Diplomado Profundización En Cisco

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Prueba de habilidades prácticas

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INTRODUCCCION

El presente trabajo permite que se pueda identificar el grado de compromiso, competencias y habilidades que se adquirieron en el desarrollo de las diferentes fases del diplomado cisco donde hubo varios escenarios tanto en la plataforma cisco como en la plataforma de universidades nacional abierta y a distancia (UNAD), de forma competitiva se pudo exponer las capacidades obtenidas de manera integral gracias a los campos de capacitación en tecnología de redes informáticas pudiendo mostrar nivel de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

Mediante el uso de la herramienta de simulación packer tracer se pudo dar solución al escenario abajo expuesto donde refiere las necesidades de una empresa de telefonía donde se deberá configurar y conectar entre si cada uno de los dispositivos siendo el estudiante el administrador de la red.

.

CONTENIDO

Objetivos

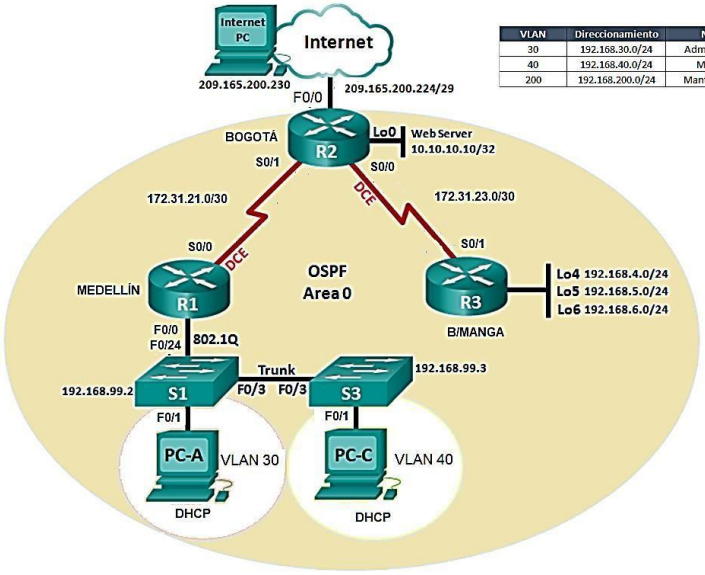
- Lograr Configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario.

- Conseguir ser el administrador de la red cumpliendo protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

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

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

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

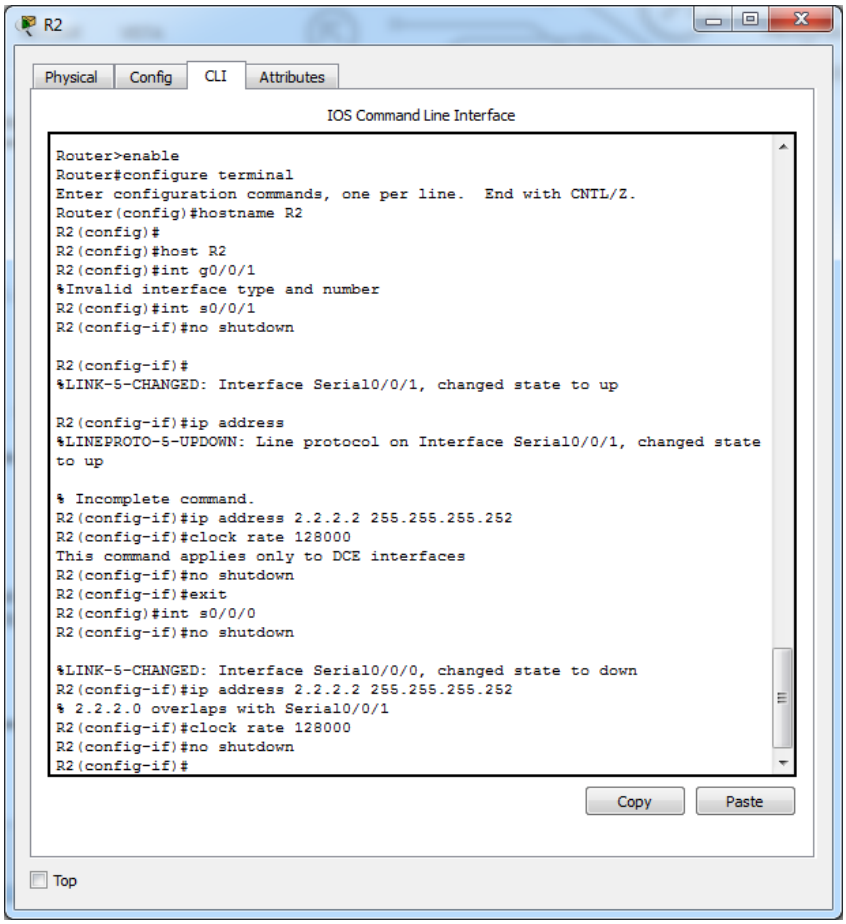
OSPFv2 area 0

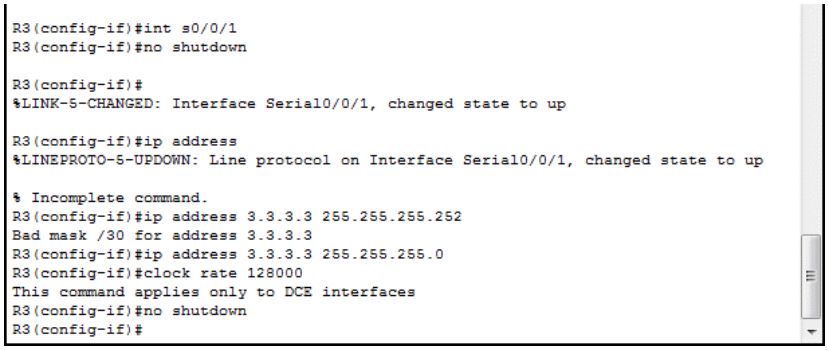
Configuration Item or Task	Specification
Router ID R1	1.1.1.1
Router ID R2	2.2.2.2
Router ID R3	3.3.3.3
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	128 Kb/s
Ajustar el costo en la métrica de S0/0 a	7500

Agregamos las direcciones IP para cada uno de los Routers y también en ella se agrega el ancho de banda de 128 Kb/s que es equivalente al comando **clock rate 128000**

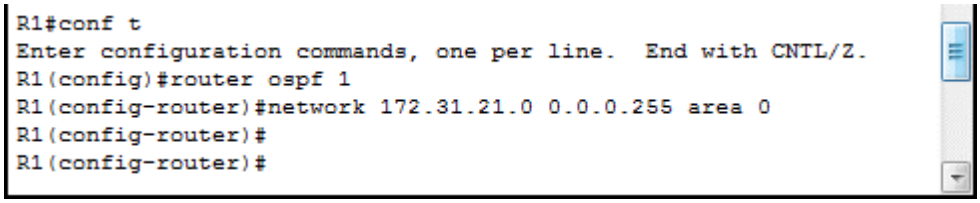
```
R1(config-if)#
R1(config-if)#int s0/0/0
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#ip address 1.1.1.1 255.255.255.252
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown
R1(config-if)#no shut
R1(config-if)#
```





Ahora realizamos la configuración del OSPF a cada uno de los Routers



```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
OSPF process 1 cannot start. There must be at least one "up" IP interface
R2(config-router)#network 172.31.22.0 0.0.0.255 area 0
R2(config-router)#
R2(config-router)#
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#network 172.31.23.0 0.0.0.255 area 0
R3(config-router)#
R3(config-router)#
```

Asignamos las direcciones IP a los Loopback

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#interface lo0
R2(config-if)#ip address 10.10.10.10 255.255.255.255
R2(config-if)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface lo4
R3(config-if)#ip address 192.168.4.0 255.255.255.255
R3(config-if)#ip address 192.168.5.0 255.255.255.255
R3(config-if)#ip address 192.168.6.0 255.255.255.255
R3(config-if)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#
```

Direccionamiento IP de los Switch

```
S1>en
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#host S1
S1(config)#int vlan 30
S1(config-if)#ip address 192.168.99.2 255.255.255.0
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.1.1
S1(config)#
```

```
S3>EN
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#host S3
S3(config)#int vlan 40
S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.1.3
S3(config)#
```

Configurar todas las interfaces LAN como pasivas

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router ospf 10
R1(config-router)#passive-interface default
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#
```

```
R2#en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 10
R2(config-router)#passive-interface default
R2(config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
```

```
R3#en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router ospf 10
R3(config-router)#passive-interface default
R3(config-router)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#
```

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2

```
R1#
R1#show ip route
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

     1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       1.1.1.0/30 is directly connected, Serial0/0/0
L       1.1.1.1/32 is directly connected, Serial0/0/0
     172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.31.0.0/16 is directly connected, GigabitEthernet0/0
L       172.31.21.0/32 is directly connected, GigabitEthernet0/0

R1#
```

```
R2>en
R2#show ip route
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

     2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       2.2.2.0/30 is directly connected, Serial0/0/1
L       2.2.2.2/32 is directly connected, Serial0/0/1
     10.0.0.0/32 is subnetted, 1 subnets
C       10.10.10.10/32 is directly connected, Loopback0

R2#
```

```
R3#show ip route
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

     3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       3.3.3.0/24 is directly connected, Serial0/0/1
L       3.3.3.3/32 is directly connected, Serial0/0/1
     192.168.6.0/32 is subnetted, 1 subnets
C       192.168.6.0/32 is directly connected, Loopback4

R3#
```

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

El comando "**show ip ospf interface brief**" no se puede implementar en Packet Tracer. Se puede utilizar el comando "**show ip ospf interface**"

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

```
R1#show ip protocols

Routing Protocol is "ospf 10"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 172.31.21.0
  Number of areas in this router is 0. 0 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
  Passive Interface(s):
    Vlan1
    GigabitEthernet0/0
    GigabitEthernet0/1
    Serial0/0/0
    Serial0/0/1
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)

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 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1              110      00:05:35
  Distance: (default is 110)

R1#
R1#
```

```
R2#show ip protocols

Routing Protocol is "ospf 10"
  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 0. 0 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
  Passive Interface(s):
    Vlan1
    GigabitEthernet0/0
    GigabitEthernet0/1
    Serial0/0/0
    Serial0/0/1
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)

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 10.10.10.10
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.31.22.0 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)

R2#
R2#
R2#
```

```
R3#show ip protocols

Routing Protocol is "ospf 10"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 172.31.23.0
  Number of areas in this router is 0. 0 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
  Passive Interface(s):
    Vlan1
    GigabitEthernet0/0
    GigabitEthernet0/1
    Serial0/0/0
    Serial0/0/1
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)

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 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)

R3#
R3#
```

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

Configuración VLAN

```
S1>en
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#
S1(config)#vlan 30
S1(config-vlan)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

S1(config-vlan)#name DHCP-A
S1(config-vlan)#
S1(config-vlan)#
```

```
S1#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- ---------
-------------------------------
1    default                           active    Fa0/1, Fa0/2,
Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6,
Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10,
Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14,
Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18,
Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22,
Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
30   DHCP-A                            active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
S1#
```

```
S3>en
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#vlan 40
S3(config-vlan)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up

S3(config-vlan)#name DHCP-C
S3(config-vlan)#
```

```
S3#show vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2,
Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6,
Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10,
Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14,
Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18,
Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22,
Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
40   DHCP-C                            active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
S3#
```

Puertos Troncales

```
S1>en
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#interface f0/1
S1(config-if)#switchport mode dynamic desirable

S1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

S1(config-if)#
```

```
S1#
%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#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#int f0/3
S1(config-if)#switchport mode dynamic desirable

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

```
S3>en
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#int f0/3
S3(config-if)#switchport mode dynamic desirabl

S3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

%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 Vlan40, changed
state to up
```

```
S3(config)#int f0/1
S3(config-if)#switchport mode dynamic desirabl

S3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
```

```
S1#show interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/3       desirable    n-802.1q       trunking      1

Port        Vlans allowed on trunk
Fa0/3       1-1005

Port        Vlans allowed and active in management domain
Fa0/3       1,30

Port        Vlans in spanning tree forwarding state and not
pruned
Fa0/3       1,30

S1#
```

```
S3#show interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Fa0/3       desirable    n-802.1q       trunking      1

Port        Vlans allowed on trunk
Fa0/3       1-1005

Port        Vlans allowed and active in management domain
Fa0/3       1,40

Port        Vlans in spanning tree forwarding state and not
pruned
Fa0/3       1,40

S3#
```

Puertos de enlace

```
S1#
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#interface f0/1
S1(config-if)#switchport access vlan 30
S1(config-if)#interface f0/3
S1(config-if)#switchport access vlan 30
S1(config-if)#
```

```
S3#
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#interface f0/3
S3(config-if)#switchport access vlan 30
% Access VLAN does not exist. Creating vlan 30
S3(config-if)#switchport access vlan 40
S3(config-if)#interface f0/1
S3(config-if)#switchport access vlan 40
S3(config-if)#
```

```
S1#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/2, Fa0/4, Fa0/5, Fa0/6
                                                Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                                Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                                Fa0/23, Fa0/24, Gig0/1, Gig0/2
30   DHCP-A                           active    Fa0/1
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
S1#
```

```
S3#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/2, Fa0/4, Fa0/5, Fa0/6
                                                Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                                Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                                Fa0/23, Fa0/24, Gig0/1, Gig0/2
30   VLAN0030                         active
40   DHCP-C                           active    Fa0/1
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
S3#
```

Encapsulamiento e Inter-VLAN Routing

```
R1(config)#
R1(config)#interface g0/1.1
R1(config-subif)#
R1(config-subif)#encapsulation dot1Q 1
R1(config-subif)#
R1(config-subif)#ip address 192.168.1.1 255.255.255.0
R1(config-subif)#
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#interface g0/1.1
R2(config-subif)#encapsulation dot1Q 1
R2(config-subif)#ip address 192.168.1.2 255.255.255.0
R2(config-subif)#
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface g0/1.2
R3(config-subif)#encapsulation dot1Q 1
R3(config-subif)#ip address 192.168.1.3
% Incomplete command.
R3(config-subif)#ip address 192.168.1.3 255.255.255.0
R3(config-subif)#
```

```
R1#show ip route
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

     1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       1.1.1.0/30 is directly connected, Serial0/0/0
L       1.1.1.1/32 is directly connected, Serial0/0/0
     172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.31.0.0/16 is directly connected, GigabitEthernet0/0
L       172.31.21.0/32 is directly connected, GigabitEthernet0/0

R1#
```

```
R1#show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     172.31.21.0     YES manual up                    up
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/1.1   192.168.1.1     YES manual administratively down down
Serial0/0/0            1.1.1.1         YES manual up                    up
Serial0/0/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
R1#
```

```
R2#show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES unset  administratively down down
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/1.1   192.168.1.2     YES manual administratively down down
Serial0/0/0            unassigned      YES unset  up                    up
Serial0/0/1            2.2.2.2         YES manual up                    up
Loopback0              10.10.10.10     YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
R2#
```

```
R3#show ip int brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     172.31.23.0     YES manual up                    down
GigabitEthernet0/1     unassigned      YES unset  administratively down down
GigabitEthernet0/1.2   192.168.1.3     YES manual administratively down down
Serial0/0/0            unassigned      YES unset  administratively down down
Serial0/0/1            3.3.3.3         YES manual up                    up
Loopback4              192.168.6.0     YES manual up                    up
Loopback5              unassigned      YES unset  up                    up
Loopback6              unassigned      YES unset  up                    up
Vlan1                  unassigned      YES unset  administratively down down
R3#
```

Seguridad en los Switches

```
S1>en
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#ip domain-name CCNA-lab.com
S1(config)#username admin privilege 15 secret sshadmin
S1(config)#line vty 0 15
S1(config-line)#transport input ssh
S1(config-line)#login local
S1(config-line)#exit
S1(config)#
S1(config)#crypto key generate rsa
The name for the keys will be: S1.CCNA-lab.com
Choose the size of the key modulus in the range of 360 to 2048
for your
  General Purpose Keys. Choosing a key modulus greater than 512
may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...
[OK]

S1(config)#
```

```
S3>en
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#ip domain-name CCNA-Lab.com
S3(config)#username admin privilege 15 secret sshadmin
S3(config)#line vty 0 15
S3(config-line)#transport input ssh
S3(config-line)#login local
S3(config-line)#exit
S3(config)#
S3(config)#crypto key generate rsa
The name for the keys will be: S3.CCNA-Lab.com
Choose the size of the key modulus in the range of 360 to 2048
for your
  General Purpose Keys. Choosing a key modulus greater than 512
may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...
[OK]

S3(config)#
```

4. En el Switch 3 deshabilitar DNS lookup

```
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#no ip domain-lookup
S3(config)#exit
S3#
%SYS-5-CONFIG_I: Configured from console by console

S3#
```

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

```
S1>en
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#host S1
S1(config)#int vlan 30
S1(config-if)#ip address 192.168.99.2 255.255.255.0
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.1.1
S1(config)#
```

```
S3>EN
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#host S3
S3(config)#int vlan 40
S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.1.3
S3(config)#
```

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

```
S1>en
S1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#interface range fasEthernet 0/2
                           ^
% Invalid input detected at '^' marker.

S1(config)#interface range f0/2
S1(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
S1(config-if-range)#interface range f0/4-23
S1(config-if-range)#shutdown

%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 FastEthernet0/18, 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
S1(config-if-range)#
```

```
S1#show run
Building configuration...

Current configuration : 1633 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S1
!
!
!
ip domain-name CCNA-lab.com
!
username admin secret 5 $1$mERr$vReEy/CTmNb7D.2HfKA2E0
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
 switchport access vlan 30
 switchport mode dynamic desirable
!
interface FastEthernet0/2
 shutdown
!
interface FastEthernet0/3
 switchport access vlan 30
 switchport mode dynamic desirable
!
interface FastEthernet0/4
 shutdown
!
interface FastEthernet0/5
 shutdown
!
interface FastEthernet0/6
 shutdown
!
```

```
interface FastEthernet0/7
 shutdown
!
interface FastEthernet0/8
 shutdown
!
interface FastEthernet0/9
 shutdown
!
interface FastEthernet0/10
 shutdown
!
interface FastEthernet0/11
 shutdown
!
interface FastEthernet0/12
 shutdown
!
interface FastEthernet0/13
 shutdown
!
interface FastEthernet0/14
 shutdown
!
interface FastEthernet0/15
 shutdown
!
interface FastEthernet0/16
 shutdown
!
interface FastEthernet0/17
 shutdown
!
interface FastEthernet0/18
 shutdown
!
interface FastEthernet0/19
 shutdown
!
interface FastEthernet0/20
 shutdown
```

```
interface FastEthernet0/21
 shutdown
!
interface FastEthernet0/22
 shutdown
!
interface FastEthernet0/23
 shutdown
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
interface Vlan30
 mac-address 00d0.bc9a.8501
 ip address 192.168.99.2 255.255.255.0
!
ip default-gateway 192.168.1.1
!
!
!
!
line con 0
!
line vty 0 4
 login local
 transport input ssh
line vty 5 15
 login local
 transport input ssh
!
!
!
end
```

```
S3>en
S3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
S3(config)#interface range f0/2
S3(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
S3(config-if-range)#interface range f0/4-24
S3(config-if-range)#shutdown

%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 FastEthernet0/18, 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
S3(config-if-range)#
```

7. Implement DHCP and NAT for IPv4

Configuramos el EIGRP

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#router eigrp 1
R1(config-router)#network 172.31.21.0 0.0.0.255
R1(config-router)#network 1.1.1.1 0.0.0.255
R1(config-router)#no auto-sumary
                          ^
% Invalid input detected at '^' marker.

R1(config-router)#no auto-summary
R1(config-router)#network 172.31.21.9 0.0.0.3
R1(config-router)#no auto-summary
R1(config-router)#
```

```
R2>
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router eigrp 1
R2(config-router)#network 172.31.21.9 0.0.0.3
R2(config-router)#
R2(config-router)#redistribute static
R2(config-router)#exit
R2(config)#ip route 0.0.0.0 0.0.0.0 209.165.200.225
R2(config)#
```

```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#ip route 172.31.0.0 255.255.252.0 209.165.200.226
R3(config)#
```

Para asignar automáticamente la información de dirección en la red, configure el R2 como servidor de DHCPv4 y el R1 como agente de retransmisión DHCP

```
R2>
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router eigrp 1
R2(config-router)#network 172.31.21.9 0.0.0.3
R2(config-router)#
R2(config-router)#redistribute static
R2(config-router)#exit
R2(config)#ip route 0.0.0.0 0.0.0.0 209.165.200.225
R2(config)#
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#ip dhcp excluded-address 172.31.21.0 192.168.0.9
R2(config)#ip dhcp excluded-address 192.168.1.1 192.168.1.9
R2(config)#ip dhcp pool R1G1
R2(dhcp-config)#network 192.168.1.0 255.255.255.0
R2(dhcp-config)#default-reouter 192.168.1.1
                            ^
% Invalid input detected at '^' marker.

R2(dhcp-config)#default-router 192.168.1.1
R2(dhcp-config)#dns-server 209.165.200.225
R2(dhcp-config)#domain-name ccna-lab.com
```

```
R2(config)#ip dhcp pool R1G0
R2(dhcp-config)#network 192.168.0.0 255.255.255.0
R2(dhcp-config)#default-router 192.168.0.1
R2(dhcp-config)#dns-server 209.165.200.225
R2(dhcp-config)#domain-name ccna-lab.com
                  ^
% Invalid input detected at '^' marker.

R2(dhcp-config)#
```

```
PC>ipconfig /all

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Physical Address.....................: 00E0.A36C.7CA4
   Link-local IPv6 Address.....: FE80::2E0:A3FF:FE6C:7CA4
   IP Address.....................: 192.168.1.10
   Subnet Mask.....................: 255.255.255.0
   Default Gateway.....................: 192.168.1.1
   DNS Servers.....................: 209.165.200.225
   DHCP Servers.....................: 192.168.2.254
   DHCPv6 Client DUID.....................: 00-01-00-01-A2-87-2D-20-00-E0-A3-6C-7C-A4
```

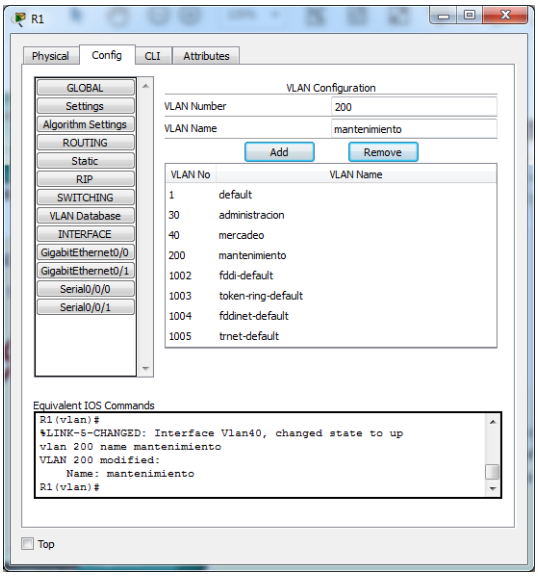
```
PC>ipconfig /all

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Physical Address.....................: 000C.CFA4.791E
   Link-local IPv6 Address.....: FE80::20C:CFFF:FEA4:791E
   IP Address.....................: 192.168.0.10
   Subnet Mask.....................: 255.255.255.0
   Default Gateway.....................: 192.168.0.1
   DNS Servers.....................: 209.165.200.225
   DHCP Servers.....................: 192.168.2.254
   DHCPv6 Client DUID.....................: 00-01-00-01-DA-62-A7-EC-00-0C-CF-A4-79-1E
```

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

Agregamos las VLANs 30 y 40 en el Router 1




```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip dhcp pool DHCP-AB
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
R1(dhcp-config)#network 192.168.0.0 255.255.255.0
R1(dhcp-config)#default
% Incomplete command.
R1(dhcp-config)#default-router 172.31.21.0
R1(dhcp-config)#dns-server 8.8.8.8
R1(dhcp-config)#exit
R1(config)#do wr
Building configuration...
[OK]
R1(config)#
```

9. 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.

```
R1>
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#ip dhcp pool administracion
R1(dhcp-config)#network 192.158.30.0 255.255.255.0
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-unad.com
                ^
% Invalid input detected at '^' marker.

R1(dhcp-config)#default-router 172.31.21.0
R1(dhcp-config)#domain-name ccna-unad.com
                ^
% Invalid input detected at '^' marker.

R1(dhcp-config)#domain-name ccna-unad.com
                ^
% Invalid input detected at '^' marker.
```

```
R1(dhcp-config)#
R1(dhcp-config)#exit
R1(config)#ip dhcp pool mercadeo
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#defaul-router 172.31.21.0
                      ^
% Invalid input detected at '^' marker.

R1(dhcp-config)#defaul-router 192.168.1.1
                      ^
% Invalid input detected at '^' marker.

R1(dhcp-config)#default-router 172.31.21.0
R1(dhcp-config)#domain-name ccna-unad.com
                ^
% Invalid input detected at '^' marker.

R1(dhcp-config)#
```

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

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#interface g0/0
R2(config-if)#ip nat inside
R2(config-if)#interface s0/0
%Invalid interface type and number
R2(config)#interface s0/0/1
R2(config-if)#ip nat outside
R2(config-if)#interface s0/0/0
R2(config-if)#ip nat outside
R2(config-if)#
```

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.

```
R1>en
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#access-list 1 deny 172.31.21.0 0.0.0.255
R1(config)#access-list 1 permit any
R1(config)#int g0/0
R1(config-if)#ip access-group 1 out
R1(config-if)#
```

```
R1#show access-list
Standard IP access list 1
    10 deny 172.31.21.0 0.0.0.255
    20 permit any

R1#
```

```
R2>en
R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#access-list 1 deny 192.168.1.2 0.0.0.255
R2(config)#access-list 1 permit any
R2(config)#int g0/1.1
R2(config-subif)#ip access-group 1 out
R2(config-subif)#
```

```
R2#show access-list
Standard IP access list 1
    10 deny 192.168.1.0 0.0.0.255
    20 permit any

R2#
```

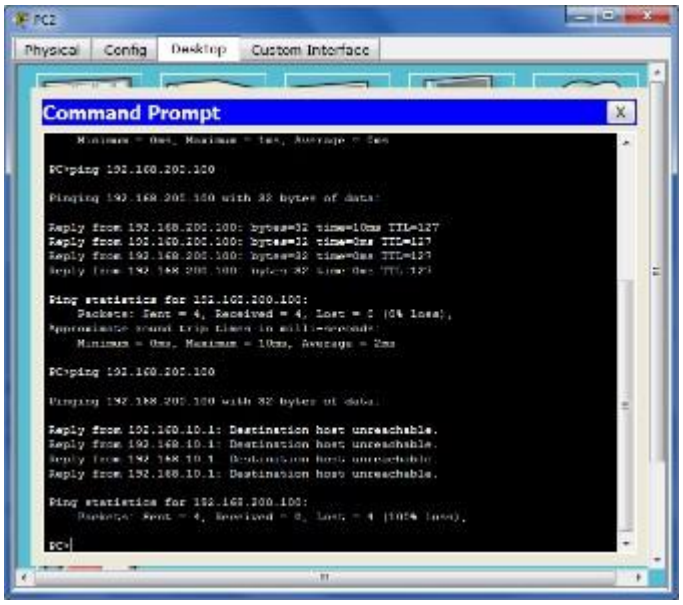
```
R3>en
R3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#access-list 1 deny 172.31.23.0 0.0.0.255
R3(config)#access-list 1 permit any
R3(config)#int g0/0
R3(config-if)#ip access-group 1 out
R3(config-if)#
```

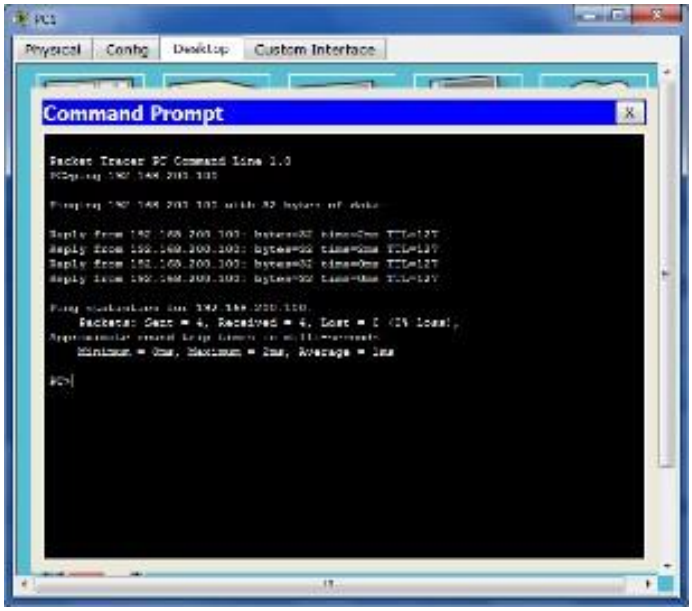
```
R3#show access-list
Standard IP access list 1
    10 deny 172.31.23.0 0.0.0.255
    20 permit any

R3#
```

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.

13. Verificar procesos de comunicación y redireccionamiento de tráfico en los Routers mediante el uso de Ping y Traceroute.





Conclusiones

- Se logró cumplir con los objetivos en lo concerniente a la configuración e interconexión entre sí de cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP.

- Se fomentó el interés por el desarrollo profesional de los diferentes procesos que involucra el mundo de las telecomunicaciones.

Bibliografía

Cisco Packet Tracer recuperado de https://www.netacad.com/es/web/about-us/cisco-packet-tracer

Guía de desarrollo de practica final recuperado de https://drive.google.com/file/d/1-7Rm5AmCFIM0cEBRctifk66pIsZA8POH/view