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GLOSARIO

- **SERVIDOR DHCP:** El protocolo de configuración dinámica de host (en inglés: Dynamic Host Configuration Protocol, también conocido por sus siglas de DHCP) es protocolo de red de tipo cliente/servidor mediante el cual un servidor DHCP asigna dinámicamente una dirección IP y otros parámetros de configuración de red a cada dispositivo.
- **RIPv2:** Routing Information Protocol versión 2 (RIPv2) es uno de los protocolos de enrutamiento interior más sencillos y utilizados. Esto es particularmente verdadero a partir de la versión 2 que introduce algunas mejoras críticas que la constituyeron en un recurso necesario para cualquier administrador de redes.
- **NAT:** La traducción de direcciones de red (NAT) está diseñada para la conservación de direcciones IP. Permite que las redes IP privadas que usan direcciones IP no registradas se conecten a Internet. NAT opera en un enrutador, generalmente conectando dos redes y traduce las direcciones privadas (no globalmente únicas) en la red interna en direcciones legales, antes de que los paquetes se envíen a otra red.

- **OSPF:** Open Shortest Path First (**OSPF**), Primer Camino Más Corto, es un protocolo de red para encaminamiento jerárquico de pasarela interior o Interior Gateway Protocol (IGP), que usa el algoritmo Dijkstra, para calcular la ruta más corta entre dos nodos.

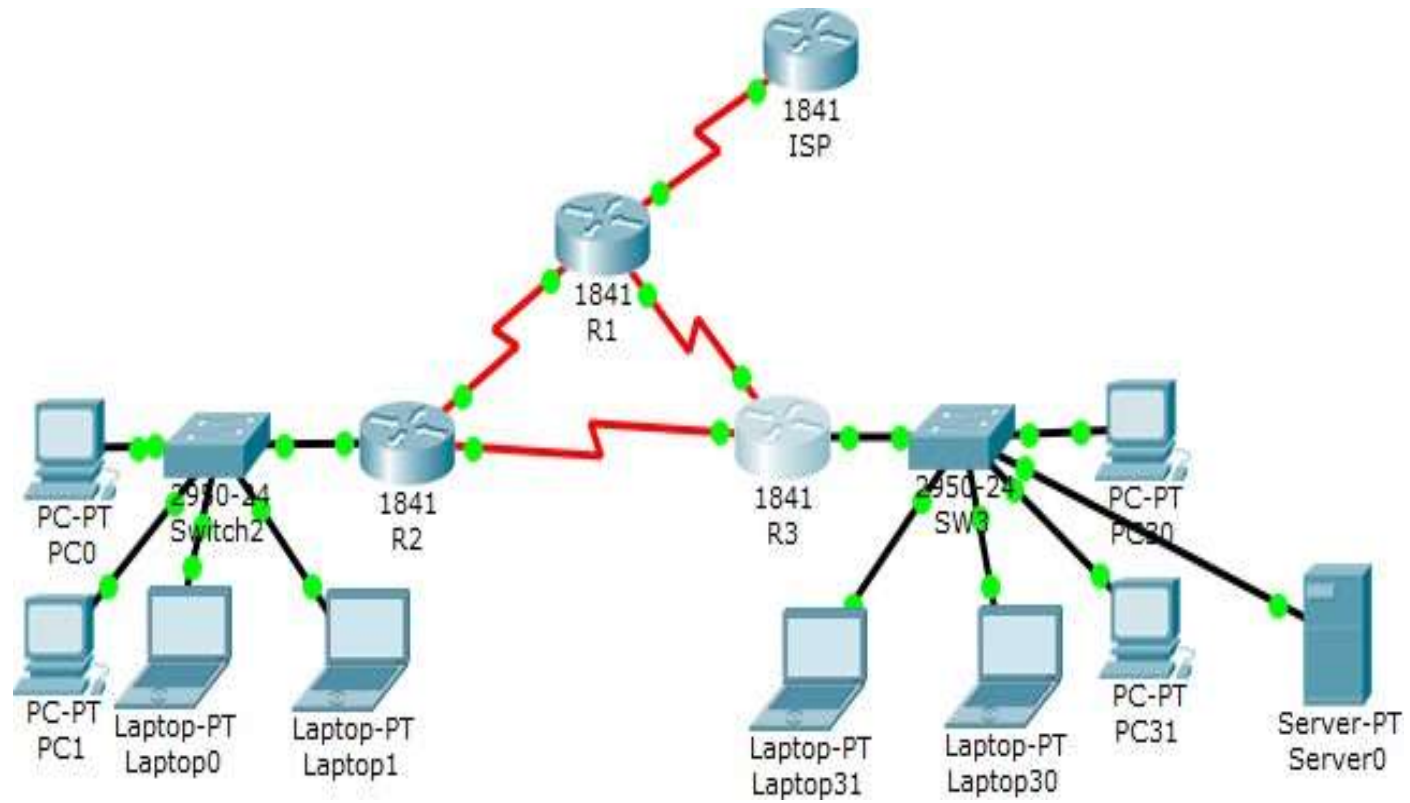
- **DIRECCION IP:** significa *Dirección de Protocolo Internet*, y cada dispositivo que se conecta a una red (así como a Internet) tiene una. Una dirección IP se parece a su número de teléfono. Su número de teléfono es un conjunto único de números que identifican a su teléfono de forma que otra persona pueda llamarle. Igualmente, una dirección IP es un conjunto único de números que identifican a su equipo de forma que pueda enviar y recibir datos hacia y desde otros equipos, respectivamente.

INTRODUCCIÓN

El funcionamiento de una red consiste en conectar computadoras y periféricos mediante dos partes del equipo: switches y routers. Estos dos elementos permiten a los dispositivos conectados a la red comunicarse con los demás y con otras redes. Aunque son muy parecidos, los switches y routers realizan funciones muy diferentes en la red: Los Switches se utilizan para conectar varios dispositivos a través de la misma red dentro de un edificio u oficina. Por ejemplo, un switch puede conectar sus computadoras, impresoras y servidores, creando una red de recursos compartidos. El switch actuaría de controlador, permitiendo a los diferentes dispositivos compartir información y comunicarse entre sí. Mediante el uso compartido de información y la asignación de recursos, los switches permiten ahorrar dinero y aumentar la productividad.

Desarrollo de los Escenarios

1. Escenario 1



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
R2	Fa0/0,100	192.168.20.1	255.255.255.0	N/D
	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
R3	Fa0/0	192.168.30.1	255.255.255.0	N/D
		2001:db8:130::9C0:80F:301	/64	N/D
	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	Interfaz
SW2	100	LAPTOPS	Fa0/2-3
SW2	200	DESTOPS	Fa0/4-5
SW3	1	-	Todas las interfaces

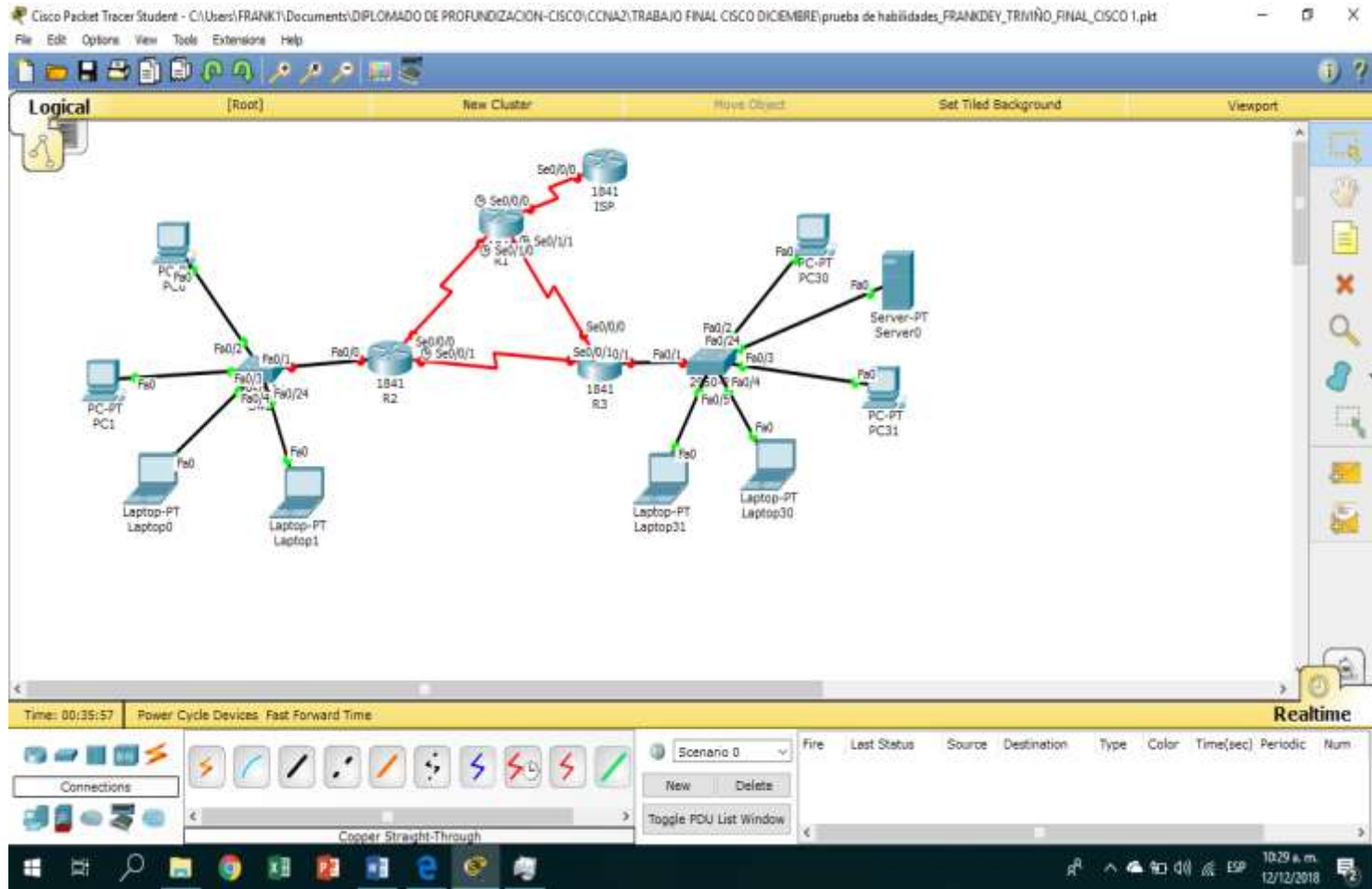
Tabla de enlaces troncales

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 subinterfaces. Todas las pruebas de alcance deben realizarse a través de ping únicamente.

TOPOLOGIA



1.2 Descripción de las actividades

- **SW1** VLAN y las asignaciones de puertos de VLAN deben cumplir con la tabla 1.

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with a central switch (SW1) connected to several devices: PC-PT PC1, PC-PT PC2, Laptop-PT Laptop0, Laptop-PT Laptop1, and Laptop-PT Laptop3. The switch is also connected to a router (R1) and another switch (SW2). The router (R1) is connected to a server (1041 ISP) and another router (R2). The switch (SW2) is connected to a server (1041 R2) and a laptop (Laptop3).

On the right, the CLI window for SW1 is open, showing the following configuration:

```
SW1# 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 #SW1-default        act/unsup
1003 #SW1-ring-default   act/unsup
1004 #SW1net-default     act/unsup
1005 #SW1-trunk-default  act/unsup

VLAN Type  STP    RTU    Access  Range  Trunk1    Trunk2
-----
1    ether  100001 1000  -      -      -      -      0    0
1002 #SW1 101003 1000  -      -      -      -      0    0
1003 tr    101003 1000  -      -      -      -      0    0
1004 #SW1 101004 1000  -      -      -      -      0    0
1005 trunk 101005 1000  -      -      -      -      0    0

Name: SW1 VLANs
-----
Primary Secondary Type    Ports
-----
SW1s
SW1s
```

Cisco Packet Tracer Student - C:\Users\FRANKY\Documents\DIPLOMADO DE PROFUNDIZACION-OSCOVCCNA2\TRABAJO FINAL OSICO DICIEMBRE\prueba de habilidades_FRANKDEY_TRINIÑO_FINAL_OSICO 1.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

SW3

Physical Config CLI

IOS Command Line Interface

```

1005 tr 101005 1500 - - - 0 0 0
1004 fdnet 101004 1500 - - - leee - 0 0
1005 crnet 101005 1500 - - - ibm - 0 0

Remove SPAN VLANs
-----
Primary Secondary Type Ports
-----

SW3(config-if-range)#exit
SW3(config)#int range Fa0/6-12
SW3(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
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively
down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively
down
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively
down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively
down
  
```

Copy Paste

Time: 00:57:56 Power Cycle Devices Fast Forward Time

Scenario 0

Fire Last Status Source Destination Type Color Time(sec) Periodic Num

New Delete

Toggle PDU List Window

Copper Straight-Through

10:58 a.m. 12/12/2018

1.3 Eliminación de las Vlan (100-200) de la tabla.

The screenshot shows the Cisco Packet Tracer interface. On the left, a network diagram is visible with a central switch (Sw2) connected to various devices including PCs, laptops, and routers. On the right, the CLI window for Sw2 is open, showing the output of the 'show vlan' command.

IOS Command Line Interface

```

SW2#
SW2#no vlan 100
% Invalid input detected at '' marker.

SW2#conf t
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
1000 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
1006 tokenet-default	act/unsup	

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BridgeId	Trans1	Trans2
1	enet	100001	1501	-	-	-	-	0	0
1000	fddi	101002	1501	-	-	-	-	0	0
1003	tr	101003	1501	-	-	-	-	0	0
1004	Ether	101004	1501	-	-	ieee	-	0	0
1006	tokenet	101006	1501	-	-	ibm	-	0	0

Remote SPAN VLANs

```

Primary Secondary Type      Ports
-----
SW2(config)#
  
```


1.4 Activación de la Fasternet de la vlan 100 y 200 de las destops y desktops.

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central switch (Sw2) connected to various devices. On the right, the CLI window for Sw2 is open, showing the configuration for VLANs 100 and 200.

IOS Command Line Interface

```

SW2 (config)#
SW2 (config)#vlan 100
SW2 (config-vlan)#name LAPTOPS
SW2 (config-vlan)#vlan 200
SW2 (config-vlan)#name DEKSTOPS
SW2 (config-vlan)#exit
SW2 (config)#int range f0/2-3
SW2 (config-if-range)#switchport mode access
SW2 (config-if-range)#switchport access vlan 100
SW2 (config-if-range)#exit
SW2 (config)#int range f0/4-5
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
  
```

VLAN Name	Status	Ports
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 DEKSTOPS	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	Trans1	Trans2
1	enat	100001	1500	-	-	-	-	0	0
100	enat	100100	1500	-	-	-	-	0	0
200	enat	100200	1500	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	0	0

- Los puertos de red que no se utilizan se deben deshabilitar.

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central switch connected to several devices: PC-1, PC0, PC1, Laptop-PT Laptop0, Laptop-PT Laptop1, and Laptop-PT Laptop3. The switch is also connected to a series of routers (R1, R2, R3) and an ISP (1841). The right pane shows the CLI of the switch (Sw2) with the following output:

```
IOS Command Line Interface
100 enet 100100 1500 - - - - 0 0
200 enet 100200 1500 - - - - 0 0
1002 fddi 101002 1500 - - - - 0 0
1003 tr 101003 1500 - - - - 0 0
1004 fdnet 101004 1500 - - - - 0 0
1005 trnet 101005 1500 - - - - 0 0

Remote SRM VLANs
-----
Primary Secondary Type Ports
-----
SW2(config)#
SW2(config)#shut range Fa0/6-24
SW2(config-if-range)#shutdow

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down
```

1.5 La información de dirección IP R1, R2 y R3 debe cumplir con la tabla 1.

R1 configuracion es ip

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central router (R1) connected to several devices: PC-1, PC-2, PC-PT, Laptop-PT, and another router (R2). The connections are labeled with interface names like Fa0/0, Fa0/1, Fa0/2, Fa0/3, Fa0/4, Fa0/5, and Fa0/6. On the right, the 'IOS Command Line Interface' window for Router R1 is open, showing the following configuration commands:

```
Router(config-if)#
Router(config-if)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
!SYS-6-CONFIC_1: Configured from console by console

Router(config)#interface Serial0/1/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#exit
Router(config)#int s0/0/0
Router(config-if)#no ip address
Router(config-if)#ip add 200.119.211.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#int s0/1/0
Router(config-if)#no ip address
Router(config-if)#ip add 10.0.0.1 255.255.255.252
Router(config-if)#no shutdown
Router(config-if)#int s0/1/1
Router(config-if)#no ip address
Router(config-if)#ip add 10.0.0.5 255.255.255.252
Router(config-if)#no shutdown
```

R2 configuraciones ip

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central switch connected to several devices: PC-PCD, PC-PT PCL, Laptop-PT Laptop0, and Laptop-PT Laptop1. The switch is also connected to two routers, R1 and R2. R1 is connected to R2 via their serial interfaces. R2 is also connected to a PC-PT PCL. The right side of the image shows the CLI window for R2, where the following configuration commands have been entered:

```
R2#(config-if)#exit
R2(config)#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)#no shut
R2(config-if)#exit
R2(config)#int f0/0/100
R2(config-subif)#
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)#ip add 192.168.21.1 255.255.255.0
R2#
! Configuring IP routing on a LAN subinterface is only allowed if that
! subinterface is already configured as part of an IEEE 802.1Q, IEEE 802.1Q,
! or ISL vLAN.
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 : 2038 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R2
!
```

R3 configuraciones ip

The screenshot displays the Cisco Packet Tracer interface. The main window shows a network topology with several devices: PC-PT PCD, PC-PT PCL, Laptop-PT Laptop0, Laptop-PT Laptop1, Laptop-PT Laptop31, and three routers labeled R1, R2, and R3. R1 is connected to R2 and R3. R2 is connected to R3. R3 is connected to an ISP labeled 1841. The interface Fa0/0 of R3 is highlighted in red, indicating it is the active interface for configuration.

The CLI window for R3 shows the following configuration commands:

```
R3#  
R3#  
R3#  
R3#  
R3#  
R3#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
R3(config)#no ip ipr6  
% Invalid input detected at '' marker.  
R3(config)#int fa0/0  
R3(config-if)#no ip ipr6  
% Invalid input detected at '' marker.  
R3(config-if)#no ipr6 add  
R3(config-if)#ipr6 unicast-routing  
R3(config)#int fa0/0  
R3(config-if)#ipr6 add 2001:db8:191::9c0/64  
R3(config-if)#shutdown  
R3(config-if)#exit  
R3(config)#int fa0/0  
R3(config-if)#ip add 192.168.10.1 255.255.255.1  
R3(config-if)#no shut  
R3(config-if)#  
%LINK-6-CHANGED: Interface FastEthernet0/0, changed state to up
```

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

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with several devices: PC Fa0 PC0, PC-PT PC1, Laptop-PT Laptop0, PC-PT PC2, Laptop-PT Laptop1, R1, R2, R3, R4, and Laptop-PT Laptop31. R1 and R2 are connected via their Serial0/0/0 interfaces. R2 and R3 are connected via their Serial0/0/0 interfaces. R3 and R4 are connected via their Serial0/0/0 interfaces. R4 is connected to Laptop-PT Laptop31 via its Fa0/24 interface. The right pane shows the CLI configuration for R2, with the following commands highlighted in blue:

```
R2#show ip dhcp pool LAPTOPS
R2(dhcp-config)#network 192.168.20.0 255.255.255.0
R2(dhcp-config)#default-router 192.168.20.1
R2(dhcp-config)#exit
R2#show ip dhcp pool SERVICIOS
R2(dhcp-config)#network 192.168.21.0 255.255.255.0
R2(dhcp-config)#default-router 192.168.21.1
R2(dhcp-config)#
```

The bottom status bar shows the time as 03:36:28 and the power cycle devices as Fast Forward Time. The bottom right corner shows the system tray with the date 12/12/2018 and time 2:57 p.m.

1.7 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**.

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central router R1 (1841) connected to R2 (1841) and R3 (1841). R1 is also connected to an ISP (1841). Various devices like PC-F0, PC-F1, Laptop-PT, and Laptop0 are connected to R1. The right side of the screen shows the CLI for R1 with the following configuration:

```
Router(config)#access-list 10 permit any
Router(config)#ip nat inside source list 10 pool ANY overload
Router(config)#int s0/1/0
Router(config-if)#ip nat inside
Router(config-if)#list s0/1/1
Router(config-if)#list s0/0/0
Router(config-if)#ip nat outside
Router(config-if)#no access-list 10
Router(config)#ip access-list INSIDE-DEVS
Router(config)#
Router(config)#ip access-list
Router(config)#ip access-list
Router(config)#ip access-list standard INSIDE-DEVS
Router(config-std-nacl)#permit any
Router(config-std-nacl)#exit
Router(config)#ip nat inside source list INSIDE-DEVS pool ANY overload
Router(config)#
```

1.8 R1 debe tener una ruta estática

predeterminada al ISP que se configuró y que incluye esa ruta en el **dominio** RIPv2.

The image shows a Cisco Packet Tracer interface with a network diagram on the left and a CLI window for R2 on the right.

Network Diagram: A central router R2 (1841) is connected to several devices: PC-Fed PC0, PC-PT PC1, Laptop-PT Laptop0, and Laptop-PT Laptop1. R2 is also connected to R1 (1841) via a serial link (Se0/0/0 to Se0/0/1) and to R3 (1841) via a serial link (Se0/0/1 to Se0/0/0). R1 is connected to an ISP (1841) via a serial link (Se0/0/0 to Se0/0/0).

CLI Configuration for R2:

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#route rip
R2(config-router)#net 10.0.0.0
R2(config-router)#net 10.0.0.8
R2(config-router)#net 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

R 10.0.0.0/30 is subnetted, 3 subnets
C 10.0.0.0 is directly connected, Serial0/0/0
C 10.0.0.4 [120/1] via 10.0.0.10, 00:00:16, Serial0/0/1
  [120/1] via 10.0.0.1, 00:00:12, Serial0/0/0
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, 00:00:16, Serial0/0/1
R 200.123.211.0/24 [120/1] via 10.0.0.1, 00:00:12, Serial0/0/0
R* 0.0.0.0/0 [120/1] via 10.0.0.1, 00:00:12, Serial0/0/0
R2(config)#
```


1.9 R2 es un servidor de DHCP

Para los dispositivos conectados al puerto FastEthernet0/0.

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with several routers (R1, R2, R3, R4) and end devices (PCs and Laptops). R2 is highlighted in red. On the right, the CLI window for R2 is open, showing the configuration of R2 as a DHCP server. The configuration includes setting the interface FastEthernet0/0 as the DHCP server interface, creating two DHCP pools (LAPTOPS and DESKTOPS), and setting the default router for each pool.

```
!LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
!LINE-5-CHANGED: Interface FastEthernet0/0, changed state to up
!LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
!LINE-5-CHANGED: Interface Serial0/0/1, changed state to down
!LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down
!LINE-5-CHANGED: Interface Serial0/0/1, changed state to up
!LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
R2(config-if)#interface FastEthernet0/0
R2(config-if)#exit
R2(config)#ip dhcp pool LAPTOPS
R2(dhcp-config)#network 192.168.20.0 255.255.255.0
R2(dhcp-config)#network 192.168.20.0 255.255.255.0
R2(dhcp-config)#default-router 192.168.20.1
R2(dhcp-config)#exit
R2(config)#ip dhcp pool DESKTOPS
R2(dhcp-config)#network 192.168.21.0 255.255.255.0
R2(dhcp-config)#network 192.168.21.0 255.255.255.0
R2(dhcp-config)#default-router 192.168.21.1
R2(dhcp-config)#default-router 192.168.21.1
R2(dhcp-config)#
```

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

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with a central switch (Sw2) connected to three routers (R1, R2, R3) and several end devices (PCs and Laptops). On the right, the CLI for Sw2 is open, showing the configuration of VLANs 100 and 200, and the configuration of interfaces for R2 to connect to Sw2.

IOS Command Line Interface

```

SW1 (config)#
SW1 (config-vlan)#vlan 100
SW1 (config-vlan)#name LAPTOPS
SW1 (config-vlan)#vlan 200
SW1 (config-vlan)#name dektops
SW1 (config-vlan)#exit
SW1 (config)#int range #0/2-3
SW1 (config-if-range)#switchport mode access
SW1 (config-if-range)#switchport access vlan 100
SW1 (config-if-range)#exit
SW1 (config)#int range #0/4-5
SW1 (config-if-range)#switchport mode access
SW1 (config-if-range)#switchport access vlan 200
SW1 (config-if-range)#exit
SW1 (config)#do show vlan

```

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/4, 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 dektops	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	Trans1	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

- El Servidor0 es sólo un servidor IPv6 y solo debe ser accesible para los dispositivos en R3 (ping).

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with a central PC (PC0) connected to a switch (R1). R1 is connected to a series of routers (R2, R3, R4) and an ISP. The routers are connected via serial links. On the right, the CLI of router R3 is shown, displaying the output of the 'show ip route' command and the configuration of static routes and access lists.

```

R3
Physical Config CLI
IOS Command Line Interface
R3(config-router)#do show ip route
Codes: C - connected, S - static, I - IGMP, 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, S - EGP
       i - IS-IS, ll - 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 10.0.0.5 to network 0.0.0.0

 10.0.0.0/30 is subnetted, 3 subnets
 R   10.0.0.0 [120/1] via 10.0.0.5, 00:00:24, Serial0/0/0
 C   10.0.0.4 is directly connected, Serial0/0/0
 C   10.0.0.8 is directly connected, Serial0/0/1
 C   192.168.30.0/24 is directly connected, FastEthernet0/0
 R   200.128.211.0/24 [120/1] via 10.0.0.5, 00:00:24, Serial0/0/0
 R*  0.0.0.0/0 [120/1] via 10.0.0.5, 00:00:24, Serial0/0/0
R3(config-router)#
R3(config-router)#exit
R3(config)#access-list 10 deny 192.168.30.6
R3(config)#access-list 10 deny 192.168.30.6
R3(config)#access-list 10 permit any
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
 10 permit any
R3#
  
```


1.10 La interfaz FastEthernet 0/0 del R3

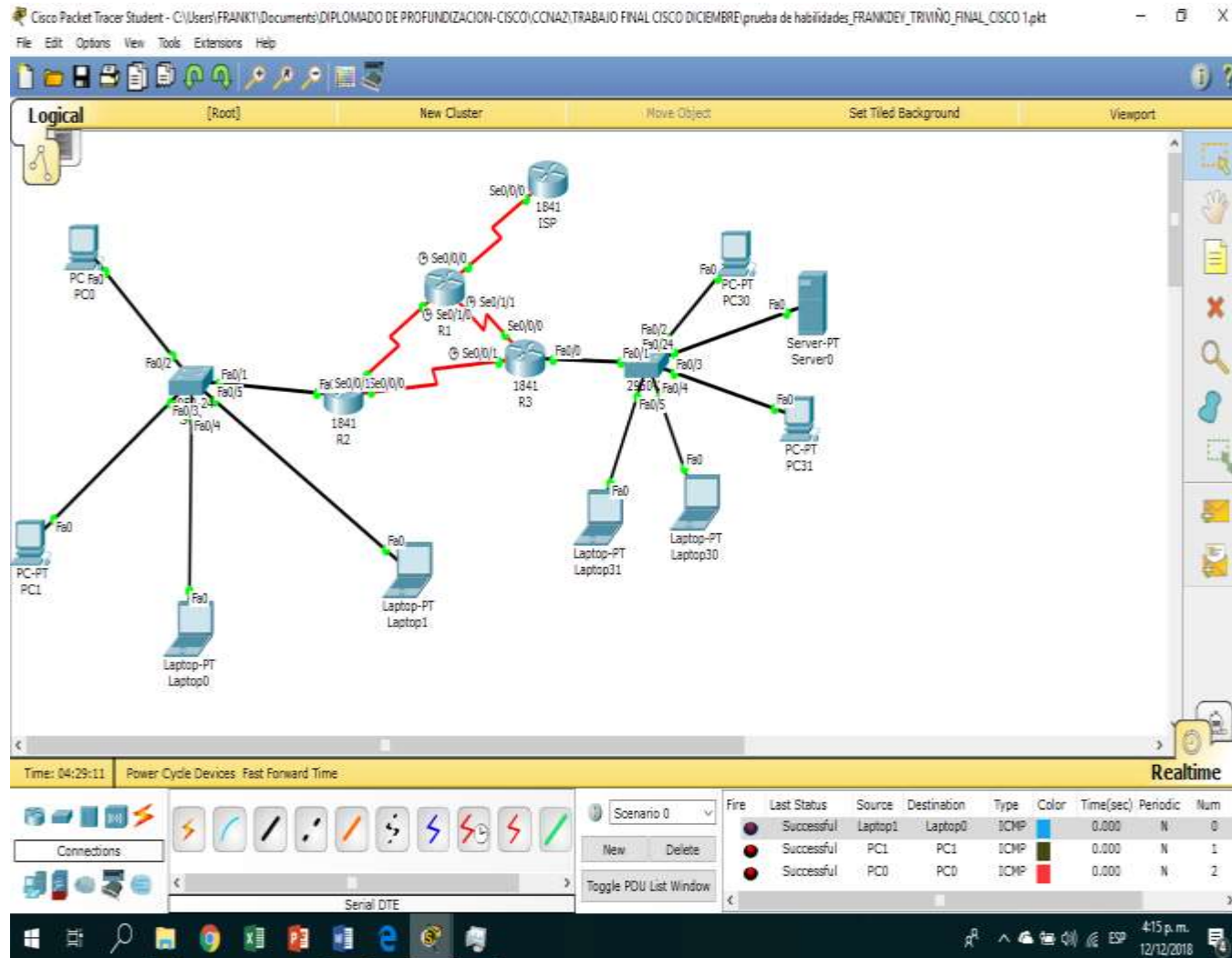
También deben tener direcciones IPv4 e IPv6 configuradas (dual-stack).

The image shows a screenshot of Cisco Packet Tracer. On the left, a network topology is visible with several routers (R1, R2, R3) and end devices (PCs and Laptops). R3 is connected to R2 and R1. R3 has a FastEthernet 0/0 interface connected to R2. R3 also has a Serial 0/0/0 interface connected to R1. R3 has a Serial 0/0/1 interface connected to R1. R3 has a Serial 0/0/2 interface connected to R1. R3 has a Serial 0/0/3 interface connected to R1. R3 has a Serial 0/0/4 interface connected to R1. R3 has a Serial 0/0/5 interface connected to R1. R3 has a Serial 0/0/6 interface connected to R1. R3 has a Serial 0/0/7 interface connected to R1. R3 has a Serial 0/0/8 interface connected to R1. R3 has a Serial 0/0/9 interface connected to R1. R3 has a Serial 0/0/10 interface connected to R1. R3 has a Serial 0/0/11 interface connected to R1. R3 has a Serial 0/0/12 interface connected to R1. R3 has a Serial 0/0/13 interface connected to R1. R3 has a Serial 0/0/14 interface connected to R1. 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R3 has a Serial 0/0/35 interface connected to R1. R3 has a Serial 0/0/36 interface connected to R1. R3 has a Serial 0/0/37 interface connected to R1. R3 has a Serial 0/0/38 interface connected to R1. R3 has a Serial 0/0/39 interface connected to R1. R3 has a Serial 0/0/40 interface connected to R1. R3 has a Serial 0/0/41 interface connected to R1. R3 has a Serial 0/0/42 interface connected to R1. R3 has a Serial 0/0/43 interface connected to R1. R3 has a Serial 0/0/44 interface connected to R1. R3 has a Serial 0/0/45 interface connected to R1. R3 has a Serial 0/0/46 interface connected to R1. R3 has a Serial 0/0/47 interface connected to R1. R3 has a Serial 0/0/48 interface connected to R1. R3 has a Serial 0/0/49 interface connected to R1. R3 has a Serial 0/0/50 interface connected to R1. R3 has a Serial 0/0/51 interface connected to R1. R3 has a Serial 0/0/52 interface connected to R1. R3 has a Serial 0/0/53 interface connected to R1. R3 has a Serial 0/0/54 interface connected to R1. R3 has a Serial 0/0/55 interface connected to R1. R3 has a Serial 0/0/56 interface connected to R1. R3 has a Serial 0/0/57 interface connected to R1. R3 has a Serial 0/0/58 interface connected to R1. R3 has a Serial 0/0/59 interface connected to R1. R3 has a Serial 0/0/60 interface connected to R1. R3 has a Serial 0/0/61 interface connected to R1. R3 has a Serial 0/0/62 interface connected to R1. R3 has a Serial 0/0/63 interface connected to R1. R3 has a Serial 0/0/64 interface connected to R1. R3 has a Serial 0/0/65 interface connected to R1. R3 has a Serial 0/0/66 interface connected to R1. R3 has a Serial 0/0/67 interface connected to R1. R3 has a Serial 0/0/68 interface connected to R1. R3 has a Serial 0/0/69 interface connected to R1. R3 has a Serial 0/0/70 interface connected to R1. R3 has a Serial 0/0/71 interface connected to R1. R3 has a Serial 0/0/72 interface connected to R1. R3 has a Serial 0/0/73 interface connected to R1. R3 has a Serial 0/0/74 interface connected to R1. R3 has a Serial 0/0/75 interface connected to R1. R3 has a Serial 0/0/76 interface connected to R1. R3 has a Serial 0/0/77 interface connected to R1. R3 has a Serial 0/0/78 interface connected to R1. R3 has a Serial 0/0/79 interface connected to R1. R3 has a Serial 0/0/80 interface connected to R1. R3 has a Serial 0/0/81 interface connected to R1. R3 has a Serial 0/0/82 interface connected to R1. R3 has a Serial 0/0/83 interface connected to R1. R3 has a Serial 0/0/84 interface connected to R1. R3 has a Serial 0/0/85 interface connected to R1. R3 has a Serial 0/0/86 interface connected to R1. R3 has a Serial 0/0/87 interface connected to R1. R3 has a Serial 0/0/88 interface connected to R1. R3 has a Serial 0/0/89 interface connected to R1. R3 has a Serial 0/0/90 interface connected to R1. R3 has a Serial 0/0/91 interface connected to R1. R3 has a Serial 0/0/92 interface connected to R1. R3 has a Serial 0/0/93 interface connected to R1. R3 has a Serial 0/0/94 interface connected to R1. R3 has a Serial 0/0/95 interface connected to R1. R3 has a Serial 0/0/96 interface connected to R1. R3 has a Serial 0/0/97 interface connected to R1. R3 has a Serial 0/0/98 interface connected to R1. R3 has a Serial 0/0/99 interface connected to R1. R3 has a Serial 0/0/100 interface connected to R1.

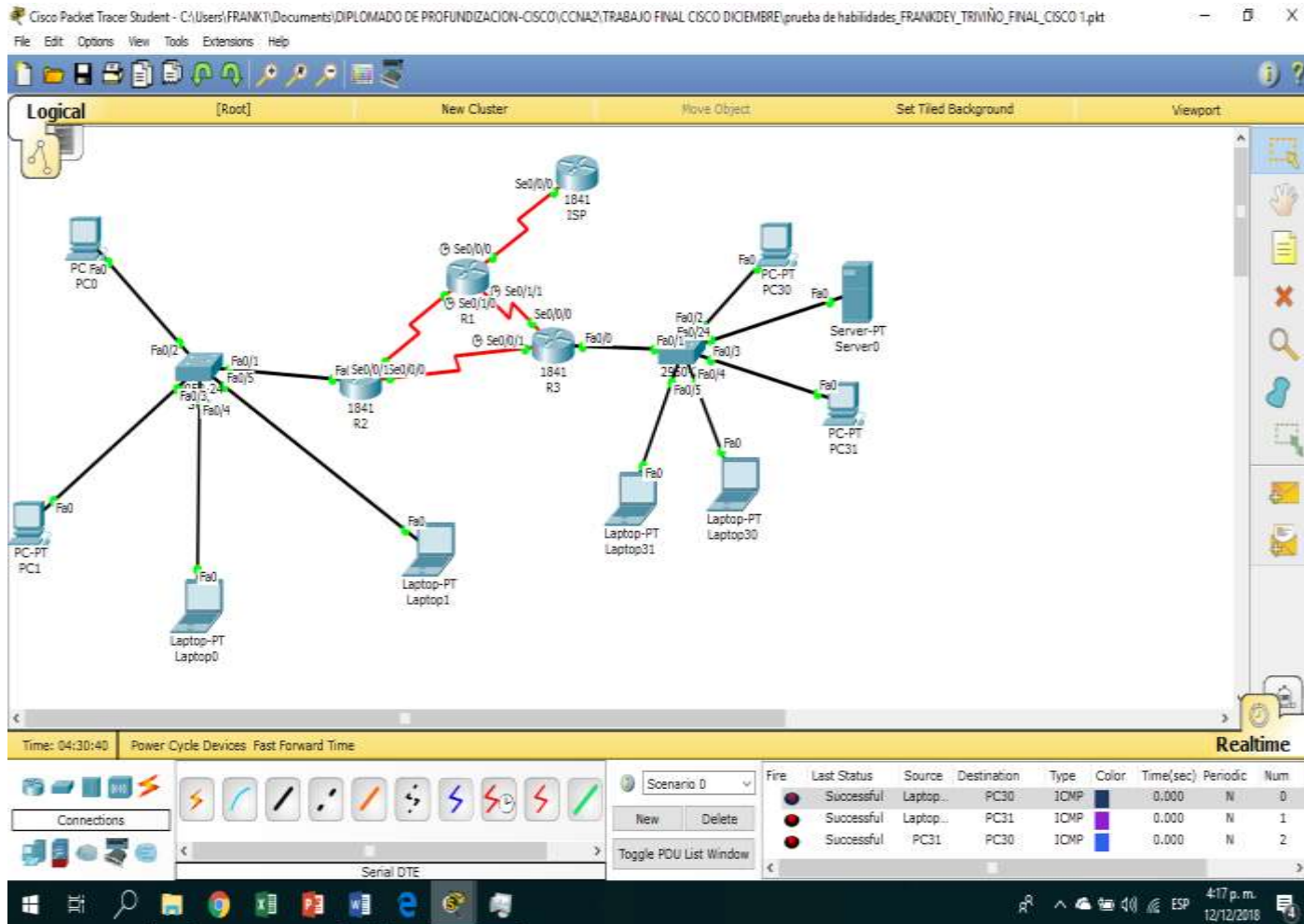
On the right, the CLI window for R3 shows the following configuration:

```
IOS Command Line Interface
% Invalid input detected at '^' marker.
R3(config-if)#ipv6 add fe80::1 link-local
R3(config-if)#nd other-config-flag
% Invalid input detected at '^' marker.
R3(config-if)#nd other-config-flag
% Invalid input detected at '^' marker.
R3(config-if)#ipv6 nd other-config-flag
R3(config-if)#ipv6 dhcp server
% Incomplete command.
R3(config-if)#ipv6 dhcp server?
server
R3(config-if)#ipv6 dhcp serveripv6 dhcp server ANY
% Invalid input detected at '^' marker.
R3(config-if)#ipv6 dhcp server ipv6 dhcp server ANY
% Invalid input detected at '^' marker.
R3(config-if)#ipv6 dhcp server ANY
% Invalid input detected at '^' marker.
R3(config-if)#ipv6 dhcp server ANY
R3(config-if)#EXIT
R3(config)#ipv6 unicast-routing
% Invalid input detected at '^' marker.
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 dhcp pool ANY
R3(config-dhcp)#dns-server 2001:db8:1:0::
R3(config-dhcp)#
```

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



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



1.13 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.

The screenshot shows a Cisco Packet Tracer network simulation. The network topology includes several routers (R1, R2, R3), a server (1841), and various PCs and laptops. A Command Prompt window is open, showing the output of a ping command from a laptop to the server IP 1841. The output indicates successful connectivity with 4 successful replies and 0% loss.

```
Packet Tracer PC Command Line 1.0
PC>ping FE80::202:4AFF:FE7E:9CB6
Pinging FE80::202:4AFF:FE7E:9CB6 with 32 bytes of data:
Reply from FE80::202:4AFF:FE7E:9CB6: bytes=32 time=1ms TTL=120
Reply from FE80::202:4AFF:FE7E:9CB6: bytes=32 time=0ms TTL=120
Reply from FE80::202:4AFF:FE7E:9CB6: bytes=32 time=0ms TTL=120
Reply from FE80::202:4AFF:FE7E:9CB6: bytes=32 time=0ms TTL=120

Ping statistics for FE80::202:4AFF:FE7E:9CB6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>
```

File	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	Laptop	PC30	ICMP	Blue	0.000	N	0
	Successful	Laptop	PC31	ICMP	Green	0.000	N	1
	Successful	PC31	PC30	ICMP	Blue	0.000	N	2

1.14 Líneas de código escenario 1

```
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
```

#####

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-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 Serial0/1/0, 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(
%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)#ip na

% Ambiguous command: "ip na"

R1(config)#ip nat 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)#ip nat pool ANY 203.123.211.1 203.123.211.1 netmask 255.255.255.252

```
R1(config)#access-list 10 permit any
R1(config)#ip nat inside source list 10 pool ANY overload
R1(config)#int s0/1/0
R1(config-if)#ip nat inside
R1(config-if)#int s0/1/1
R1(config-if)#ip nat inside
R1(config-if)#int s0/0/0
R1(config-if)#ip nat 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)#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)#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)#
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)#ip nat pool

% Incomplete command.

R1(config)#ip nat pool ?

WORD Pool name

R1(config)#ip nat pool ?

WORD Pool name

inside Inside address translation

outside Outside address translation

pool Define pool of addresses

```
R1(config)#ip nat pool ANY 200.123.211.1 200.123.211.1 netmask 255.255.255.252
R1(config)#ip nat pool ANY 200.123.211.1 200.123.211.1 netmask 255.255.255.252
R1(config)#ip nat inside source list INSIDE-DEVS ?
    interface Specify interface for global address
    pool Name pool of global addresses
R1(config)#ip nat inside source list INSIDE-DEVS pool ANY overload
R1(config)#ip nat 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
```

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
```

```
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)#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 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)#
```

```
#####
```

```
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)#
```

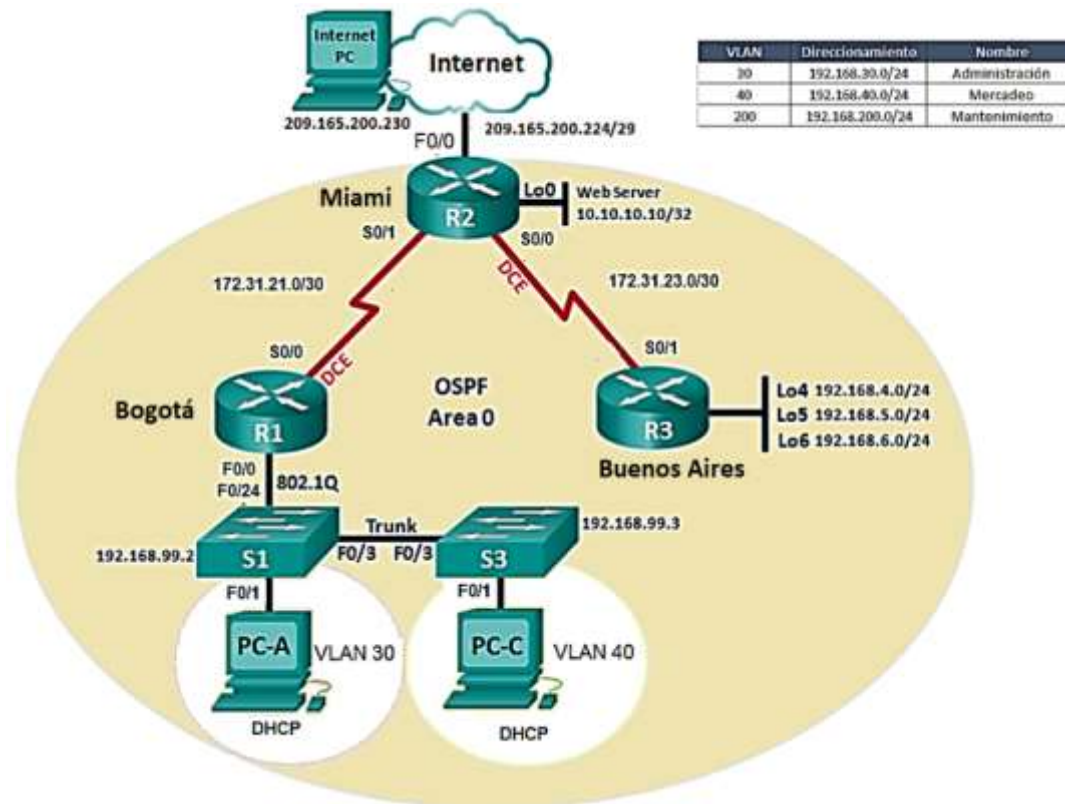
```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
ISP(config-if)#
```

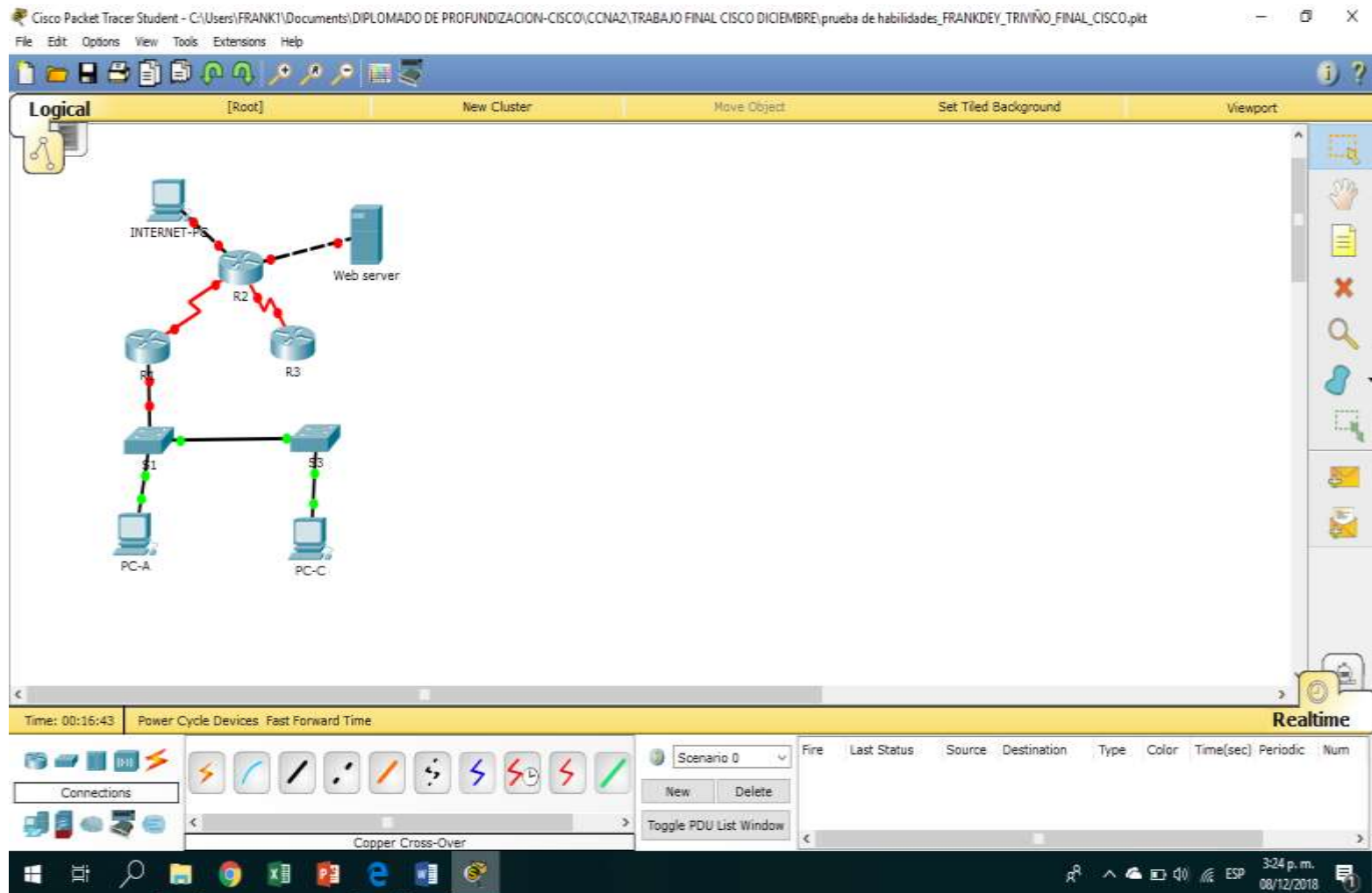
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
```

2. Escenario 2

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



2.1 Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios: Topología de la red.



2.2 Se configura el pc de internet

Cisco Packet Tracer Student - C:\Users\FRANKT\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root]

INTERNET-PC

Physical Config Desktop Custom Interface

IP Configuration

IP Configuration

DHCP Static

IP Address: 209.165.200.230

Subnet Mask: 255.255.255.248

Default Gateway: 209.165.200.225

DNS Server:

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address:

Link Local Address: FE80::201:C7FF:FE17:4C9B

IPv6 Gateway:

IPv6 DNS Server:

Time: 00:27:44 Power Cycle Devices Fast Forward Time

Connections

Copper Cross-Over

Scenario 0

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
------	-------------	--------	-------------	------	-------	-----------	----------	-----

New Delete

Toggle PDU List Window

3:35 p. m. 08/12/2018

2.3 Configuración R1

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNAZ\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

```
graph TD
    Internet[INTERNET-PC] --- R2
    R2 --- Web[Web server]
    R2 --- R1
    R2 --- R3
    R1 --- PC_A[PC-A]
    R1 --- PC_C[PC-C]
```

R1

Physical Config CLI

IOS Command Line Interface

```
Router>en
Router#conf t
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)#
R1(config-if)#ip add 172.16.13.1 255.255.255.252
R1(config-if)#clock rate 128000
% Invalid input detected at '^' marker.
R1(config-if)#click rate 128000
% Invalid input detected at '^' marker.
R1(config-if)#clock rate 128000
R1(config-if)#ip route 0.0.0.0 0.0.0.0 s0/0/0
% Invalid input detected at '^' marker.
R1(config-if)#ip route 0.0.0.0 0.0.0.0 s0/0/0
% Invalid input detected at '^' marker.
```

Copy Paste

Time: 00:41:25 Power Cycle Devices: Fast Forward Time

Connections

Serial DCE

Scenario 0 New Delete Toggle PDU List Window

3:49 p.m. 08/12/2018

2.4 Configuración servidor –web

Cisco Packet Tracer Student - C:\Users\FRANKY\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CONAZ\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Web server

Physical Config Services Desktop Custom Interface

IP Configuration

Interface: FastEthernet0

IP Configuration

- DHCP
- Static

IP Address: 10.10.10.10

Subnet Mask: 255.255.255.0

Default Gateway: 10.10.10.1

DNS Server:

IPv6 Configuration

- DHCP
- Auto Config
- Static

IPv6 Address:

Link Local Address: FE80::202:17FF:FE85:B404

IPv6 Gateway:

IPv6 DNS Server:

Time: 00:59:08 Power Cycle Devices Fast Forward Time

Connections

Copper Cross-Over

Scenario 0	Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
------------	------	-------------	--------	-------------	------	-------	-----------	----------	-----

Toggle PDU List Window

realtime

4:06 p. m. 08/12/2018

2.5 Configuración de R3

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2,TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRUJANO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

```
graph TD
    R2 --- R3
    R2 --- R1
    R2 --- WS[Web server]
    R1 --- PC_A[PC-A]
    R1 --- PC_C[PC-C]
```

Time: 01:09:59 Power Cycle Devices Fast Forward Time

Connections

Copper Cross-Over

Physical Config CLI

IOS Command Line Interface

```
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)#
```

Copy Paste

realtime

dic Num

New Delete

Toggle PDU List Window

4:17 p.m. 08/12/2018

2.6 Configuración de S1

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Diagram description: A network topology in Cisco Packet Tracer. At the top, an 'INTERNET-PC' is connected to router 'R2'. Router 'R2' is connected to a 'Web server' and router 'R3'. Router 'R2' is also connected to router 'R1'. Router 'R1' is connected to switch 'S1'. Switch 'S1' is connected to 'PC-A'. Switch 'S2' is connected to 'PC-C'. Routers 'R1' and 'R3' are connected to each other. The interface 'S1' is highlighted in the diagram.

Time: 01:13:06 Power Cycle Devices: Fast Forward Time

Connections

Copper Cross-Over

S1

Physical Config CLI

IOS Command Line Interface

```
Switch con0 is now available

Press RETURN to get started.

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S1
S1(config)#
```

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me

Num

New Delete

Toggle PDU List Window

4:20 p. m. 08/12/2018

2.7 Configuración S3

Cisco Packet Tracer Student - C:\Users\FRANKI\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNAZ\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Physical Config CLI

IOS Command Line Interface

```
press RETURN to get started.

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%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>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S3
S3(config)#
```

Copy Paste

Time: 01:14:22 Power Cycle Devices Fast Forward Time

Realtime

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
------	-------------	--------	-------------	------	-------	-----------	----------	-----

Scenario 0

New Delete

Toggle PDU List Window

Copper Cross-Over

4:22 p. m. 08/12/2018

2.8 Configuración vlan 30-40 y 200

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central router R2 connected to an Internet PC and a Web server. R2 is also connected to routers R1 and R3. R1 is connected to a switch S1, which is connected to PC-A. R3 is connected to a switch S3, which is connected to PC-C. The network is viewed in the 'Logical' tab.

On the right, the CLI window for router S1 is open, showing the following configuration commands:

```
S1>en
S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#vlan 30
S1(config-vlan)#name administracion
S1(config-vlan)#vlan 40
S1(config-vlan)#name mercadeo
S1(config-vlan)#vlan 200
S1(config-vlan)#name mantenimiento
S1(config-vlan)#
```

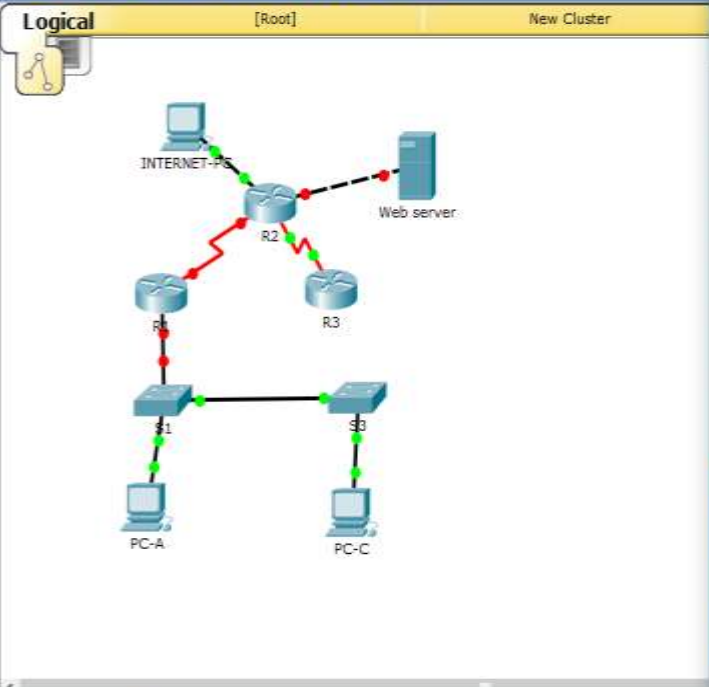
The bottom status bar shows the time as 01:32:37, the scenario as Scenario 0, and the date as 08/12/2018 at 4:40 p.m.

2.9 Configuración vlan en S1

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEV_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster



Time: 02:05:26 Power Cycle Devices Fast Forward Time

Scenario 0

Src	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
New								
Delete								
Toggle PDU List Window								

Copper Straight-Through

5:13 p.m. 08/12/2018

S1

Physical Config CLI

IOS Command Line Interface

```
S1(config-if)#switchport mode trunk
S1(config-if)#int range fa0/1-2, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2,fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2, fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2, fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2, fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#
S1(config)#int range fa0/1-2, fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2
S1(config-if-range)#int range fa0/1-2, fa0/4
S1(config-if-range)#int range fa0/1-2, fa0/4, fa0/6-24
S1(config-if-range)#int range fa0/1-2, fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2, fa0/4, fa0/6-24, g1/1-2
interface range not validated - command rejected
S1(config-if-range)#int fa0/6
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 90
S1(config-if)#int range fa0/1-2, fa0/4, fa0/7-24, g1/1-2
interface range not validated - command rejected
S1(config)#int range fa0/1-2, fa0/4, fa0/7-24, g0/1-2
S1(config-if-range)#
```

Copy Paste

Realtime

2.10 Configuración vlan S3

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Time: 02:23:54 Power Cycle Devices Fast Forward Time

Connections

Copper Straight-Through

IOS Command Line Interface

```
S3>en
S3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#int fa0/3
S3(config-if)#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, g1/1-2
interface range not validated - command rejected
S3(config)#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, g1/1-2
interface range not validated - command rejected
S3(config)#int range fa0/1-2, fa0/4-17, fa0/19-24, g0/1-3
S3(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
```

Copy Paste

New Delete

Toggle PDU List Window

5:31 p.m. 08/12/2018

2.11 Configuración vlan R1

Cisco Packet Tracer Student - C:\Users\FRANKY\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

```
graph TD
    InternetPC[Internet PC] --- R2
    R2 --- WebServer[Web server]
    R2 --- R1
    R2 --- R3
    R1 --- S1[Switch 1]
    R3 --- S2[Switch 2]
    S1 --- S2
    S1 --- PC-A[PC-A]
    S2 --- PC-C[PC-C]
```

Time: 02:46:04 Power Cycle Devices Fast Forward Time

Scenario 0

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
------	-------------	--------	-------------	------	-------	-----------	----------	-----

Copper Straight-Through

5:54 p. m. 08/12/2018

R1

Physical Config CLI

IOS Command Line Interface

```
Router(config)#hostname R1
R1(config)#hostname R1
R1(config)#int g0/1.200
R1(config-subif)#description mantenimiento LAN
R1(config-subif)#encapsulation dot1q 200
R1(config-subif)#ip add 192.168.99.1 255.255.255.0
R1(config-subif)#exit
R1(config)#noint g0/1.200

% Invalid input detected at '^' marker.

R1(config)#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
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.200, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1.200, changed state to up

R1(config-if)#
```

Copy Paste

2.12 Ping desde S1

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central router R2 connected to an Internet PC and a Web server. R2 is also connected to routers R1 and R3. R1 is connected to PC-A, and R3 is connected to PC-C. The network is shown in a logical view with various connection types.

On the right, the CLI window for router S1 is open, showing the following output:

```
IOS Command Line Interface

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, 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
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, 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>
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 = 0/0/0 ms
S1>
```

The bottom of the interface shows a taskbar with various application icons and a system tray displaying the time as 5:56 p.m. on 08/12/2018.

2.13 Ping desde s3

Cisco Packet Tracer Student - C:\Users\FRANKY\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL-CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRMIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

```
graph TD
    Internet[Internet-PS] --- R2
    WebServer[Web server] --- R2
    R2 --- R1
    R2 --- R3
    R1 --- S1
    R3 --- S3
    S1 --- PC_A[PC-A]
    S3 --- PC_C[PC-C]
```

Time: 02:49:41 Power Cycle Devices Fast Forward Time

Scenario 0

Connections

Copper Straight-Through

New Delete Toggle PDU List Window

Physical Config CLI

IOS Command Line Interface

```
S3>en
S3#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 = 0/0/2 ms
S3#
```

Copy Paste

5:57 p.m. 08/12/2018

2.14 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

2.15 Router R1

The screenshot displays the Cisco Packet Tracer interface. On the left, the 'Logical' view shows a network topology with routers R1, R2, and R3, a web server, and PCs A and C. R1 is connected to R2, which is connected to R3. R2 is also connected to a web server and an internet cloud. R1 is connected to PC-A, and R3 is connected to PC-C. The bottom status bar shows a timer of 03:02:28 and 'Power Cycle Devices: Fast Forward Time'.

On the right, the 'CLI' window for Router R1 shows the following configuration commands:

```
*SYS-5-CONFIG_I: Configured from console by console
R1#conf t
Enter configuration commands, one per line. End with CTRL/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 192.168.300.0 0.0.0.255 area 0
R1(config-router)#passive-interface g0/1.30
%Invalid interface type and number
R1(config-router)#passive-interface g0/1.30
%Invalid interface type and number
R1(config-router)#passive-interface g0/1.30
%Invalid interface type and number
R1(config-router)#passive-interface g0/1.40
%Invalid interface type and number
R1(config-router)#passive-interface g0/1.30
%Invalid interface type and number
R1(config-router)#auto-cost reference-bandwidth 1000
% Invalid input detected at '' marker.
R1(config-router)#exit
R1(config)#int e0/0/0
R1(config-if)#bandwidth 100
R1(config-if)#ip ospf cost 9600
R1(config-if)#
```

2.16 Router R2

Cisco Packet Tracer Student - C:\Users\FRANKT\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pt

File Edit Options View Tools Extensions Help

Logical [Root]

```
graph TD
    Internet-PC --- R2
    R2 --- Web-server
    R2 --- R1
    R2 --- R3
    R1 --- S1
    R3 --- S3
    S1 --- PC-A
    S3 --- PC-C
```

Web server

Physical Config Services Desktop Custom Interface

Command Prompt

```

Ping statistics for 209.165.200.225:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

SERVER>ping 209.165.200.225

Pinging 209.165.200.225 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 209.165.200.225:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

SERVER>ip config
Invalid Command.

SERVER>ipconfig

FastEthernet0 Connection: (default port)
Link-local IPv6 Address . . . . . FE80::203:17FF:FE85:B404
IP Address. . . . . 10.10.10.10
Subnet Mask. . . . . 255.255.255.0
Default Gateway. . . . . 10.10.10.1

SERVER>

```

Viewport

Time: 03:08:47 Power Cycle Devices Fast Forward Time

Scenario 0

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
------	-------------	--------	-------------	------	-------	-----------	----------	-----

Connections

Copper Straight-Through

Toggle PDU List Window

6:17 p. m. 08/12/2018

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACIÓN-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.plt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move

```

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
OSPF process 1 cannot start. There must be at least one "up" IP interface
R2(config-router)#router-id 5.5.5.5
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 10.10.10.0 0.0.0.255 area 0
R2(config-router)#passive-interface g0/1
R2(config-router)#auto-cost reference-bandwidth 9500
! OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent across all routers.
R2(config-router)#auto-cost reference-bandwidth 9500
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)#auto-cost reference-bandwidth 1000
R2(config-router)#int s0/0/0
R2(config-if)#bandwidth 256
R2(config-if)#int s0/0/0
R2(config-if)#ip ospf cost 9500
R2(config-if)#
  
```

Time: 03:14:52 Power Cycle Devices Fast Forward Time

Realtime

Scenario 0

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
<p>New Delete</p> <p>Toggle PDU List Window</p>								

Copper Straight-Through

6:23 p.m. 08/12/2018

2.17 Router 3

Cisco Packet Tracer Student - C:\Users\FRANKT\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

```
graph TD
    Internet[Internet-PC] --- R2
    Web[Web server] --- R2
    R2 --- R1
    R2 --- R3
    R1 --- S1[S1]
    R3 --- S2[S2]
    S1 --- PC_A[PC-A]
    S2 --- PC_C[PC-C]
```

R3

Physical Config CLI

IOS Command Line Interface

```
R3 con0 is now available

Press RETURN to get started...

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
OSPF process 1 cannot start. There must be at least one "up" IP interface
R3(config-router)#router-id 8.8.8.8
R3(config-router)#
```

Copy Paste

Time: 03:17:43 Power Cycle Devices Fast Forward Time

Connections

Copper Straight-Through

Scenario []

New Delete

Toggle PDU List Window

6:26 p.m. 08/12/2018

Cisco Packet Tracer Student - C:\Users\FRANKY\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CONAZ\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

INTERNET-PC Web server R2 R3 R1 S1 S3 PC-A PC-B PC-C

Time: 03:25:10 Power Cycle Devices Fast Forward Time

Connections

Copper Straight-Through

Scenario

New Delete

Toggle PDU List Window

Physical Config CLI

IOS Command Line Interface

```
R3(config-router)#network 192.168.4.0 0.0.255.255 area 0
R3(config-router)#passive-interface lo4
%Invalid interface type and number
R3(config-router)#passive-interface lo4
% Invalid input detected at '^' marker.
R3(config-router)#passive-interface lo5
% Invalid input detected at '^' marker.
R3(config-router)#passive-interface lo6
% Invalid input detected at '^' marker.
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)#auto-cost reference-bandwidth 1000
R3(config-router)#exit
R3(config)#passive-interface lo4
% Invalid input detected at '^' marker.
R3(config)#int s0/0/0
R3(config-if)#int s0/0/1
R3(config-if)#bandwidth 256
R3(config-if)#int s0/0/1
R3(config-if)#ip ospf cost 9500
R3(config-if)#
```

Copy Paste

6:33 p.m. 08/12/2018

2.18 Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2

Nota: no soporta

The screenshot displays the Cisco Packet Tracer Student interface. On the left, a network diagram shows a central router R2 connected to an Internet-PE router, a Web server, and two other routers, R1 and R3. R1 and R3 are connected to switches S1 and S3, which are in turn connected to PCs PC-A and PC-C. The diagram uses red dashed lines for connections to R2 and green solid lines for other connections.

On the right, the CLI window for router R2 is open, showing the following commands and their outputs:

```
R2>show ip ospf interface brief
% Invalid input detected at '' marker...

R2>show ip ospf interface brief
% Invalid input detected at '' marker...

R2>
R2>
R2>show ip ospf interface brief
% Invalid input detected at '' marker...

R2>show ip ospf interface brief
% Invalid input detected at '' marker...

R2>show ip ospf interface brief
% Invalid input detected at '' marker...

R2>
R2>
R2>
R2>show ip ospf interface brief
% Invalid input detected at '' marker...
```

The bottom of the interface shows a toolbar with various tools and a status bar indicating the time as 03:29:39 and the power cycle devices as Fast Forward Time.

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

Nota: no soporta

The screenshot displays the Cisco Packet Tracer interface. The main workspace shows a network topology with several devices: R1, R2, R3, S1, S2, PC-A, PC-C, an Internet PC, and a Web server. R2 is connected to R1, R3, and the Web server. R1 is connected to S1, which is connected to PC-A. R3 is connected to S2, which is connected to PC-C. The Internet PC is connected to R2. The CLI window for R2 is open, showing the command prompt and the command `show ip ospf interface brief` being entered multiple times. The output of the command is not visible, only the command prompt and the command text are shown. The status bar at the bottom indicates the time is 03:30:38 and the power cycle devices are fast-forwarding time.

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

Cisco Packet Tracer Student - C:\Users\FRANKT\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

```
graph TD
    Internet[Internet-PS] --- R2
    WebServer[Web server] --- R2
    R2 --- R3
    R2 --- S1
    R3 --- S3
    S1 --- S3
    S1 --- PC_A[PC-A]
    S3 --- PC_C[PC-C]
```

R2

Physical Config CLI

IOS Command Line Interface

```
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 00:27:27
Distance: (default is 110)

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 0.0.0.3 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 00:27:33
Distance: (default is 110)

R2#
```

Copy Paste

Time: 03:33:52 Power Cycle Devices: Fast Forward Time

Connections

Copper Straight-Through

Scenario New Delete Toggle PDU List Window

6:42 p.m. 08/12/2018

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

Cisco Packet Tracer Student - C:\Users\FRANKI\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

```
R2
Physical Config CLI
IOS Command Line Interface
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 00:27:27
Distance: (default is 110)
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 0.0.0.3 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 00:27:33
Distance: (default is 110)
R2#show ip route ospf
R2#show ip route ospf
R2#
```

Time: 03:36:12 Power Cycle Devices Fast Forward Time

Connections

Copper Straight-Through

Scenario New Delete Toggle PDU List Window

6:44 p. m. 08/12/2018

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

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows a central router R2 connected to an Internet PC, a Web server, and another router R3. R2 is also connected to a switch, which is connected to two PCs, PC-A and PC-C. The interface is titled 'Logical' and includes tabs for '[Root]', 'New Cluster', 'Move Object', 'Set Tiled Background', and 'Viewport'. The bottom status bar shows 'Time: 03:39:12' and 'Power Cycle Devices Fast Forward Time'. The bottom toolbar contains various icons for connections and device management.

On the right, the 'R2' configuration window is open, showing the 'IOS Command Line Interface'. The CLI displays the following commands and their outputs:

```
R2#show ip route ospf
R2#show ip route ospf
R2#show ip ospf interface

R2#show run
Building configuration...
Current configuration : 995 bytes
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
hostname R2

no ip vrf
no ipw6 def
--More--
```

2.23 Implement DHCP and NAT for IPv4

The screenshot displays the Cisco Packet Tracer interface. The main window shows a network topology with three routers (R1, R2, R3), two switches (S1, S2), and two PCs (PC-A, PC-C). R2 is connected to an Internet PC and a Web server. R1 is connected to S1, which is connected to PC-A. R3 is connected to S2, which is connected to PC-C. The interface is titled "Logical" and shows the network in a hierarchical view.

On the right, the CLI window for router R1 is open, showing the following commands and output:

```
R1 con0 is now available

Press RETURN to get started:

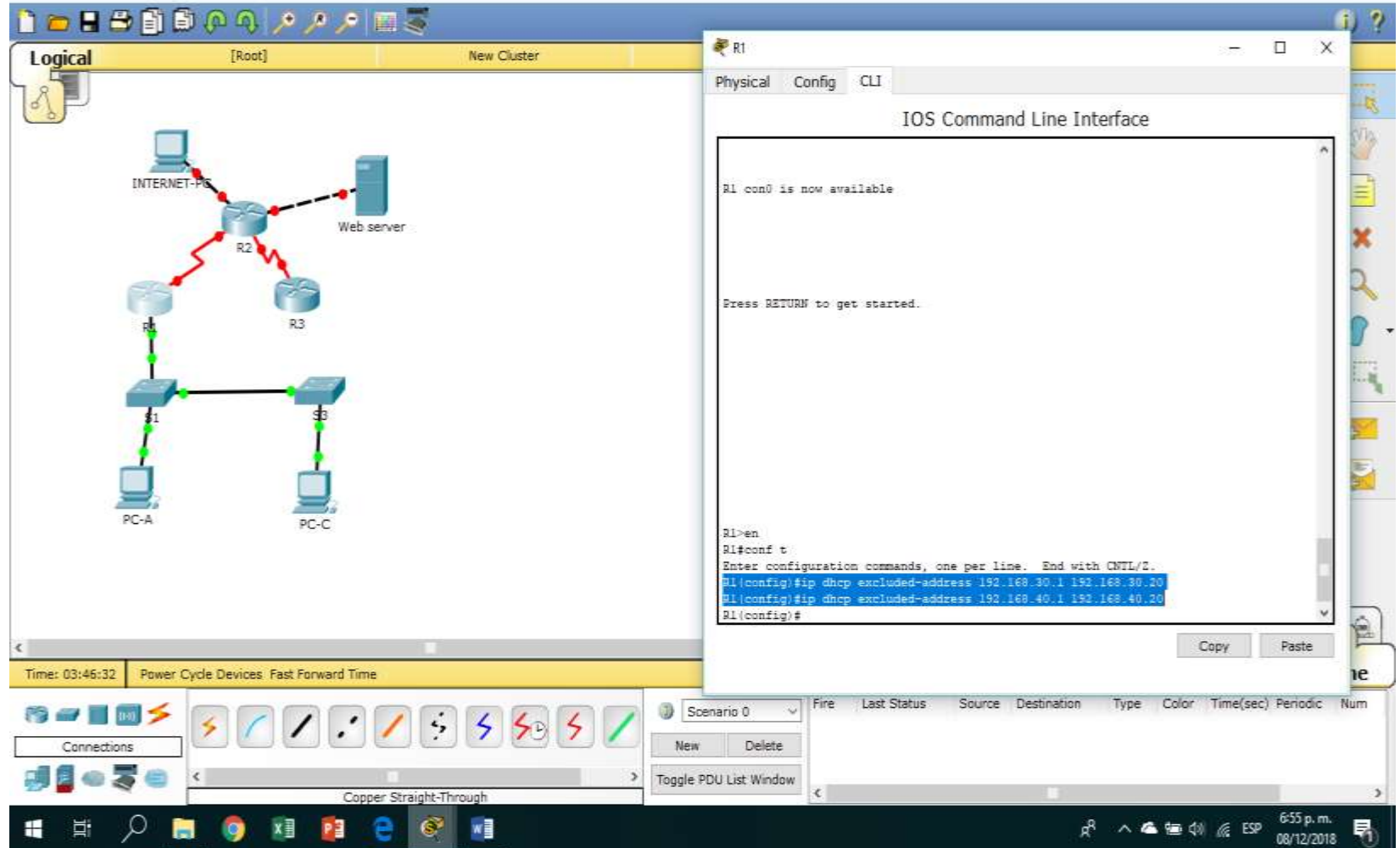
R1>en
R1#conf t
Enter configuration commands, one per line. End with CTRL/Z.
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.20
R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.20
R1(config)#
```

The bottom status bar shows the time as 03:46:07 and the scenario as Scenario 0. The system tray at the bottom right indicates the time is 6:54 p. m. on 08/12/2018.

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

Cisco Packet Tracer Student - C:\Users\FRANKI\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help



Logical [Root] New Cluster

INTERNET-PC Web server R2 R3 R1 PC-A PC-C

Time: 03:46:32 Power Cycle Devices. Fast Forward Time

Scenario 0 Fire Last Status Source Destination Type Color Time(sec) Periodic Num

New Delete Toggle PDU List Window

Copper Straight-Through

6:55 p. m. 08/12/2018

```
IOS Command Line Interface

R1 con0 is now available.

Press RETURN to get started.

R1>en
R1#conf t
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)#
```

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

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

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\pruebas de habilidades_FRANKWEY_TRIVIÑO_FINAL_CISCO.plt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Time: 03:54:39 Power Cycle Devices Fast Forward Time

Connections

Copper Straight-Through

Scenario 0

Fire Last Status Source Destination Type Color Time(sec) Periodic Num

New Delete

Toggle PDU List Window

R1

Physical Config CLI

IOS Command Line Interface

```

R1>en
R1#conf t
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 administracion
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-unad.com
~
% Invalid input detected at '^' marker.
R1(dhcp-config)#ip dhcp pool ADMINISTRACION
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-unad.com
~
% Invalid input detected at '^' marker.
R1(dhcp-config)#default-router 192.168.30.1
R1(dhcp-config)#network 192.168.30.0 255.255.255.0
R1(dhcp-config)#ip dhcp pool MERCADEO
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-unad.com
~
% Invalid input detected at '^' marker.
R1(dhcp-config)#
R1(dhcp-config)#default-router 192.168.40.1
R1(dhcp-config)#network 192.168.40.0 255.255.255.0
R1(dhcp-config)#

```

Copy Paste

7:03 p. m. 08/12/2018

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

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with a central router R2 connected to an Internet-PS, a Web server, and two other routers R1 and R3. R1 and R3 are connected to switches S1 and S3, which are in turn connected to PCs A and C. The main window shows the CLI for router R2 with the following configuration commands:

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#user webuser privilege 15
R2(config)#ip http server

% Invalid input detected at '^' marker.

R2(config)#ip http authentication local
.

% Invalid input detected at '^' marker.

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

% Invalid input detected at '^' marker.

R2(config-if)#ip nat inside
R2(config-if)#
```

The bottom of the interface shows a toolbar with various tools and a status bar indicating the time as 7:12 p.m. on 08/12/2018.

2.27 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.

Cisco Packet Tracer Student - C:\Users\FRANK1\Documents\DIPLOMADO DE PROFUNDIZACION-CISCO\CCNAZ\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Internet-PS, Web server, R2, R3, PC-A, PC-C

R2

Physical Config CLI

IOS Command Line Interface

```
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#user webuser privilege 15
R2(config)#ip http server
% Invalid input detected at '^' marker.
R2(config)#ip http authentication local
% Invalid input detected at '^' marker.
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
% Invalid input detected at '^' marker.
R2(config-if)#ip nat inside
R2(config-if)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#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 192.168.40.0 0.0.0.255
R2(config)#access-list 1 permit 192.168.4.0 0.0.3.255
R2(config)#
```

Copy Paste

Time: 04:08:04 Power Cycle Devices Fast Forward Time

Connections

Copper Straight-Through

Scenario 0 Fire Last Status Source

New Delete

Toggle PDU List Window

Capturas de pantalla guardadas
La captura de pantalla se agregó a tu OneDrive.
OneDrive

7:16 p. m.
08/12/2018

2.28 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.

The screenshot displays the Cisco Packet Tracer interface. On the left, a network diagram shows three routers: R1, R2, and R3. R1 is connected to R2, and R2 is connected to R3. R1 is also connected to an Internet cloud. R2 is connected to a Web server. R1 is connected to PC-A, and R3 is connected to PC-C. The interface is titled 'Logical' and shows a 'New Cluster' button.

On the right, the CLI window for R2 is open, showing the following configuration:

```
R2
R2(config-if)#ip nat inside
% Invalid input detected at '''' marker.
R2(config-if)#ip nat inside
R2(config-if)#end
R2#
%SYS-1-CONFIG_I: Configured from console by console

R2#conf t
Enter configuration commands, one per line. End with CTRL/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 209.168.200.255 209.168.200.228 netmask
255.255.255.248
!*pool INTERNET mask 255.255.255.248 too small; should be at least 0.0.0.0
!*start and end addresses on different subnets
R2(config)#ip nat pool INTERNET 209.168.200.255 209.168.200.228 netmask
255.255.255.248
!*pool INTERNET mask 255.255.255.248 too small; should be at least 0.0.0.0
!*start and end addresses on different subnets
R2(config)#ip nat inside source list 1 pool INTERNET
R2(config)#
```

Cisco Packet Tracer Student - C:\Users\FRANKY\Documents\DIPLOMADO DE PROFUNDIZACION-ISCO\CCNA2\TRABAJO FINAL CISCO DICIEMBRE\prueba de habilidades_FRANKDEY_TRIVIÑO_FINAL_CISCO.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster

Time: 00:01:01 Power Cycle Devices Fast Forward Time

Routers: 1841, 1941, 2620XM, 2621XM, 2811, 2901, 2911, Generic, Generic

1841

R2

Physical Config CLI

IOS Command Line Interface

```
... low-speed serial(synchronous) network interfaces.
DRAM configuration is 64 bits wide with parity disabled.
268K bytes of non-volatile configuration memory.
249956K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

R2>en
R2#show access-list
Standard IP access list 1
 10 permit 192.168.30.0 0.0.0.255
 20 permit 192.168.40.0 0.0.0.255
 30 permit 192.168.4.0 0.0.0.255
R2#
```

Copy Paste

Scenario u

New Delete

Toggle PDU List Window

7:58 p.m. 09/12/2018

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

The screenshot displays the Cisco Packet Tracer Student interface. The main window shows a network topology in the 'Logical' view. The topology includes an 'INTERNET-PC' connected to a central router 'R2'. Router 'R2' is connected to a 'Web server' and two other routers, 'R1' and 'R3'. Router 'R1' is connected to a switch 'S1', which is connected to 'PC-A'. Router 'R3' is connected to a switch 'S3', which is connected to 'PC-C'. The network is shown in a hierarchical structure with various devices and their interconnections.

Overlaid on the network is a 'Web Browser' window titled 'INTERNET-PC'. The browser's address bar shows the URL 'http://209.165.200.229'. The page content displays 'Cisco Packet Tracer' and a welcome message: 'Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.' Below the welcome message, there are 'Quick Links' for 'A small page', 'Copyrights', 'Image page', and 'Image'.

The interface also shows a 'Realtime' panel at the bottom right, a 'Power Cycle Devices' button, and a 'Routers' panel at the bottom left. The system tray at the bottom indicates the time as 7:55 p.m. on 08/12/2018.

2.30 Línea de Código Escenario 2

```
Router>enable
```

```
Router#confterm
```

```
Enterconfigurationcommands, 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>enable
```

```
R1#config term
```

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

```
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.
```

```
^
```

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

```
R1(config-subif)#int g0/1.40
```

^

% Invalid input detected at '^' marker.

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-costreference-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)#ipospfcost 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-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)#
```

```
R3#
```

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

```
R2(config-if)#description Connection to R1
```

```
R2(config-if)#ip address 172.16.12.2 255.255.255.252
```

```
R2(config-if)#no shutdown
```

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

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

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

```
%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, 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)#
```

```
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)#

%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 protocolon 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 route without gateway, if not a point-to-point interface, may impact performance

```
R3(config)#
```

```
R3#
```

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

```
S1>enable
```

```
S1#config term
```

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

```
S1(config)#no ipdomain-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)#intvlan 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 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)#inrange fa0/1-2, fa0/4, fa0/6-24, g1/1-2

interface range not validated - command rejected

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

interface range not validated - command rejected

```
S1(config)#inrange 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)#inrange f0/1-2, f0/4, f0/7-24, g0/1-2
```

```
S1(config-if-range)#shutdown
```

```
S3>enable
```

```
S3#config term
```

```
Enterconfigurationcommands, one per line. Endwith CNTL/Z.
```

```
S3(config)#vlan 30
```

```
S3(config-vlan)#nameAdministracion
```

```
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 protocolon 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)#inrange 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)#inrange fa0/1-2, fa0/4/17, fa0/19-24, g0/1-2
```

```
^
```

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

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

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

```
R1#config term
```

```
Enterconfigurationcommands, one per line. Endwith CNTL/Z.
```

```
R1(config)#ipdhcplexcluded-address 192.168.30.1 192.168.30.20
```

```
R1(config)#ipdhcplexcluded-address 192.168.40.1 192.168.40.20
```

```
R1(config)#ipdhcp pool ACCT
R1(dhcp-config)#ipdhcp pool ADMINISTRACION
R1(dhcp-config)#exit
R1(config)#ipdhcp 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)#ipdhcp pool MERCADEO
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)#ipnatininside static 10.10.10.10 209.165.200.229
```

```
R2(config)#int g0/0
```

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

```
R2(config-if)#int g0/1
```

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

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

```
R2#
```

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

Conclusiones

De acuerdo a la práctica de los escenarios 1 y 2 se implementó nat para permitir que los hosts puedan salir a internet realizando nat la traducción de las direcciones privadas en intranet a direcciones públicas extranet, todo esto con el fin de hacer la red más segura debido a que las redes privadas no deben anunciar sus direcciones ni su topología interna, por lo que se utiliza NAT para obtener acceso externo controlado. Además la importancia de las listas de control de acceso radica en que pueden volver más segura la red, es una herramienta principal para los administradores que a través de condiciones programadas controlan diferentes tipos de tráfico haciendo menos vulnerable una red. E implementar la configuración de un router como DHCP y evidenciar la importancia de este al permitir dar soluciones efectivas al momento de realizar la asignación de direcciones IP a los hosts, evidenciándose como no siempre debe tenerse un servidor para esta tarea ya que puede ser posible configurar el routers de acuerdo a un pool de direcciones IP establecidas por el administrador de la red.

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