



DIPLOMADO DE PROFUNDIZACION DE CISCO

DISEÑO E IMPLEMENTACION DE SOLUCIONES INTEGRADAS LAN / WLAN

PRUEBA DE HABILIDADES PRÁCTICAS CCNA

ESTUDIANTE

DARWIN FERNANDO URREGO – CODIGO: 1.104.696.856

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD

ESCUELA DE CIENCIAS BÁSICAS TECNOLOGÍA E INGENIERÍA

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RESUMEN

El comprender la importancia en el diseño, desarrollo y aplicación de las telecomunicaciones, nos indican los avances tecnológicos que el mundo está logrando día tras día, todo esto con el fin de suplir diferentes necesidades a la sociedad; ya sea de tipo industrial o de pequeños hogares que solicitan un servicio en particular; por este motivo nos vemos en la necesidad de alcanzar cada vez mas metas en el desarrollo de nuevas tecnologías de comunicación mediante el aprendizaje continuo evidenciadas en el presente trabajo.

La universidad Nacional Abierta y a Distancia UNAD en compañía de la plataforma CISCO Networking Academy, establecieron una estrategia de aprendizaje basado en el desarrollo de prácticas evaluativas con el fin de brindar nuevos conocimientos a estudiantes mediante la implementación del curso denominado, “DIPLOMADO DE PROFUNDIZACIÓN CISCO (DISEÑO E IMPLEMENTACIÓN DE SOLUCIONES INTEGRADAS LAN / WAN)”, el cual dispone de módulos distribuidos de nivel básico bajo el nombre de “Fundamentos del Networking” basado en exploraciones de redes para lograr sus respectivos diseños y configuraciones, para finalmente llegar hasta un nivel avanzado el cual se llama “Enrutamiento en soluciones de red”, el cual permite la correcta configuración de routers y switches para un mejor manejo de una red y a su vez lograr métodos de resolución de problemas presentados.



ABSTRACT

Understanding the importance in the design, development and application of telecommunications, indicates the technological advances that the world is achieving day after day, all this in order to supply different needs to society; whether industrial or small households that request a particular service; for this reason we see ourselves in the need to achieve more and more goals in the development of new communication technologies through continuous learning evidenced in this work.

The National Open University and Distance UNAD in company of the platform CISCO Networking Academy, established a learning strategy based on the development of evaluative practices in order to provide new knowledge to students through the implementation of the course called, " CISCO deepening diploma (Design and implementation of integrated solutions LAN / WAN), "which has distributed modules of basic level under the name of" Fundamentals of Networking "based on network scans to achieve their respective designs and configurations, to finally reach an advanced level which is called "Routing in network solutions", which allows the correct configuration of routers and switches for a better management of a network and in turn to achieve problem solving methods presented.



GLOSARIO

Switch: Dispositivo de características digitales que se necesita para interconectar redes de ordenadores. El switch opera en el nivel del cruzamiento o combinación de datos y tiene como finalidad principal garantizar la interconexión de un mínimo de dos segmentos de red, similar a la función de un puente (bridge).

Router: Se trata de un producto de hardware que permite interconectar computadoras que funcionan en el marco de una red. Se encarga de establecer qué ruta se destinará a cada paquete de datos dentro de una red informática. Puede ser beneficioso en la interconexión de computadoras, en la conexión de los equipos a Internet o para el desarrollo interno de quienes proveen servicios de Internet.

VLAN: Refiere a una red de área local (lo que conocemos como LAN) de carácter virtual. Se trata de un concepto que se emplea en el terreno de la informática para nombrar al desarrollo de redes lógicas vinculadas a una única red de tipo físico. Esto quiere decir que, en una misma red física, pueden establecerse diferentes VLAN.

NAT: Es un mecanismo utilizado por routers IP para intercambiar paquetes entre dos redes que asignan mutuamente direcciones incompatibles. Consiste en convertir, en tiempo real, las direcciones utilizadas en los paquetes transportados. También es necesario editar los paquetes

para permitir la operación de protocolos que incluyen información de direcciones dentro de la conversación del protocolo.

Topología: En el ámbito de la informática, la topología de red representa un conjunto de ordenadores comunicados entre sí para el intercambio de información, donde cada uno se denomina nodo.

Contenido

INTRODUCCIÓN	8
Objetivos	9
Objetivo General.....	9
Objetivos Específicos	9
ESCENARIO 1	10
Descripción de las actividades Escenario 1	14
Código de configuración escenario 1:	38
ESCENARIO 2	55
Descripción de las actividades Escenario 2:	56
Código de Configuración escenario 2:.....	83
CONCLUSIONES	102
REFERENCIAS.....	103

INTRODUCCIÓN

El presente informe evidencia el desarrollo del examen de habilidades prácticas, en el cual se muestra por medio del software packet tracer la configuración de protocolos de enrutamiento OSPFv2, además se configuran detalladamente VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Network Address Translation (NAT), de acuerdo a lo establecido en la guía planteada.

Se implementaría en el escenario 1; NAT, servidor de DHCP, RIPV2 y el respectivo routing entre VLAN, desarrollando su respectiva configuración de direcciones IP, las VLAN, los enlaces troncales y las sub-interfaces.

Se establecerán procesos de verificación los cuales identifiquen que cada implementación en la topología realizada funcione y así se tenga procesos de comunicación y redirecciónamiento de tráfico en los routers sin intermitencias en la red.

Finalmente con la implementación de las telecomunicaciones podemos desarrollar desde redes pequeñas en oficinas o locales hasta grandes empresas que no solo comuniquen lugares a corta distancia si no que se puede llegar a establecer comunicaciones en cualquier lugar del mundo supliendo necesidades según sea el caso de cualquier cliente.

Objetivos

Objetivo General

Establecer mediante el uso de herramientas virtuales la capacidad de configurar y administrar dispositivos Networking orientados al diseño de redes, mediante arquitecturas TCP/IP, en búsqueda de aplicar y adquirir conocimientos que permitan optimizar y mantener segura cualquier tipo de red.

Objetivos Específicos

Comprender el funcionamiento de cada dispositivo en una red.

Diseñar y comprender el funcionamiento de una topología de red.

Configurar de forma básica dispositivos como routers, switches y servidores.

Implementar VLANs en el diseño de redes.

Configurar mediante la Implementación de OSPFv2 dispositivos que originen o procesen información de protocolos en la red.

Determinar niveles de seguridad para administrar una red.

SOLUCION DE LAS ACTIVIDADES

ESCENARIO 1

Topología de red

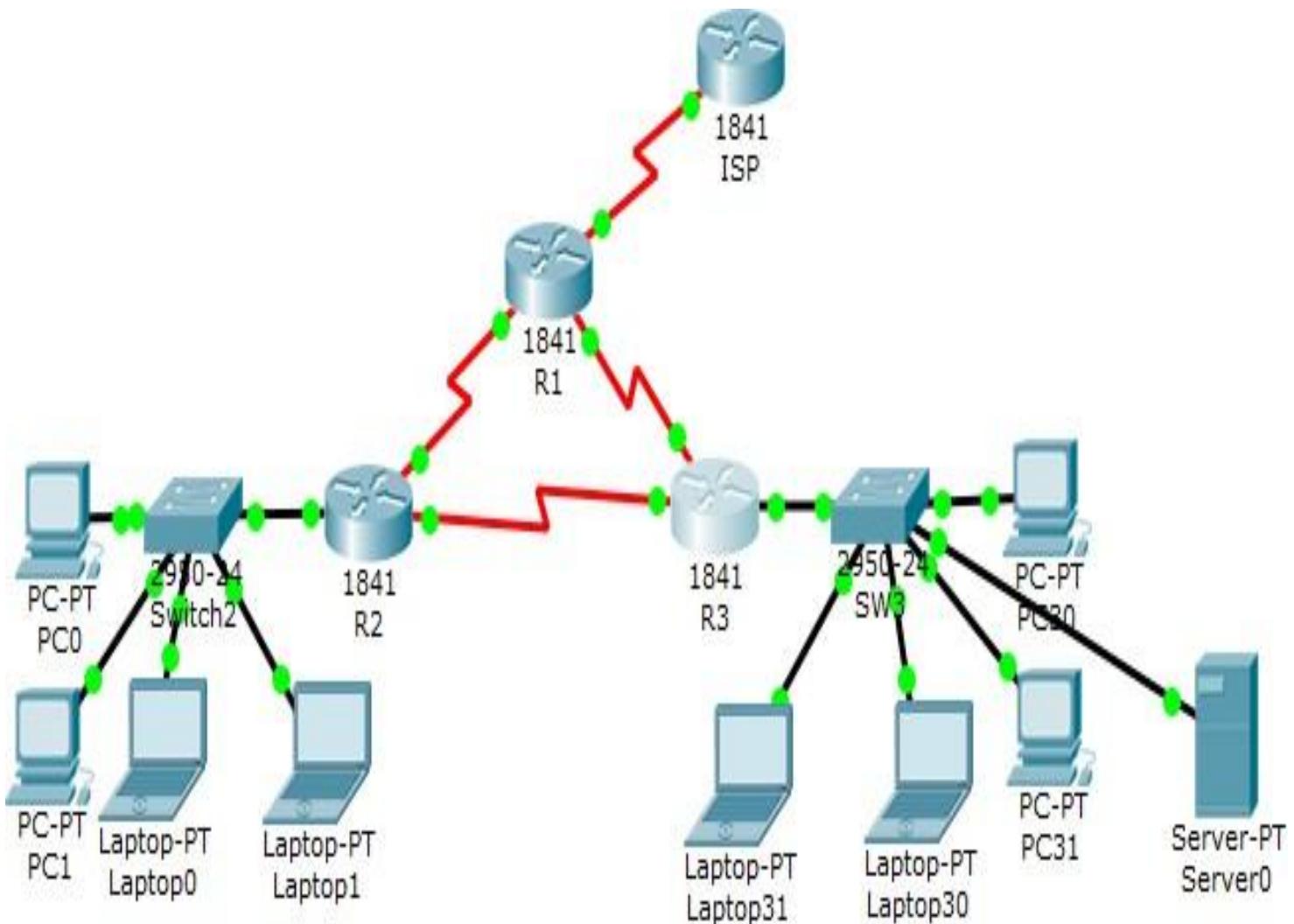


Tabla de direccionamiento

El administrador	Interfaces	Dirección IP	Máscara de subred	Gateway predeterminado
ISP	S0/0/0	200.123.211.1	255.255.255.0	N/D
R1	Se0/0/0	200.123.211.2	255.255.255.0	N/D
	Se0/1/0	10.0.0.1	255.255.255.252	N/D
	Se0/1/1	10.0.0.5	255.255.255.252	N/D
	Fa0/0,100	192.168.20.1	255.255.255.0	N/D
R2	Fa0/0,200	192.168.21.1	255.255.255.0	N/D
	Se0/0/0	10.0.0.2	255.255.255.252	N/D
	Se0/0/1	10.0.0.9	255.255.255.252	N/D
	Fa0/0	192.168.30.1 2001:db8:130::9C0:80F:301	255.255.255.0 /64	N/D
R3	Se0/0/0	10.0.0.6	255.255.255.252	N/D
	Se0/0/1	10.0.0.10	255.255.255.252	N/D
SW2	VLAN 100	N/D	N/D	N/D
	VLAN 200	N/D	N/D	N/D
SW3	VLAN1	N/D	N/D	N/D

PC20	NIC	DHCP	DHCP	DHCP
PC21	NIC	DHCP	DHCP	DHCP
PC30	NIC	DHCP	DHCP	DHCP
PC31	NIC	DHCP	DHCP	DHCP
Laptop20	NIC	DHCP	DHCP	DHCP
Laptop21	NIC	DHCP	DHCP	DHCP
Laptop30	NIC	DHCP	DHCP	DHCP
Laptop31	NIC	DHCP	DHCP	DHCP

Tabla de asignación de VLAN y de puertos

Dispositivo	VLAN	Nombre	Interfa z
SW2	100	LAPTOPS	Fa0/2-3
SW2	200	DESTOPS	Fa0/4-5
SW3	1	-	Todas las interfaces

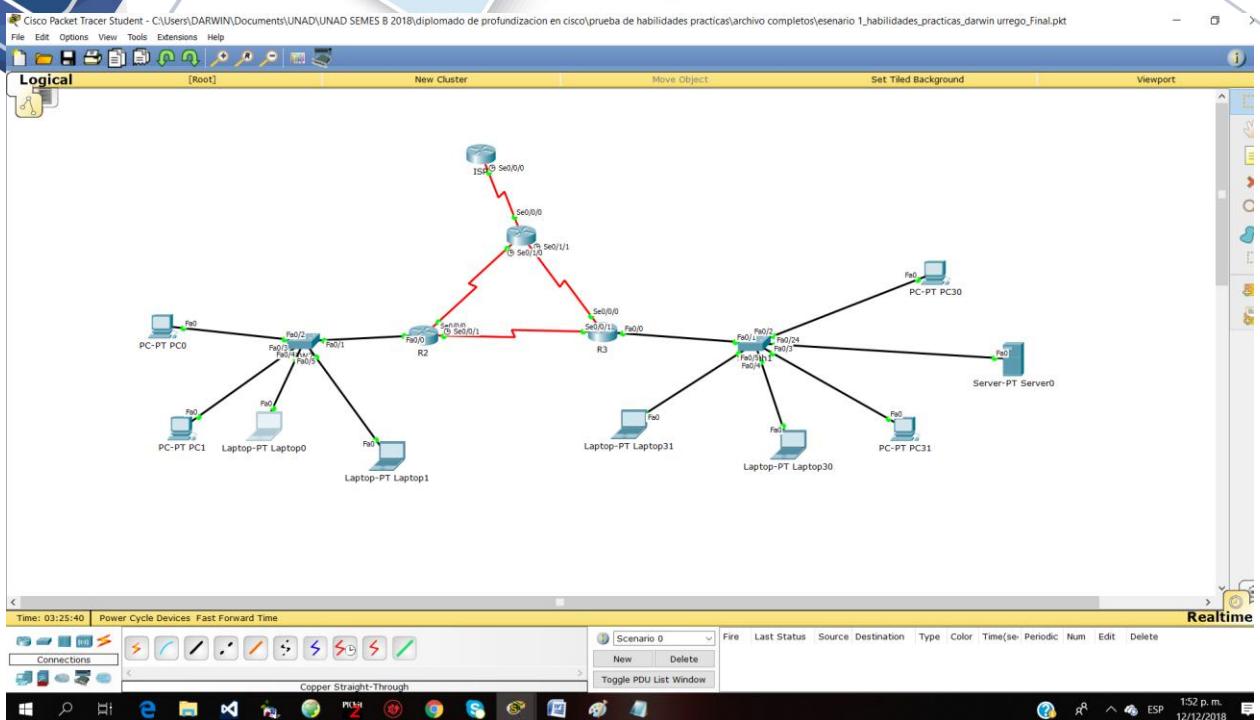
Tabla de enlaces troncales

Dispositivo local	Interfaz local	Dispositivo remoto
SW2	Fa0/2-3	100

Situación

En esta actividad, demostrará y reforzará su capacidad para implementar NAT, servidor de DHCP, RIPV2 y el routing entre VLAN, incluida la configuración de direcciones IP, las VLAN, los enlaces troncales y las sub-interfaces. Todas las pruebas de alcance deben realizarse a través de ping únicamente.

Topología Implementada:



Descripción de las actividades Escenario 1

- SW1 VLAN y las asignaciones de puertos de VLAN deben cumplir con la tabla1.

Switch1

Physical Config CLI

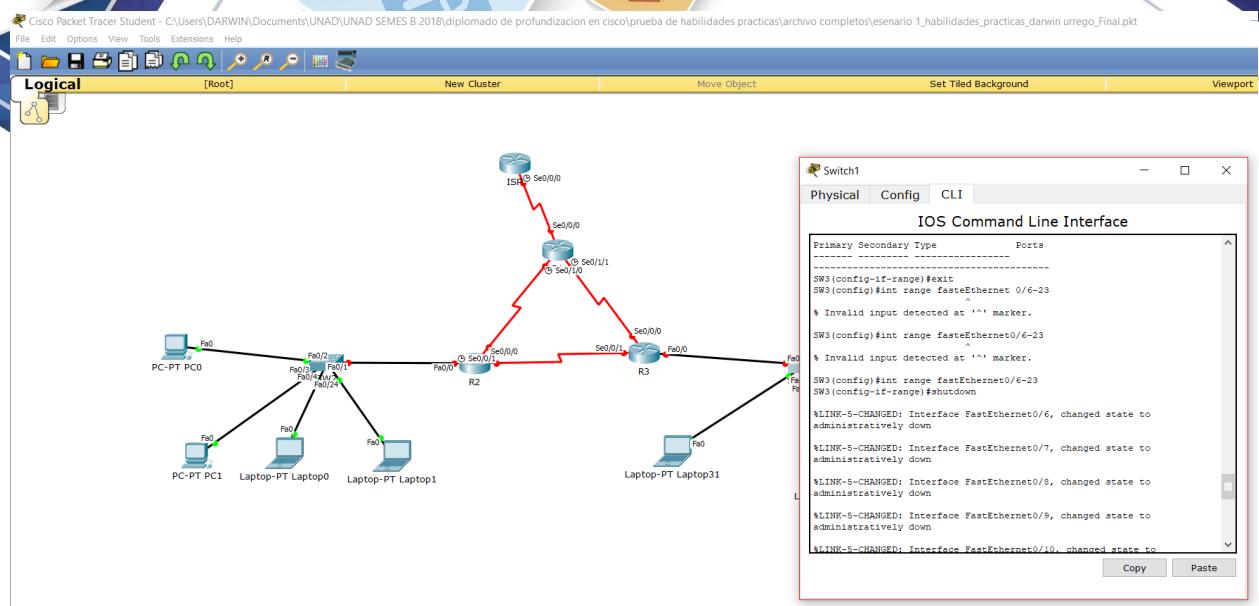
IOS Command Line Interface

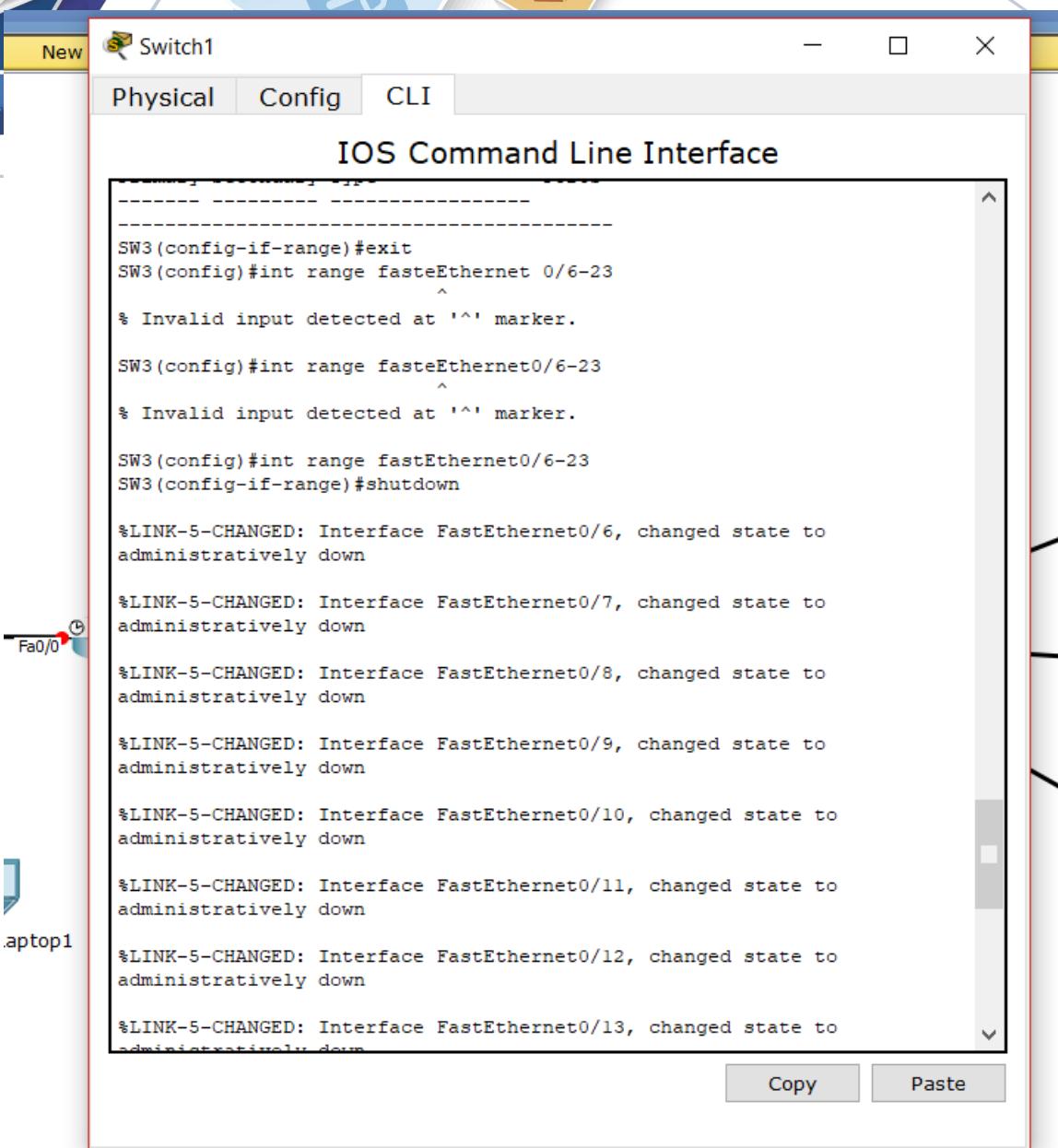
```
SW3#show vlan

VLAN Name          Status      Ports
----- -----
1     default      active      Fa0/1, Fa0/2, Fa0/3,
                           Fa0/4
                           Fa0/8
                           Fa0/12
                           Fa0/16
                           Fa0/20
                           Fa0/24
                           1002 fddi-default
                           1003 token-ring-default
                           1004 fdnet-default
                           1005 trnet-default

VLAN Type   SAID      MTU      Parent RingNo BridgeNo Stp    BrdgMode Transl
Trans2
----- -----
1     enet    100001   1500      -        -        -        -        -        0
0
1002 fddi   101002   1500      -        -        -        -        -        0
0
1003 tr     101003   1500      -        -        -        -        -        0
0
1004 fdnet  101004   1500      -        -        -        ieee   -        0
0
1005 trnet  101005   1500      -        -        -        atm    -        0
```

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Eliminación Vlan 100 y 200 según tabla:

SW2

Physical Config CLI

IOS Command Line Interface

```

Primary Secondary Type          Ports
----- -----
SW2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
SW2(config)#no vlan 100
SW2(config)#no vlan 200
SW2(config)#do show vlan

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
1002 fddi-default   act/unsup
1003 token-ring-default act/unsup
1004 fddinet-default act/unsup
1005 trnet-default   act/unsup

VLAN Type SAID      MTU    Parent RingNo BridgeNo Stp  BrdgMode Transl
Trans2
----- -----
1     enet  100001    1500   -     -     -     -     -     0
0
1002 fddi  101002    1500   -     -     -     -     -     0
0
1003 tr    101003    1500   -     -     -     -     -     0

```

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Configuración de nombres VLAN y activación de fast Ethernet 100-200 de los laptops y desktops.


 SW2

Physical Config CLI

IOS Command Line Interface

Primary	Secondary	Type	Ports
<hr/>			
SW2 (config)#vlan 100			
SW2 (config-vlan)#name LAPTOPS			
SW2 (config-vlan)#VLAN 200			
SW2 (config-vlan)#name DESKTOPS			
SW2 (config-vlan)#exit			
SW2 (config)#int range fastEthernet 0/2-3			
SW2 (config-if-range)#switchport mode access			
SW2 (config-if-range)#switchport access vlan 100			
SW2 (config-if-range)#int range fastEthernet 0/4-5			
SW2 (config-if-range)#switchport mode access			
SW2 (config-if-range)#switchport access vlan 200			
SW2 (config-if-range)#exit			
SW2 (config)#do show vlan			
<hr/>			
VLAN	Name	Status	Ports
<hr/>			
1	default	active	Fa0/1, 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			
100	LAPTOPS	active	Fa0/2, Fa0/3
200	DESKTOPS	active	Fa0/4, Fa0/5
1002	fddi-default	act/unsup	
1003	token-ring-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trnet-default	act/unsup	

VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Transl

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- Los puertos de red que no se utilizan se debendeshabilitar.

SW2

Physical Config CLI

IOS Command Line Interface

```

Fa0/16                               Fa0/17, Fa0/18, Fa0/19,
Fa0/20                               Fa0/21, Fa0/22, Fa0/23,
Fa0/24
  100 LAPTOPS                         active   Fa0/2, Fa0/3
  200 DESKTOPS                        active   Fa0/4, Fa0/5
  1002 fddi-default                   act/unsup
  1003 token-ring-default            act/unsup
  1004 fddinet-default               act/unsup
  1005 trnet-default                 act/unsup

VLAN Type SAID          MTU Parent RingNo BridgeNo Stp BrdgMode Transl
Trans2
-----
  1   enet  100001      1500  -    -    -    -    -    0
  0
  100  enet  100100      1500  -    -    -    -    -    0
  0
  200  enet  100200      1500  -    -    -    -    -    0
  0
  1002 fddi  101002      1500  -    -    -    -    -    0
  0
  1003 tr   101003      1500  -    -    -    -    -    0
  0

SW2(config)#int range f0/6-24
SW2(config-if-range)#shutdown

%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

```

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- La información de dirección IP R1, R2 y R3 debe cumplir con la tabla1.



Physical Config CLI

IOS Command Line Interface

```
4 Low-speed serial(sync/async) network interface(s)
191K bytes of NVRAM.
63488K bytes of ATA CompactFlash (Read/Write)
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version
12.4(15)T1, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

Router>enable
Router#config term
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#host ISP
ISP(config)#int s0/0/0
ISP(config-if)#ip add 200.123.211.1 255.255.255.0
ISP(config-if)#no shutdown

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

ISP(config-if)#

```

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Configuración R1:


 R1

Physical Config CLI

IOS Command Line Interface

```

Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#no ip address
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#no ip add
Router(config-if)#ip add 200.123.211.1 255.255.255.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router(config-if)#interface Serial0/1/0
Router(config-if)#no ip add
Router(config-if)#ip add 10.0.0.1 255.255.255.252
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Router(config-if)#
Router(config-if)#interface Serial0/1/1
Router(config-if)#no ip add
Router(config-if)#ip add 10.0.0.5 255.255.255.252
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#interface Serial0/0/0
Router(config-if)#no ip add
Router(config-if)#ip add 200.123.211.2 255.255.255.0

```

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Configuración R2:

R2

Physical Config CLI

IOS Command Line Interface

```
Router(config-if)#no shutdown

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

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

Router(config-if)#exit
Router(config)#hostname R2
R2(config)#int s0/0/0
R2(config-if)#no ip add
R2(config-if)#ip add 10.0.0.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#int s0/0/1
R2(config-if)#no ip add
R2(config-if)#ip add 10.0.0.9 255.255.255.252
R2(config-if)#exit
R2(config)#int f0/0.100
R2(config-subif)#encapsulation dot1q 100
R2(config-subif)#ip add 192.168.20.1 255.255.255.0
R2(config-subif)#int f0/0.200
R2(config-subif)#encapsulation dot1q 200
R2(config-subif)#ip add 192.168.21.1 255.255.255.0
R2(config-subif)#do show run
Building configuration...

Current configuration : 1054 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R2
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
```

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R2

Physical Config CLI

IOS Command Line Interface

```
!
!
!
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
shutdown
!
interface FastEthernet0/0.100
encapsulation dot1Q 100
ip address 192.168.20.1 255.255.255.0
!
interface FastEthernet0/0.200
encapsulation dot1Q 200
ip address 192.168.21.1 255.255.255.0
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
ip address 10.0.0.2 255.255.255.252
!
interface Serial0/0/1
ip address 10.0.0.9 255.255.255.252
clock rate 2000000
shutdown
!
interface Serial0/1/0
no ip address
clock rate 2000000
shutdown
!
interface Serial0/1/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
!
router rip
```

Copy

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Configuración R3:

R3

Physical Config CLI

IOS Command Line Interface

```
Copyright (c) 1986-2007 by Cisco Systems, Inc.  
Compiled Wed 18-Jul-07 04:52 by pt_team  
  
Press RETURN to get started!  
  
Router>enable  
Router#config term  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#host R3  
R3(config)#int s0/0/0  
R3(config-if)#no ip add  
R3(config-if)#ip add 10.0.0.6 255.255.255.252  
R3(config-if)#no shut  
  
R3(config-if)#  
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up  
  
R3(config-if)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed  
state to up  
  
R3(config-if)#int s0/0/1  
R3(config-if)#no ip add  
R3(config-if)#ip add 10.0.0.10 255.255.255.252  
R3(config-if)#no shut  
  
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down  
R3(config-if)#  
R3(config-if)#exit  
R3(config)#ipv6 unicast-routing  
R3(config)#int fa0/0  
R3(config-if)#ipv6 add 2001:db8:130::9/64  
R3(config-if)#  
R3#  
%SYS-5-CONFIG_I: Configured from console by console  
  
R3#  
  
R3 con0 is now available
```

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R3

Physical Config CLI

IOS Command Line Interface

```
Press RETURN to get started.
```

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

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

R3>config term
      ^
% Invalid input detected at '^' marker.

R3>enable
R3#config term
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#int fa0/0
R3(config-if)#no ipv6 add
R3(config-if)#ipv6 unicast-routing
R3(config)#int fa0/0
R3(config-if)#ipv6 add 2001:db8:130::9C0/64
R3(config-if)#shutdown
R3(config-if)#exit
R3(config)#int fa0/0
R3(config-if)#ip add 192.168.30.1 255.255.255.0
R3(config-if)#no shutdown

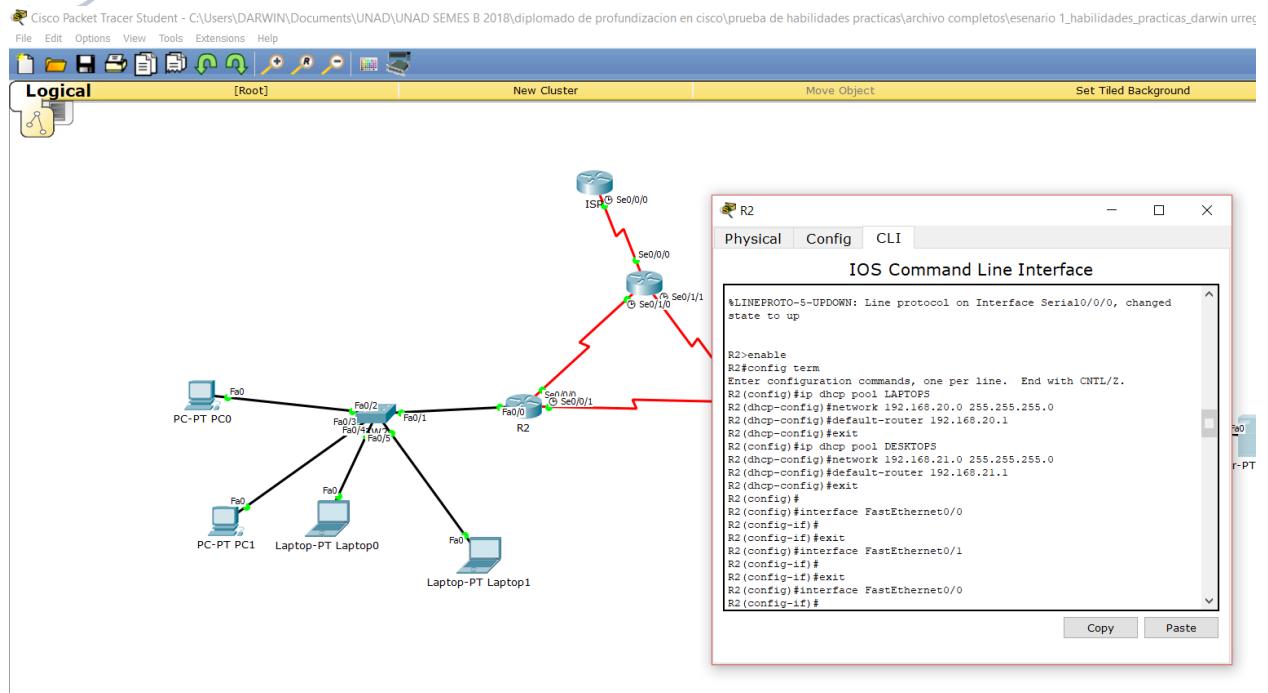
R3(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up
```

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- **Laptop20, Laptop21, PC20, PC21, Laptop30, Laptop31, PC30 y PC31**
deben obtener información IPv4 del servidor DHCP.



- **R1** debe realizar una NAT con sobrecarga, sobre una dirección IPv4 pública.
Asegúrese de que todos los terminales pueden comunicarse con Internet pública (haga ping a la dirección ISP) y la lista de acceso estándar se **llama INSIDE-DEVS**.


 R1

Physical Config CLI

IOS Command Line Interface

```

state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed
state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed
state to up

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

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


R1>enable
R1#config term
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip na [REDACTED]
% Ambiguous command: "ip na"
R1(config)#ip nat pool ANY 203.123.211.1 200.123.211.1 netmask
255.255.255.252 [REDACTED]
%Pool ANY mask 255.255.255.252 too small; should be at least 0.0.0.0
%Start and end addresses on different subnets [REDACTED]
R1(config)#ip nat pool ANY 203.123.211.1 203.123.211.1 netmask
255.255.255.252 [REDACTED]
R1(config)#access-list 10 permit any
R1(config)#ip nat inside source list 10 pool ANY overload
R1(config)#int s0/1/0 [REDACTED]
R1(config-if)#ip nat inside
R1(config-if)#int s0/1/1 [REDACTED]
R1(config-if)#ip nat inside
R1(config-if)#int s0/0/0 [REDACTED]
R1(config-if)#ip nat outside
R1(config-if)#exit [REDACTED]
R1(config)#no access-list 10
R1(config)#access-list INSIDE-DEVS P
^
% Invalid input detected at '^' marker.

R1(config)#access-list INSIDE-DEVS
^
% Invalid input detected at '^' marker.

R1(config)#
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#

```

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 R1

Physical Config CLI

IOS Command Line Interface

```

R1(config-if)#exit
R1(config)#no access-list 10
R1(config)#access-list INSIDE-DEVS P
^
% Invalid input detected at '^' marker.

R1(config)#access-list INSIDE-DEVS
^
% Invalid input detected at '^' marker.

R1(config)#
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#config
Configuring from terminal, memory, or network [terminal]? config term
?Must be "terminal", "memory" or "network"
R1#enable
R1#config term
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#access-list INSIDE-DEVS
^
% Invalid input detected at '^' marker.

R1(config)#ip access-list standard INSIDE-DEVS
^
% Invalid input detected at '^' marker.

R1(config)#ip access-list standard INSIDE-DEVS ?
% Unrecognized command
R1(config)#ip access-list standard INSIDE-DEVS ?
% Unrecognized command
R1(config)#ip access-list standard INSIDE-DEVS
^
% Invalid input detected at '^' marker.

R1(config)#ip access-list?
access-list
R1(config)#ip access-list standard INSIDE-DEVS
R1(config-std-nacl)#permit any
R1(config-std-nacl)#exit
R1(config)#ip nat
% Incomplete command.
R1(config)#ip n
% Ambiguous command: "ip n"
R1(config)#ip na
% Ambiguous command: "ip na"
R1(config)#ip nat
% Incomplete command.
R1(config)#ip nat inside source list INSIDE-DEVS pool ANY overload
R1(config)#
  
```


- R1 debe tener una ruta estática predeterminada al ISP que se configuró y que incluye esa ruta en el dominio RIPv2.

R1

Physical Config CLI

IOS Command Line Interface

```
% Invalid input detected at '^' marker.

R1(config)#ip access-list?
access-list
R1(config)#ip access-list standard INSIDE-DEVS
R1(config-std-nacl)#permit any
R1(config-std-nacl)#exit
R1(config)#ip nat
% Incomplete command.
R1(config)#ip n
% Ambiguous command: "ip n"
R1(config)#ip na
% Ambiguous command: "ip na"
R1(config)#ip nat
% Incomplete command.
R1(config)#ip nat inside source list INSIDE-DEVS pool ANY overload
R1(config)#
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#do show ip route connected
C 10.0.0.0/30  is directly connected, Serial0/1/0
C 10.0.0.4/30  is directly connected, Serial0/1/1
C 200.123.211.0/24 is directly connected, Serial0/0/0
R1(config-router)#network 10.0.0.0
R1(config-router)#network 10.0.0.4
R1(config-router)#network 200.123.211.0
R1(config-router)#default-information originate
R1(config-router)#exit
R1(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0
R1(config)|
```

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R3

Physical Config CLI

IOS Command Line Interface

```
% Ambiguous command: "ip r"
R3(config)#do show ip route connected
C  10.0.0.4/30  is directly connected, Serial0/0/0
C  10.0.0.8/30  is directly connected, Serial0/0/1
C  192.168.30.0/24  is directly connected, FastEthernet0/0
R3(config)#network 10.0.0.4
^
% Invalid input detected at '^' marker.

R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#do show ip route connected
C  10.0.0.4/30  is directly connected, Serial0/0/0
C  10.0.0.8/30  is directly connected, Serial0/0/1
C  192.168.30.0/24  is directly connected, FastEthernet0/0
R3(config-router)#network 10.0.0.4
R3(config-router)#network 10.0.0.8
R3(config-router)#network 192.168.30.0
R3(config-router)#

```

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 R2

Physical Config CLI

IOS Command Line Interface

```

R2>enable
R2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#route ip
^
% Invalid input detected at '^' marker.

R2(config)#route rip
R2(config-router)#version 2
R2(config-router)#do show ip route connected
C 10.0.0.0/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.20.0/24 is directly connected, FastEthernet0/0.100
C 192.168.21.0/24 is directly connected, FastEthernet0/0.200
R2(config-router)#network 10.0.0.0
R2(config-router)#network 10.0.0.8
R2(config-router)#network 192.168.20.1
R2(config-router)#network 192.168.21.1
R2(config-router)#exit
R2(config)#do show ip route
Codes: C - connected, S - static, I - IGRP, 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 10.0.0.1 to network 0.0.0.0

      10.0.0.0/30 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, Serial0/0/0
R    10.0.0.4 [120/1] via 10.0.0.1, 00:00:00, Serial0/0/0
                  [120/1] via 10.0.0.10, 00:00:15, Serial0/0/1
C    10.0.0.8 is directly connected, Serial0/0/1
C    192.168.20.0/24 is directly connected, FastEthernet0/0.100
C    192.168.21.0/24 is directly connected, FastEthernet0/0.200
R    192.168.30.0/24 [120/1] via 10.0.0.10, 00:00:15, Serial0/0/1
R    200.123.211.0/24 [120/1] via 10.0.0.1, 00:00:00, Serial0/0/0
R*   0.0.0.0/0 [120/1] via 10.0.0.1, 00:00:00, Serial0/0/0
R2(config)#
  
```

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- **R2** es un servidor de DHCP para los dispositivos conectados al puerto FastEthernet0/0.

- R2 debe, además de enruteamiento a otras partes de la red, ruta entre las VLAN 100 y 200.

SW2

Physical Config CLI

IOS Command Line Interface

```
Fa0/16
Fa0/20
Fa0/24
100 LAPTOPS
200 DESKTOPS
1002 fddi-default
1003 token-ring-default
1004 fddinet-default
1005 trnet-default

VLAN Type SAID      MTU    Parent RingNo BridgeNo Stp   BrdgMode Transl
Trans2
-----
1   enet  100001    1500   -
0
100  enet  100100    1500   -
0
200  enet  100200    1500   -
0
1002 fddi  101002    1500   -
0
1003 tr   101003    1500   -
0

SW2(config)#int range f0/6-24
SW2(config-if-range)#shutdown

%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
```

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- El Servidor 0 es sólo un servidor IPv6 y solo debe ser accesible para los dispositivos en R3 (ping).

R3

Physical Config CLI

IOS Command Line Interface

```
C 10.0.0.4/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.30.0/24 is directly connected, FastEthernet0/0
R3(config-router)#network 10.0.0.4
R3(config-router)#network 10.0.0.8
R3(config-router)#network 192.168.30.0
R3(config-router)#
R3(config-router)#
R3(config-router)#
R3(config-router)#
R3(config-router)#
R3(config)#exit
R3(config)#access-list 10 deny 192.168.30.6
R3(config)#access-list 10 permit any
R3(config)#show access-lists
^
% Invalid input detected at '^' marker.

R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#show access-lists
Standard IP access list 10
    10 deny host 192.168.30.6
    20 permit any
R3#
```

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 R3

Physical Config CLI

IOS Command Line Interface

```
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#show access-lists
Standard IP access list 10
  10 deny host 192.168.30.6
  20 permit any
R3#
R3#config term
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip access-group 10
% Incomplete command.
R3(config-if)#ip access-group 10?
<1-199> WORD
R3(config-if)#ip access-group 10
% Incomplete command.
R3(config-if)#ip access-group 10 in
R3(config-if)#ip access-group 10 ?
  in  inbound packets
  out  outbound packets
R3(config-if)#ip access-group 10
```

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- La NIC instalado en direcciones IPv4 e IPv6 de Laptop30, de Laptop31, de PC30 y obligación de configurados PC31 simultáneas (dual-stack). Las direcciones se deben configurar mediante DHCP y DHCPv6.

R3

Physical Config CLI

IOS Command Line Interface

```
R3>enable
R3#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface fastEthernet 0/0
R3(config-if)#ipv6 add
% Incomplete command.
R3(config-if)#ipv6 address fe80::1 link-local
R3(config-if)#ip ad
% Incomplete command.
R3(config-if)#ipv6 nd othe-config-flag
^
% Invalid input detected at '^' marker.

R3(config-if)#ipv6 nd other-config-flag
R3(config-if)#ipv6 dhcp server ?
WORD  Name of IPv6 DHCP pool
R3(config-if)#ipv6 dhcp server ANY
R3(config-if)#exit
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 dhcp pool ANY
R3(config-dhcp)#dns-server 2001:db8:130::
R3(config-dhcp)#

```

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- La interfaz FastEthernet 0/0 del R3 también deben tener direcciones IPv4 e IPv6 configuradas (dual- stack).

R3

Physical Config CLI

IOS Command Line Interface

```
R3>enable
R3#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface fastEthernet 0/0
R3(config-if)#ipv6 add
% Incomplete command.
R3(config-if)#ipv6 address fe80::1 link-local
R3(config-if)#ip ad
% Incomplete command.
R3(config-if)#ipv6 nd othe-config-flag
^
% Invalid input detected at '^' marker.

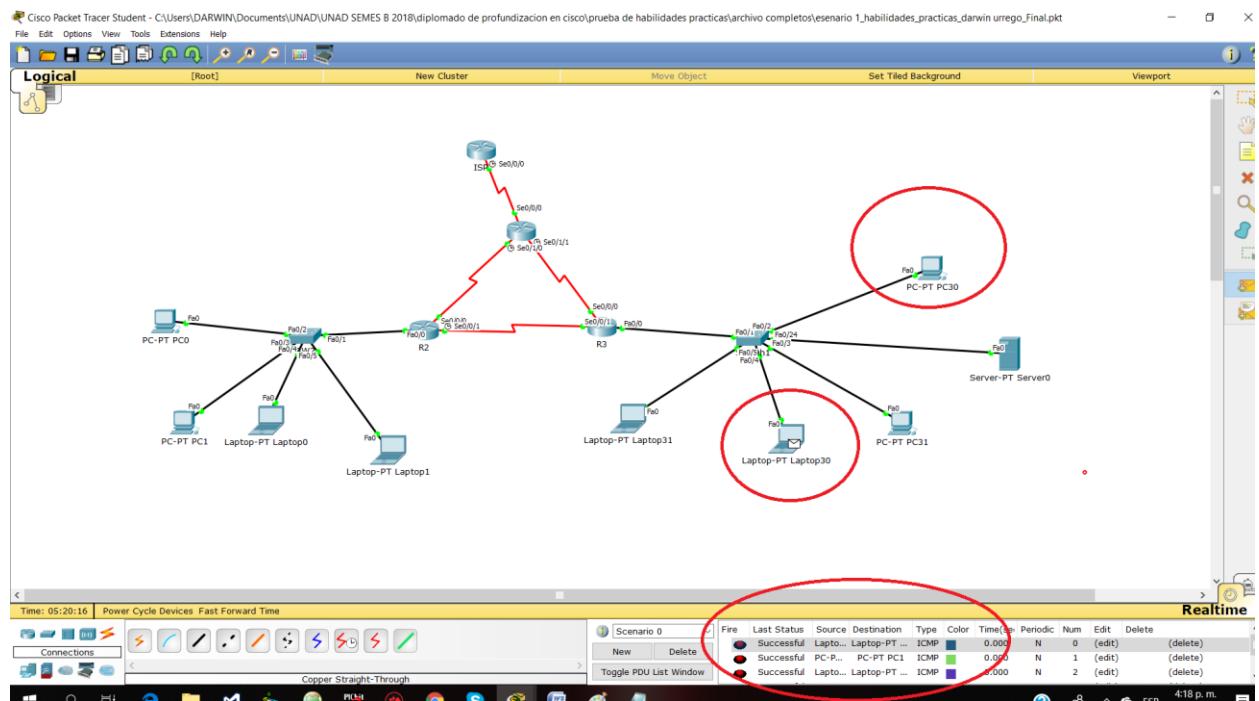
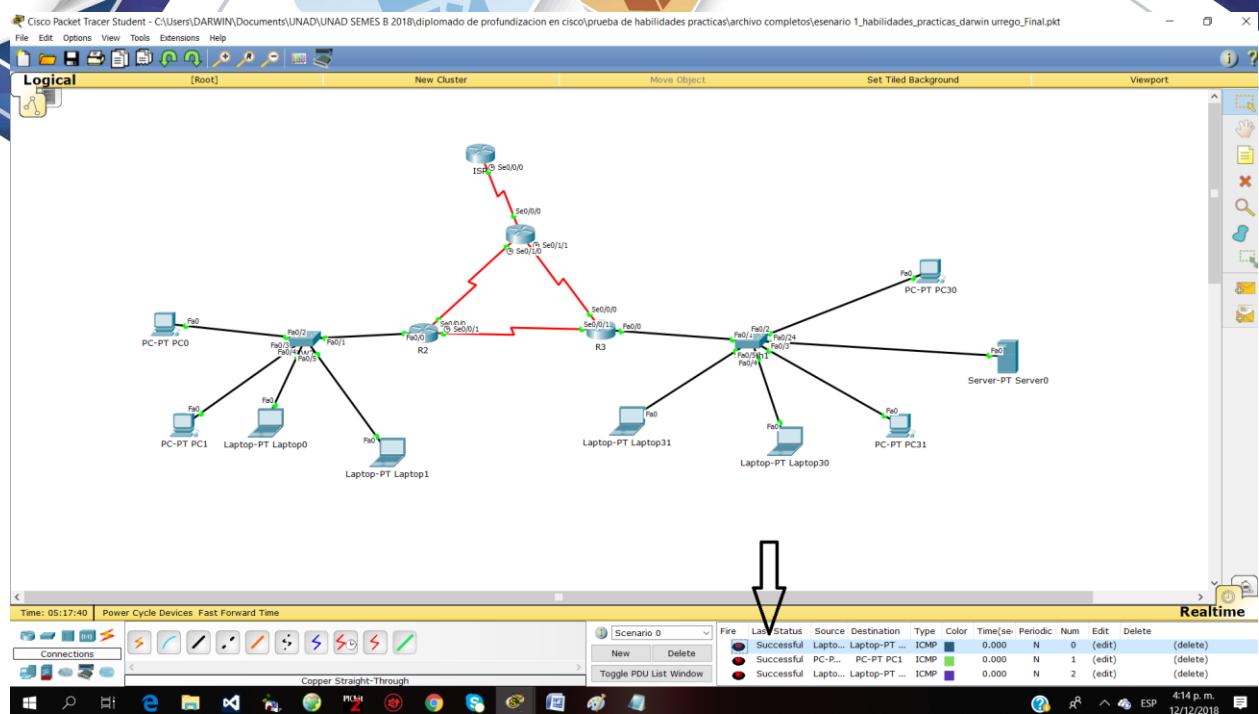
R3(config-if)#ipv6 nd other-config-flag
R3(config-if)#ipv6 dhcp server ?
    WORD  Name of IPv6 DHCP pool
R3(config-if)#ipv6 dhcp server ANY
R3(config-if)#exit
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 dhcp pool ANY
R3(config-dhcp)#dns-server 2001:db8:130::
R3(config-dhcp)#

```

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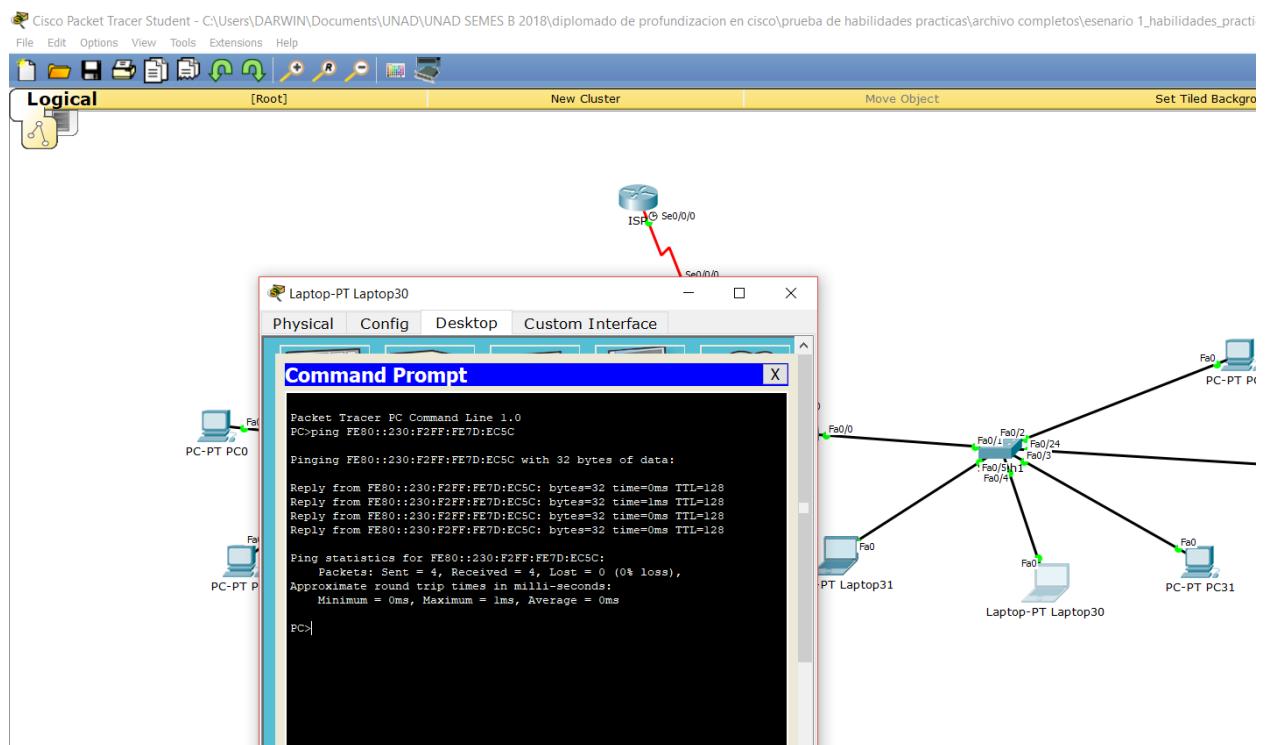
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- R1, R2 y R3 intercambian información de routing mediante RIP versión 2.



- R1, R2 y R3 deben saber sobre las rutas de cada uno y la ruta predeterminada desde R1.

- Verifique la conectividad. Todos los terminales deben poder hacer ping entre sí y a la dirección IP del ISP. Los terminales bajo el R3 deberían poder hacer IPv6-ping entre ellos y el servidor.



Código de configuración escenario 1:

```
#####
```

```
SW2
```

```
Switch>enable
```

```
Switch#config term
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

Switch(config)#host SW2

SW2(config)#exit

SW2#

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

#

SW2#conf term

Enter configuration commands, one per line. End with CNTL/Z.

SW2(config)#no vlan 100

SW2(config)#no vlan 200

SW2(config)#do show vlan

#

SW2(config)#vlan 100

SW2(config-vlan)#name LAPTOPS

SW2(config-vlan)#VLAN 200

SW2(config-vlan)#name DESKTOPS

SW2(config-vlan)#exit

SW2(config)#int range fastEthernet 0/2-3

SW2(config-if-range)#switchport mode access

SW2(config-if-range)#switchport access vlan 100

SW2(config-if-range)#int range fastEthernet 0/4-5

SW2(config-if-range)#switchport mode access

SW2(config-if-range)#switchport access vlan 200

SW2(config-if-range)#exit

SW2(config)#do show vlan

```
SW2(config)#int range f0/6-24
```

```
SW2(config-if-range)#shutdown
```

```
#####
```

SW3

```
Switch>enable
```

```
Switch#config term
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Switch(config)#host SW3
```

```
SW3(config)#show vlan
```

```
#
```

```
SW3#config term
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
SW3(config)#int range f0/1-24
```

```
SW3(config-if-range)#switchport mode access
```

```
SW3(config-if-range)#switchport access vlan 1
```

```
SW3(config-if-range)#do show vlan
```

```
#
```

```
SW3(config-if-range)#exit
```

```
SW3(config)#int range fastEthernet 0/6-23
```

```
#####
```

R1

Router>enable

Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface FastEthernet0/0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial0/0/0

Router(config-if)#no ip address

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial0/0/0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial0/0/0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial0/0/1

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial0/0/0

Router(config-if)#

Router(config-if)#exit

Router(config)#interface Serial0/0/0

Router(config-if)#no ip add

```
Router(config-if)#ip add 200.123.211.1 255.255.255.0
```

```
Router(config-if)#no shut
```

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down

```
Router(config-if)#interface Serial0/1/0
```

```
Router(config-if)#no ip add
```

```
Router(config-if)#ip add 10.0.0.1 255.255.255.252
```

```
Router(config-if)#no shutdown
```

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down

```
Router(config-if)#

```

```
Router(config-if)#interface Serial0/1/1
```

```
Router(config-if)#no ip add
```

```
Router(config-if)#ip add 10.0.0.5 255.255.255.252
```

```
Router(config-if)#no shutdown
```

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down

```
Router(config-if)#

```

```
Router(config-if)#

```

```
Router(config-if)#exit
```

```
Router(config)#interface Serial0/0/0
```

```
Router(config-if)#interface Serial0/0/0
```

```
Router(config-if)#no ip add
```

```
Router(config-if)#ip add 200.123.211.2 255.255.255.0
```

```
Router(config-if)#no shutdown
```

Router(config-if)#

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config-if)#exit

Router(config)#hostname R1

R1(config)#

#

R1>enable

R1#config term

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#ipna

% Ambiguous command: "ipna"

R1(config)#ipnat pool ANY 203.123.211.1 200.123.211.1 netmask 255.255.255.252

%Pool ANY mask 255.255.255.252 too small; should be at least 0.0.0.0

%Start and end addresses on different subnets

R1(config)#ipnat pool ANY 203.123.211.1 203.123.211.1 netmask 255.255.255.252

R1(config)#access-list 10 permit any

R1(config)#ipnat inside source list 10 pool ANY overload

R1(config)#int s0/1/0

R1(config-if)#ipnat inside

R1(config-if)#int s0/1/1

R1(config-if)#ipnat inside

R1(config-if)#int s0/0/0

R1(config-if)#ipnat outside

R1(config-if)#exit

R1(config)#no access-list 10

R1(config)#ip access-list?

access-list

R1(config)#ip access-list standard INSIDE-DEVS

R1(config-std-nacl)#permit any

R1(config-std-nacl)#exit

R1(config)#ipnat

% Incomplete command.

R1(config)#ip n

% Ambiguous command: "ip n"

R1(config)#ipna

% Ambiguous command: "ipna"

R1(config)#ipnat

% Incomplete command.

R1(config)#ipnat inside source list INSIDE-DEVS pool ANY overload

R1(config)#+

R1(config)#ip access-list?

access-list

R1(config)#ip access-list standard INSIDE-DEVS

R1(config-std-nacl)#permit any

R1(config-std-nacl)#exit

R1(config)#ipnat

% Incomplete command.

R1(config)#ip n

% Ambiguous command: "ip n"

R1(config)#ipna

% Ambiguous command: "ipna"

R1(config)#ipnat

% Incomplete command.

R1(config)#ipnat inside source list INSIDE-DEVS pool ANY overload

R1(config)#

R1(config)#router rip

R1(config-router)#version 2

R1(config-router)#do show ip route connected

C 10.0.0.0/30 is directly connected, Serial0/1/0

C 10.0.0.4/30 is directly connected, Serial0/1/1

C 200.123.211.0/24 is directly connected, Serial0/0/0

R1(config-router)#network 10.0.0.0

R1(config-router)#network 10.0.0.4

R1(config-router)#network 200.123.211.0

R1(config-router)#default-information originate

R1(config-router)#exit

R1(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0

R1(config)#

R1>enable

R1#conf term

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#ip access-list

% Incomplete command.

R1(config)#ip access-list standard

% Incomplete command.

R1(config)#ip access-list standard ?

<1-99> Standard IP access-list number

WORD Access-list name

R1(config)#ip access-list standard INSIDE-DEVS

R1(config-std-nacl)#permit any

R1(config-std-nacl)#exit

R1(config)#ipnat pool

% Incomplete command.

R1(config)#ipnat pool ?

WORD Pool name

R1(config)#ipnat pool ?

WORD Pool name

R1(config)#ipnat pool ANY ?

A.B.C.D Start IP address

R1(config)#ipnat pool ANY

% Incomplete command.

R1(config)#ipnat pool ANY ?

A.B.C.D Start IP address

```
R1(config)#ipnat pool ANY 200.123.211.1 200.123.211.1 netmask 255.255.255.252
```

R1(config)#ipnat inside ?

source Source address translation

R1(config)#ipnat ?

insideInside address translation

outside Outside address translation

pool Define pool of addresses

```
R1(config)#ipnat pool ANY 200.123.211.1 200.123.211.1 netmask R1(config)#ipnat pool
ANY 200.123.211.1 200.123.211.1 netmask R1(config)#ipnat pool ANY 200.123.211.1
200.123.211.1 netmask 255.255.255.252
```

R1(config)#ipnat inside source list INSIDE-DEVS ?

interface Specify interface for global address

pool Name pool of global addresses

R1(config)#ipnat inside source list INSIDE-DEVS pool ANY overload

R1(config)#ipnat inside source list INSIDE-DEVS interface s0/0/0 overload

R1(config)#+

#####

R2

Router(config-if)#exit

Router(config)#hostname R2

R2(config)#int s0/0/0

R2(config-if)#no ip add

```
R2(config-if)#ip add 10.0.0.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#int s0/0/1
R2(config-if)#no ip add
R2(config-if)#ip add 10.0.0.9 255.255.255.252
R2(config-if)#exit
R2(config)#int f0/0.100
R2(config-subif)#encapsulation dot1q 100
R2(config-subif)#ip add 192.168.20.1 255.255.255.0
R2(config-subif)#int f0/0.200
R2(config-subif)#encapsulation dot1q 200
R2(config-subif)#ip add 192.168.21.1 255.255.255.0
R2(config-subif)#do show run
Building configuration...
#
#
```

```
R2(config)#route rip
R2(config-router)#version 2
R2(config-router)#do show ip route connected
C 10.0.0.0/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.20.0/24 is directly connected, FastEthernet0/0.100
C 192.168.21.0/24 is directly connected, FastEthernet0/0.200
R2(config-router)#network 10.0.0.0
R2(config-router)#network 10.0.0.8
```

R2(config-router)#network 192.168.20.1

R2(config-router)#network 192.168.21.1

R2(config-router)#exit

R2(config)#do show ip route

Codes: C - connected, S - static, I - IGRP, 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 10.0.0.1 to network 0.0.0.0

10.0.0.0/30 is subnetted, 3 subnets

C 10.0.0.0 is directly connected, Serial0/0/0

R 10.0.0.4 [120/1] via 10.0.0.1, 00:00:00, Serial0/0/0

[120/1] via 10.0.0.10, 00:00:15, Serial0/0/1

C 10.0.0.8 is directly connected, Serial0/0/1

C 192.168.20.0/24 is directly connected, FastEthernet0/0.100

C 192.168.21.0/24 is directly connected, FastEthernet0/0.200

R 192.168.30.0/24 [120/1] via 10.0.0.10, 00:00:15, Serial0/0/1

R 200.123.211.0/24 [120/1] via 10.0.0.1, 00:00:00, Serial0/0/0

R* 0.0.0.0/0 [120/1] via 10.0.0.1, 00:00:00, Serial0/0/0

R2(config)#


```
#####
```

R3

Router>enable

Router#config term

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#host R3

R3(config)#int s0/0/0

R3(config-if)#no ip add

R3(config-if)#ip add 10.0.0.6 255.255.255.252

R3(config-if)#no shut

R3(config-if)#

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R3(config-if)#

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

R3(config-if)#int s0/0/1

R3(config-if)#no ip add

R3(config-if)#ip add 10.0.0.10 255.255.255.252

R3(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

R3(config-if)#

R3(config-if)#

#

R3>enable

R3#config term

Enter configuration commands, one per line. End with CNTL/Z.

R3(config)#ipv6 unicast-routing

R3(config)#int fa0/0

R3(config-if)#no ipv6 add

R3(config-if)#ipv6 unicast-routing

R3(config)#int fa0/0

R3(config-if)#ipv6 add 2001:db8:130::9C0/64

R3(config-if)#shutdown

R3(config-if)#exit

R3(config)#int fa0/0

R3(config-if)#ip add 192.168.30.1 255.255.255.0

R3(config-if)#no shutdown

#

R3(config)#router rip

R3(config-router)#version 2

R3(config-router)#do show ip route connected

C 10.0.0.4/30 is directly connected, Serial0/0/0

C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.30.0/24 is directly connected, FastEthernet0/0

```
R3(config-router)#network 10.0.0.4
R3(config-router)#network 10.0.0.8
R3(config-router)#network 192.168.30.0
R3(config-router)#
#
R3(config-router)#exit
R3(config)#access-list 10 deny 192.168.30.6
R3(config)#access-list 10 permit any
R3(config)#show access-lists
```

% Invalid input detected at '^' marker.

```
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

```
R3#show access-lists
Standard IP access list 10
 10 deny host 192.168.30.6
 20 permit any
R3#
```

R3>enable

R3#conf ter

Enter configuration commands, one per line. End with CNTL/Z.

R3(config)#interface fastEthernet 0/0

R3(config-if)#ipv6 add

% Incomplete command.

R3(config-if)#ipv6 address fe80::1 link-local

R3(config-if)#ip ad

% Incomplete command.

R3(config-if)#ipv6 ndothe-config-flag

^

% Invalid input detected at '^' marker.

R3(config-if)#ipv6 nd other-config-flag

R3(config-if)#ipv6 dhcp server ?

WORD Name of IPv6 DHCP pool

R3(config-if)#ipv6 dhcp server ANY

R3(config-if)#exit

R3(config)#ipv6 unicast-routing

R3(config)#ipv6 dhcp pool ANY

R3(config-dhcp)#dns-server 2001:db8:130::

R3(config-dhcp)#+

#####

ISP

Router>enable

Router#config term

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#host ISP

ISP(config)#int s0/0/0

ISP(config-if)#ip add 200.123.211.1 255.255.255.0

ISP(config-if)#no shutdown

ISP(config-if)#

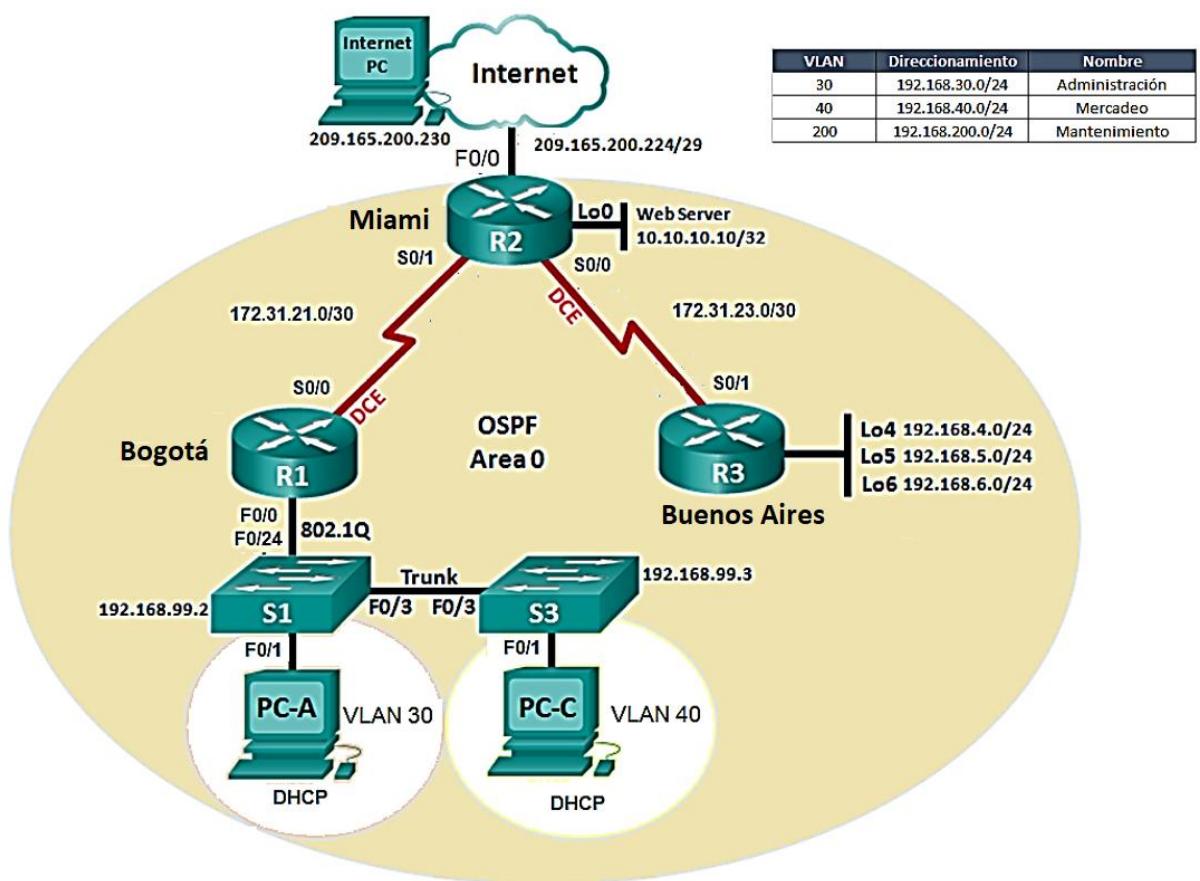
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

ISP(config-if)#

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

ESCENARIO 2

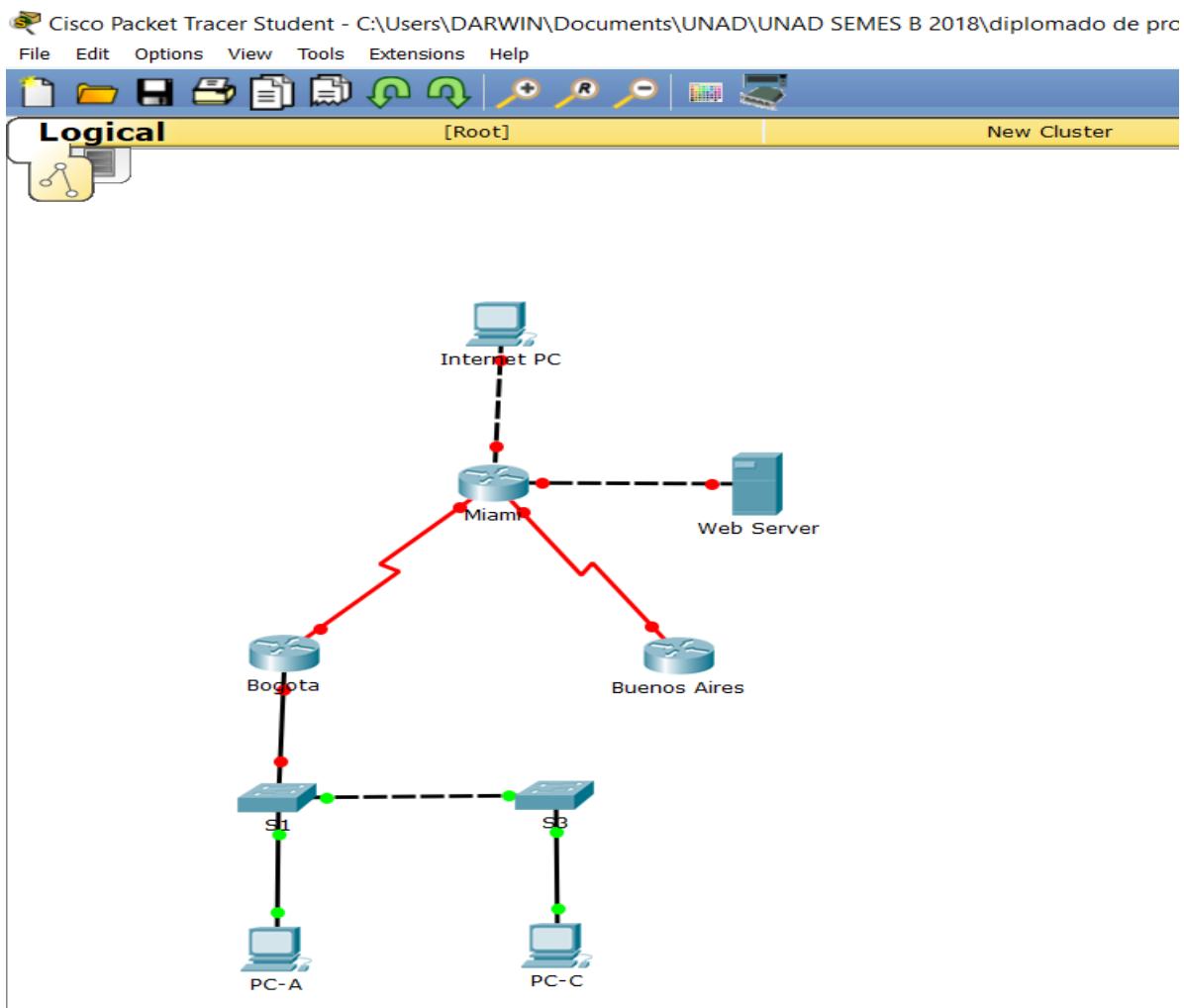
Escenario: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los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



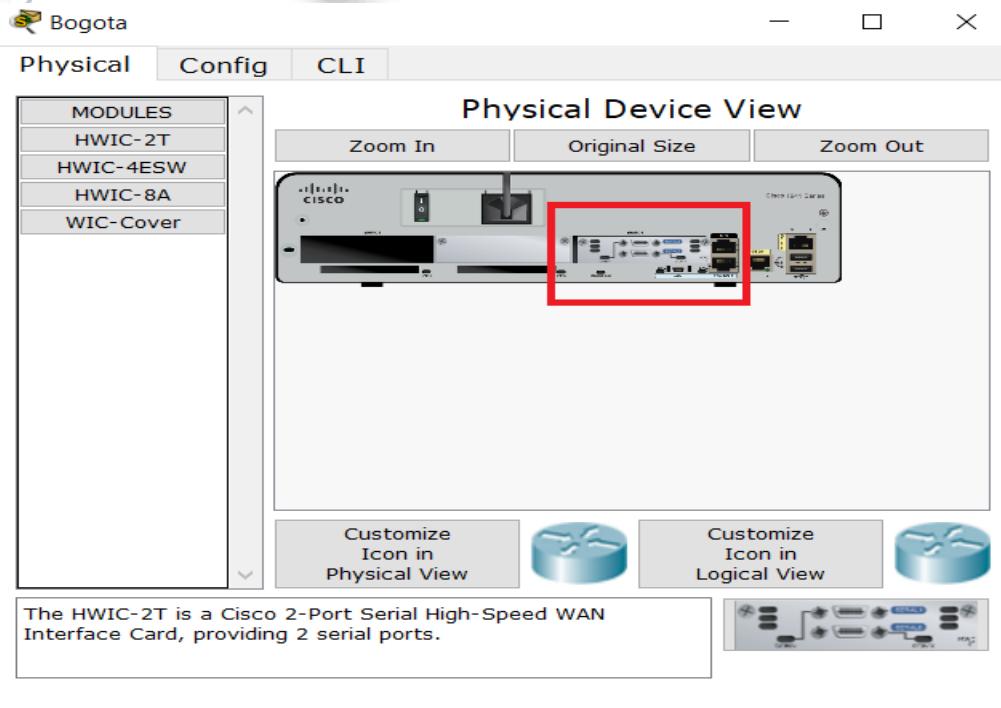
Descripción de las actividades Escenario 2:

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

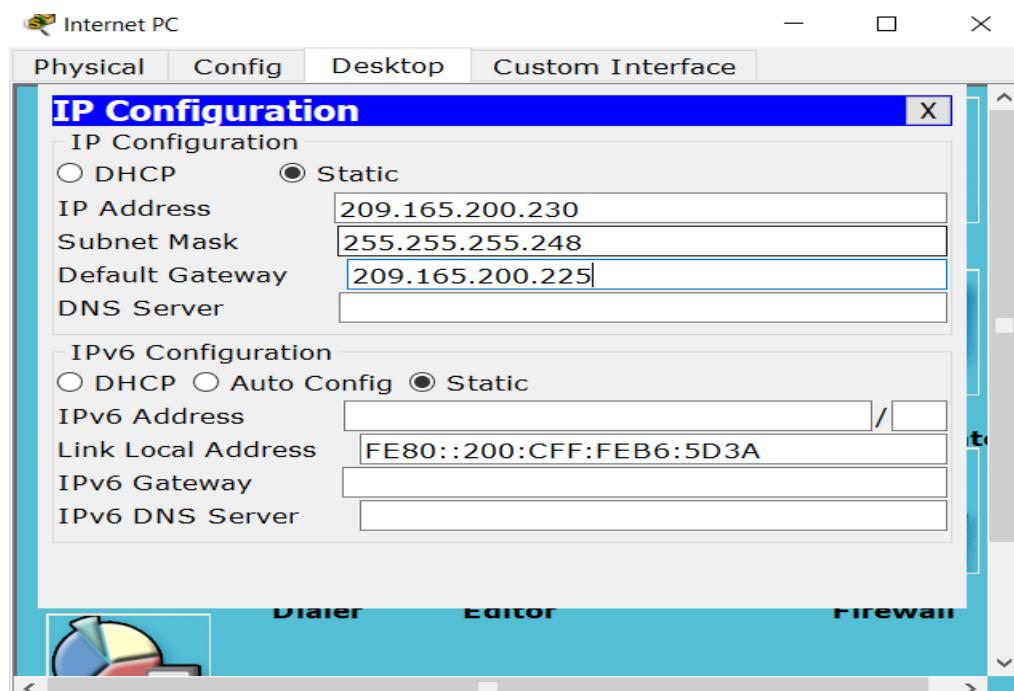
TOPOLOGIA:



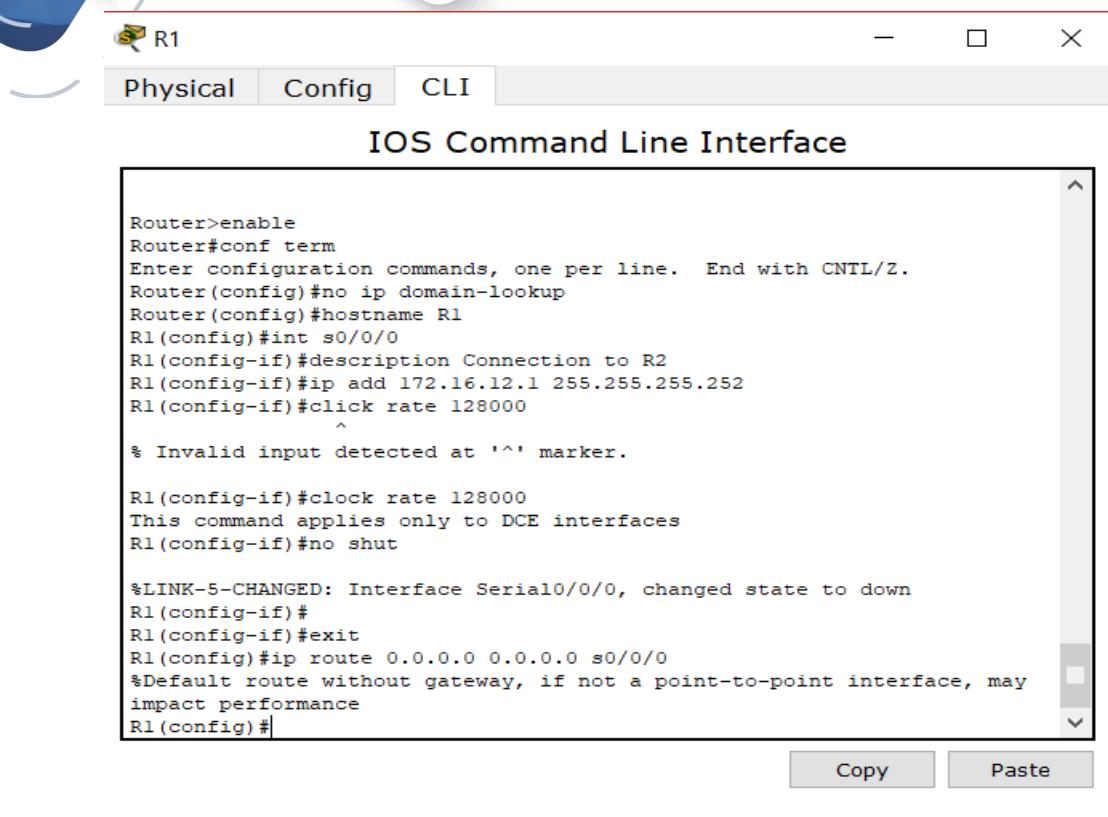
La configuración de cada Switch con su respectiva comunicación:



Configuración Internet PC:



Configuración router R1: Bogotá



The image shows a software interface for configuring a Cisco router. The title bar says "R1" and has tabs for "Physical", "Config", and "CLI". The main window is titled "IOS Command Line Interface". It contains the following configuration commands:

```
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R1
R1(config)#int s0/0/0
R1(config-if)#description Connection to R2
R1(config-if)#ip add 172.16.12.1 255.255.255.252
R1(config-if)#clock rate 128000
^
% Invalid input detected at '^' marker.

R1(config-if)#clock rate 128000
This command applies only to DCE interfaces
R1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
R1(config-if)#exit
R1(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0
%Default route without gateway, if not a point-to-point interface, may
impact performance
R1(config) #
```

At the bottom right of the terminal window are "Copy" and "Paste" buttons.


 R1

Physical Config CLI

IOS Comm

```
R1(config)#int g0/1.40
R1(config-subif)#description Mercadeo LAN
R1(config-subif)#encapsulation dot1q 30
^
% Invalid input detected at '^' marker.

R1(config-subif)#encapsulation dot1q 30
R1(config-subif)#no ip add 192.168.30.1 255.255.255.0
^
% Invalid input detected at '^' marker.

R1(config-subif)#no encapsulation dot1q 30
R1(config-subif)#int g0/1.30
R1(config-subif)#description Administracion LAN
R1(config-subif)#encapsulation dot1q 30
R1(config-subif)#ip add 192.168.30.1 255.255.255.0
R1(config-subif)#int g0/40
^
% Invalid input detected at '^' marker.

R1(config-subif)#intg0/1.40
^
% Invalid input detected at '^' marker.

R1(config-subif)#int g0/1.40
R1(config-subif)#description Mercadeo LAN
R1(config-subif)#ip add 192.168.40.1 255.255.255.0

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL VLAN.

R1(config-subif)#int g0/1.200
R1(config-subif)#description Mantenimiento LAN
R1(config-subif)#encapsulation dot1q 200
R1(config-subif)#ip add 192.168.200.1 255.255.255.0
R1(config-subif)#int g0/1
R1(config-if)#no shut

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

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

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

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

R1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

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

Configuración router R2: Miami



Physical Config CLI

IC

```

2 Gigabit Ethernet interfaces
2 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

Router>enable
Router#config term
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#host R2
R2(config)#int s0/0/0
R2(config-if)#descrip Connection to R1
R2(config-if)#ip add 172.16.12.2 255.255.255.252
R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R2(config-if)#int s0/0/1
R2(config-if)#descrip Connection to R3
R2(config-if)#ip add 172.16.23.1 255.255.255.252
R2(config-if)#clock rate 128000
R2(config-if)#no shut

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)#int g0/0
R2(config-if)#descrip Connection to ISP
R2(config-if)#ip add 209.165.200.225 255.255.255.248
R2(config-if)#no shut

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 add 10.10.10.1 255.255.255.0
R2(config-if)#no shut

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)#description Connection to Web Server
R2(config-if)#

```

```

R2 (config-if) #description Connection to Web Server
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) #

```

Configuración router R3: Buenos Aires

R3

Physical Config CLI

IOS Co

```
PRESS RETURN TO get started.

Router>enable
Router#no ip domain-lookup
^
% Invalid input detected at '^' marker.

Router#config term
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#host R3
R3(config)#int s0/0/1
R3(config-if)#descrip Connection to R2
R3(config-if)#ip add 172.16.23.2 255.255.255.252
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, 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 add 192.168.4.1 255.255.255.0
R3(config-if)#no shut
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 add 192.168.5.1 255.255.255.0
R3(config-if)#no shut
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 add 192.168.6.1 255.255.255.0
R3(config-if)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1
%Default route without gateway, if not a point-to-point interface, may impact performance
R3(config)#

```

Configuración S1:

S1

Physical Config CLI

IOS Command Line Interface

```
Press RETURN to get started.
```

```
Switch>enable
Switch#config  term
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#host S1
S1(config)#[
```

Copy

Paste


 S1

Physical Config CLI

 IOS

```

S1>enable
S1#config term
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#no ip domain-lookup
S1(config)#
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)#exit
S1(config)#int vlan 200
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)#ip add 192.168.200.2 255.255.255.0
S1(config-if)#no shut
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.200.1
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 Vlan200, 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, gl1/1-2
interface range not validated - command rejected
S1(config)#int range f0/1-2, f0/4, f0/6-24, gl1/1-2
interface range not validated - command rejected
S1(config)#int range f0/1-2, f0/4, f0/6-24, g0/1-2
S1(config-if-range)#switchport mode access
S1(config-if-range)#int fa0/6
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#int range f0/1-2, f0/4, f0/7-24, g0/1-2
S1(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

```

Configuración S3:

S3

Physical Config CLI

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

Switch>enable
Switch#config term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#host S3
S3(config) #
```

Copy Paste

S3

Physical Config CLI

IC

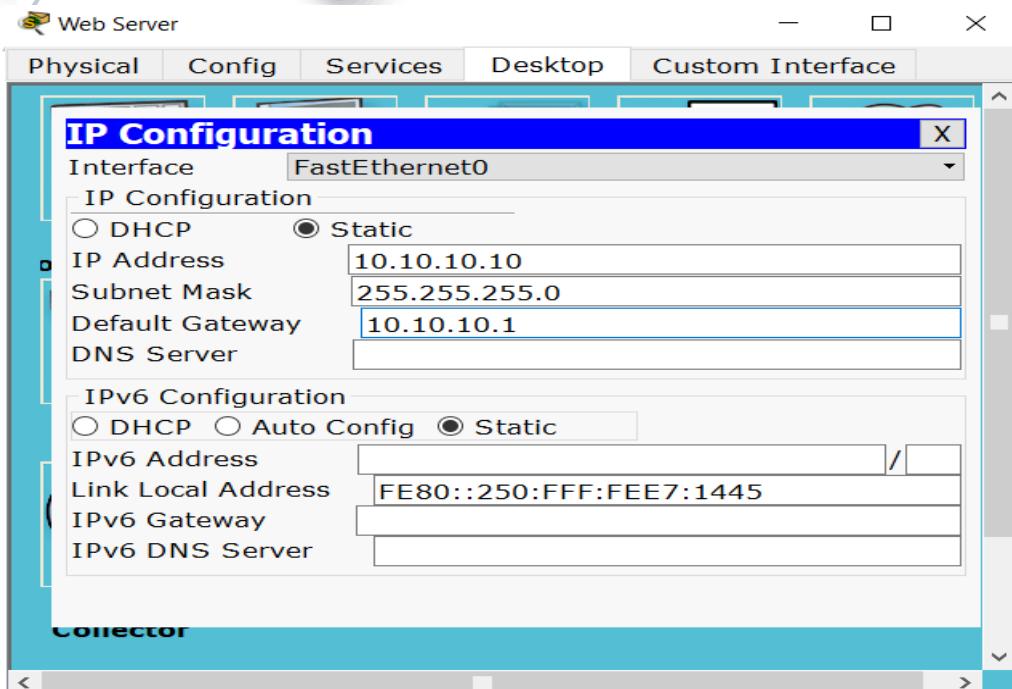
```
S3>enable
S3#config term
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#vlan 30
S3(config-vlan)#name Administracion
S3(config-vlan)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#int vlan 200
S3(config-if)#
*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 add 192.168.200.3 255.255.255.0
S3(config-if)#no shut
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.200.1
S3(config-if)#int fa0/0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#int range fa0/1-2, fa0/4-24, g0/1-2
S3(config-if-range)#switchport mode access
S3(config-if-range)#int fa0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if)#int range fa0/1-2, fa0/4/17, fa0/19-24, g0/1-2
^
* Invalid input detected at '^' marker.

S3(config-if)#int range fa0/1-2, fa0/4-17, fa0/19-24, g0/1-2
S3(config-if-range)#shutdown

*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
```

Configuración Web Server:



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	5.5.5.5
Router ID R3	8.8.8.8

Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	256 Kb/s
Ajustar el costo en la métrica de S0/0 a	9500

Configuration R1: Bogota

R1

Physical Config CLI

IOS Command Line Interface

```

R1(config-if)#
R1(config-if)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#router ospf 1
 ^
% Invalid input detected at '^' marker.

R1#config term
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 172.16.12.0 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)#int s0/0/0
R1(config-if)#bandwidth 256
R1(config-if)#ip ospf cost 9500
R1(config-if)#

```

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Configuración R2: Miami

 R2

— □ ×

Physical Config CLI

IOS Command Line Interface

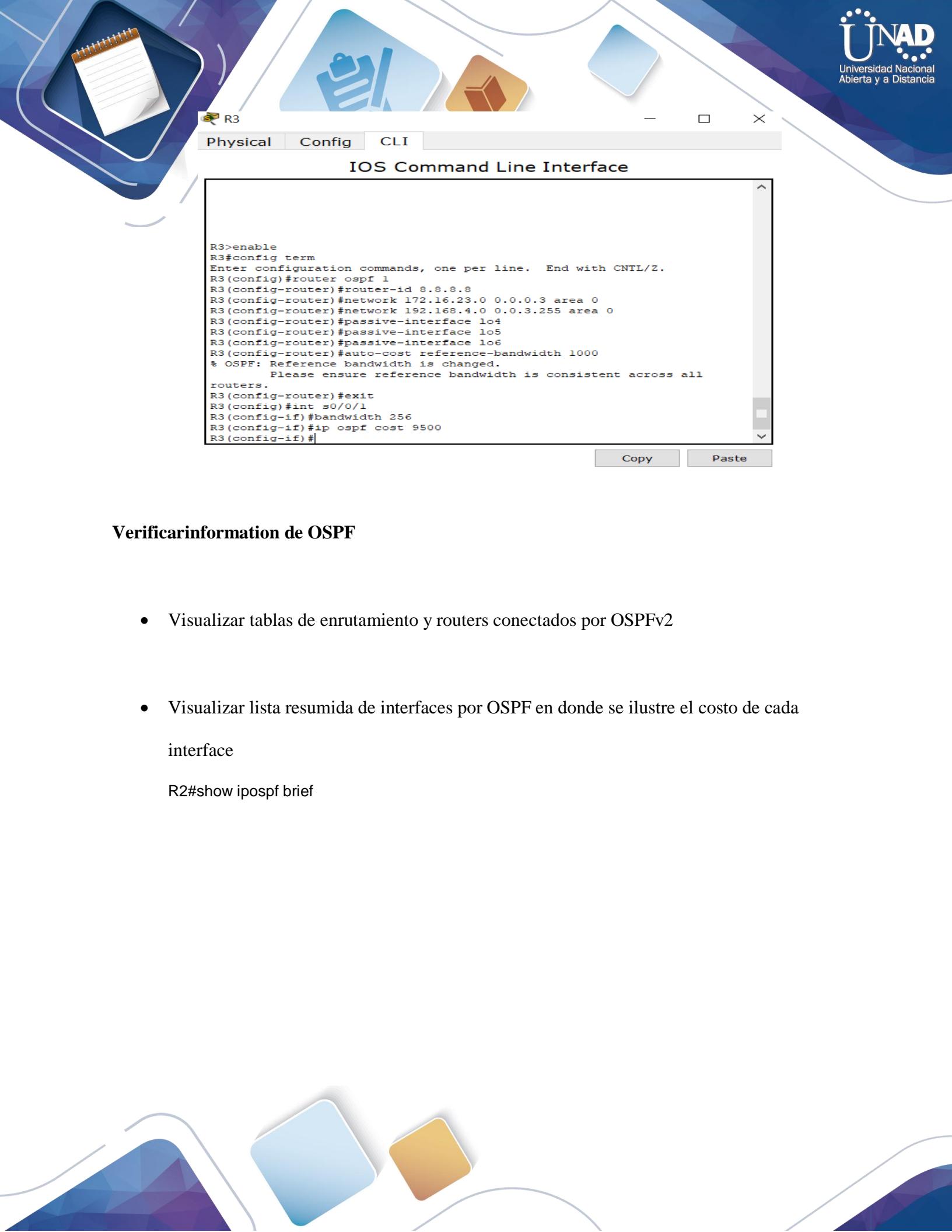
```
R2>ena
R2#config term
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#router-id 5.5.5.5
R2(config-router)#network 172.16.12.0 0.0.0.0 area 0
R2(config-router)#network 172.16.12.0 0.0.0.3 area 0
R2(config-router)#network 172.16.23.0 0.0.0.3 area 0
R2(config-router)#network 172.16.23.0 0.0.0.3 area 0
R2(config-router)#network 10.10.10.0 0.0.0.255 area 0
R2(config-router)#passive-interface g0/1
R2(config-router)#auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
    Please ensure reference bandwidth is consistent across all
routers.
R2(config-router)#int s0/0/0
R2(config-if)#bandwidth 256
R2(config-if)#int s0/0/1
R2(config-if)#bandwidth 256
R2(config-if)#int s0/0/0
R2(config-if)#ip ospf cost 9500
R2(config-if)#

```

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Paste

Configuración R3: Buenos Aires



R3

Physical Config CLI

IOS Command Line Interface

```

R3>enable
R3#config term
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#router-id 8.8.8.8
R3(config-router)#network 172.16.23.0 0.0.0.3 area 0
R3(config-router)#network 192.168.4.0 0.0.3.255 area 0
R3(config-router)#passive-interface lo4
R3(config-router)#passive-interface lo5
R3(config-router)#passive-interface lo6
R3(config-router)#auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
    Please ensure reference bandwidth is consistent across all
routers.
R3(config-router)#exit
R3(config)#int s0/0/1
R3(config-if)#bandwidth 256
R3(config-if)#ip ospf cost 9500
R3(config-if)#

```

Copy **Paste**

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

R2#show ip ospf brief

R2

Physical Config CLI

IOS Command Line Interface

```

R2#
R2#
R2#
R2#show ip ospf brief
^
% Invalid input detected at '^' marker.

R2#show ip ospf interface
Serial0/0/  is up, line protocol is up
  Internet address is 172.16.12.2/30, Area 0
    Process ID 1, Router ID 5.5.5.5, Network Type POINT-TO-POINT, Cost:
  9500
    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 00:00:02
    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
    Suppress hello for 0 neighbor(s)
Serial0/0/1 is up, line protocol is up
  Internet address is 172.16.23.1/30, Area 0
    Process ID 1, Router ID 5.5.5.5, Network Type POINT-TO-POINT, Cost:
  647
    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 00:00:09

R2#

```

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

 R2

Physical Config CLI

IOS Command Line Interface

```
Last flood scan time is 0 msec, maximum is 0 msec
Suppress hello for 0 neighbor(s)
Serial0/0/1 is up, line protocol is up
  Internet address is 172.16.23.1/30, Area 0
  Process ID 1, Router ID 5.5.5.5, Network Type POINT-TO-POINT, Cost:
647
    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 00:00:09

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 5.5.5.5
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.16.12.0 0.0.0.0 area 0
    172.16.12.0 0.0.0.3 area 0
    172.16.23.0 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
    5.5.5.5            110          00:18:13
  Distance: (default is 110)

R2#
R2#
```


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

R1

Physical Config CLI

IOS Comm

```

R1(config)#int g0/1.40
R1(config-subif)#description Mercadeo LAN
R1(config-subif)#encapsulation dot1q 30
^
% Invalid input detected at '^' marker.

R1(config-subif)#encapsulation dot1q 30
R1(config-subif)#no ip add 192.168.30.1 255.255.255.0
^
% Invalid input detected at '^' marker.

R1(config-subif)#no encapsulation dot1q 30
R1(config-subif)#int g0/1.30
R1(config-subif)#description Administracion LAN
R1(config-subif)#encapsulation dot1q 30
R1(config-subif)#ip add 192.168.30.1 255.255.255.0
R1(config-subif)#int g0/40
^
% Invalid input detected at '^' marker.

R1(config-subif)#int g0/1.40
^
% Invalid input detected at '^' marker.

R1(config-subif)#int g0/1.40
R1(config-subif)#description Mercadeo LAN
R1(config-subif)#ip add 192.168.40.1 255.255.255.0

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL VLAN.

R1(config-subif)#int g0/1.200
R1(config-subif)#description Mantenimiento LAN
R1(config-subif)#encapsulation dot1q 200
R1(config-subif)#ip add 192.168.200.1 255.255.255.0
R1(config-subif)#int g0/1
R1(config-if)#no shut

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

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

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

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

R1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

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

```

S1

Physical Config CLI

IOS

```
S1>enable
S1#config term
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#no ip domain-lookup
S1(config)#
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)#exit
S1(config)#int vlan 200
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)#ip add 192.168.200.2 255.255.255.0
S1(config-if)#no shut
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.200.1
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 Vlan200, 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, gl1/1-2
interface range not validated - command rejected
S1(config)#int range f0/1-2, f0/4, f0/6-24, gl1/1-2
interface range not validated - command rejected
S1(config)#int range f0/1-2, f0/4, f0/6-24, g0/1-2
S1(config-if-range)#switchport mode access
S1(config-if-range)#int fa0/6
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#int range f0/1-2, f0/4, f0/7-24, g0/1-2
S1(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down
```

S3

Physical Config CLI IC

```

S3>enable
S3#config term
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#vlan 30
S3(config-vlan)#name Administracion
S3(config-vlan)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#int 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 add 192.168.200.3 255.255.255.0
S3(config-if)#no shut
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.200.1
S3(config)#int fa0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#int range fa0/1-2, fa0/4-24, go/1-2
S3(config-if-range)#switchport mode access
S3(config-if-range)#int fa0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if)#int range fa0/1-2, fa0/4/17, fa0/19-24, go/1-2
S3(config-if)#int range fa0/1-2, fa0/4-17, fa0/19-24, go/1-2
S3(config-if-range)#shutdown

%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

```

3. En el Switch 3 deshabilitar DNS lookup

S3

Physical Config CLI

IOS Command Line Interface

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

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

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to down

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

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

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

Switch>enable
Switch#config term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#host S3
S3(config)#

```

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

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

S1

Physical Config CLI

IOS

```

S1>enable
S1#config term
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#no ip domain-lookup
S1(config)#
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)#exit
S1(config)#int vlan 200
S1(config-if)#
*SLINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)#ip add 192.168.200.2 255.255.255.0
S1(config-if)#no shut
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.200.1
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 Vlan200, 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, gl1/1-2
interface range not validated - command rejected
S1(config)#int range f0/1-2, f0/4, f0/6-24, gl1/1-2
interface range not validated - command rejected
S1(config)#int range f0/1-2, f0/4, f0/6-24, g0/1-2
S1(config-if-range)#switchport mode access
S1(config-if-range)#int fa0/6
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#int range f0/1-2, f0/4, f0/7-24, g0/1-2
S1(config-if-range)#shutdown

*SLINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
*SLINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

```

S3

Physical **Config** **CLI**

IC

```

S3>enable
S3#config term
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#vlan 30
S3(config-vlan)#name Administracion
S3(config-vlan)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#int 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 add 192.168.200.3 255.255.255.0
S3(config-if)#no shut
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.200.1
S3(config)#int fa0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#int range fa0/1-2, fa0/4-24, g0/1-2
S3(config-if-range)#switchport mode access
S3(config-if-range)#int fa0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if)#int range fa0/1-2, fa0/4/17, fa0/19-24, g0/1-2
S3(config-if)#
% Invalid input detected at '^' marker.

S3(config-if)#int range fa0/1-2, fa0/4-17, fa0/19-24, g0/1-2
S3(config-if-range)#shutdown

*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

```

- Implement DHCP and NAT for IPv4

R1

Physical **Config** **CLI**

IOS Command Line Interface

```

R1>enable
R1#ip dhcp exc
^
% Invalid input detected at '^' marker.

R1#ip dhcp excluded-address 192.168.30.1 192.168.30.20
^
% Invalid input detected at '^' marker.

R1#config term
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.20
R1(config)#

```

Copy **Paste**

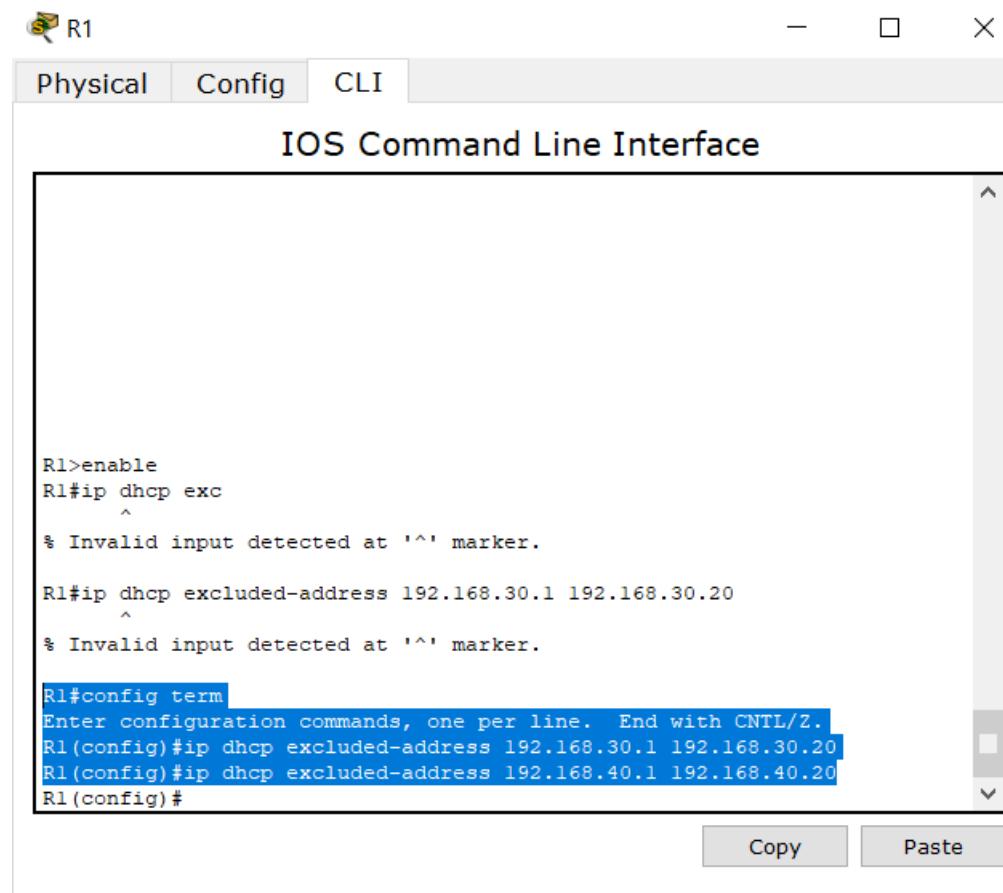
5. Configurar R1 como servidor DHCP para las VLANs 30 y 40.

R1#config term

Enter configuration commands, one per line. Endwith CNTL/Z.

R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.20

R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.20



The window shows the IOS Command Line Interface. The title bar says "IOS Command Line Interface". The menu bar has tabs for "Physical", "Config" (which is selected), and "CLI". The main area displays the following command history:

```
R1>enable
R1#ip dhcp exc
^
% Invalid input detected at '^' marker.

R1#ip dhcp excluded-address 192.168.30.1 192.168.30.20
^
% Invalid input detected at '^' marker.

R1#config term
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.20
R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.20
R1(config) #
```

At the bottom right of the terminal window are "Copy" and "Paste" buttons.

6. 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: MERCADERO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com (no lo muestra packet tracer) Establecer default gateway.

R1#enable

R1#ip dhcp exec

^

% Invalid input detected at '^' marker.

R1#ip dhcp excluded-address 192.168.30.1 192.168.30.20

^

% Invalid input detected at '^' marker.

R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.20

R1(config)#ip dhcp pool ACCT

R1(dhcp-config)#ip dhcp pool ADMINISTRACION

R1(dhcp-config)#exit

R1(config)#ip dhcp pool ADMINISTRACION

R1(dhcp-config)#dns-server 10.10.10.11

R1(dhcp-config)#default-router 192.168.30.1

R1(dhcp-config)#network 192.168.30.0 255.255.255.0

R1(dhcp-config)#ip dhcp pool MERCADERO

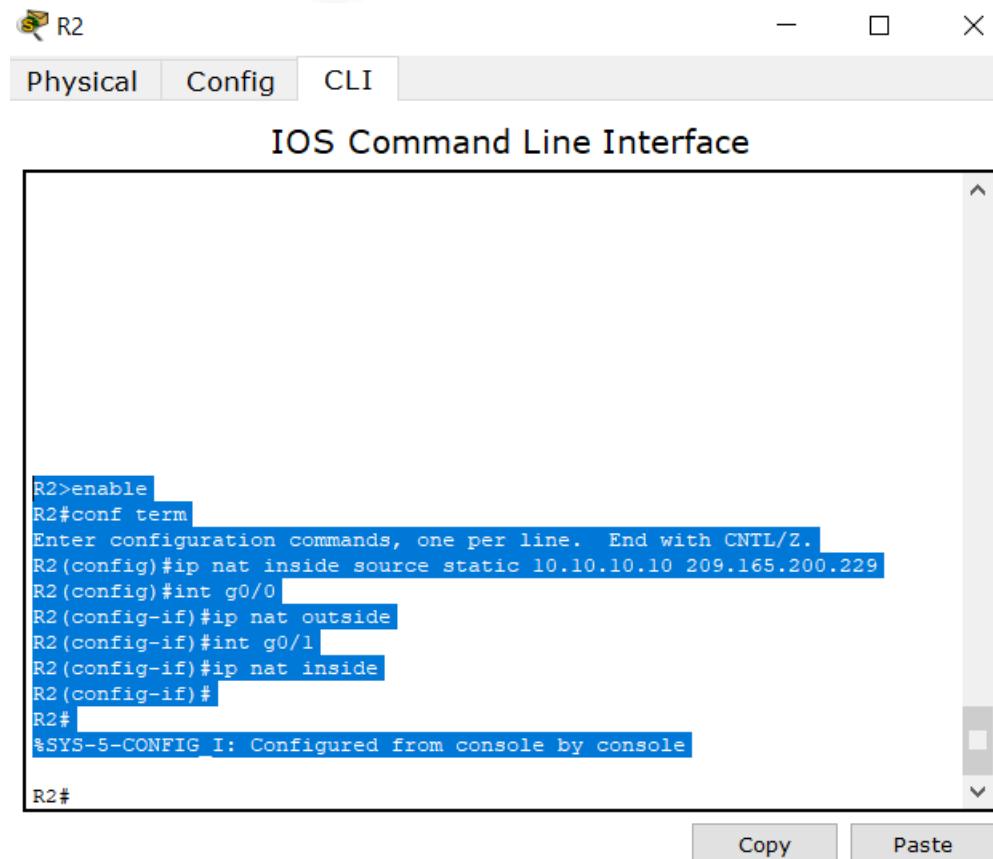
R1(dhcp-config)#dns-server 10.10.10.11

R1(dhcp-config)#default-router 192.168.40.1

R1(dhcp-config)#network 192.168.40.0 255.255.255.0

R1(dhcp-config)#

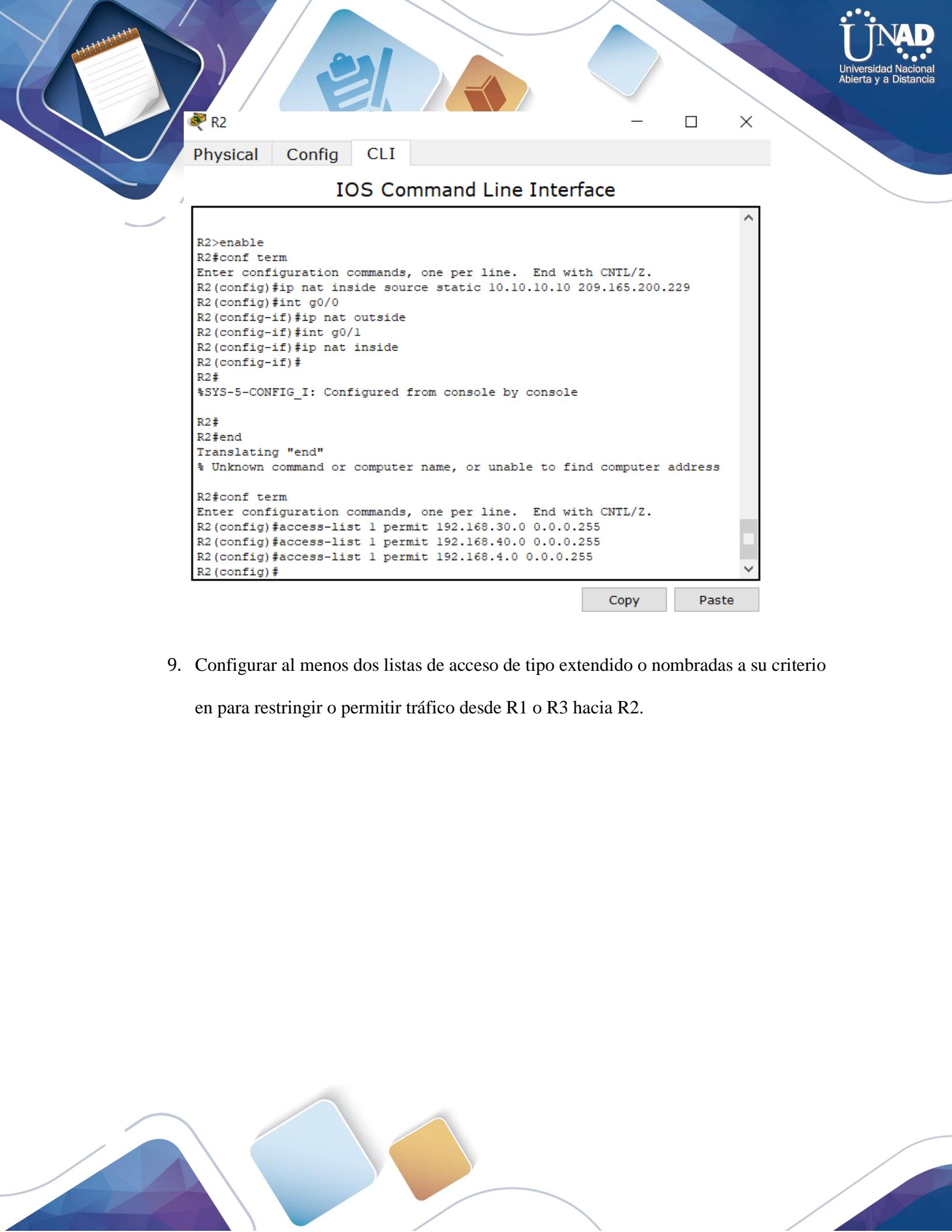
7. Configurar NAT en R2 para permitir que los host puedan salir a internet



R2>enable
R2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip nat inside source static 10.10.10.10 209.165.200.229
R2(config)#int g0/0 [REDACTED]
R2(config-if)#ip nat outside
R2(config-if)#int g0/1 [REDACTED]
R2(config-if)#ip nat inside
R2(config-if)#
R2# [REDACTED]
%SYS-5-CONFIG_I: Configured from console by console
R2#

Copy Paste

8. 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 Physical Config CLI

IOS Command Line Interface

```
R2>enable
R2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
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#
%SYS-5-CONFIG_I: Configured from console by console

R2#
R2#end
Translating "end"
% Unknown command or computer name, or unable to find computer address

R2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
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 0.0.0.255
R2(config)#

```

9. 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

Physical Config CLI

IOS Command Line Interface

```

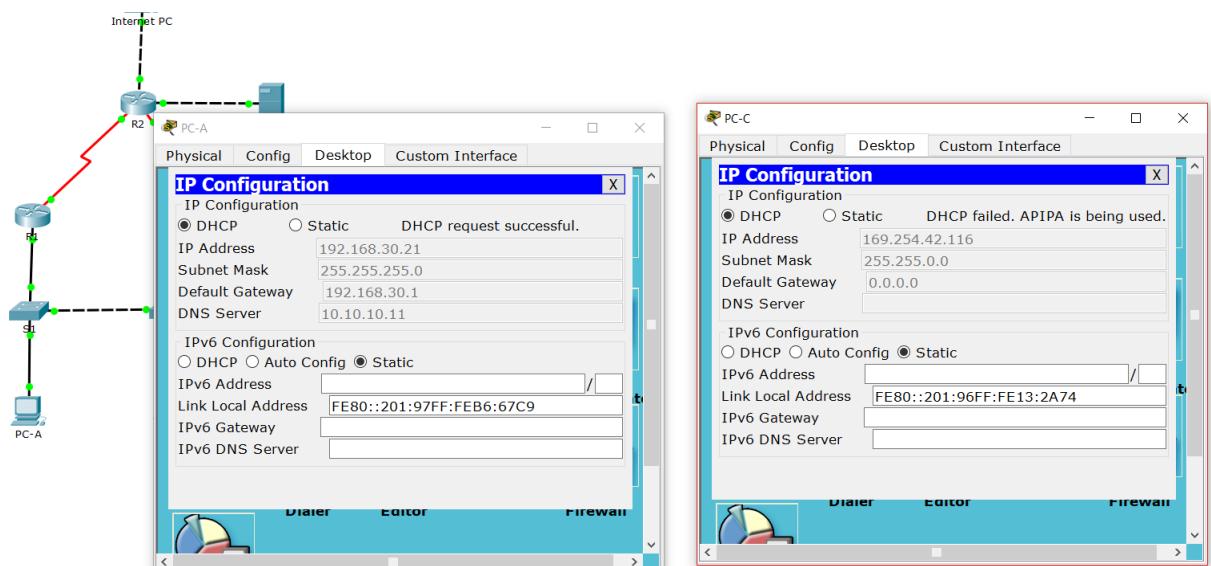
R2(config-if)#ip nat outside
R2(config-if)#int g0/1
R2(config-if)#ip nat inside
R2(config-if)#
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
R2#end
Translating "end"
% Unknown command or computer name, or unable to find computer address

R2#conf term
Enter configuration commands, one per line. End with CNTL/Z.
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 0.0.0.255
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 pool INTERNET
          ^
% Invalid input detected at '^' marker.

R2(config)#ip nat inside source list 1 pool INTERNET
R2(config)#
  
```

Copy **Paste**



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

S1

Physical Config CLI

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to up

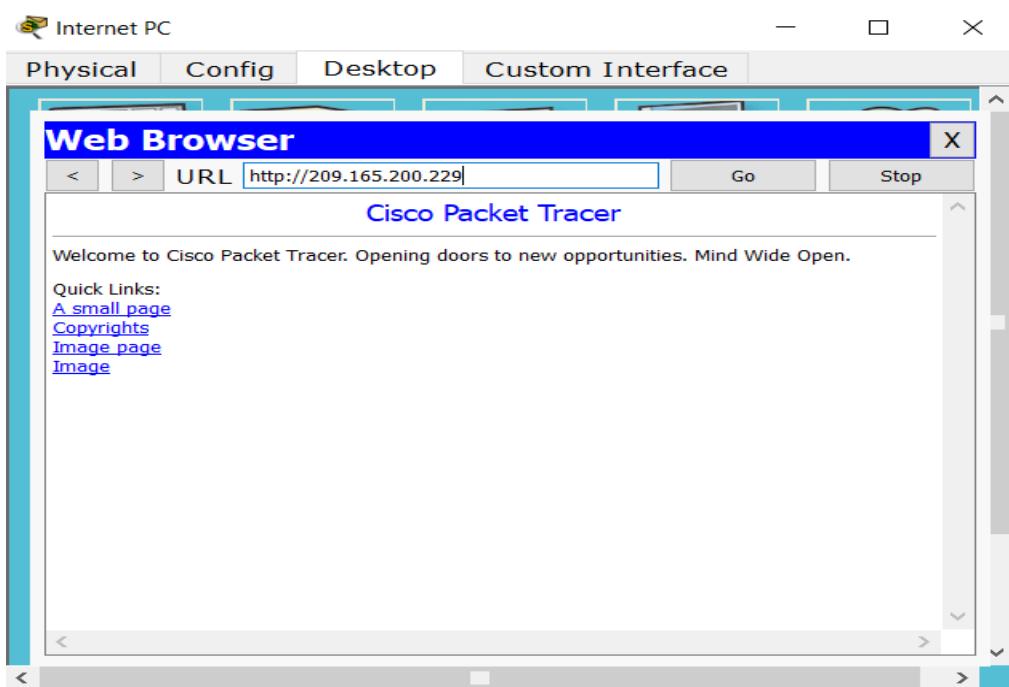
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed
state to up

S1>ping 192.168.200.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.200.1, timeout is 2 seconds:
!!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/1 ms

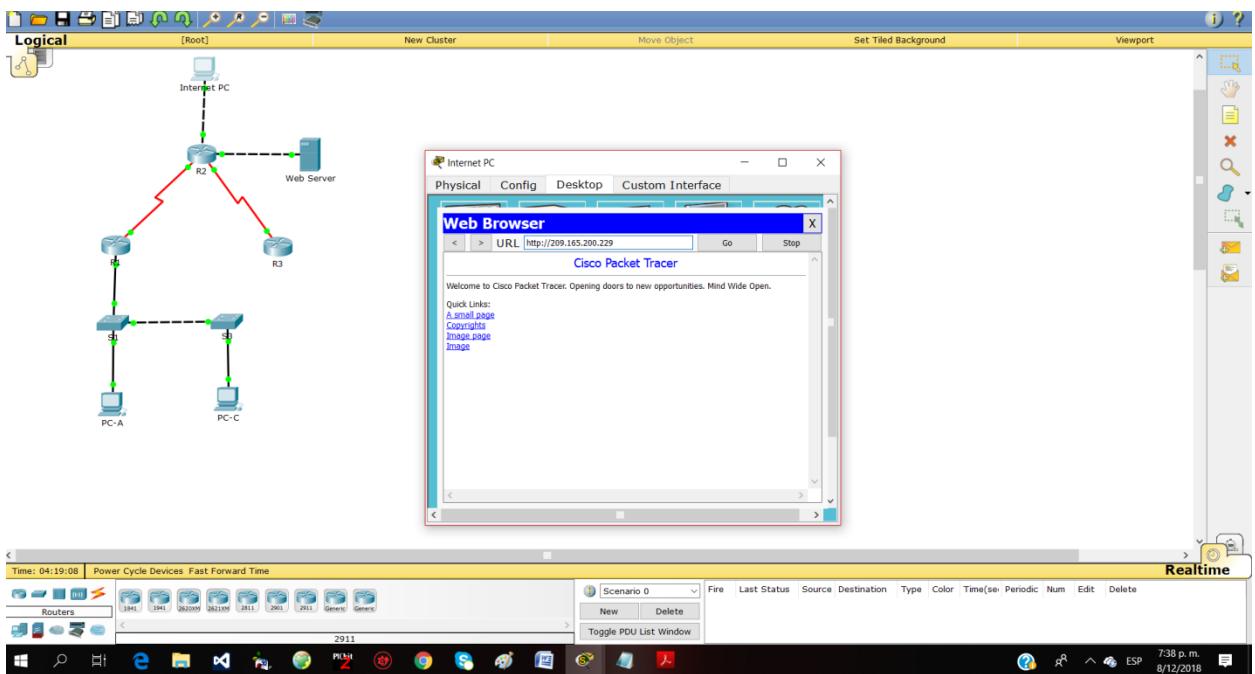
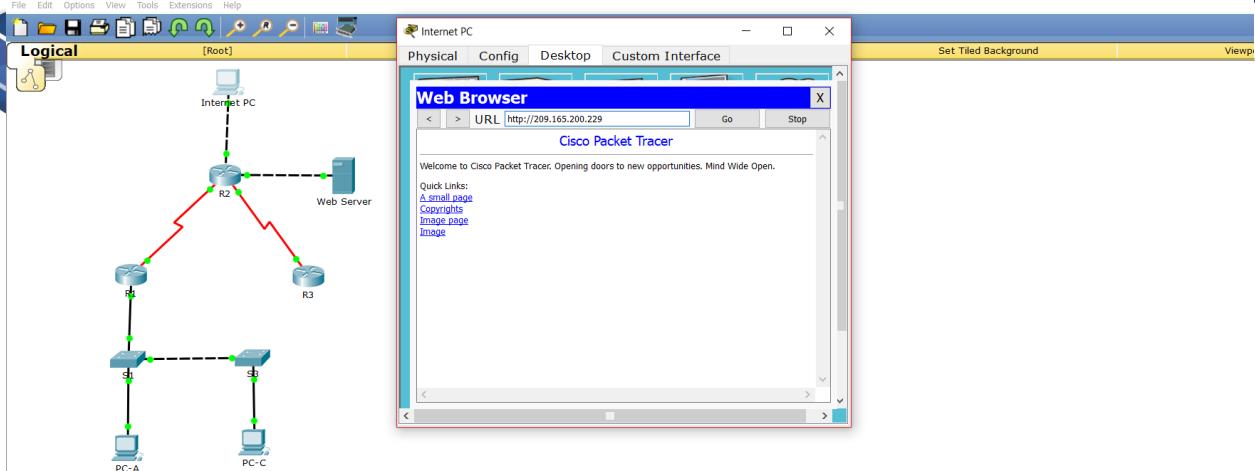
S1>ping 192.168.30.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.30.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

S1>
```

Copy **Paste**



Cisco Packet Tracer Student - C:\Users\|DARWIN|Documents\UNAD\UNAD SEMES B 2018\diplomado de profundizacion en cisco\prueba de habilidades practicas\Escenario 2 habilidades practicas darwin urego - desarrollo final.pkt



Código de Configuración escenario 2:

Router>enable

Router#confterm

Enter configuration commands, one per line. Endwith CNTL/Z.

```
Router(config)#no ipdomain-lookup
```

```
Router(config)#hostname R1
```

```
R1(config)#int s0/0/0
```

```
R1(config-if)#descriptionConnectionto R2
```

```
R1(config-if)#ipadd 172.16.12.1 255.255.255.252
```

```
R1(config-if)#clickrate 128000
```

^

% Invalid input detected at '^' marker.

```
R1(config-if)#clockrate 128000
```

This command applies only to DCE interfaces

```
R1(config-if)#no shut
```

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down



R1(config-if)#



R1(config-if)#exit



R1(config)#iproute 0.0.0.0 0.0.0.0 s0/0/0

%Default routewithoutgateway, ifnot a point-to-point interface, mayimpact performance

R1(config)#

#

R1>enable

R1#config term

Enterconfigurationcommands, one per line.Endwith CNTL/Z.

R1(config)#int g0/1.40

R1(config-subif)#description Mercadeo LAN

R1(config-subif)#encapsulationdotlq 30

^

% Invalid input detected at '^' marker.

R1(config-subif)#encapsulation dot1q 30

R1(config-subif)#no ipadd 192.168.30.1 255.255.255.0

^



% Invalid input detected at '^' marker.

R1(config-subif)#no encapsulation dot1q 30

R1(config-subif)#int g0/1.30

R1(config-subif)#description Administracion LAN

R1(config-subif)#encapsulation dot1q 30

R1(config-subif)#ipadd 192.168.30.1 255.255.255.0

R1(config-subif)#int g0/40

^

% Invalid input detected at '^' marker.

R1(config-subif)#intg0/1.40

^

% Invalid input detected at '^' marker.

R1(config-subif)#int g0/1.40

R1(config-subif)#description Mercadeo LAN

R1(config-subif)#ipadd 192.168.40.1 255.255.255.0

% Configuring IP routing on a LAN subinterface is only allowed if that

subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,

or ISL vLAN.

#

```
R1(config-subif)#int g0/1.200
```

```
R1(config-subif)#description Mantenimiento LAN
```

```
R1(config-subif)#encapsulation dot1q 200
```

```
R1(config-subif)#ipadd 192.168.200.1 255.255.255.0
```

```
R1(config-subif)#int g0/1
```

```
R1(config-if)#no shut
```

#

```
R1(config-if)#
```

```
R1#config term
```

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 172.16.12.0 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)#int s0/0/0
```

```
R1(config-if)#bandwidth 256
```

```
R1(config-if)#ip ospf cost 9500
```

```
R1(config-if)#+
```

```
#
```

```
R2(config)#router ospf 1
```

```
R2(config-router)#router-id 5.5.5.5
```

```
R2(config-router)#network 172.16.12.0 0.0.0.0 area 0
```

```
R2(config-router)#network 172.16.12.0 0.0.0.3 area 0
```

```
R2(config-router)#network 172.16.23.0 0.0.0.3 area 0
```

```
R2(config-router)#network 172.16.23.0 0.0.0.3 area 0
```

```
R2(config-router)#network 10.10.10.0 0.0.0.255 area 0
```

```
R2(config-router)#passive-interface g0/1
```

```
R2(config-router)#auto-cost reference-bandwidth 1000
```

% OSPF: Reference bandwidth is changed.

Please ensure reference bandwidth is consistent across all routers.

```
R2(config-router)#int s0/0/0
```

```
R2(config-if)#bandwidth 256
```

```
R2(config-if)#int s0/0/1
```

```
R2(config-if)#bandwidth 256
```

```
R2(config-if)#int s0/0/0
```

```
R2(config-if)#ip ospf cost 9500
```

```
R2(config-if)#
#####
```

```
R3#config term
```

Enter configuration commands, one per line. End with CNTL/Z.

```
R3(config)#router ospf 1
```

```
R3(config-router)#router-id 8.8.8.8
```

```
R3(config-router)#network 172.16.23.0 0.0.0.3 area 0
```

```
R3(config-router)#network 192.168.4.0 0.0.3.255 area 0
```

R3(config-router)#passive-interface lo4

R3(config-router)#passive-interface lo5

R3(config-router)#passive-interface lo6

R3(config-router)#auto-costreference-bandwidth 1000

% OSPF: Reference bandwidthischanged.

Pleaseensurereferencebandwidthisconsistentacrossallrouters.

R3(config-router)#exit

R3(config)#int s0/0/1

R3(config-if)#bandwidth 256

R3(config-if)#ipospfcost 9500

R3(config-if)#

R3#



Router>enable



Router#configterm



Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#no ip domain-lookup

Router(config)#host R2

R2(config)#int s0/0/0

R2(config-if)#descrip Connection to R1

R2(config-if)#ipadd 172.16.12.2 255.255.255.252

R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down

R2(config-if)#int s0/0/1

R2(config-if)#descrip Connection to R3

R2(config-if)#ipadd 172.16.23.1 255.255.255.252

R2(config-if)#clockrate 128000

R2(config-if)#no shut

#

R2(config-if)#{/Diagram}

%LINK-5-CHANGED: Interface Serial0/0/1, changedstateto up

#

R2(config-if)#

%LINEPROTO-5-UPDOWN: Line protocolon Interface Serial0/0/1, changedstateto up

R2(config-if)#int g0/0

R2(config-if)#descripConnectionto ISP

R2(config-if)#ipadd 209.165.200.225 255.255.255.248

R2(config-if)#no shut

R2(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changedstateto up

%LINEPROTO-5-UPDOWN: Line protocolon Interface GigabitEthernet0/0, changedstateto up

R2(config-if)#int g0/1

R2(config-if)#ipadd 10.10.10.1 255.255.255.0

R2(config-if)#no shut



R2(config-if)#



%LINK-5-CHANGED: Interface GigabitEthernet0/1, changedstateto up

%LINEPROTO-5-UPDOWN: Line protocolon Interface GigabitEthernet0/1, changedstateto up

R2(config-if)#descriptionConnectionto Web Server

R2(config-if)#

#

Router>enable

Router#noipdomain-lookup ^

% Invalid input detected at '^' marker.

Router#configterm

Enterconfigurationcommands, one per line.Endwith CNTL/Z.

Router(config)#no ipdomain-lookup

Router(config)#host R3

R3(config)#int s0/0/1

R3(config-if)#descripConnectionto R2

R3(config-if)#ipadd 172.16.23.2 255.255.255.252



R3(config-if)#no shut

####

R3(config-if)#


%LINK-5-CHANGED: Interface Serial0/0/1, changedstateto up

R3(config-if)#


%LINEPROTO-5-UPDOWN: Line protocolon Interface Serial0/0/1, changedstateto up

R3(config-if)#int lo4

R3(config-if)#


%LINK-5-CHANGED: Interface Loopback4, changedstateto up

%LINEPROTO-5-UPDOWN: Line protocolon Interface Loopback4, changedstateto up

R3(config-if)#ipadd 192.168.4.1 255.255.255.0

R3(config-if)#no shut

R3(config-if)#int lo5

R3(config-if)#


%LINK-5-CHANGED: Interface Loopback5, changedstateto up

%LINEPROTO-5-UPDOWN: Line protocolon Interface Loopback5, changedstateto up



```
R3(config-if)#ipadd 192.168.5.1 255.255.255.0
```



```
R3(config-if)#no shut
```

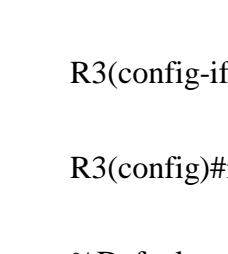


```
R3(config-if)#int lo6
```

```
R3(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback6, changedstateto up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changedstateto up
```



```
R3(config-if)#ipadd 192.168.6.1 255.255.255.0
```

```
R3(config-if)#exit
```

```
R3(config)#iproute 0.0.0.0 0.0.0.0 s0/0/1
```

```
%Default routewithoutgateway, ifnot a point-to-point interface, mayimpact performance
```

```
R3(config)#
```

```
R3#
```

```
%SYS-5-CONFIG_I: Configuredfromconsolebyconsole
```

```
####
```

```
Switch>enable
```





Switch#configterm



Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#no ip domain-lookup

Switch(config)#host S1

S1(config)#

#

S1>enable

S1#config term

Enter configuration commands, one per line. End with CNTL/Z.

S1(config)#no ip domain-lookup

S1(config)#

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)#exit

S1(config)#intylan 200

S1(config-if)#

%LINK-5-CHANGED: Interface Vlan200, changedstateto up

S1(config-if)#ipadd 192.168.200.2 255.255.255.0

S1(config-if)#no shut

S1(config-if)#exit

S1(config)#ip default-gateway 192.168.200.1

S1(config)#int f0/3

S1(config-if)#switchportmodetrunk

#

S1(config-if)#

%LINEPROTO-5-UPDOWN: Line protocolon Interface FastEthernet0/3, changedstatetodown

%LINEPROTO-5-UPDOWN: Line protocolon Interface FastEthernet0/3, changedstateto up

%LINEPROTO-5-UPDOWN: Line protocolon Interface Vlan200, changedstateto up

S1(config-if)#switchporttrunknativevlan 1

S1(config-if)#int f0/5

S1(config-if)#switchportmodetrunk

S1(config-if)#switchporttrunknativevlan 1

S1(config-if)#intrange fa0/1-2, fa0/4, fa0/6-24, g1/1-2

interfacerangenotvalidated - commandrejected

S1(config)#intrange f0/1-2, f0/4, f0/6-24, g1/1-2

interfacerangenotvalidated - commandrejected

S1(config)#intrange f0/1-2, f0/4, f0/6-24, g0/1-2

S1(config-if-range)#switchportmodeaccess

S1(config-if-range)#int fa0/6

S1(config-if)#switchportmodeaccess

S1(config-if)#switchportaccessvlan 30

S1(config-if)#intrange f0/1-2, f0/4, f0/7-24, g0/1-2

S1(config-if-range)#shutdown

####

Switch>enable

Switch#configterm

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#no ipdomain-lookup

Switch(config)#host S3

S3(config)#

#

S3>enable

S3#config term

Enter configuration commands, one per line. End with CNTL/Z.

S3(config)#vlan 30

S3(config-vlan)#name Administracion

S3(config-vlan)#vlan 40

S3(config-vlan)#name Mercadeo

S3(config-vlan)#vlan 200

S3(config-vlan)#name Mantenimiento

S3(config-vlan)#intvlan 200

S3(config-if)#+

%LINK-5-CHANGED: Interface Vlan200, changedstateto up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changedstateto up

S3(config-if)#ipadd 192.168.200.3 255.255.255.0

S3(config-if)#no shut

S3(config-if)#exit

S3(config)#ip default-gateway 192.168.200.1

S3(config)#int fa0/3

S3(config-if)#switchportmodetrunk

S3(config-if)#switchporttrunknativevlan 1

S3(config-if)#intrange fa0/1-2, fa0/4-24, g0/1-2

S3(config-if-range)#switchportmodeaccess

S3(config-if-range)#int fa0/18

S3(config-if)#switchportmodeaccess

S3(config-if)#switchportaccessvlan 40

S3(config-if)#intrange fa0/1-2, fa0/4/17, fa0/19-24, g0/1-2

^

% Invalid input detected at '^' marker.

S3(config-if)#intrange fa0/1-2, fa0/4-17, fa0/19-24, g0/1-2



```
S3(config-if-range)#shutdown
```



```
#####
```



```
R1#config term
```

Enter configuration commands, one per line. End with CNTL/Z.

```
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.20
```

```
R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.20
```

```
R1(config)#ip dhcp pool ACCT
```

```
R1(dhcp-config)#ip dhcp pool ADMINISTRACION
```

```
R1(dhcp-config)#exit
```

```
R1(config)#ip dhcp pool ADMINISTRACION
```

```
R1(dhcp-config)#dns-server 10.10.10.11
```

```
R1(dhcp-config)#default-router 192.168.30.1
```

```
R1(dhcp-config)#network 192.168.30.0 255.255.255.0
```

```
R1(dhcp-config)#ip dhcp pool MERCADERO
```

```
R1(dhcp-config)#dns-server 10.10.10.11
```

```
R1(dhcp-config)#default-router 192.168.40.1
```

```
R1(dhcp-config)#network 192.168.40.0 255.255.255.0
```

```
R1(dhcp-config)#{
```





#####

R2>enable

R2#conf term

Enter configuration commands, one per line. End with CNTL/Z.

```
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#
```

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

```
#
```

R2#conf term

Enter configuration commands, one per line. End with CNTL/Z.

```
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)#
```

CONCLUSIONES

Con el desarrollo de la actividad se comprendió como establecer una topología y configurar cada elemento establecido en ella con el fin de tener comunicación en todos los dispositivos sin intermitencias mediante verificaciones por medio de comando PING.

Se establecieron configuraciones ACL de cada router con el fin de limitar el acceso a cualquier IP en una red, lo que asegura que solo el personal o las IP con permisos puedan acceder a los router.

Se logró configurar correctamente los DHCP, haciendo más fácil la tarea de establecer asignaciones de direcciones IP en la red.

Mediante el uso de la herramienta PacketTracer se comprendió en detalle cómo funciona una red, con el fin de llegar a un punto comparable con la realidad y así mejorar las habilidades cognitivas con base en exploraciones de redes para lograr sus respectivos diseños y configuraciones y finalmente llegar a un nivel avanzado el cual se llama “Enrutamiento en soluciones de red”, que nos permitió la correcta configuración de routers y switches para un mejor manejo de una red y a su vez establecer metodologías de resolución de problemas presentados en cada etapa.

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