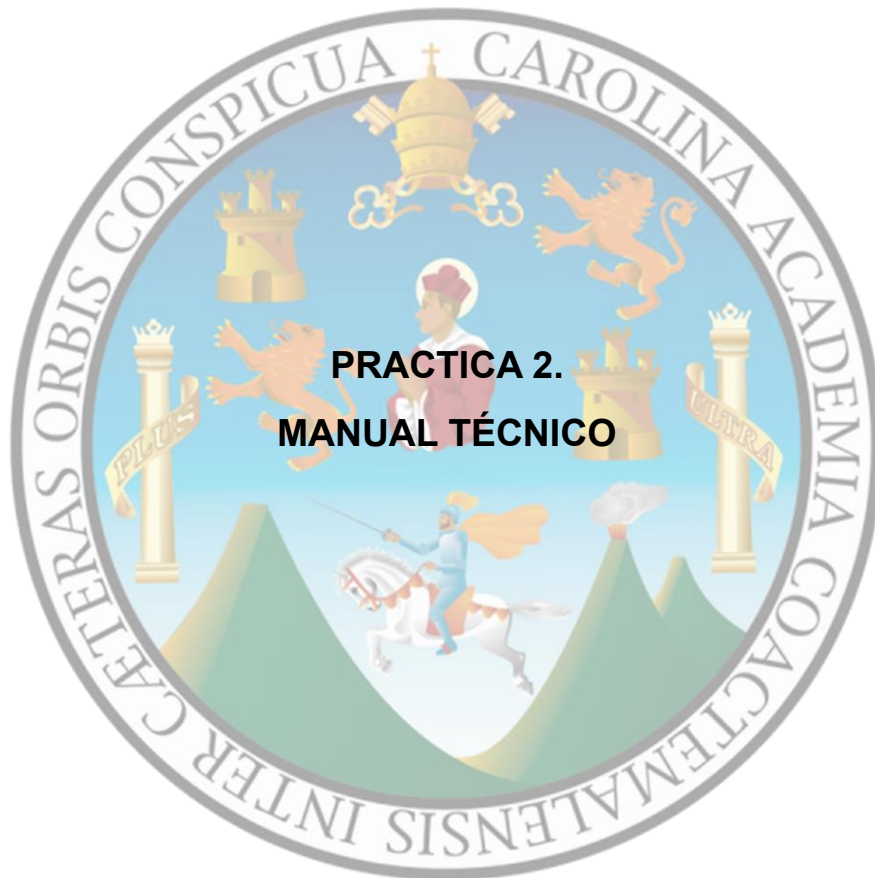


**UNIVERSIDAD SAN CARLOS DE GUATEMALA  
ESCUELA DE CIENCIAS Y SISTEMAS  
LABORATORIO DE REDES DE COMPUTADORAS 2  
SECCIÓN A  
SEGUNDO SEMESTRE**



**PRACTICA 2.  
MANUAL TÉCNICO**

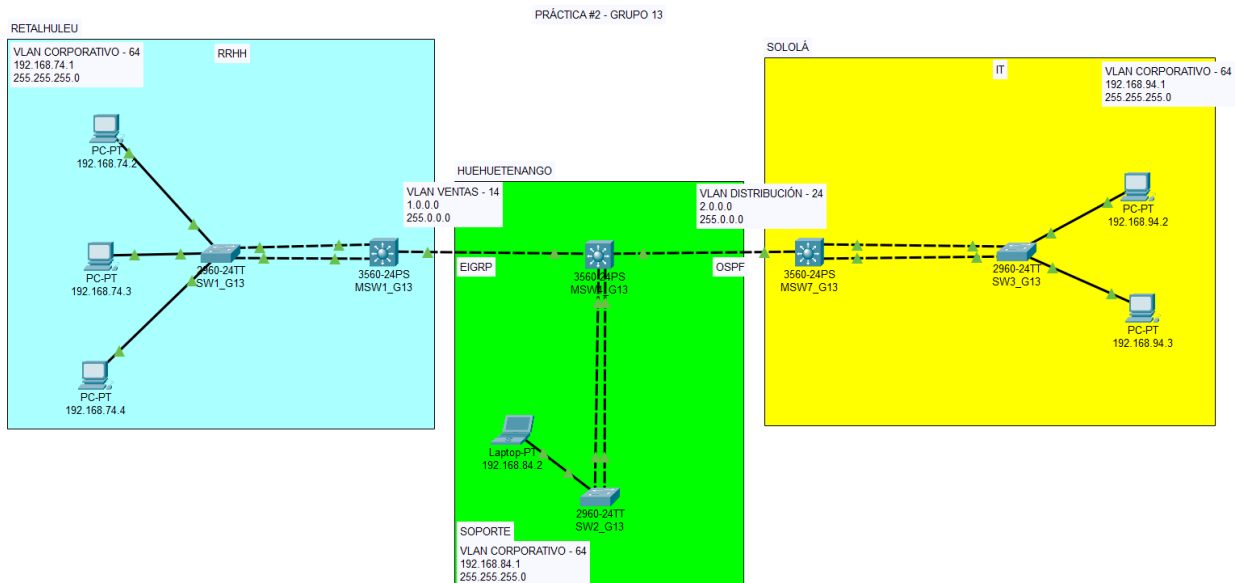
**Grupo 13**

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- **Objetivos y alcances del sistema.**

- Configurar los protocolos de capa 3 como lo son: RIP, OSPF, EIGRP y BGP.
- Tener el conocimiento con las redes MAN y LAN,
- Tener el conocimiento e implementar las diferentes interfaces de ipv4. Implementar LACP.

- **Topología.**



- **Tecnologías por utilizar:**

- Cisco packet

Link de descarga: [Cisco Packet Tracer - Networking Simulation Tool \(netacad.com\)](https://www.netacad.com/cisco-packet-tracer)

- **Vlan's utilizadas:**

COORPORATIVO64	64
VENTAS14	14
DISTRIBUCION24	24

- **Creación de Vlan's (switch capa 2).**

Para crear las VLAN'S se debe de seguir los siguientes comandos:

- vlan #númeroVlan
- name #nombreVlan
- exit
- do write (para guardar los cambios).

```
SW2_G13(config)#vlan 64
SW2_G13(config-vlan)#name CORPORATIVO64
SW2_G13(config-vlan)#exit
SW2_G13(config)#do write
Building configuration...
[OK]
```

- **Agregar modo acceso a puertos (switch capa 2).**

Para poner los puertos en modo acceso al switch de capa 2, se debe de seguir los siguientes comandos:

- int f#númeroPuerto
- switchport mode Access
- switchport Access vlan #numeroVlan
- description 'ACC\_VLAN64' (descripción al puerto)
- no shutdown (levantar el puerto)
- do write (guardar los cambios)

```
SW2_G13(config)#int f0/11
SW2_G13(config-if)#switchport mode acc
SW2_G13(config-if)#switchport mode access
SW2_G13(config-if)#switchport access vlan 64
SW2_G13(config-if)#descrip
SW2_G13(config-if)#description ACC_VLAN64
SW2_G13(config-if)#no shut
SW2_G13(config-if)#exit
SW2_G13(config)#do write
Building configuration...
[OK]
```

- **Asignación de hostname (switch capa 2).**

Para asignar un nombre al hostname del switch seguiremos los siguientes comandos:

- configure terminal
- hostname #nombre
- do write

```
SW1#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
SW1(config)#hostname SW1_G13
SW1_G13(config)#do write
Building configuration...
[OK]
SW1_G13(config)#exit
SW1_G13#
%SYS-5-CONFIG_I: Configured from console by console
```

- **Asignación de dirección ip a una interfaz de una VLAN.**

Para asignar una ip a una interface del switch seguiremos los siguientes comandos:

- int vlan #numeroVlan
- ip address #direccionIp #mascaraSubRed
- no shutdown

```
MSW1_G13(config)#int vlan 64
MSW1_G13(config-if)#
%LINK-5-CHANGED: Interface Vlan64, changed state to up

MSW1_G13(config-if)#ip address 192.168.74.1 255.255.255.0
MSW1_G13(config-if)#no shutdown
MSW1_G13(config-if)#exit
MSW1_G13(config)#int vlan 14
MSW1_G13(config-if)#
%LINK-5-CHANGED: Interface Vlan14, changed state to up

MSW1_G13(config-if)#ip address 1.0.0.1 255.0.0.0
^
% Invalid input detected at '^' marker.

MSW1_G13(config-if)#ip address 1.0.0.1 255.0.0.0
MSW1_G13(config-if)#no shutdown
```

- **Configuración de VLAN (MSW1).**

Para crear vlan's en el switch capa 3 se utilizan los mismos comandos descritos en el switch de capa 2:

- vlan #númeroVlan
- name #nombreVlan
- exit
- do write (para guardar los cambios).

```
MSW1_G13>ENA
MSW1_G13#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
MSW1_G13(config)#vlan 64
MSW1_G13(config-vlan)#name CORPORATIVO64
MSW1_G13(config-vlan)#exit
MSW1_G13(config)#vlan 14
MSW1_G13(config-vlan)#name VENTAS14
MSW1_G13(config-vlan)#exit
MSW1_G13(config)#do write
Building configuration...
[OK]
MSW1_G13(config)#do show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
14	VENTAS14	active	
64	CORPORATIVO64	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

- **Configuración LACP (switch capa 2).**

- Interface range FastEthernet #rango de interfaces
- switch port mode trunk
- channel-protocol lacp
- channel-group 1 mode active
- no shutdown
- exit
- do write

```
SW1_G13>ena
SW1_G13#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
SW1_G13(config)#interface range FastEthernet0/1 - 2
SW1_G13(config-if-range)#switchport mode trunk

SW1_G13(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

SW1_G13(config-if-range)#channel-protocol lacp
SW1_G13(config-if-range)#channel-group 1 mode active
SW1_G13(config-if-range)#
Creating a port-channel interface Port-channel 1

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface Port-channel1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed state to up

SW1_G13(config-if-range)#no shutdown
SW1_G13(config-if-range)#exit
SW1_G13(config)#do write
Building configuration...
[OK]
```

- **Configuración LACP (switch multicapa).**

- Interface range FastEthernet #rango de interfaces
- switch port mode trunk encapsulation dot1Q
- switch port mode trunk
- channel-protocol lacp
- chanel-group 1 mode active
- no shutdown
- exit
- do write

```
MSW4_G13>
MSW4_G13>ena
MSW4_G13#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
MSW4_G13(config)#interface range FastEthernet0/1 - 2
MSW4_G13(config-if-range)#switchport trunk encapsulation dot1Q
MSW4_G13(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%EC-5-CANNOT_BUNDLE2: Fa0/1 is not compatible with Fa0/2 and will be suspended (trunk
encap of Fa0/1 is auto, Fa0/2 is dot1q)

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan14, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan24, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan64, changed state to up

%LINK-3-UPDOWN: Interface Port-channell, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channell, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

MSW4_G13(config-if-range)#switchport mode trunk
MSW4_G13(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

MSW4_G13(config-if-range)#channel-protocol lacp
MSW4_G13(config-if-range)#channel-group 1 mode active
MSW4_G13(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

MSW4_G13(config-if-range)#no shut
MSW4_G13(config-if-range)#
```

- **Protocolo OSPF (switch multicapa).**

- ip routing
- router ospf 10
- network 192.168.84.0 0.0.255.255 area 10

```
MSW4_G13>
MSW4_G13>
MSW4_G13>ena
MSW4_G13#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
MSW4_G13(config)#ip routing
MSW4_G13(config)#ip routing
MSW4_G13(config)#router ospf 10
MSW4_G13(config-router)#network 192.168.84.0 0.255.255.255 area 10
MSW4_G13(config-router)#network 2.0.0.0 0.0.0.255 area 10
MSW4_G13(config-router)#network 192.168.94.0 0.255.255.255 area 10
MSW4_G13(config-router)#
```

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- **Protocolo EIGRP(switch multicapa).**

- ip routing
- router eigrp 20
- network 192.168.74.0
- network 1.0.0.0
- network 192.168.84.0

```
MSW1_G13>
MSW1_G13>ena
MSW1_G13#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
MSW1_G13(config)#ip routing
MSW1_G13(config)#rout
MSW1_G13(config)#router e
MSW1_G13(config)#router eigrp 20
MSW1_G13(config-router)#netw
MSW1_G13(config-router)#network 192.168.74.0
MSW1_G13(config-router)#network 1.0.0.0
MSW1_G13(config-router)#network 192.168.84.0
MSW1_G13(config-router)#no auto
MSW1_G13(config-router)#no auto-summary
MSW1_G13(config-router)#exit
MSW1_G13(config)#do write
Building configuration...
[OK]
MSW1_G13(config)#
```

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