

DIPLOMADOS DE PROFUNDIZACION CISCO

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA UNAD  
ESCUELA DE CIENCIAS BASICAS, TECNOLOGIAS E INGENIERIAS

INGENIERIA ELECTRÓNICA

DUITAMA

2018

PRUEBA DE HABILIDADES PRÁCTICAS

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NOTA DE ACEPTACION

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Presidente del jurado

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Jurado

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Jurado (En caso de ser solo uno,  
borrar este o agregar de ser  
necesario).

## DEDICATORIA

A mis padres: por constante apoyo durante mi carrera; a mis hermanos y demás familiares por estar comprometidos con este proyecto

## AGRADECIMIENTOS

A dios por a verme dado la sabiduría y por vencer los obstáculos que se me presentaron.

A la universidad nacional abierta y a distancia unad por brindar esta oportunidad de ofertar este Programa modalidad virtual

A mi familia por apoyarme para culminar con éxito esta carrera profesional

Agradezco todo el apoyo recibido por todos los tutores que se involucraron en el desarrollo en esta carrera

Agradezco a todos los que me ayudaron para que esto fuera posible. Dentro del marco del conocimiento preste atención a todos los trabajos colaborativos y evaluaciones en plataforma de tal forma que con ello aprendí el total de este diplomado

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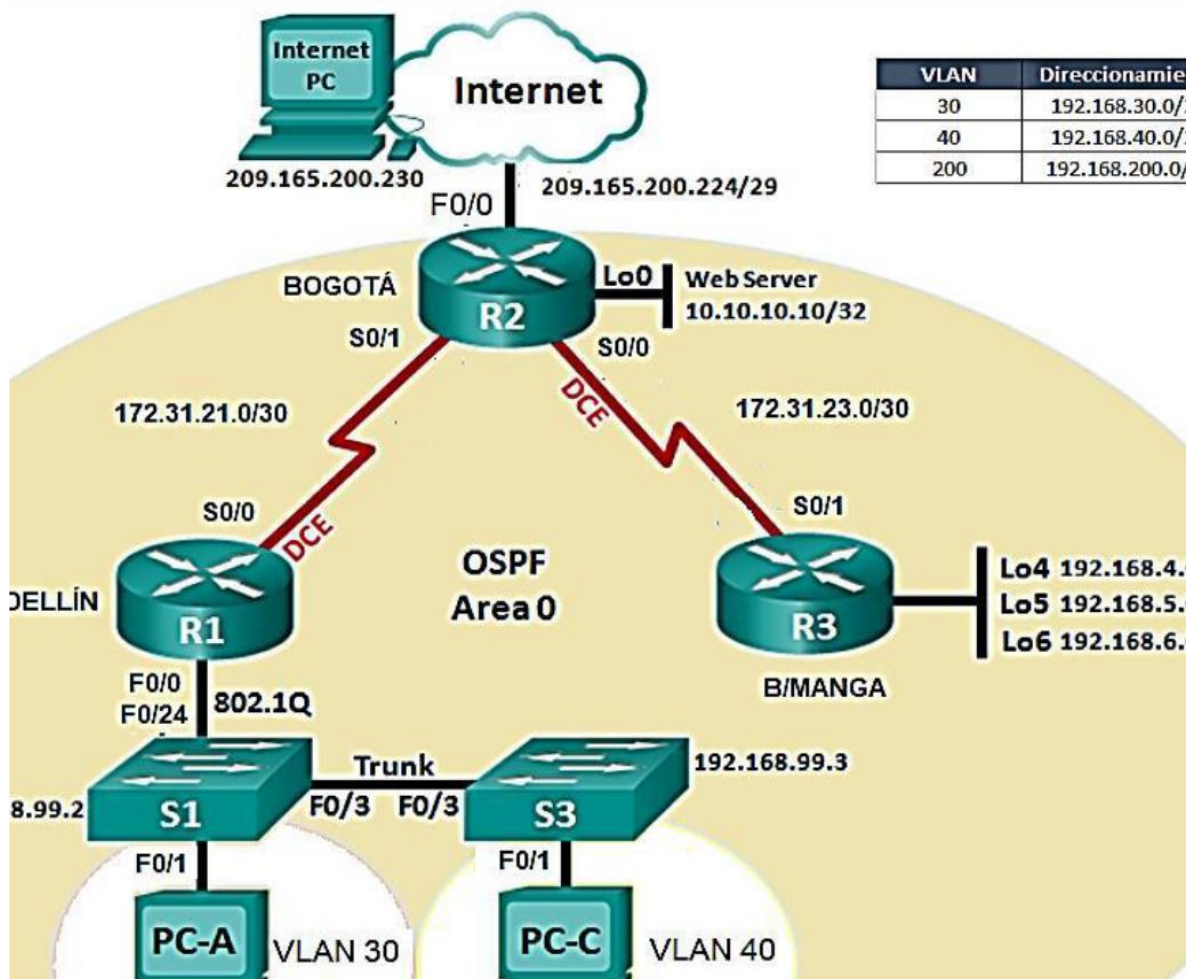
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## INTRODUCCIÓN

Esta es una evaluación de prueba de habilidades donde finalizamos este diplomado y con el que damos muestra lo que aprendimos durante este semestre en curso.

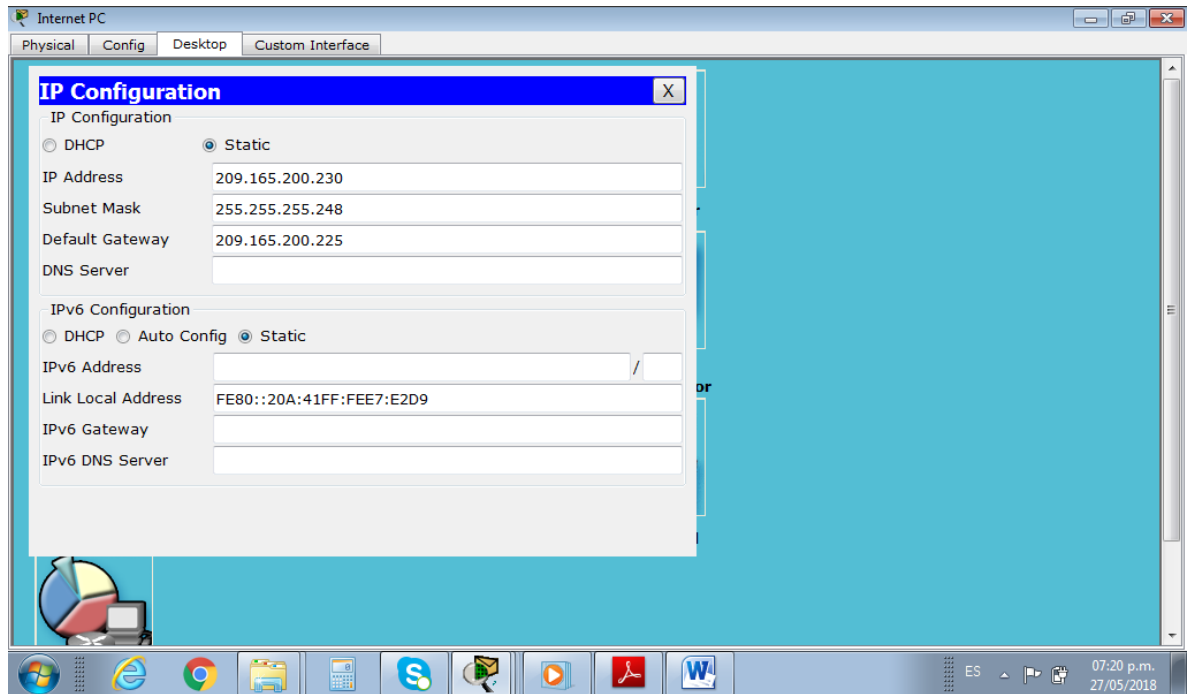
Packet Tracer es una herramienta de aprendizaje de redes que admite una amplia gama de simulaciones físicas y lógicas. También proporciona herramientas de visualización para ayudarlo a comprender el funcionamiento interno de una red. Packet Tracer consta de simulaciones de red, juegos, actividades y desafíos que proporcionan una amplia gama de experiencias de aprendizaje. Estas herramientas lo ayudarán a comprender la forma en que los datos fluyen en una red.

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

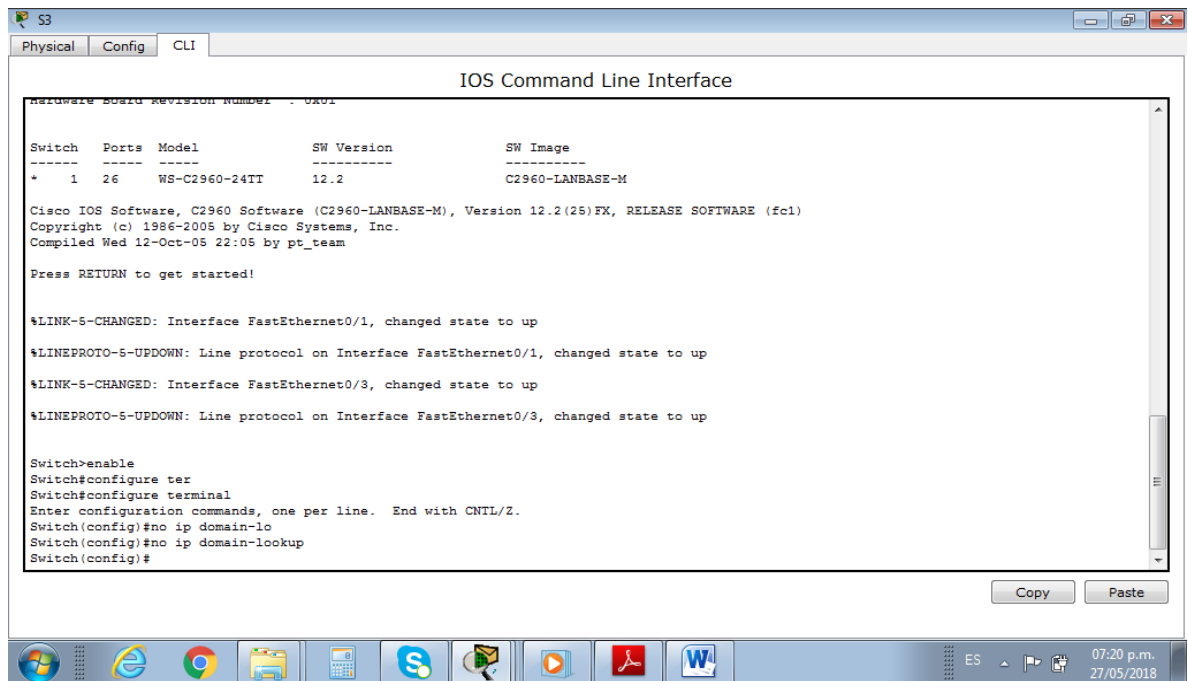


## Desarrollo de la actividad

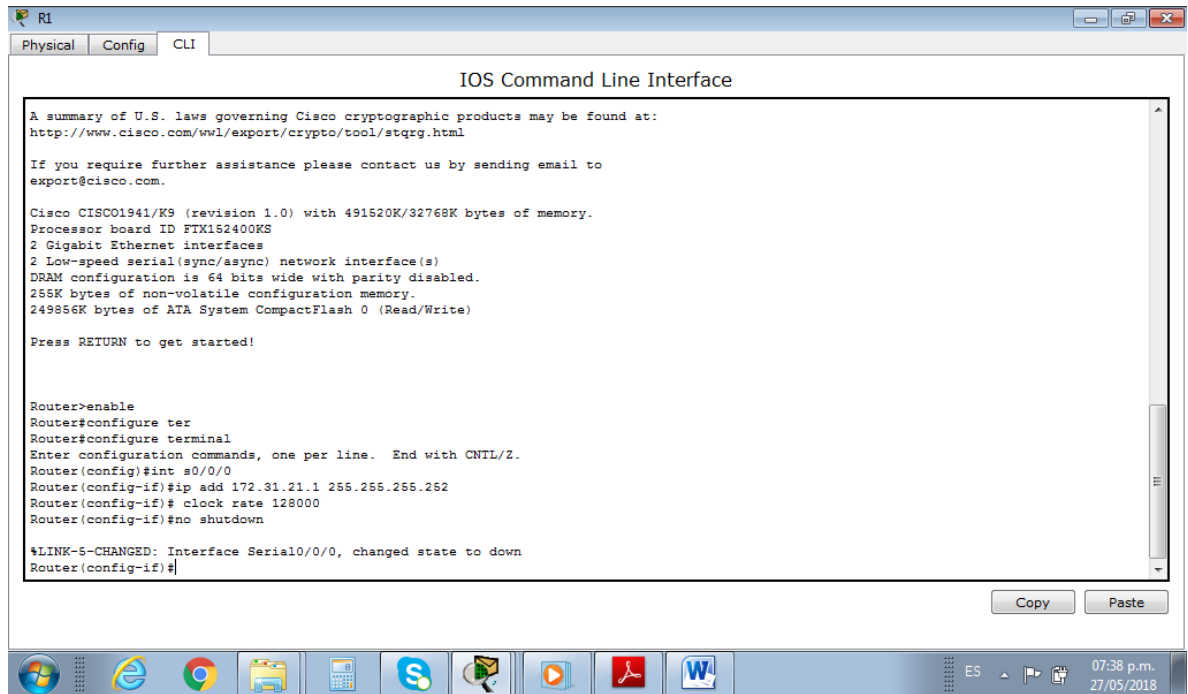
### Configuración Ip internet pc



### Lookup desactivado en s3



## Configuración ip y activación puerto R1



The screenshot shows the IOS Command Line Interface for router R1. The window title is 'R1' and it has tabs for 'Physical', 'Config', and 'CLI'. The main content area displays the following text:

```
IOS Command Line Interface

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco CISCO1941/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FTX152400K5
2 Gigabit Ethernet interfaces
2 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249956K bytes of ATA System CompactFlash 0 (Read/Write)

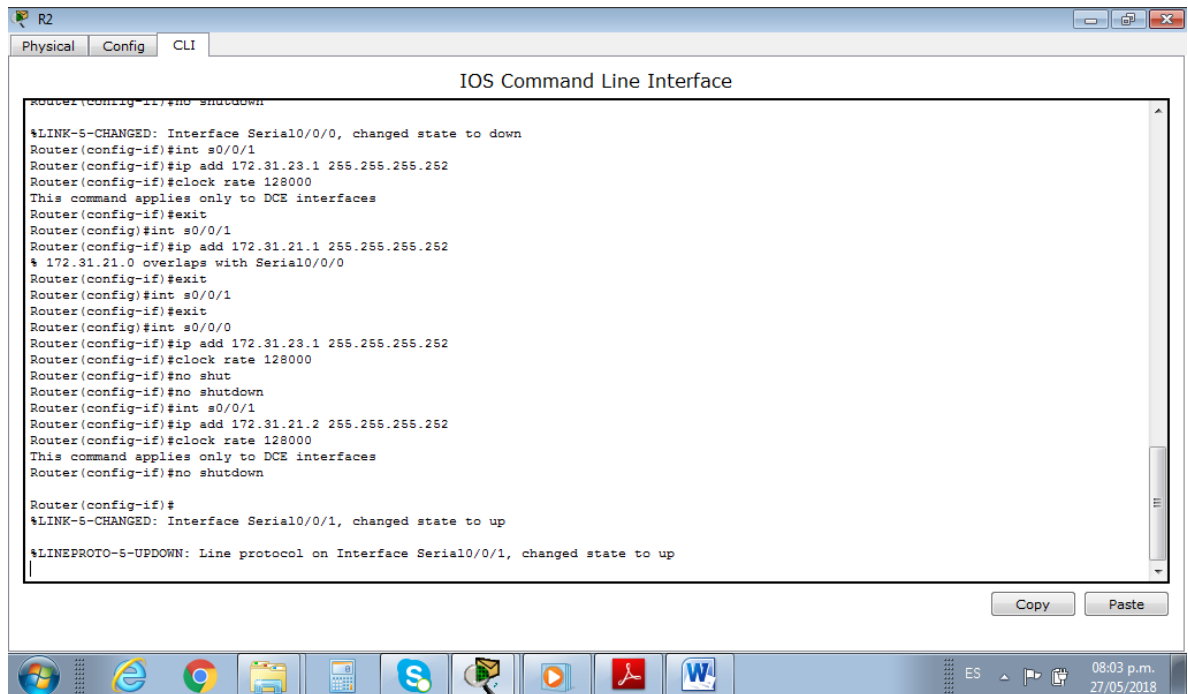
Press RETURN to get started!

Router>enable
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int s0/0/0
Router(config-if)#ip add 172.31.21.1 255.255.255.252
Router(config-if)# clock rate 128000
Router(config-if)#no shutdown

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

At the bottom of the window, there are 'Copy' and 'Paste' buttons. The taskbar at the bottom shows various application icons and the system clock indicating 07:38 p.m. on 27/05/2018.

## Configuración ip y activación puertos serial R2



The screenshot shows the IOS Command Line Interface for router R2. The window title is 'R2' and it has tabs for 'Physical', 'Config', and 'CLI'. The main content area displays the following text:

```
IOS Command Line Interface

Router(config-if)#no shutdown

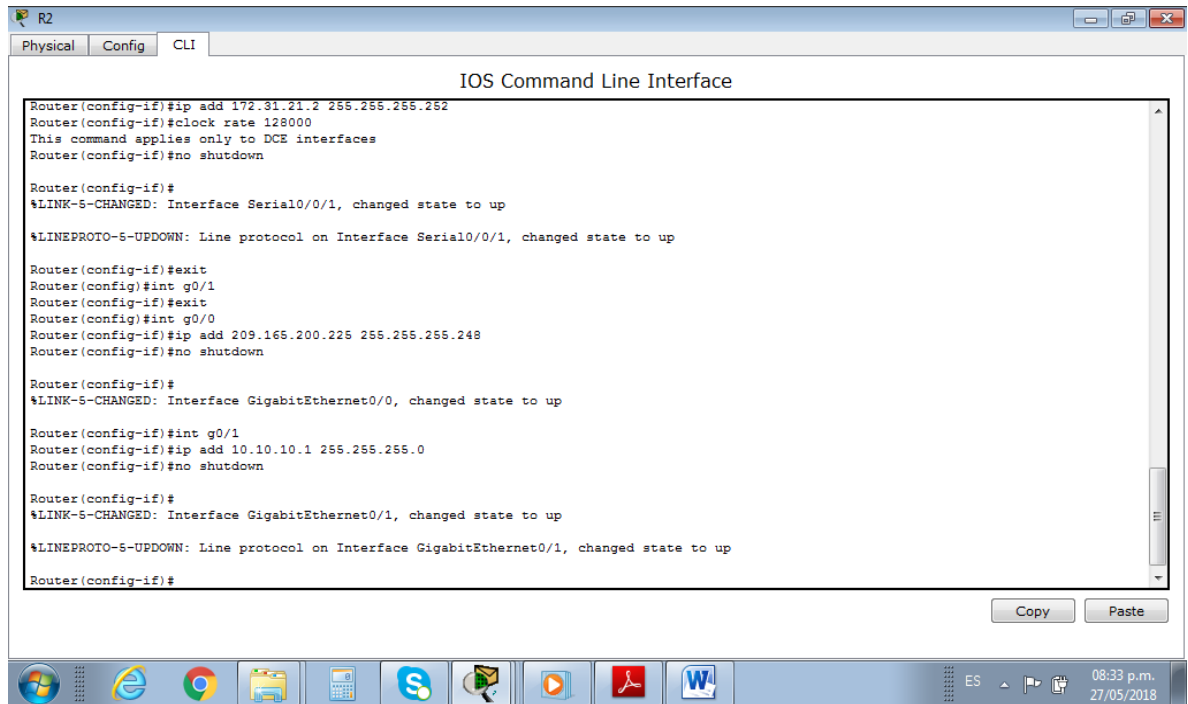
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router(config-if)#int s0/0/1
Router(config-if)#ip add 172.31.23.1 255.255.255.252
Router(config-if)#clock rate 128000
This command applies only to DCE interfaces
Router(config-if)#exit
Router(config)#int s0/0/1
Router(config-if)#ip add 172.31.21.1 255.255.255.252
% 172.31.21.0 overlaps with Serial0/0/0
Router(config-if)#exit
Router(config)#int s0/0/1
Router(config-if)#exit
Router(config)#int s0/0/0
Router(config-if)#ip add 172.31.23.1 255.255.255.252
Router(config-if)#clock rate 128000
Router(config-if)#no shut
Router(config-if)#no shutdown
Router(config-if)#int s0/0/1
Router(config-if)#ip add 172.31.21.2 255.255.255.252
Router(config-if)#clock rate 128000
This command applies only to DCE interfaces
Router(config-if)#no shutdown

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

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

At the bottom of the window, there are 'Copy' and 'Paste' buttons. The taskbar at the bottom shows various application icons and the system clock indicating 08:03 p.m. on 27/05/2018.

## Configuración ip puertos Gigabit R2



The screenshot shows the IOS Command Line Interface for router R2. The user is in configuration mode, configuring interfaces Serial0/0/1 and GigabitEthernet0/0, 0/1. The configuration includes IP addresses, clock rates, and shutdown commands. The status of each interface is shown as 'changed state to up'.

```
Router(config-if)#ip add 172.31.21.2 255.255.255.252
Router(config-if)#clock rate 128000
This command applies only to DCE interfaces
Router(config-if)#no shutdown

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

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

Router(config-if)#exit
Router(config)#int g0/1
Router(config-if)#exit
Router(config)#int g0/0
Router(config-if)#ip add 209.165.200.225 255.255.255.248
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

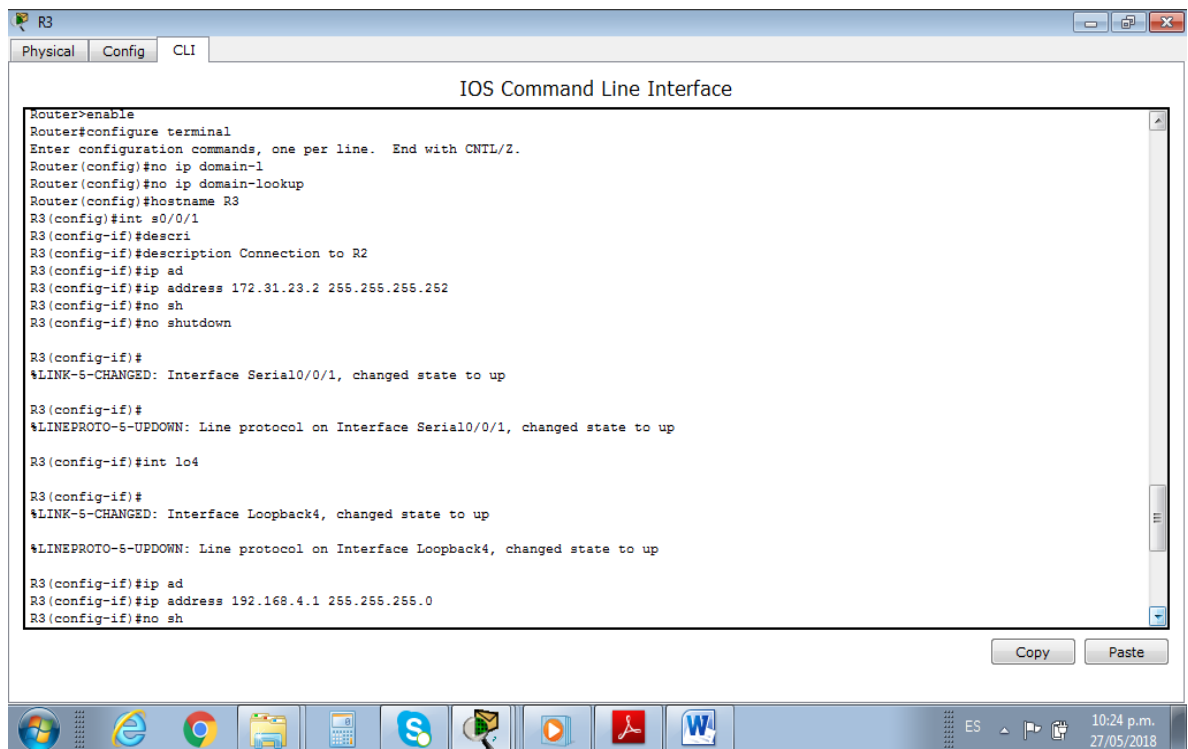
Router(config-if)#int g0/1
Router(config-if)#ip add 10.10.10.1 255.255.255.0
Router(config-if)#no shutdown

Router(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

Router(config-if)#
```

## Configuración ip activación puertos. Asignación ip y activación puerto "lo" en R3



The screenshot shows the IOS Command Line Interface for router R3. The user is in enable mode, configuring terminal settings, hostname, and interfaces Serial0/0/1 and Loopback4. The configuration includes IP addresses, descriptions, and shutdown commands. The status of each interface is shown as 'changed state to up'.

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-1
Router(config)#no ip domain-lookup
Router(config)#hostname R3
R3(config)#int s0/0/1
R3(config-if)#descri
R3(config-if)#description Connection to R2
R3(config-if)#ip ad
R3(config-if)#ip address 172.31.23.2 255.255.255.252
R3(config-if)#no sh
R3(config-if)#no shutdown

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

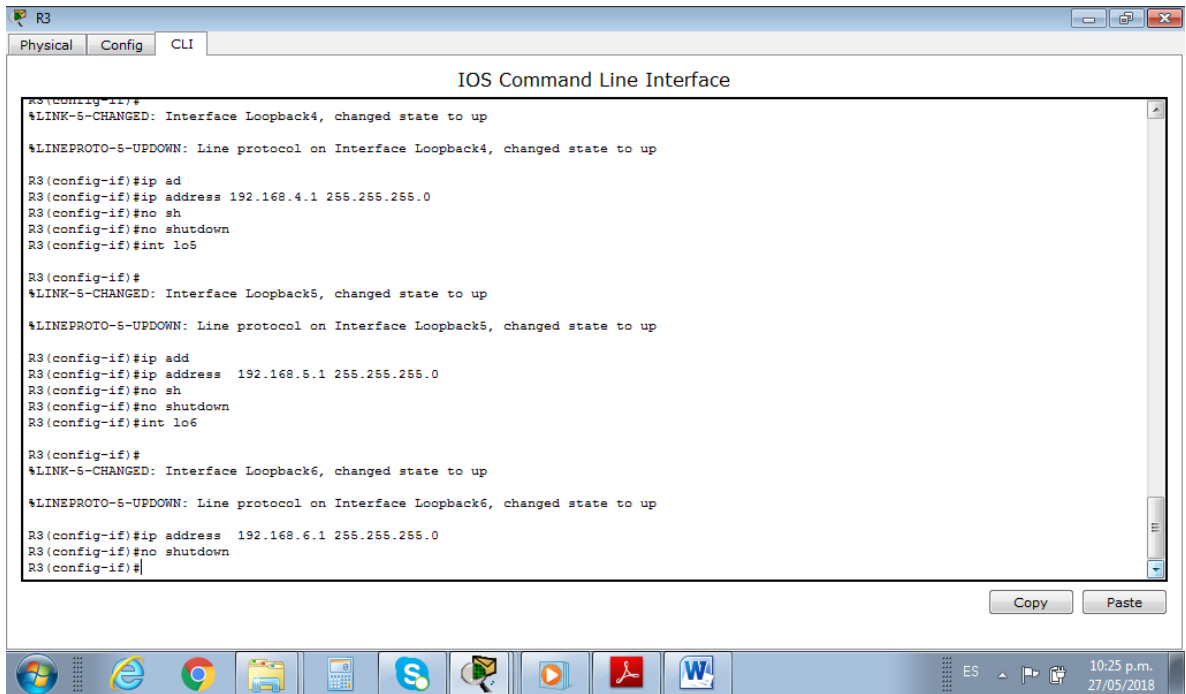
R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

R3(config-if)#int lo4
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up

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

R3(config-if)#ip ad
R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#no sh
```

## Activación puertos Loopback



The screenshot shows the CLI of router R3 in configuration mode. The user has entered commands to activate three loopback interfaces: Loopback4, Loopback5, and Loopback6. Each interface is configured with an IP address from the 192.168.4.1 to 192.168.6.1 range, and the protocol is set to 'lo'. The output shows that each interface has successfully changed state to 'up'.

```
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 ad
R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#no shutdown
R3(config-if)#int lo5

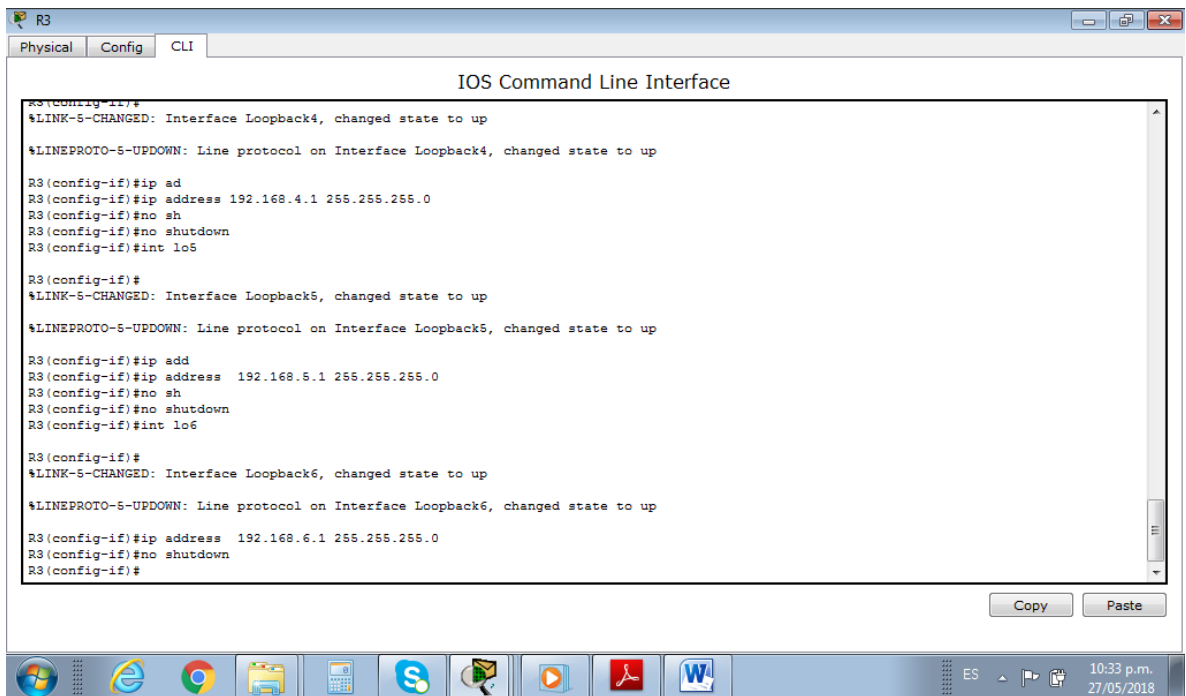
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

R3(config-if)#ip add
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#no shutdown
R3(config-if)#int lo6

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed state to up

R3(config-if)#ip address 192.168.6.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
```

## Configuración puertos Loopback En R3



The screenshot shows the CLI of router R3 in configuration mode. The user has entered commands to configure three loopback interfaces: Loopback4, Loopback5, and Loopback6. Each interface is configured with an IP address from the 192.168.4.1 to 192.168.6.1 range, and the protocol is set to 'lo'. The output shows that each interface has successfully changed state to 'up'.

```
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 ad
R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#no shutdown
R3(config-if)#int lo5

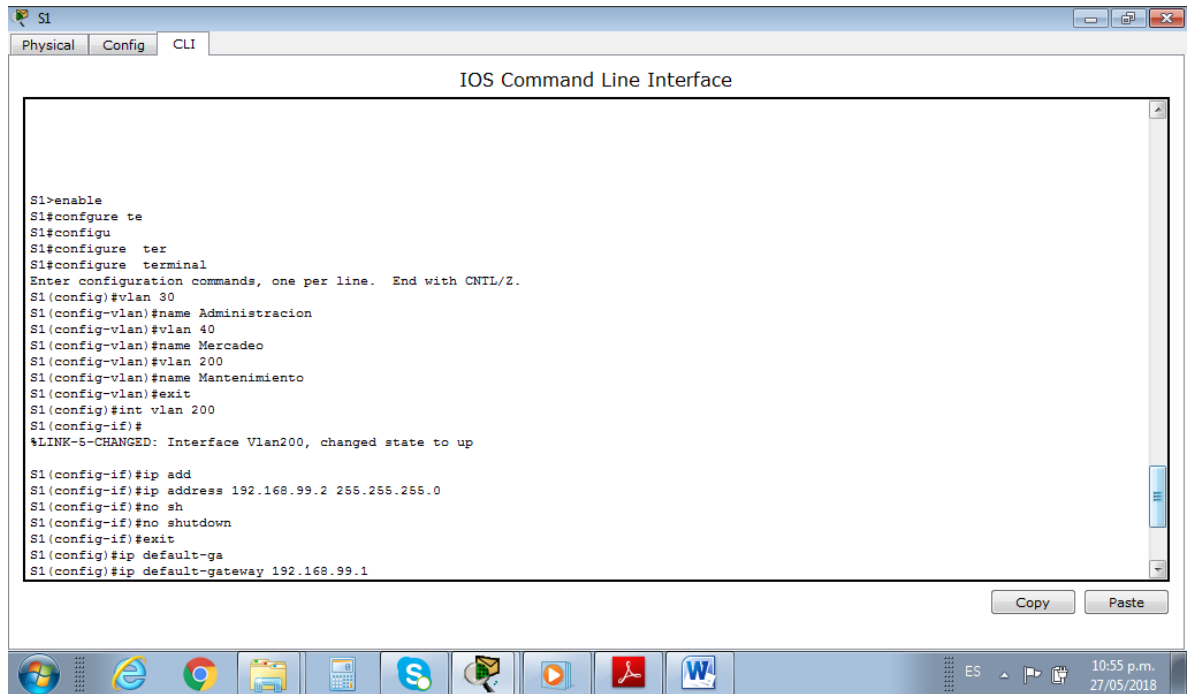
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

R3(config-if)#ip add
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#no shutdown
R3(config-if)#int lo6

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed state to up

R3(config-if)#ip address 192.168.6.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
```

## Configuración Vlan en S1



```
S1
Physical Config CLI
IOS Command Line Interface

S1>enable
S1#configure te
S1#configu
S1#configure ter
S1#configure terminal
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)#exit
S1(config)#int vlan 200
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)#ip add
S1(config-if)#ip address 192.168.99.2 255.255.255.0
S1(config-if)#no sh
S1(config-if)#no shutdown
S1(config-if)#exit
S1(config)#ip default-ga
S1(config)#ip default-gateway 192.168.99.1
```

Copy Paste

ES 10:55 p.m. 27/05/2018

## Configuración de puertos modo Acces y trunk en S1



```
S1
Physical Config CLI
IOS Command Line Interface

S1(config-if)#int range fa0/2, fa0/4-24, g1/1-2
% Invalid input detected at '^' marker.
S1(config-if)#int range fa0/2, fa0/4-24, g0/1-2
interface range not validated - command rejected
S1(config)#int range fa0/2, fa0/4-24, g0/1-2
S1(config-if-range)#sw
S1(config-if-range)#switchport mode access
S1(config-if-range)#int f0/24
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#int fa0/1
S1(config-if)#switchport mode access
S1(config-if)#int range fa0/1-2, fa0/4-23, g0/1-2
S1(config-if-range)#switchports mode access

% Invalid input detected at '^' marker.

S1(config-if-range)#
S1(config-if-range)#switchport mode access
S1(config-if-range)#int fa0/1
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan31

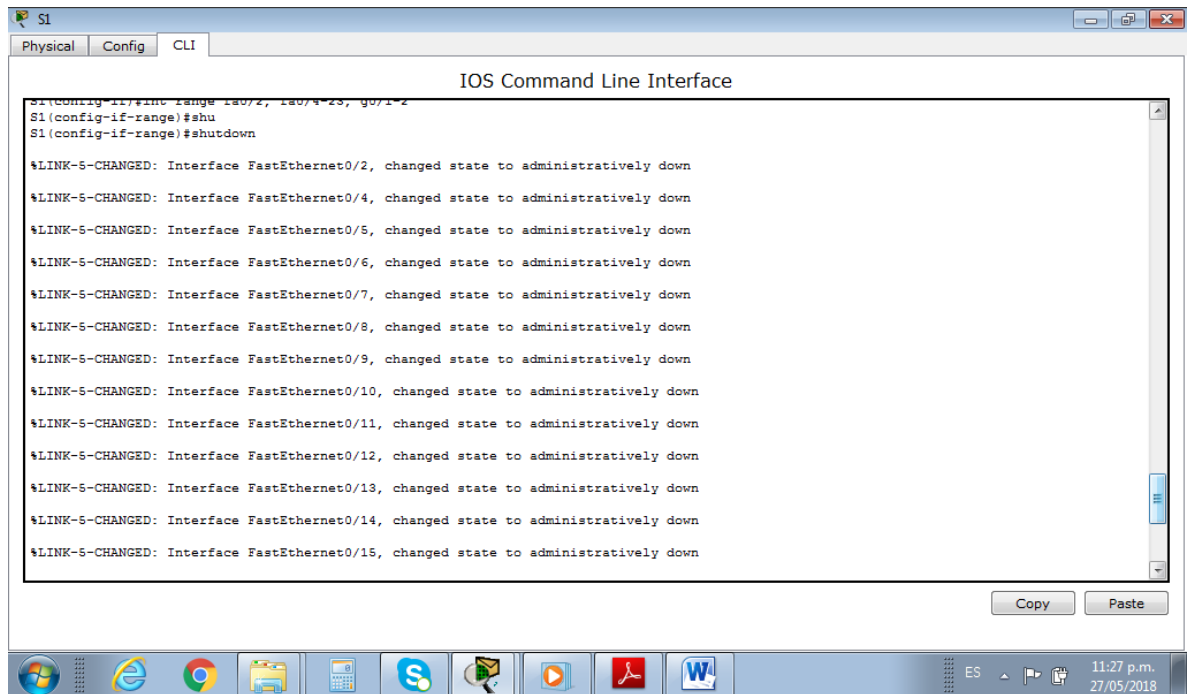
% Invalid input detected at '^' marker.

S1(config-if)#switchport acce
S1(config-if)#switchport access vlan 30
S1(config-if)#int range fa0/2, fa0/4-23, g0/1-2
```

Copy Paste

ES 11:27 p.m. 27/05/2018

## Puertos sin utilizar desactivados en S1

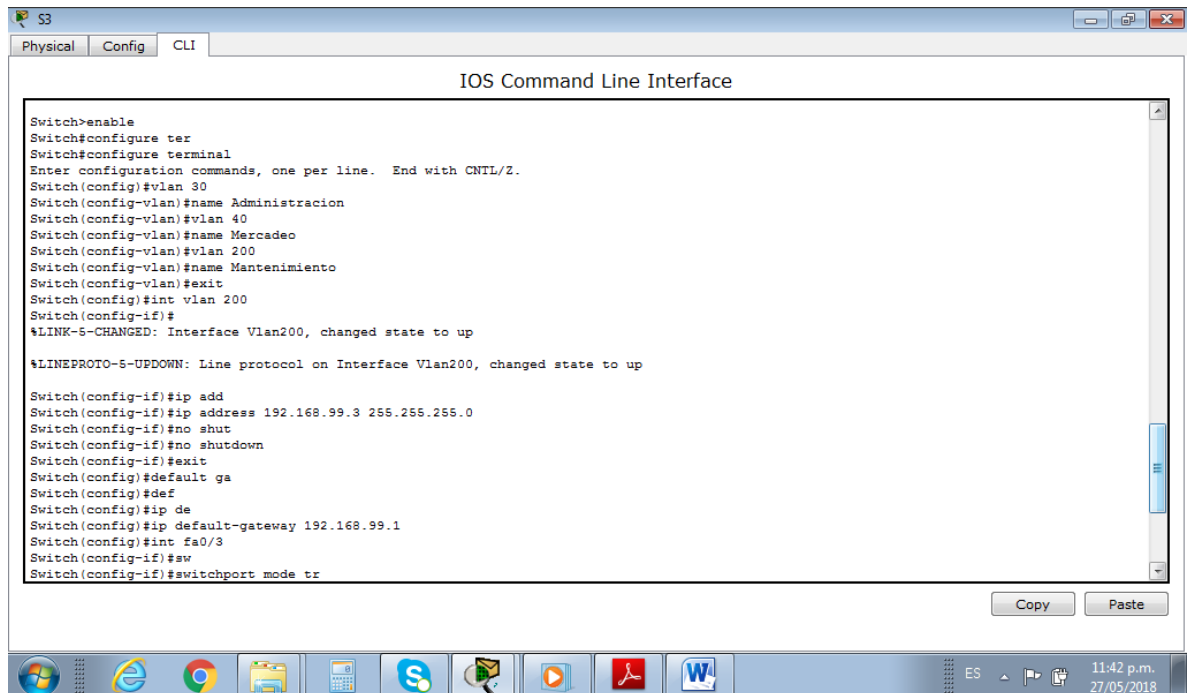


The screenshot shows the CLI interface of a Cisco switch S1. The user has entered the command 'shut range fa0/2, fa0/4-23, g0/1-2' to administratively shut down a range of ports. The output shows 14 messages, one for each port, indicating that the state has been changed to administratively down. The ports listed are Fa0/2, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, and Fa0/15.

```
S1(Config-If)#shut range fa0/2, fa0/4-23, g0/1-2
S1(config-if-range)#shu
S1(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down
```

## Configuración ip y Gateway en S3



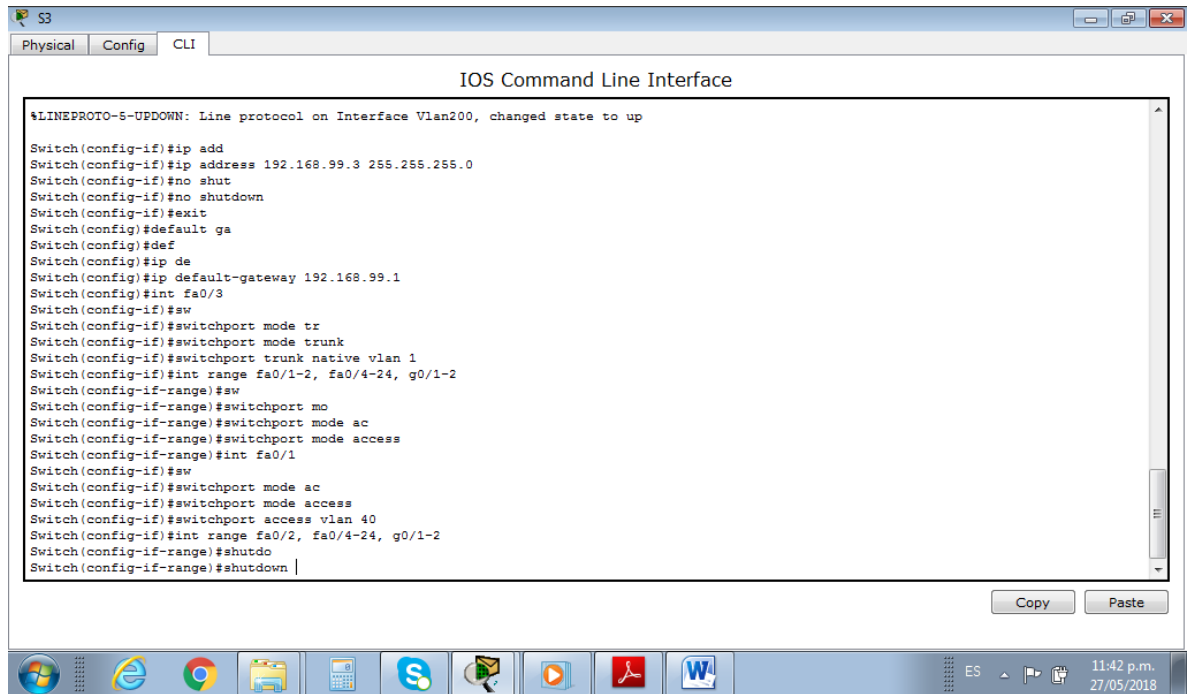
The screenshot shows the CLI interface of a Cisco switch S3. The user has entered several commands to configure VLANs and an IP address. The output shows that the VLANs have been created and named, and that the IP address 192.168.99.3 has been assigned to the interface Vlan200. The user also configured the default gateway as 192.168.99.1 and set the switchport mode to trunk on Fa0/3.

```
Switch>enable
Switch#configure ter
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 30
Switch(config-vlan)#name Administracion
Switch(config-vlan)#vlan 40
Switch(config-vlan)#name Mercadeo
Switch(config-vlan)#vlan 200
Switch(config-vlan)#name Mantenimiento
Switch(config-vlan)#exit
Switch(config)#int vlan 200
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed state to up

Switch(config-if)#ip add
Switch(config-if)#ip address 192.168.99.3 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#no shutdown
Switch(config-if)#exit
Switch(config)#default-ga
Switch(config)#def
Switch(config)#ip de
Switch(config)#ip default-gateway 192.168.99.1
Switch(config)#int fa0/3
Switch(config-if)#sw
Switch(config-if)#switchport mode tr
```

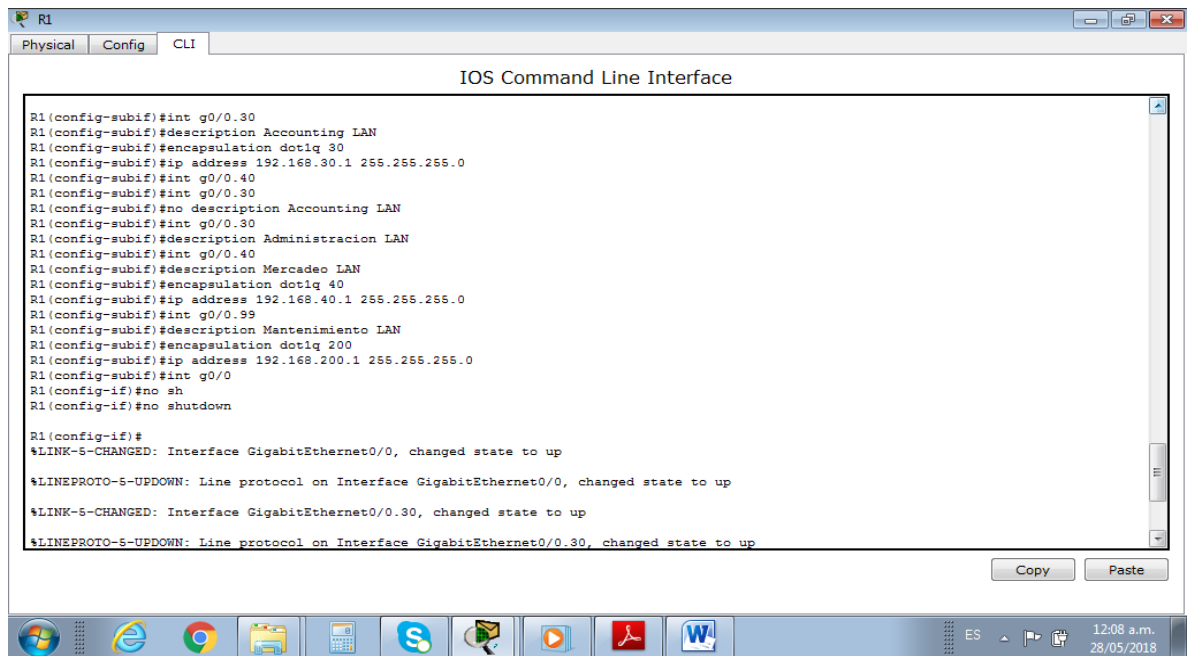
## Configuración Vlan en S3



The screenshot shows the CLI interface of a switch named S3. The configuration includes setting the IP address for the Vlan200 interface, configuring the default gateway, and setting up trunk and access ports. The interface is currently in the configuration mode for the Vlan200 interface.

```
Switch(config-if)#ip add
Switch(config-if)#ip address 192.168.99.3 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#no shutdown
Switch(config-if)#exit
Switch(config)#default ga
Switch(config)#def
Switch(config)#ip de
Switch(config)#ip default-gateway 192.168.99.1
Switch(config)#int fa0/3
Switch(config-if)#sw
Switch(config-if)#switchport mode tr
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk native vlan 1
Switch(config-if)#int range fa0/1-2, fa0/4-24, g0/1-2
Switch(config-if-range)#sw
Switch(config-if-range)#switchport mo
Switch(config-if-range)#switchport mode ac
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#int fa0/1
Switch(config-if)#sw
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 40
Switch(config-if)#int range fa0/2, fa0/4-24, g0/1-2
Switch(config-if-range)#shutdo
Switch(config-if-range)#shutdown
```

## Configuración Vlan en R1

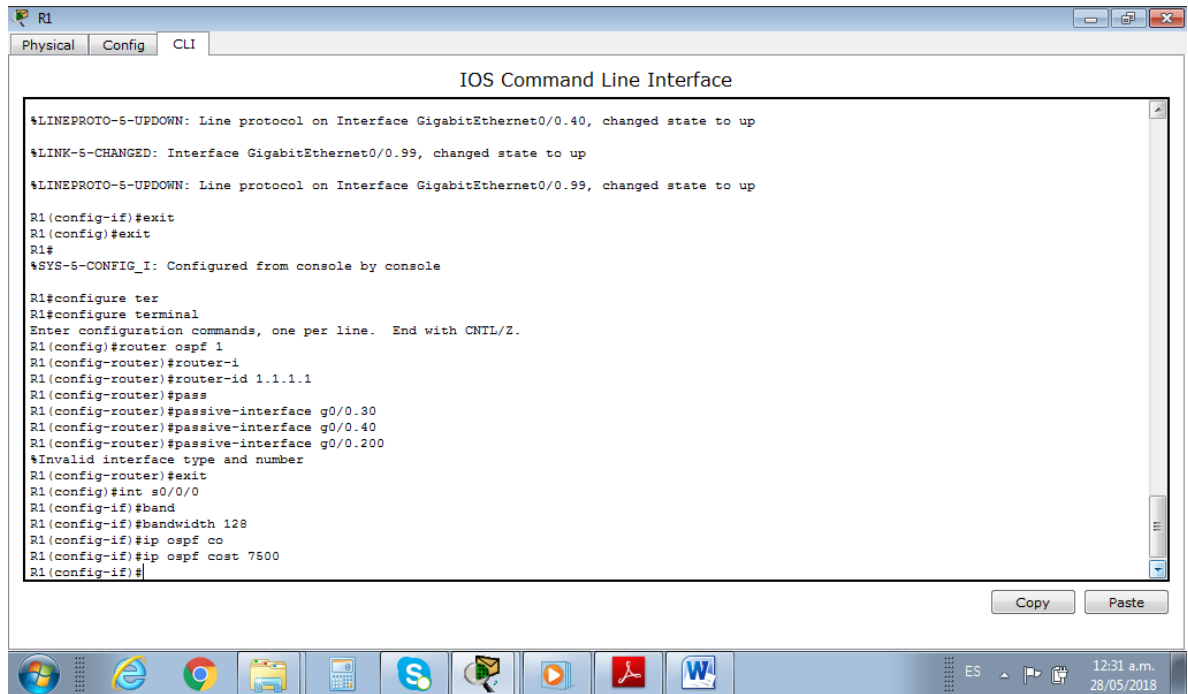


The screenshot shows the CLI interface of a router named R1. The configuration includes setting up subinterfaces on GigabitEthernet0/0 with different descriptions and IP addresses. The interfaces are currently in the configuration mode for the subinterfaces.

```
R1(config-subif)#int g0/0.30
R1(config-subif)#description Accounting LAN
R1(config-subif)#encapsulation dot1q 30
R1(config-subif)#ip address 192.168.30.1 255.255.255.0
R1(config-subif)#int g0/0.40
R1(config-subif)#int g0/0.30
R1(config-subif)#no description Accounting LAN
R1(config-subif)#int g0/0.30
R1(config-subif)#description Administracion LAN
R1(config-subif)#int g0/0.40
R1(config-subif)#description Mercadeo LAN
R1(config-subif)#encapsulation dot1q 40
R1(config-subif)#ip address 192.168.40.1 255.255.255.0
R1(config-subif)#int g0/0.99
R1(config-subif)#description Mantenimiento LAN
R1(config-subif)#encapsulation dot1q 200
R1(config-subif)#ip address 192.168.200.1 255.255.255.0
R1(config-subif)#int g0/0
R1(config-if)#no sh
R1(config-if)#no shutdown

R1(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
%LINK-5-CHANGED: Interface GigabitEthernet0/0.30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to up
```

## Configuración Ospf e interfaces pasivas y costo en R1



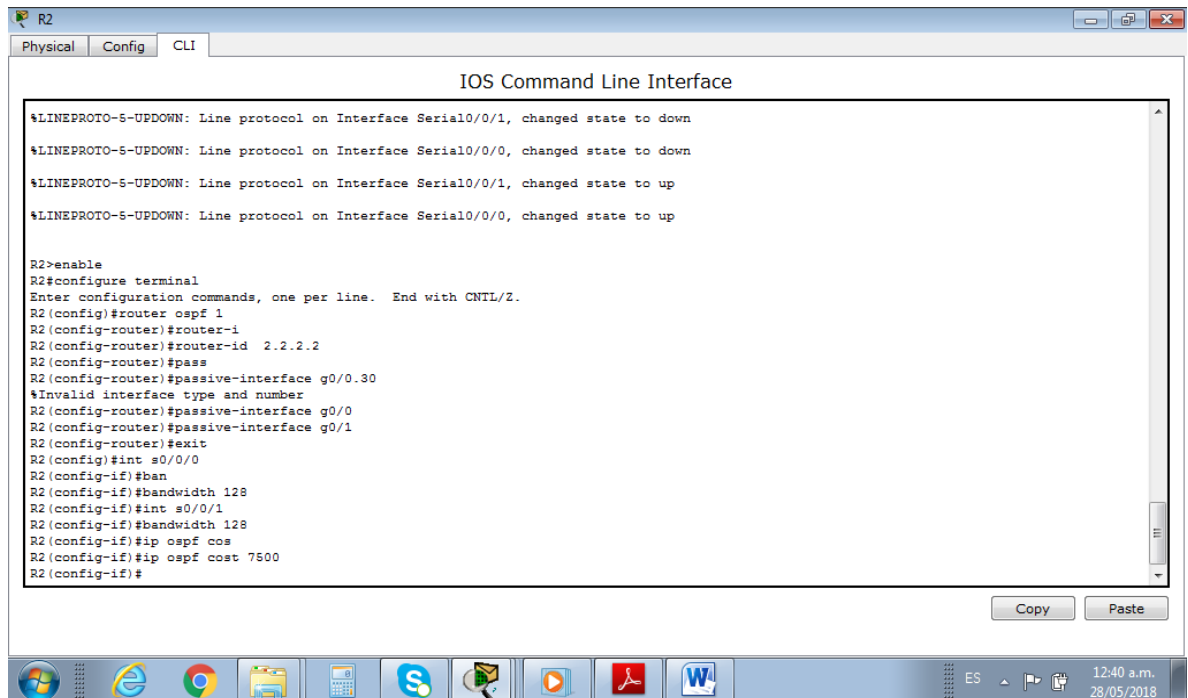
```
R1
Physical Config CLI
IOS Command Line Interface

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.40, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/0.99, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.99, changed state to up

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

R1#configure ter
R1#configure terminal
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)#pass
R1(config-router)#passive-interface g0/0.30
R1(config-router)#passive-interface g0/0.40
R1(config-router)#passive-interface g0/0.200
%Invalid interface type and number
R1(config-router)#exit
R1(config)#int s0/0/0
R1(config-if)#band
R1(config-if)#bandwidth 128
R1(config-if)#ip ospf co
R1(config-if)#ip ospf cost 7500
R1(config-if)#
```

## Configuración ospf e interfaces pasivas en R2

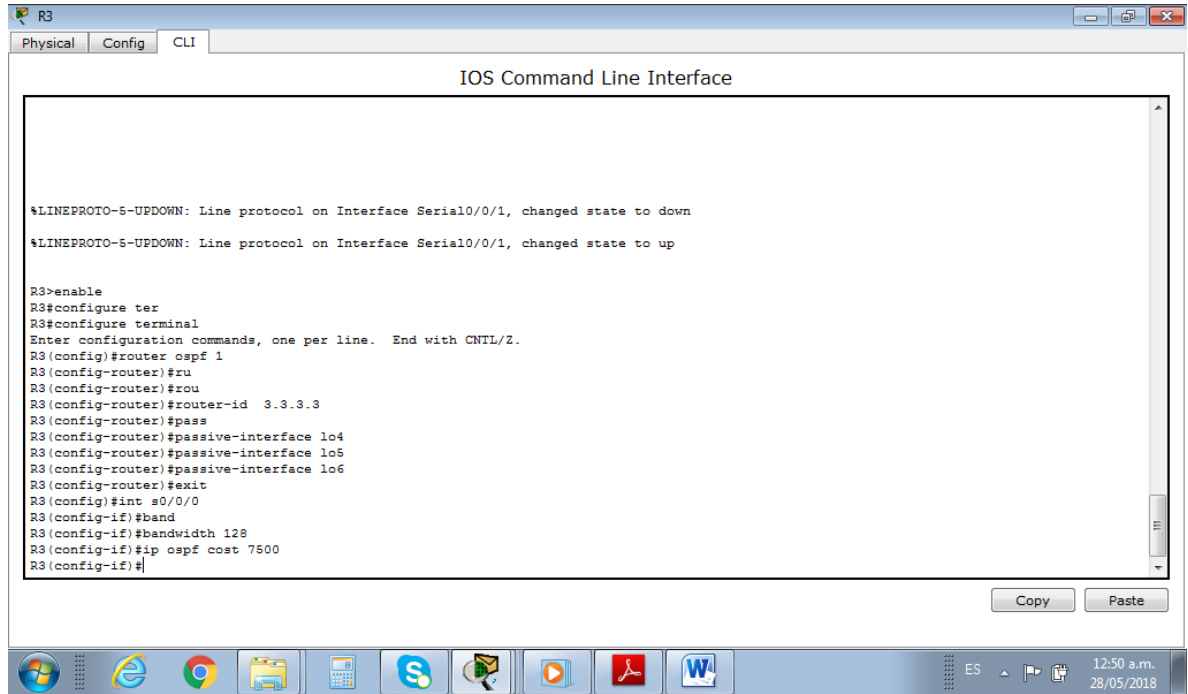


```
R2
Physical Config CLI
IOS Command Line Interface

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

R2>enable
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#router-id 2.2.2.2
R2(config-router)#pass
R2(config-router)#passive-interface g0/0.30
%Invalid interface type and number
R2(config-router)#passive-interface g0/0
R2(config-router)#passive-interface g0/1
R2(config-router)#exit
R2(config)#int s0/0/0
R2(config-if)#ban
R2(config-if)#bandwidth 128
R2(config-if)#int s0/0/1
R2(config-if)#bandwidth 128
R2(config-if)#ip ospf cos
R2(config-if)#ip ospf cost 7500
R2(config-if)#
```

## Configuración ospf e interfaces pasivas en R3



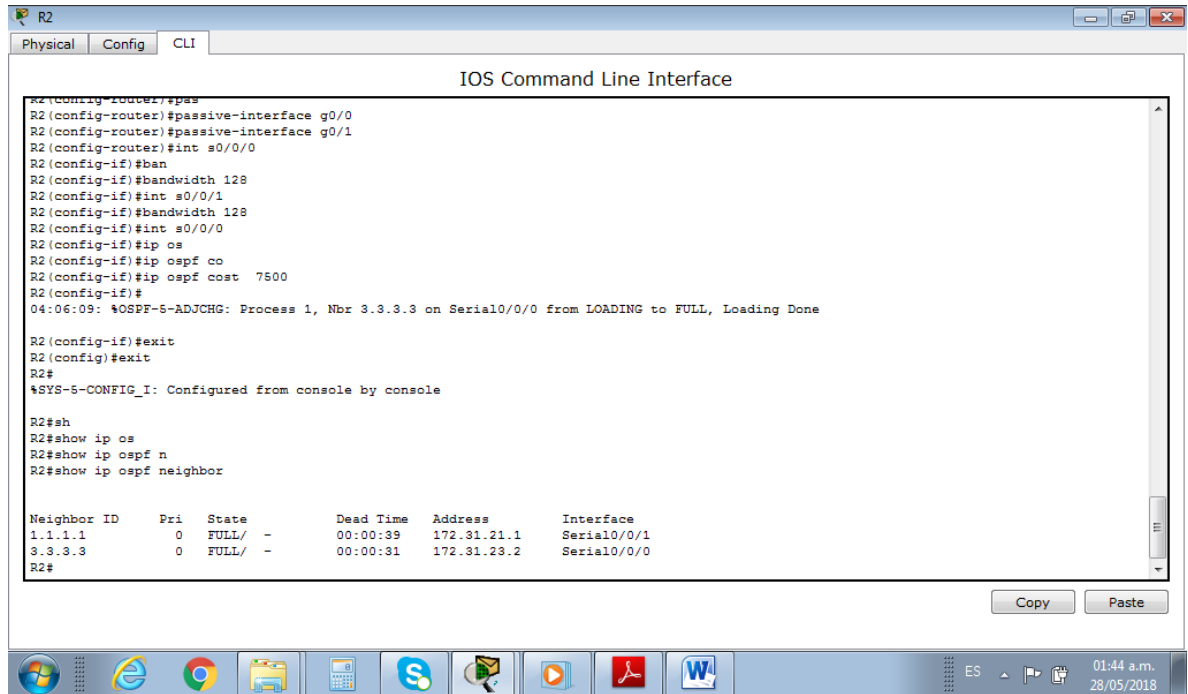
The screenshot shows the CLI of router R3. It displays the configuration of OSPF on interface Serial0/0/0 and the configuration of passive interfaces 104, 105, and 106. The configuration includes setting the router ID to 3.3.3.3, enabling OSPF, and configuring the interface with a bandwidth of 128 and an OSPF cost of 7500. The status of the interface is shown as up.

```
R3
Physical Config CLI
IOS Command Line Interface

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

R3>enable
R3#configure ter
R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#ru
R3(config-router)#rou
R3(config-router)#router-id 3.3.3.3
R3(config-router)#pass
R3(config-router)#passive-interface lo4
R3(config-router)#passive-interface lo5
R3(config-router)#passive-interface lo6
R3(config-router)#exit
R3(config)#int s0/0/0
R3(config-if)#band
R3(config-if)#bandwidth 128
R3(config-if)#ip ospf cost 7500
R3(config-if)#
```

## Visualización tablas de enrutamiento y Reuters conectados ospf



The screenshot shows the CLI of router R2. It displays the configuration of OSPF on interface Serial0/0/0 and the configuration of passive interfaces g0/0 and g0/1. The configuration includes setting the router ID to 3.3.3.3, enabling OSPF, and configuring the interface with a bandwidth of 128 and an OSPF cost of 7500. The status of the interface is shown as up. The neighbor table is also displayed, showing the neighbor 3.3.3.3 on Serial0/0/0.

```
R2
Physical Config CLI
IOS Command Line Interface

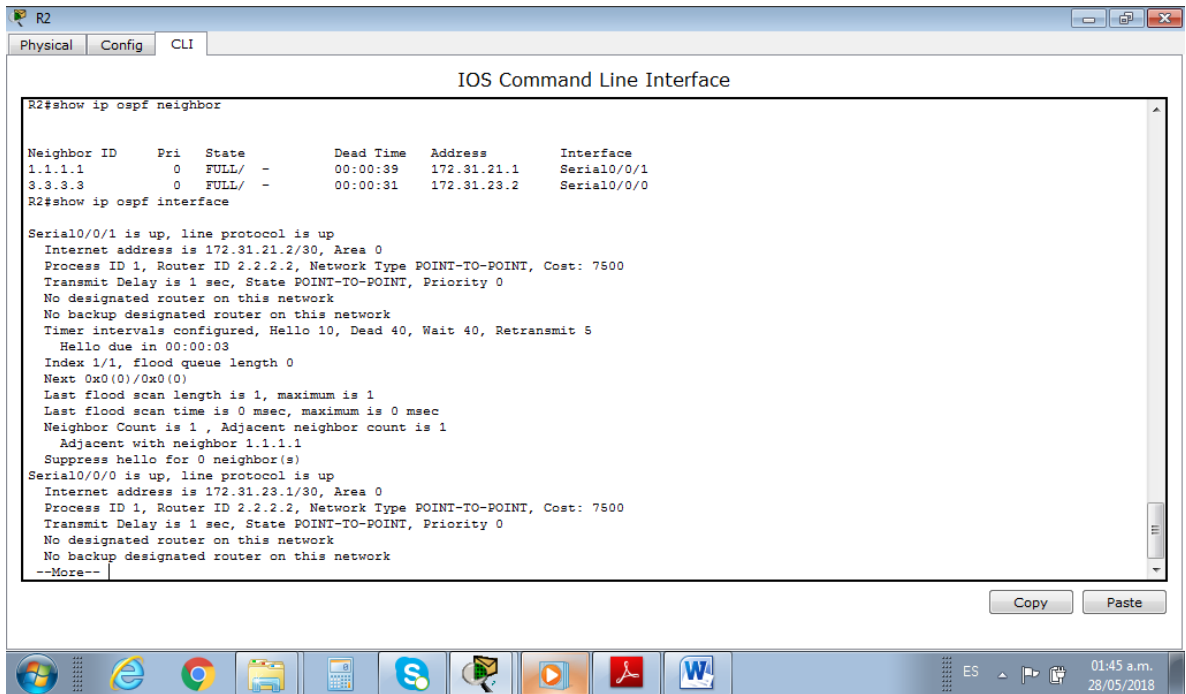
R2(config-router)#pas
R2(config-router)#passive-interface g0/0
R2(config-router)#passive-interface g0/1
R2(config-router)#int s0/0/0
R2(config-if)#ban
R2(config-if)#bandwidth 128
R2(config-if)#int s0/0/1
R2(config-if)#bandwidth 128
R2(config-if)#int s0/0/0
R2(config-if)#ip os
R2(config-if)#ip ospf co
R2(config-if)#ip ospf cost 7500
R2(config-if)#
04:06:09: %OSPF-5-ADJCHG: Process 1, Nbr 3.3.3.3 on Serial0/0/0 from LOADING to FULL, Loading Done

R2(config-if)#exit
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#sh
R2#show ip os
R2#show ip ospf n
R2#show ip ospf neighbor

Neighbor ID Pri State Dead Time Address Interface
1.1.1.1 0 FULL/ - 00:00:39 172.31.21.1 Serial0/0/1
3.3.3.3 0 FULL/ - 00:00:31 172.31.23.2 Serial0/0/0
R2#
```

## Visualización de interfaces por ospf

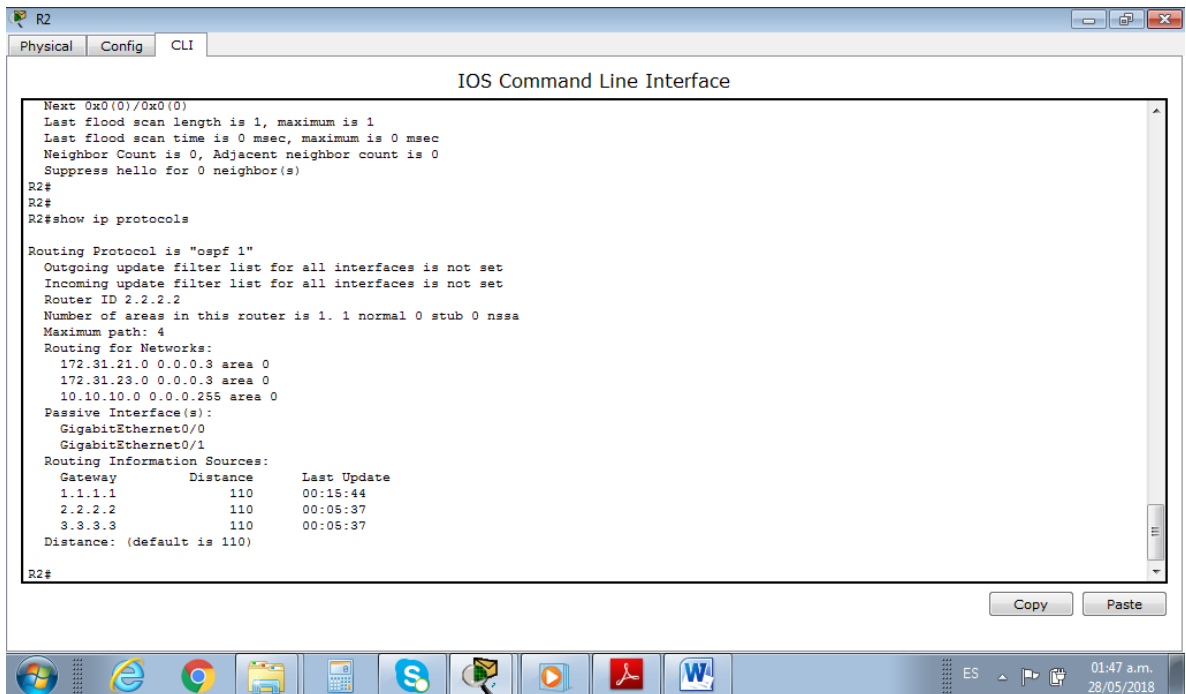


The screenshot shows a Cisco IOS CLI window titled "R2" with tabs for "Physical", "Config", and "CLI". The main window displays the output of the command "show ip ospf neighbor" and "show ip ospf interface".

```
R2#show ip ospf neighbor
Neighbor ID    Pri  State           Dead Time   Address        Interface
1.1.1.1        0    FULL/ -         00:00:39   172.31.21.1   Serial0/0/1
3.3.3.3        0    FULL/ -         00:00:31   172.31.23.2   Serial0/0/0
R2#show ip ospf interface
Serial0/0/1 is up, line protocol is up
Internet address is 172.31.21.2/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:03
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 1.1.1.1
  Suppress hello for 0 neighbor(s)
Serial0/0/0 is up, line protocol is up
Internet address is 172.31.23.1/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
--More--
```

Buttons for "Copy" and "Paste" are visible at the bottom right of the CLI window. The Windows taskbar at the bottom shows the time as 01:45 a.m. on 28/05/2018.

## Visualización de procesos ospf

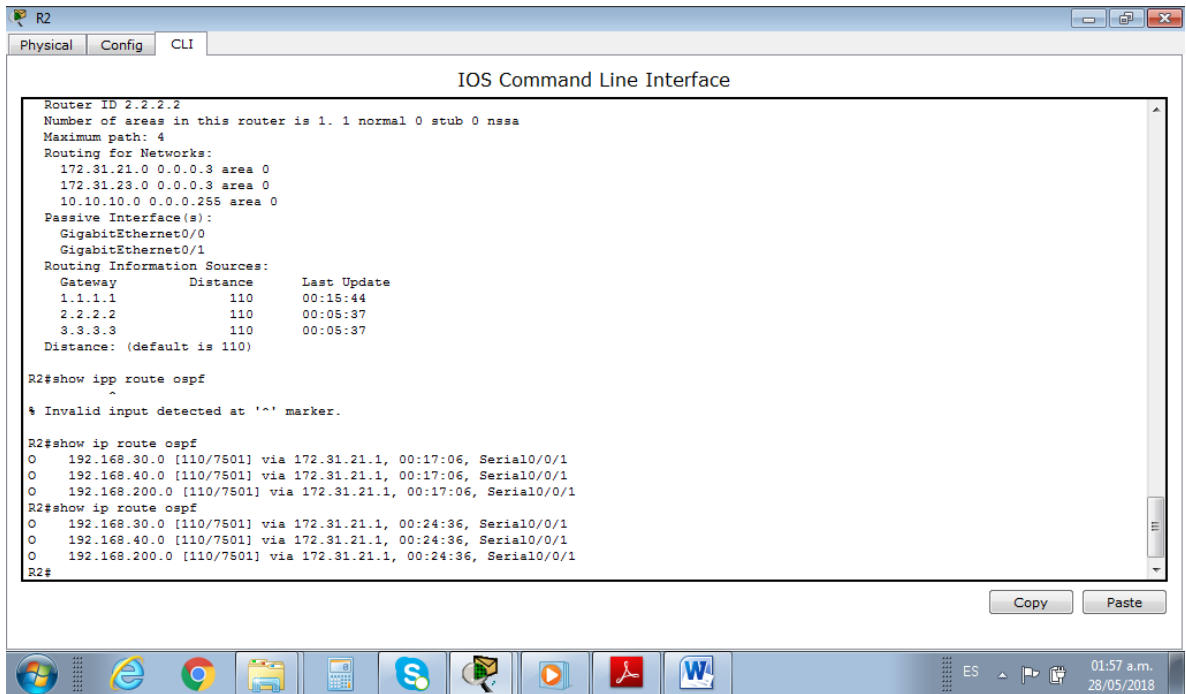


The screenshot shows a Cisco IOS CLI window titled "R2" with tabs for "Physical", "Config", and "CLI". The main window displays the output of the command "show ip protocols".

```
R2#
R2#
R2#show ip protocols
Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 2.2.2.2
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.31.21.0 0.0.0.3 area 0
    172.31.23.0 0.0.0.3 area 0
    10.10.10.0 0.0.0.255 area 0
  Passive Interface(s):
    GigabitEthernet0/0
    GigabitEthernet0/1
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1           110          00:15:44
    2.2.2.2           110          00:05:37
    3.3.3.3           110          00:05:37
  Distance: (default is 110)
R2#
```

Buttons for "Copy" and "Paste" are visible at the bottom right of the CLI window. The Windows taskbar at the bottom shows the time as 01:47 a.m. on 28/05/2018.

## Visualización de rutas ospf en R2



The screenshot shows the IOS Command Line Interface for router R2. The interface displays the following information:

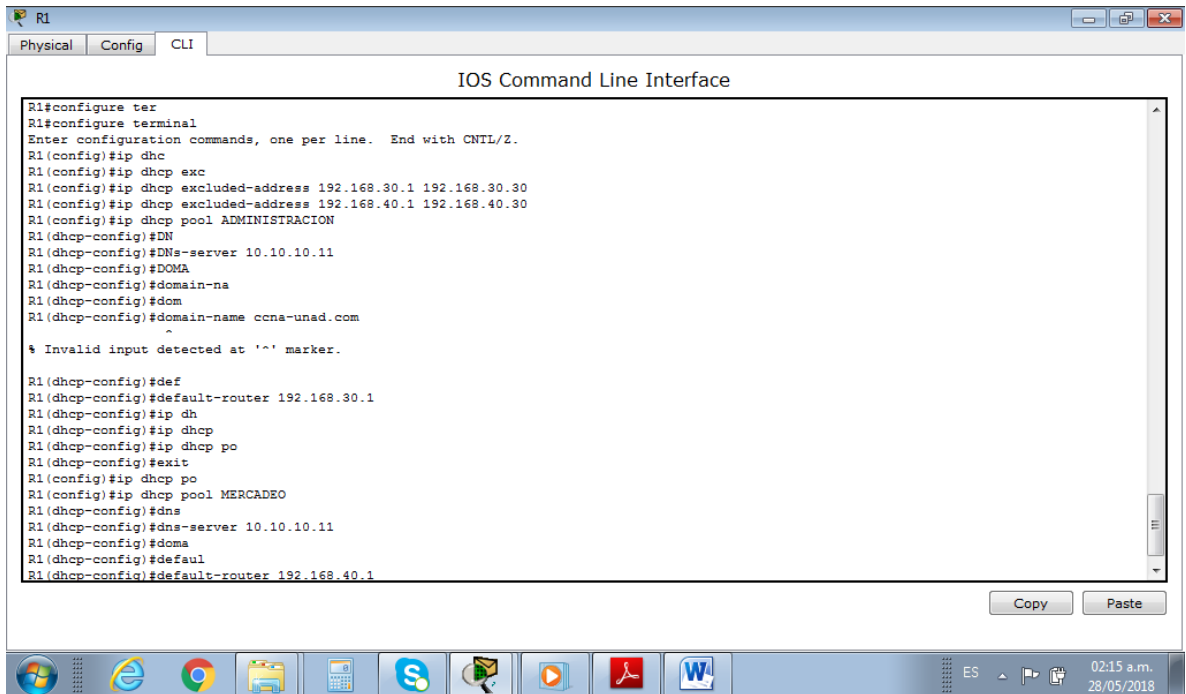
```
Router ID 2.2.2.2
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
 172.31.21.0 0.0.0.3 area 0
 172.31.23.0 0.0.0.3 area 0
 10.10.10.0 0.0.0.255 area 0
Passive Interface(s):
 GigabitEthernet0/0
 GigabitEthernet0/1
Routing Information Sources:
 Gateway      Distance    Last Update
 1.1.1.1      110         00:15:44
 2.2.2.2      110         00:05:37
 3.3.3.3      110         00:05:37
Distance: (default is 110)

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

R2#show ip route ospf
O   192.168.30.0 [110/7501] via 172.31.21.1, 00:17:06, Serial0/0/1
O   192.168.40.0 [110/7501] via 172.31.21.1, 00:17:06, Serial0/0/1
O   192.168.200.0 [110/7501] via 172.31.21.1, 00:17:06, Serial0/0/1
R2#show ip route ospf
O   192.168.30.0 [110/7501] via 172.31.21.1, 00:24:36, Serial0/0/1
O   192.168.40.0 [110/7501] via 172.31.21.1, 00:24:36, Serial0/0/1
O   192.168.200.0 [110/7501] via 172.31.21.1, 00:24:36, Serial0/0/1
R2#
```

The taskbar at the bottom shows the system time as 01:57 a.m. on 28/05/2018.

## Configuración DHCP pool para vlans en R1. Configurado como DHCP



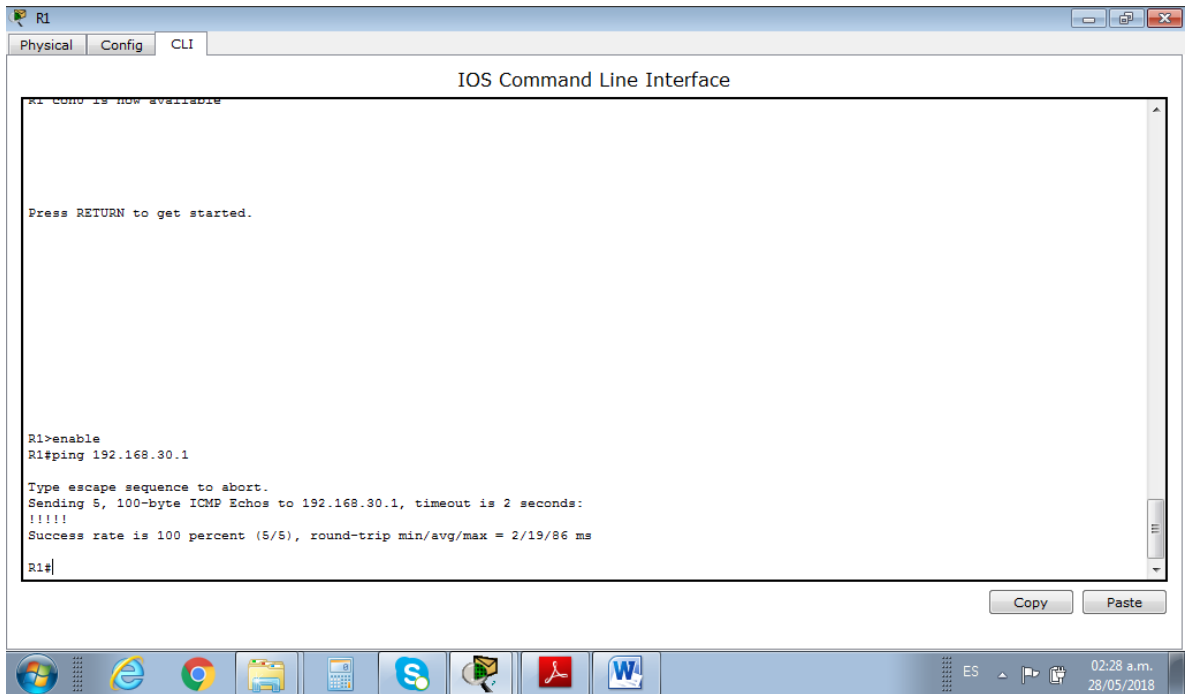
The screenshot shows the IOS Command Line Interface for router R1. The interface displays the following configuration commands:

```
R1#configure ter
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dhcp
R1(config)#ip dhcp exc
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30
R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30
R1(config)#ip dhcp pool ADMINISTRACION
R1(dhcp-config)#DN
R1(dhcp-config)#DNS-server 10.10.10.11
R1(dhcp-config)#DOMA
R1(dhcp-config)#domain-na
R1(dhcp-config)#dom
R1(dhcp-config)#domain-name ccna-unad.com
R1(dhcp-config)#
% Invalid input detected at '^' marker.

R1(dhcp-config)#def
R1(dhcp-config)#default-router 192.168.30.1
R1(dhcp-config)#ip dh
R1(dhcp-config)#ip dhcp
R1(dhcp-config)#ip dhcp po
R1(dhcp-config)#exit
R1(config)#ip dhcp po
R1(config)#ip dhcp pool MERCADEO
R1(dhcp-config)#dns
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#doma
R1(dhcp-config)#defaul
R1(dhcp-config)#default-router 192.168.40.1
```

The taskbar at the bottom shows the system time as 02:15 a.m. on 28/05/2018.

## Comprobación de conectividad mediante ping en R1



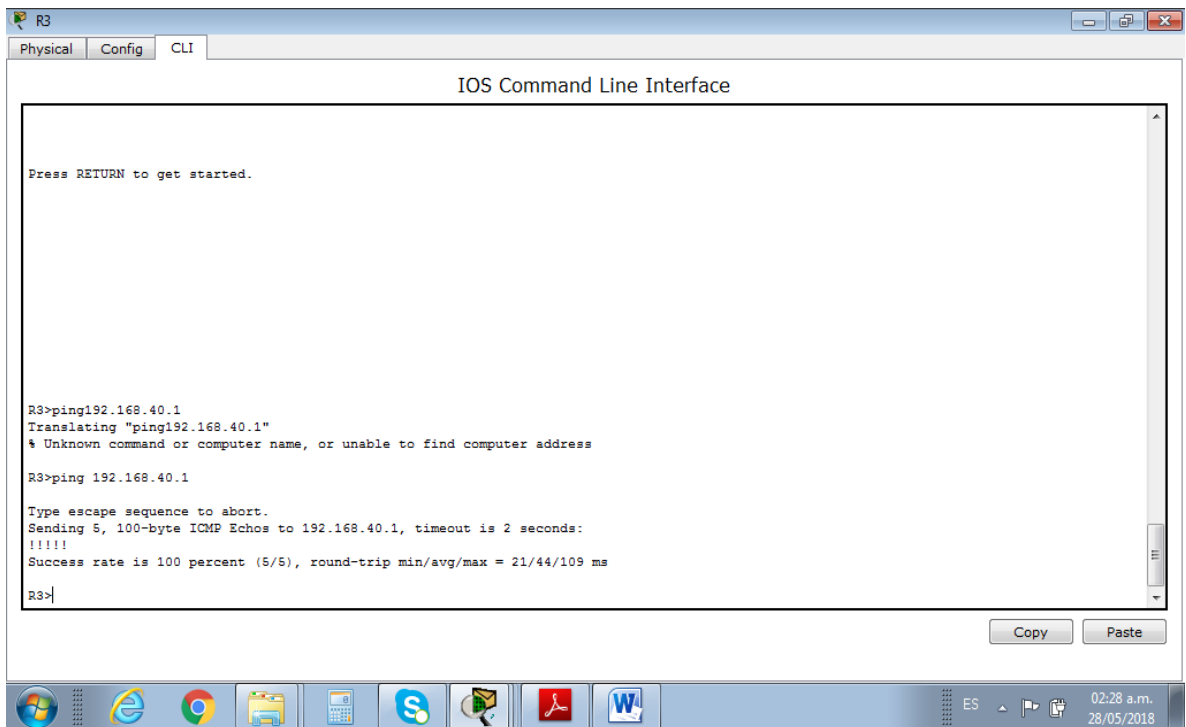
The screenshot shows the IOS Command Line Interface for router R1. The user has entered the command 'ping 192.168.30.1' and received a successful response. The output indicates that 5 ICMP Echoes were sent, all received, with a success rate of 100 percent. The round-trip time for the packets is 2/19/86 ms.

```
R1
Physical Config CLI
IOS Command Line Interface

R1>enable
R1#ping 192.168.30.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.30.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/19/86 ms
R1#
```

## Verificación de conectividad desde R3



The screenshot shows the IOS Command Line Interface for router R3. The user has entered the command 'ping 192.168.40.1' and received a successful response. The output indicates that 5 ICMP Echoes were sent, all received, with a success rate of 100 percent. The round-trip time for the packets is 21/44/109 ms.

```
R3
Physical Config CLI
IOS Command Line Interface

R3>ping192.168.40.1
Translating "ping192.168.40.1"
% Unknown command or computer name, or unable to find computer address

R3>ping 192.168.40.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.40.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 21/44/109 ms
R3>
```



## CONCLUSIONES

- Los estudiantes próximos a culminar el diplomado de CISCO somos capaces de administrar una red y cumplir a cabalidad los requisitos impuestos por la misma.
- La configuración de switches y routers es para fundamental para la seguridad informática ya que de ahí dependemos muchos de los usuarios al estar en contacto con la tecnología.
- Una situación puesta en análisis es para nosotros los estudiantes un reto y un anhelo poder desarrollarlo, analizarlo y cumplirlo, teniendo así la satisfacción de ayudar con nuestro conocimiento al desarrollo de un avance tecnológico continuo.
- La evaluación de habilidades fue desarrollada en su totalidad y espero haber podido cumplir con las expectativas a evaluar.

## REFERENCIAS BIBLIOGRÁFICAS

Programa Packet Tracer

Tomado el 15 de marzo de 2018 en la URL: [www.itechtics.com/download-cisco-packet-tracer-7-1-1-free-direct-download-links/](http://www.itechtics.com/download-cisco-packet-tracer-7-1-1-free-direct-download-links/)

Cisco Packet Tracer

Tomado el 25 de febrero de 2018 en la URL:<https://www.netacad.com/es/web/about-us/cisco-packet-tracer>

Packet Tracer

Tomado el 15 de febrero de 2018 en la URL:[https://es.wikipedia.org/wiki/Packet\\_Tracer](https://es.wikipedia.org/wiki/Packet_Tracer)

Manual de uso Packet Tracer

Tomado el 16 de marzo de 2018 en la URL:[http://asei.com.co/files/23\\_10\\_2013\\_03\\_13\\_44\\_upload.pdf](http://asei.com.co/files/23_10_2013_03_13_44_upload.pdf)