encapsulation dot1Q 30 R1(config-subif)#ip address 192.168.30.1 255.255.255.0 R1(config-subif)#int g0/1.40 R1(config-subif)#descrip Mercadeo R1(config-subif)#encapsulation dot1Q 40 R1(config-subif)#ip address 192.168.40.1 255.255.255.0 R1(config-subif)#int g0/1.200 R1(config-subif)#descorip Mantenimient ^ % Invalid input detected at '^' marker. R1(config-subif)#descrip Mantenimiento R1(config-subif)#encapsulation dot1Q 200 R1(config-subif)#ip address 192.168.200.1 255.255.255.0 R1(config-subif)#exit

```
R1(config)#int g0/1
R1(config-if)#no shu

R1(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

%LINK-5-CHANGED: Interface GigabitEthernet0/1.30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1.30, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/1.40, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1.40, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/1.200, changed state to
up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/1.200, changed state to up
```

S1

```
S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#vlan 30
S1(config-vlan)#name Administracion
S1(config-vlan)#vlan 40
S1(config-vlan)#name Mercadeo
S1(config-vlan)#vlan 200
S1(config-vlan)#name Mantenimiento
S1(config-vlan)#
S1(config-vlan)#exit
S1(config)#int vlan 30
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

S1(config-if)#ip addres 192.168.99.2 255.255.255.0
S1(config-if)#no shu
S1(config-if)#exit
```

```
S1(config)#ip default-gateway 192.168.99.1
S1(config)#


S1>en
Password:
Password:
S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#int f0/3
S1(config-if)#switchport mode trunk

S1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed
state to up

S1(config-if)#switchport trunk native vlan 1
S1(config-if)#int f0/5
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#int range fa0/1-2, fa0/4, fa0/6-24,g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2, fa0/4, fa0/6-24,g0/1-2
S1(config-if-range)#switchport mode access
S1(config-if-range)#int f0/6
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
```

S3

```
S3>en
Password:
S3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#
S3(config)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 30
S3(config-vlan)#name Administracion
```

```
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#exit
S3(config)#int vlan 30
S3(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up

S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#no shu
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.99.1
S3(config)#int f0/3
S3(config-if)#sw
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#int range f0/1-2, f0/4-24, g0/1-2
S3(config-if-range)#switchport mode access
S3(config-if-range)#int f0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
```

1.4 En el Switch 3 deshabilitar DNS lookup

```
Switch>EN
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S3

S3(config)#
```

1.5 Asignar direcciones IP a los Switches acorde a los lineamientos.

S1	S1(config)#int vlan 30 S1(config-if)# %LINK-5-CHANGED: Interface Vlan30, changed state to up S1(config-if)#ip addres 192.168.99.2 255.255.255.0 S1(config-if)#no shu

	S1(config-if)#exit S2
S3	S3(config)#int vlan 30 S3(config-if)# %LINK-5-CHANGED: Interface Vlan30, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up S3(config-if)#ip address 192.168.99.3 255.255.255.0 S3(config-if)#no shu S3(config-if)#exit

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

S1
S1(config-if)#int range fa0/1-2, fa0/4, fa0/7-24,g0/1-2 S1(config-if-range)#shutdown %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down %LINK-5-CHANGED: Interface FastEthernet0/10, changed state to

administratively down

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%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 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
S1(config-if-range)#

S3

S3(config-if)#int range f0/1-2, f0/4-17, f0/19-24,g0/1-2
S3(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, 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 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)#

1.7 Implement DHCP and NAT for IPv4

1.8 Configurar R1 como servidor DHCP para las VLANs 30 y 40.

1.9 Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

R1
R1>en Password: R1#conf t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#ip dhcp e R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30 R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30 R1(config)#

Configurar DHCP pool para VLAN 30	Name: ADMINISTRACIO N DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway. R1(config)#ip dhcp pool ADMINISTRACION R1(dhcp-config)#dn R1(dhcp-config)#dns-server 10.10.10.11 R1(dhcp-config)#domain n R1(dhcp-config)#domain n R1(dhcp-config)#domain na R1(dhcp-config)#? default-router Default routers dns-server Set name server exit Exit from DHCP pool configuration mode network Network number and mask no Negate a command or set its defaults option Raw DHCP options

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

```
R1(dhcp-config)#ip dhcp pool MERCADEO
R1(dhcp-config)#DN
R1(dhcp-config)#DNs-server 10.10.10.11
R1(dhcp-config)#doma
R1(dhcp-config)#domain-name
^
% Invalid input detected at '^' marker.
R1(dhcp-config)#domain-name ccna-unad.com
^
% Invalid input detected at '^' marker.
R1(dhcp-config)#default-router 192.168.40.1
R1(dhcp-config)#network 192.168.40.0 255.255.255.0
 R1(dhcp-config)#
```

	R1(dhcp-config)# R1(dhcp-config)#default router 192.168.30.1 ^ % Invalid input detected at '^' marker. R1(dhcp-config)#default-router 192.168.30.1 R1(dhcp-config)#network 192.168.30.0 255.255.255.0

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

R2
R2>en Password: R2#conf t Enter configuration commands, one per line. End with CNTL/Z. R2(config)#user webuser privilege 15 secret cisco12345 R2(config)#ip nat inside source static 10.10.10.10 209.165.200.229 R2(config)#int g0/0 R2(config-if)#ip nat outside R2(config-if)#int g0/1 R2(config-if)#ip nat inside R2(config-if)# R2(config)#ip nat pool INTERNET 209.165.200.225 209.165.200.228 netmask 255.255.255.248 R2(config)#ip nat inside source list 1 pool INTERNET R2(config)#

1.11 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
LISTA DE ACCESO QUE SOLO PERMITE TRAFICO DESDE LAS VLAN CREADAS Y LAS lop R2(config)#access-list 1 permit 192.168.30.0 0.0.0.255 R2(config)#access-list 1 permit 192.168.40.0 0.0.0.255 R2(config)#access-list 1 permit 192.168.4.0 0.0.3.255 R2(config)# LISTA DE ACCESO QUE SOLO PERMITE TRAFICO TELNET DE R1 A R2 R2(config)#ip access-list standard MANAGMENT R2(config-std-nacl)#permit host 172.31.21.1 R2(config-std-nacl)#exit R2(config)#line vty 0 4 R2(config-line)#access-class MANAGMENT in R2(config-line)#
R3
R3(config)#access-list 1 permit any R3(config)# R3#

%SYS-5-CONFIG_I: Configured from console by console

1.12 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.

R2

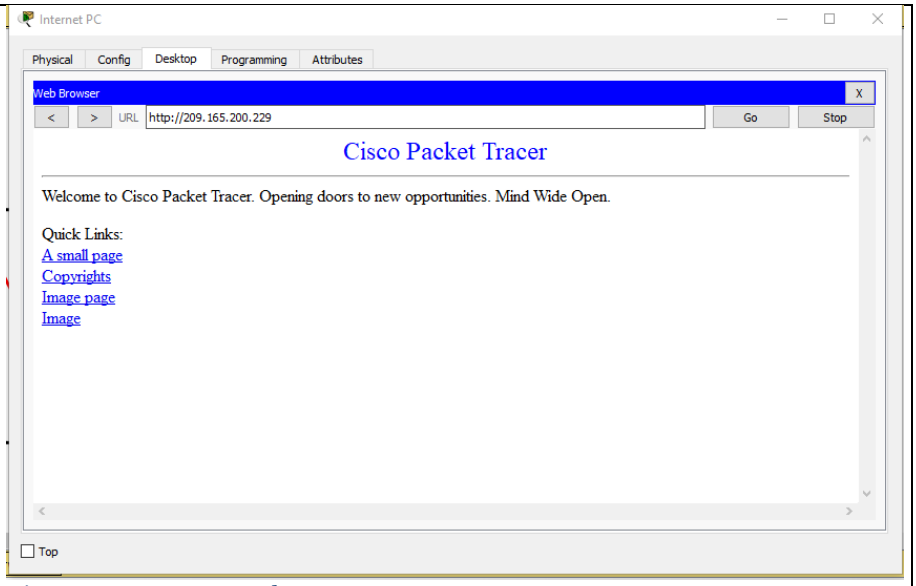
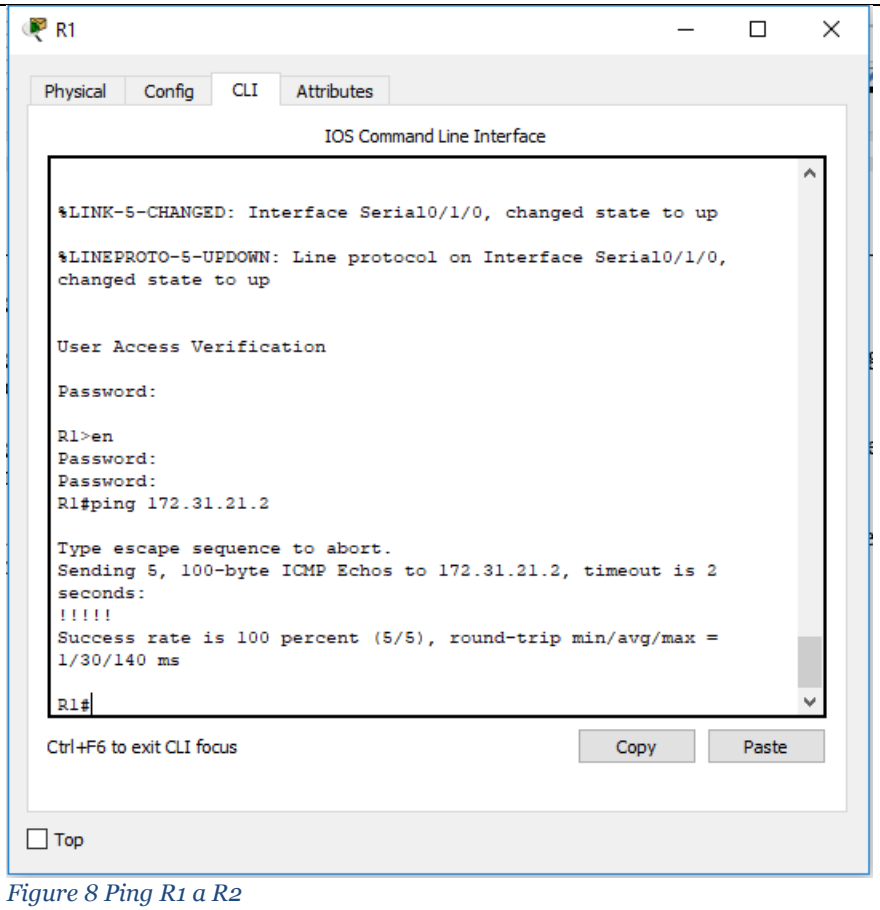
LSITA DE ACCESO QUE PERMITE A LOS HOST ENTRAR AL SERVIDOR WEB A TRAVES DE WWW MEDIANTE LA NAT

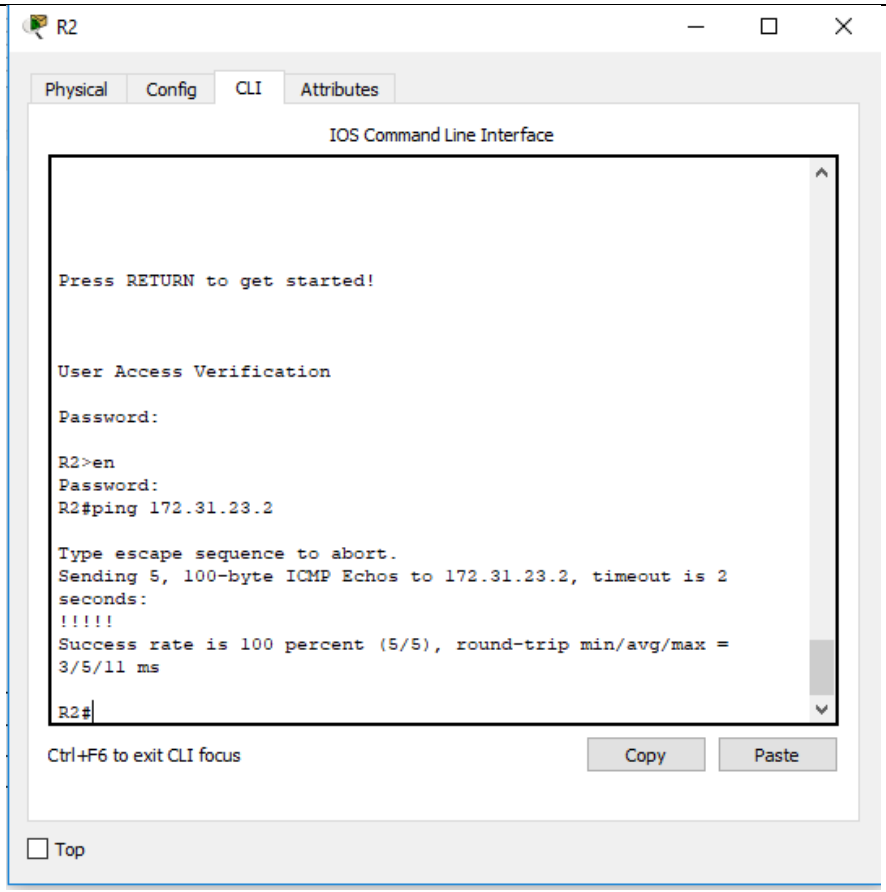
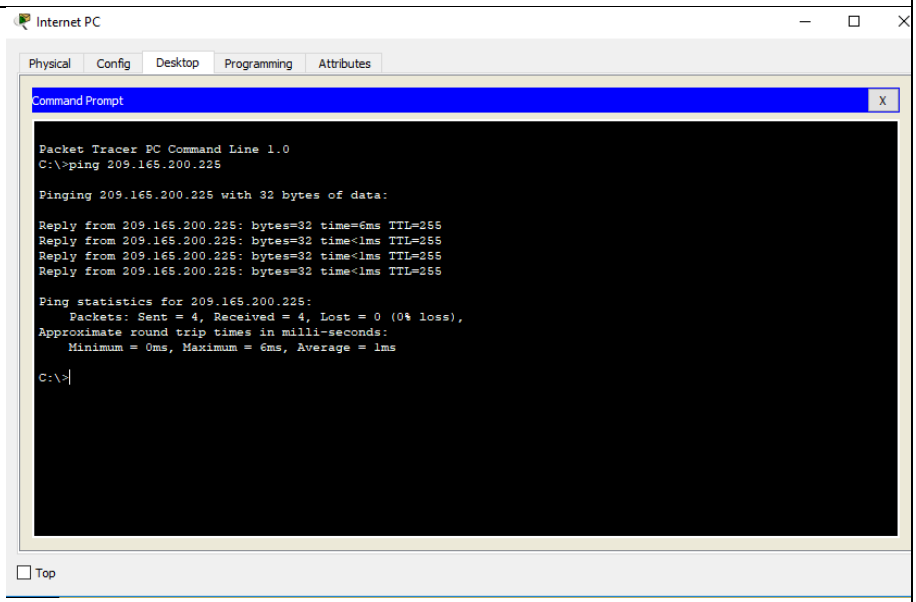
```
R2(config)#access-list 101 permit tcp any host 209.165.200.229 eq www
```

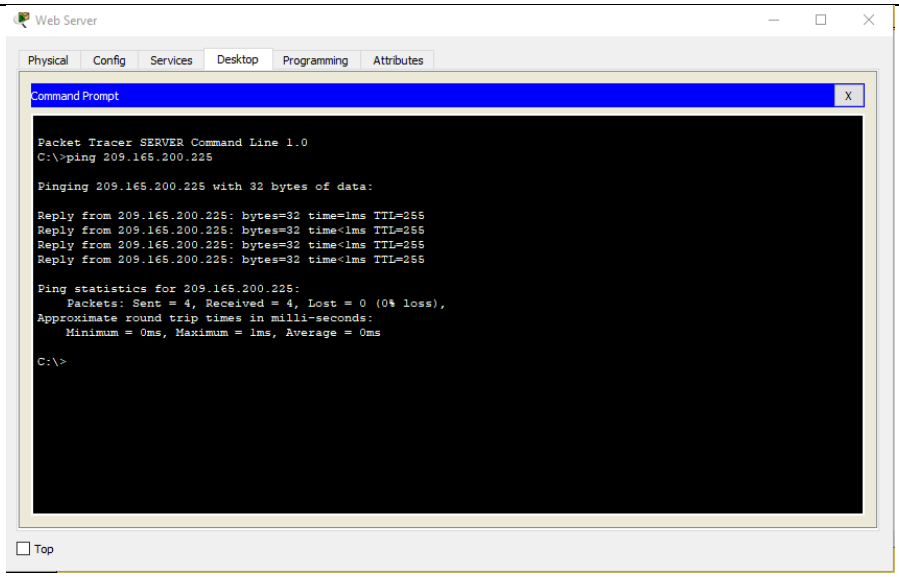
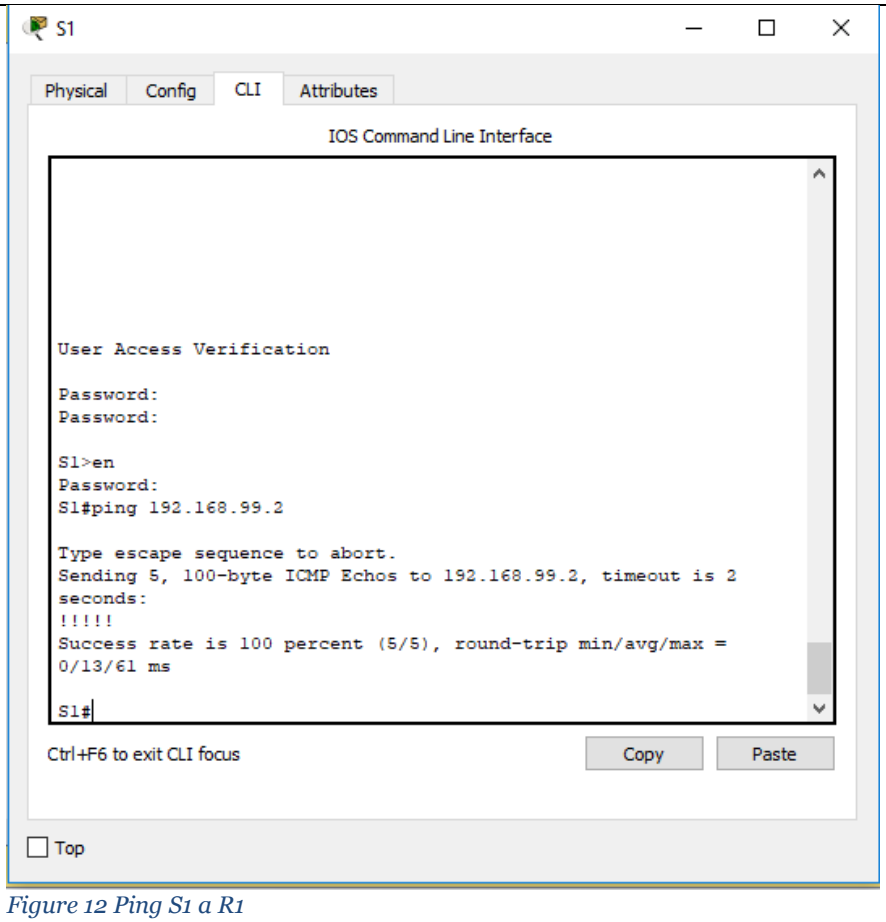
LISTA DE ACCESO PARA PREVENIR TRAFICO PING DE REDES INTERNAS MIENTRAS SE CONTINUA PERMITIENDO A LAS INTERFACES LAN PING A EL PC INTERNET

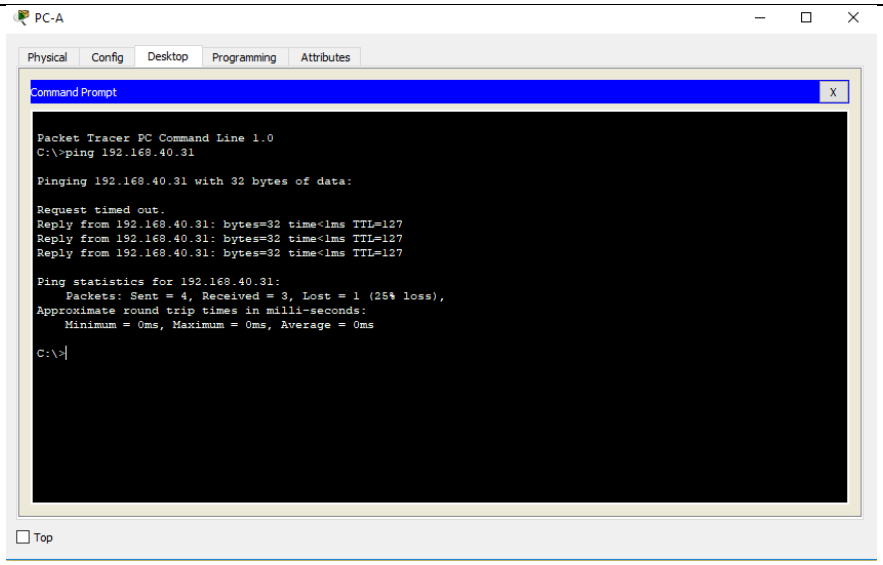
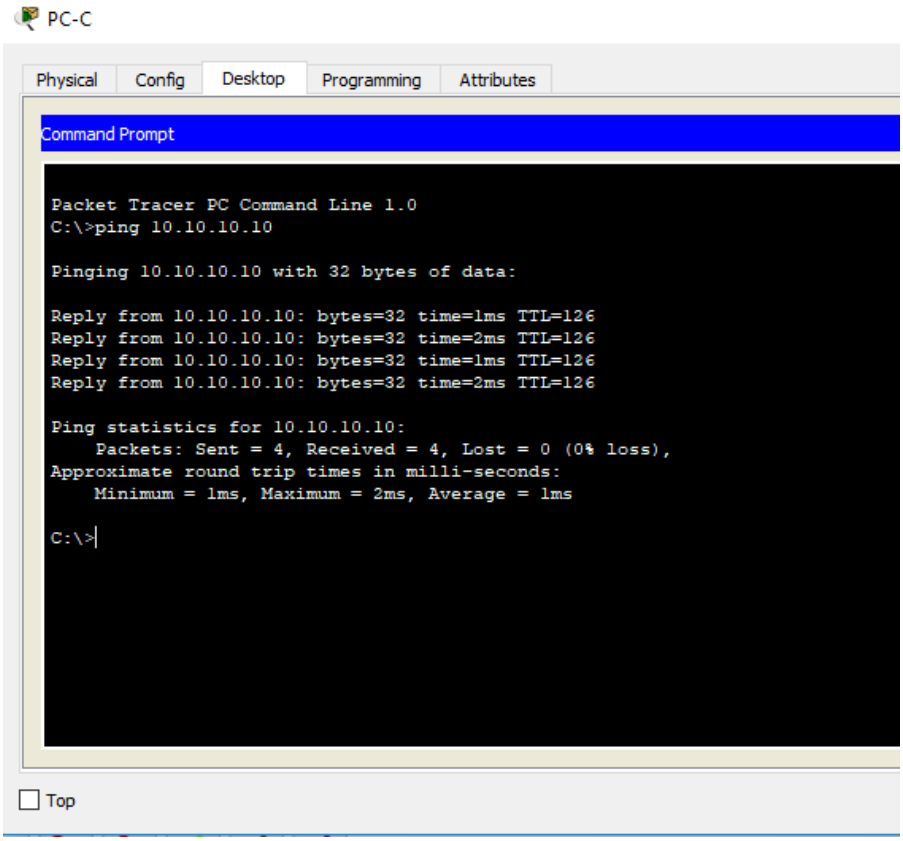
```
R2(config)#access-list 101 permit icmp any any echo-reply
R2(config)#


R2(config)#int g0/0
R2(config-if)#ip
R2(config-if)#ip ac
R2(config-if)#ip access-group 101 in
R2(config-if)#int s0/0/0
R2(config-if)#ip access-group 101 out
R2(config-if)#int s0/0/1
R2(config-if)#ip access-group 101 out
R2(config-if)#int g0/1
R2(config-if)#ip access-group 101 out
R2(config-if)#
```

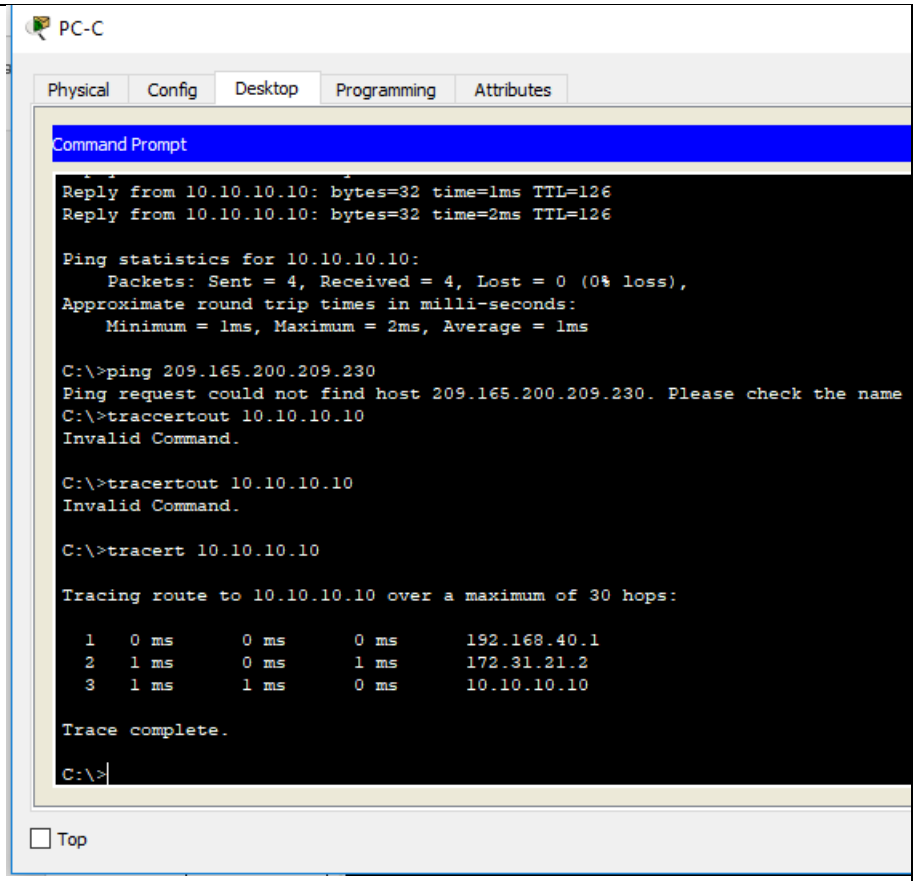
1.13 Verificar procesos de comunicación y redireccionamiento de tráfico en los routers mediante el uso de Ping y Traceroute.

INTERNET-PC A WEBSERVER	 *Figure 7 Acceso PC a Web Server*
R1 A R2	 *Figure 8 Ping R1 a R2*

R2 A R3	 *Figure 9 Ping R2 a R3*
PC INTERNET A INTERNET	 *Figure 10 Ping Internet PC a internet*

SERVIDOR WEB A INTERNET	 *Figure 11 Ping Web Server a Internet*
S1 al R1	 *Figure 12 Ping S1 a R1*

PC-A HACIA PC-C	 *Figure 13 Ping PC-A a PC-C*
PING PC-C A WEB-SERVER	 *Figure 14 Ping PC-C a Web Server*

TRACERT PC-A HACIA WEBSERVER	 *Figure 15 Tracert PC-A a Web Server*

Conclusiones

Respecto a los conocimientos y habilidades adquiridas durante el desarrollo del diplomado, concluyo que debo practicar mucho más los procesos básicos de configuración de las redes, con el apoyo de las herramientas de simulación, y en los conceptos fundamentales que sirven de base a la práctica.

La herramienta packet tracert es líder para la implementación y aprendizaje de todo tipo de entornos de simulación para redes, la cual la hace la aplicación aliada número uno para un estudiante que esté interesado en las redes de información.

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