

## ***Examen Práctico - Red Nacional***

**Materia:** Conmutación y Enrutamiento de Redes de Datos

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**TECNOLOGICO  
NACIONAL DE MÉXICO**



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# Introducción

Con el fin de mejorar el diseño de Red de la compañía JuanMark, utilizaremos tecnologías y herramientas de simulación y control de versiones relevantes para presentar la viabilidad de una red nacional.



# Objetivo

El propósito de este trabajo es el practicar lo visto en nuestro semestre, aplicándolo en un proyecto a gran escala que pruebe no sólo el conocimiento, sino las aptitudes para implementar un diseño indicado siguiendo las indicaciones de parte del Cliente trabajando en equipo en la aplicación y documentación de la red, utilizando GitHub como herramienta de Control de Versiones y Colaboración.

## Configuraciones Generales:

### Router Rip:

Una de las directrices generales consistió en configurar Router RIP en la red, un ejemplo de esta configuración sería lo siguiente:

```
router rip  
version 2
```

```
network 148.60.192.0  
network 148.60.200.0  
network 148.60.208.0  
network 148.60.216.0  
network 148.60.224.0
```

En el que los networks son las direcciones de red de cada VLAN.

### SSH:

El SSH o configuración inalámbrica de los dispositivos de red también es un requerimiento, en el que incluiremos el nombre del dominio, el nombre de usuario y secreto, así como la conexión virtual VTY. Ejemplo:!!!Configuracion SSH

```
ip domain-name juanmark.com
```

```
crypto key generate rsa  
username juan secret mark
```

```
line vty 0 15  
transport input SSH  
login local  
exit
```

```
ip ssh version 2
```

## Seguridad de Puertos:

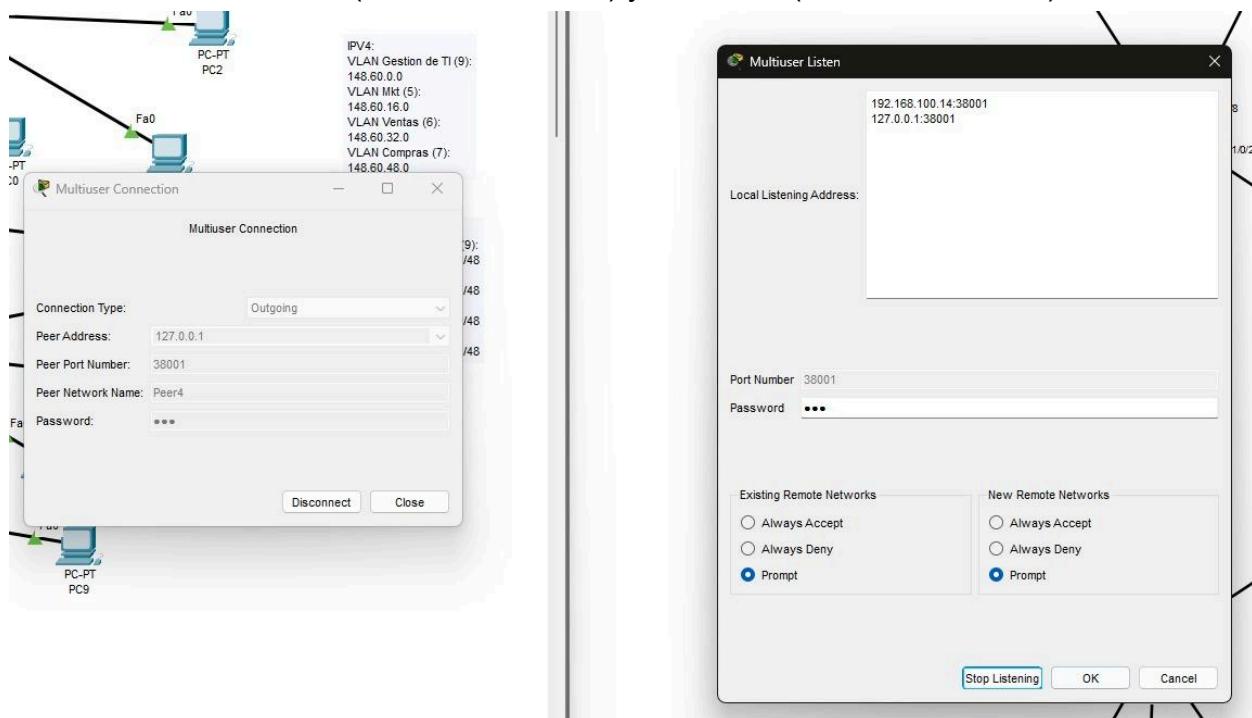
En este caso, agregaremos seguridad de puertos a todos los puertos de dispositivos Switch para asegurar la información de las direcciones MAC. Ejemplo:

```
switchport port-security mac-address sticky  
switchport port-security violation shutdown.
```

## Pruebas de Conexión Inter-Regionales

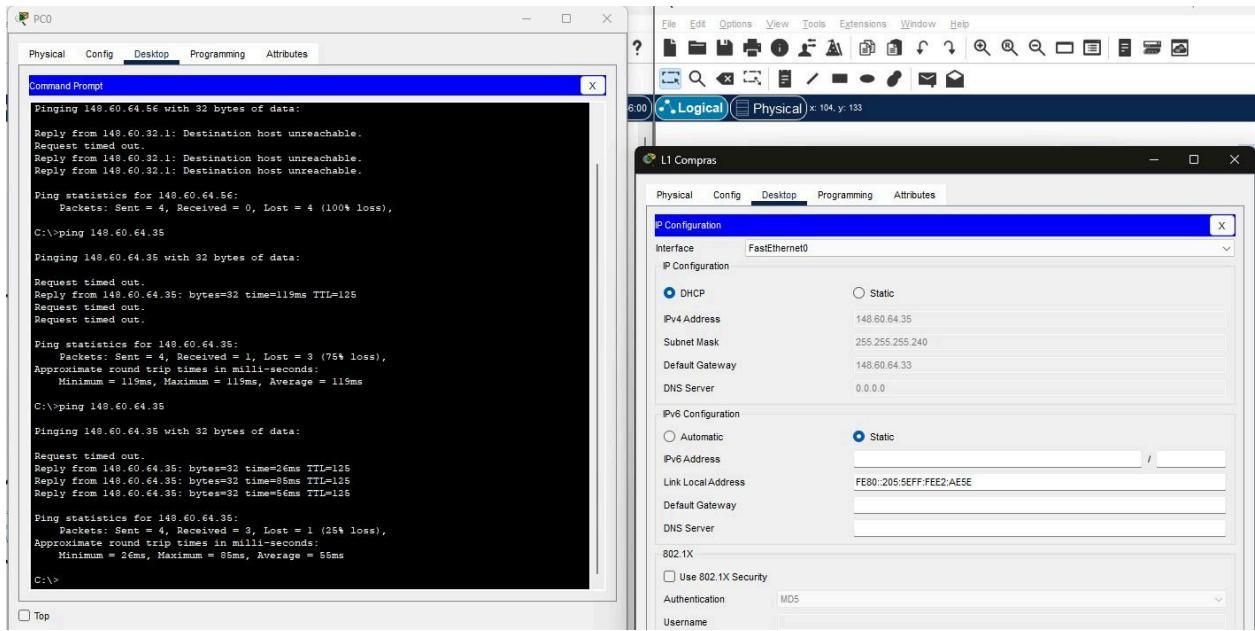
Nota: Las conexiones Inter-Regionales se hicieron de forma local en una máquina por limitaciones de dispositivos y disponibilidad.

### Conexión entre Noreste (Está escuchando) y Noroeste (Esta Conectando)

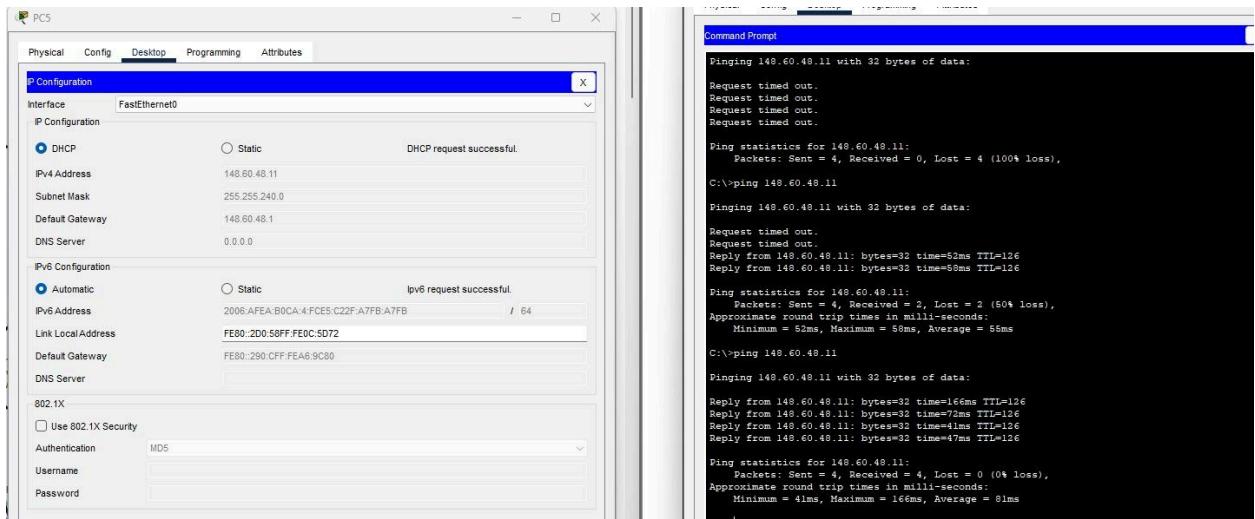


Noroeste -> Noreste

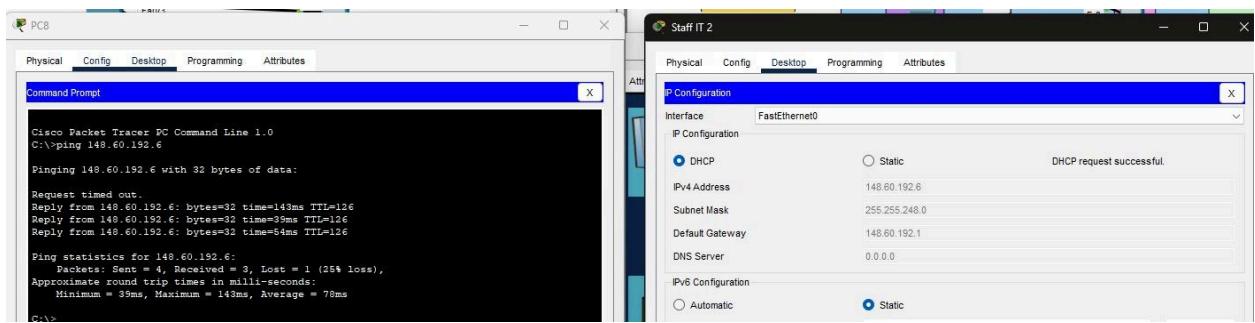
PC0 -> L1 Compras



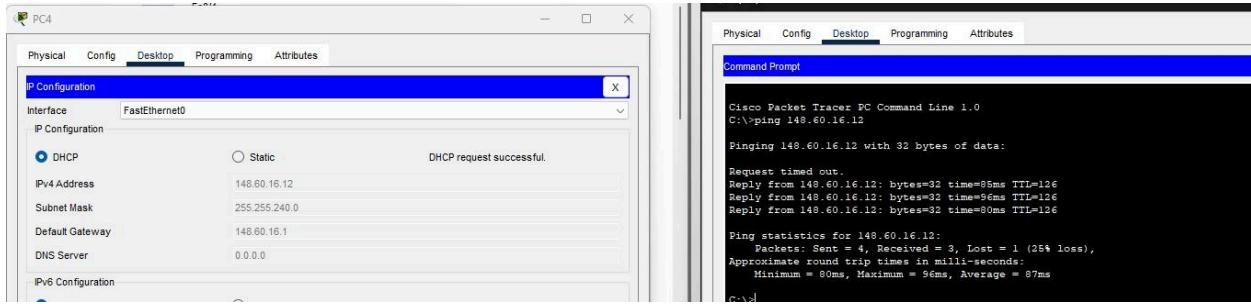
## Noreste -> Noroeste L1 Gestión TI -> PC5



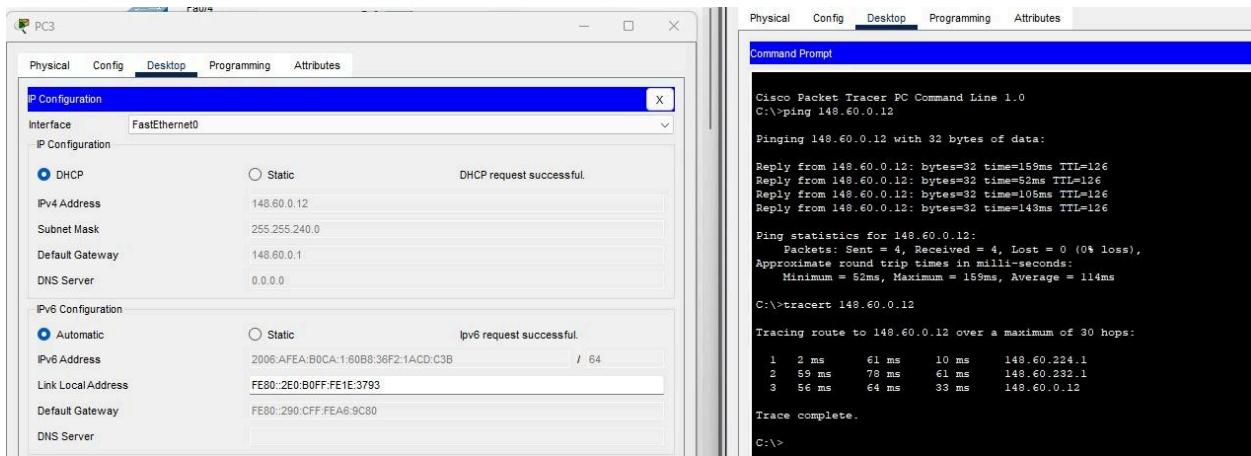
## Noroeste->Centro PC8 -> Staff IT 2



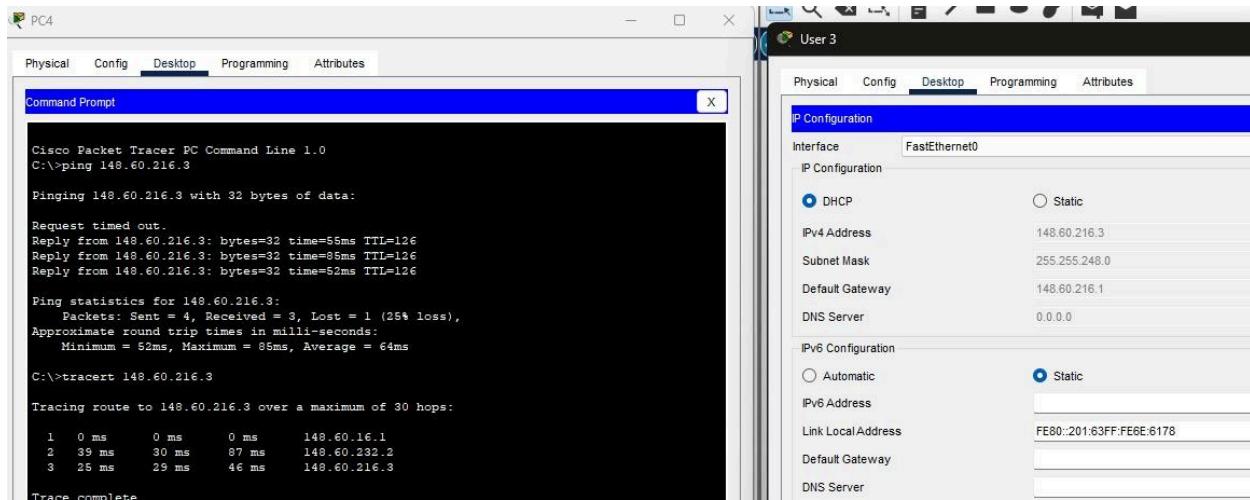
Centro->Noroeste  
Laptop4->PC4



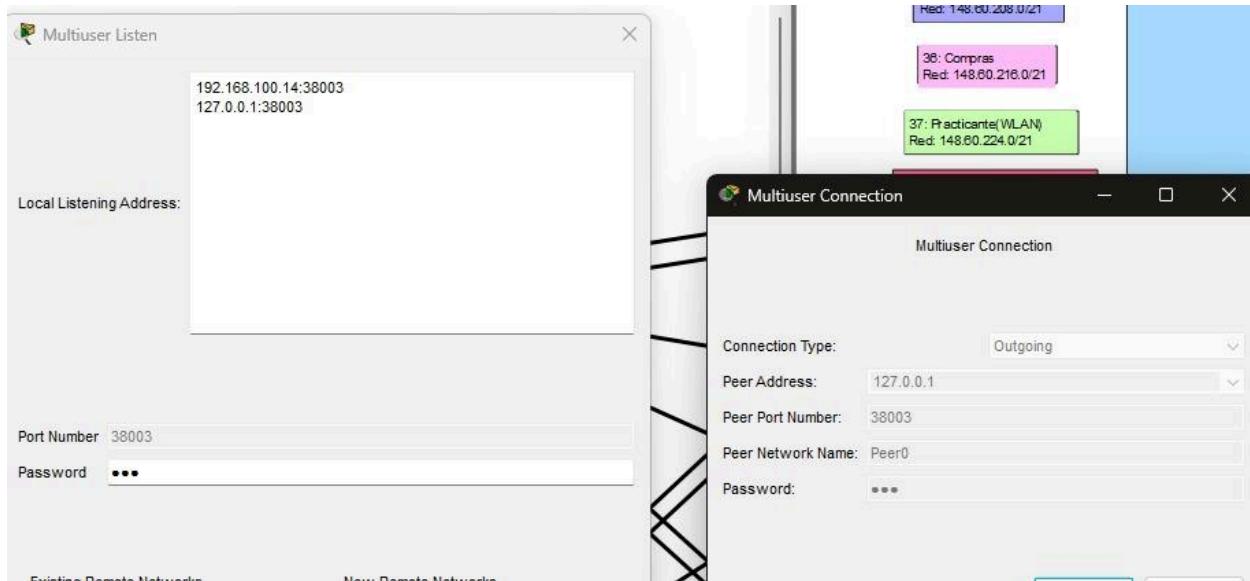
tracert Centro->Noroeste  
Laptop3 -> PC3



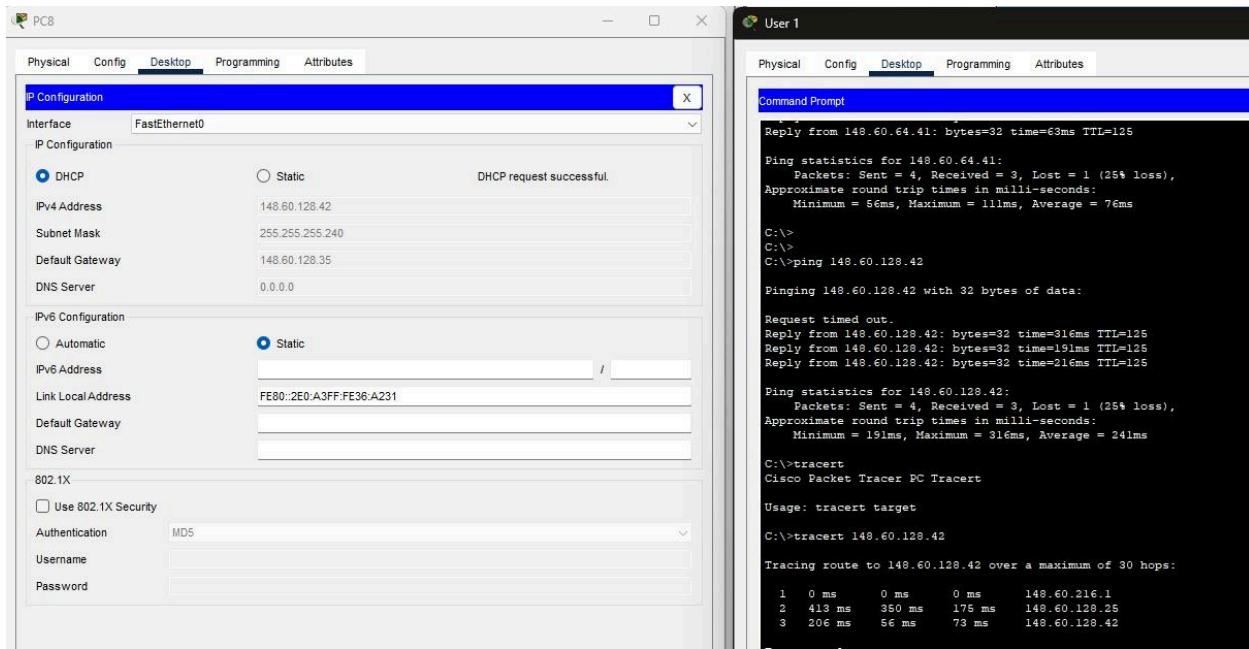
Noroeste -> Centro  
PC4 -> User 3



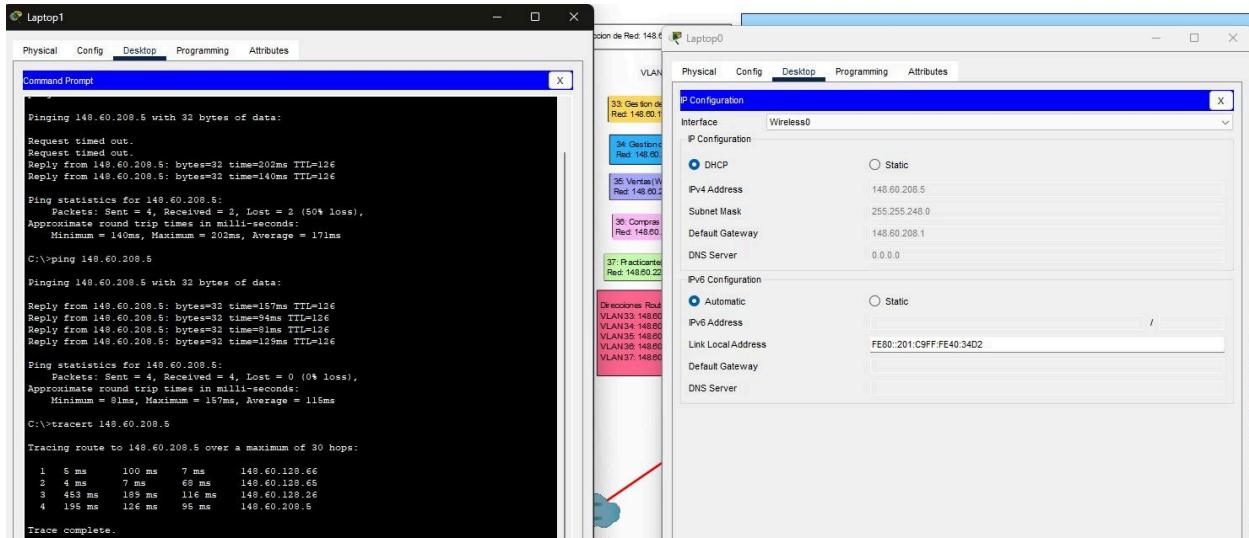
## Conexión Centro a Sureste



Ping+Tracert  
 Centro->Sureste  
 User1->PC8

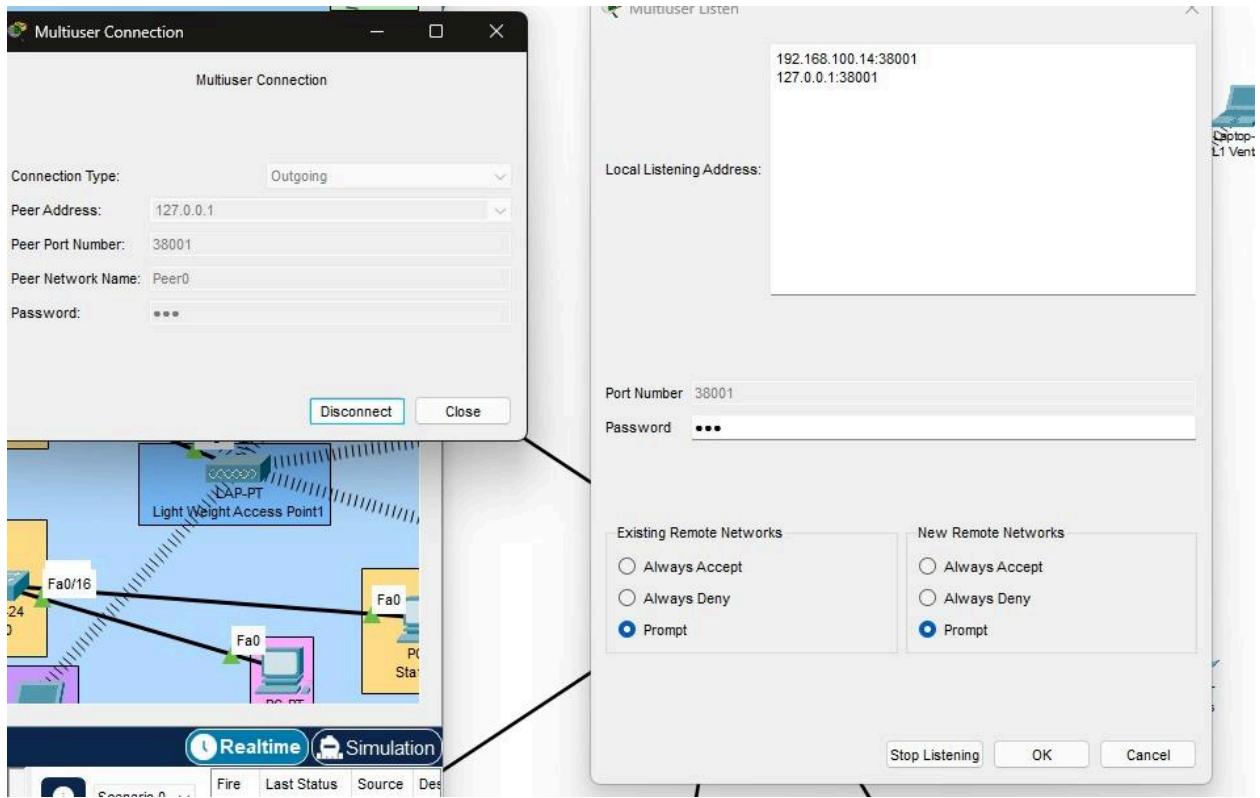


ping+tracert  
 Sureste -> Centro  
 Laptop1 -> Laptop0



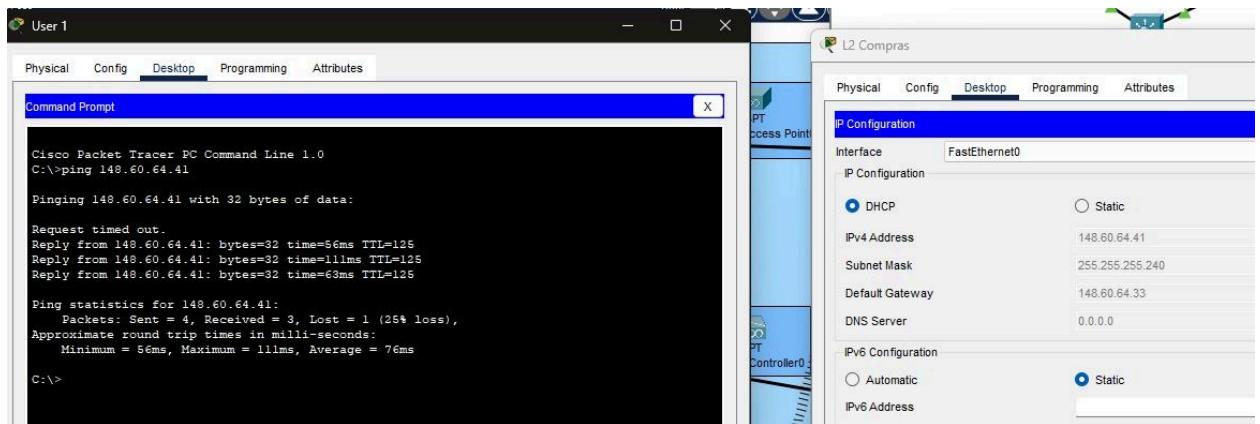


## Conexión entre Noroeste (escuchando) y Centro (Conectándose)

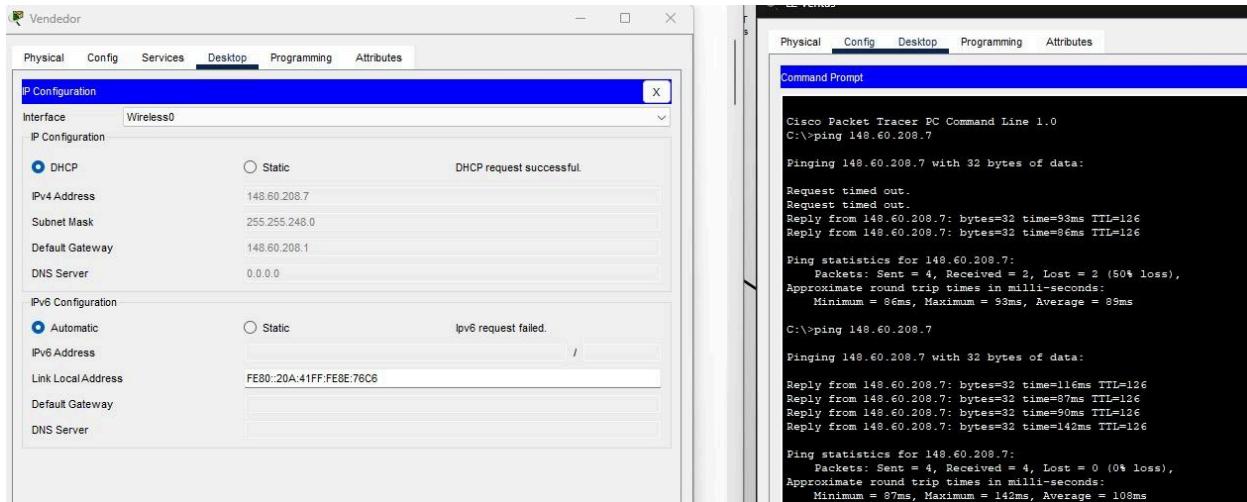


User 1 -> L2 Compras

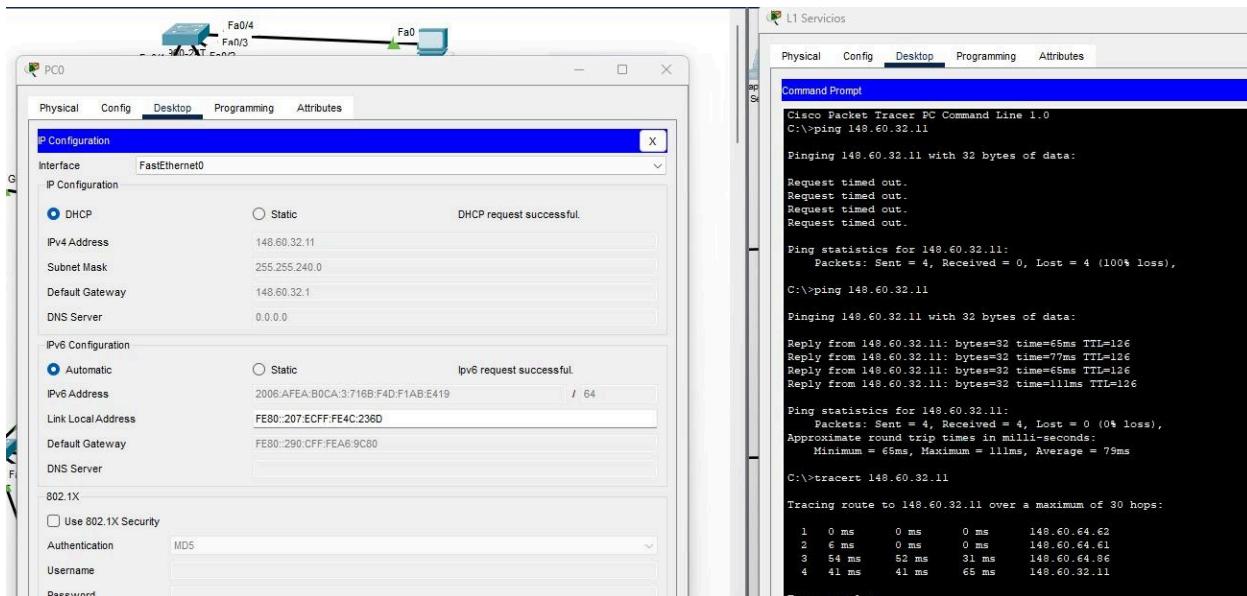
Centro -> Noreste



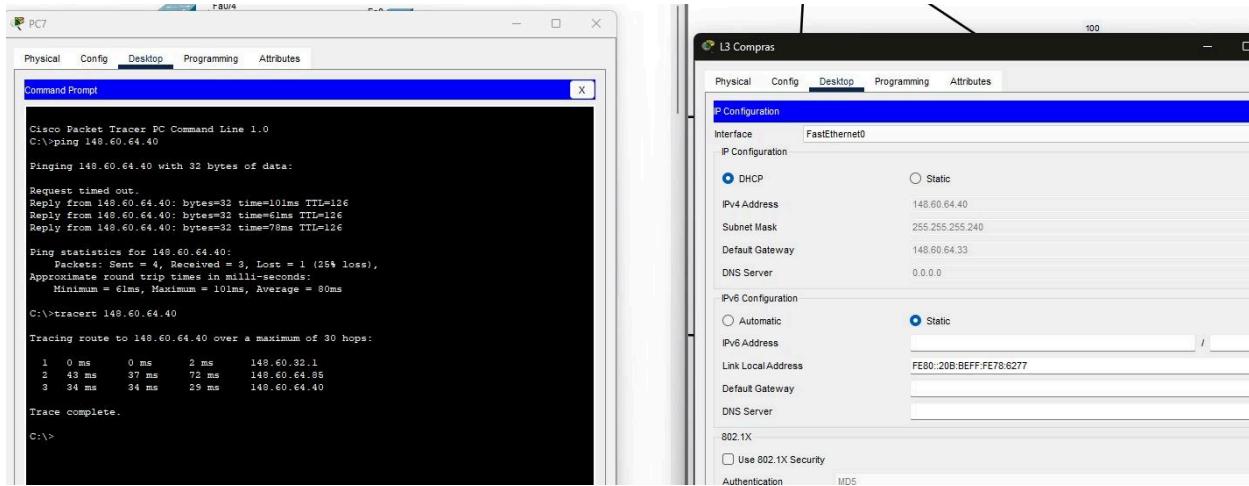
L2 Ventas -> Vendedor  
Noreste -> Centro



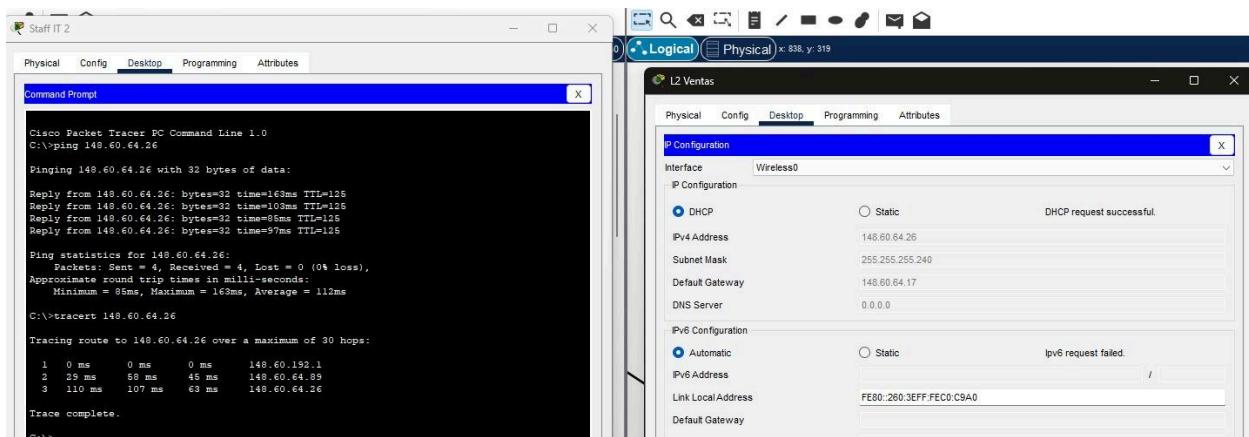
Tracert  
Noreste -> Noroeste  
L1 Servicios -> PC0



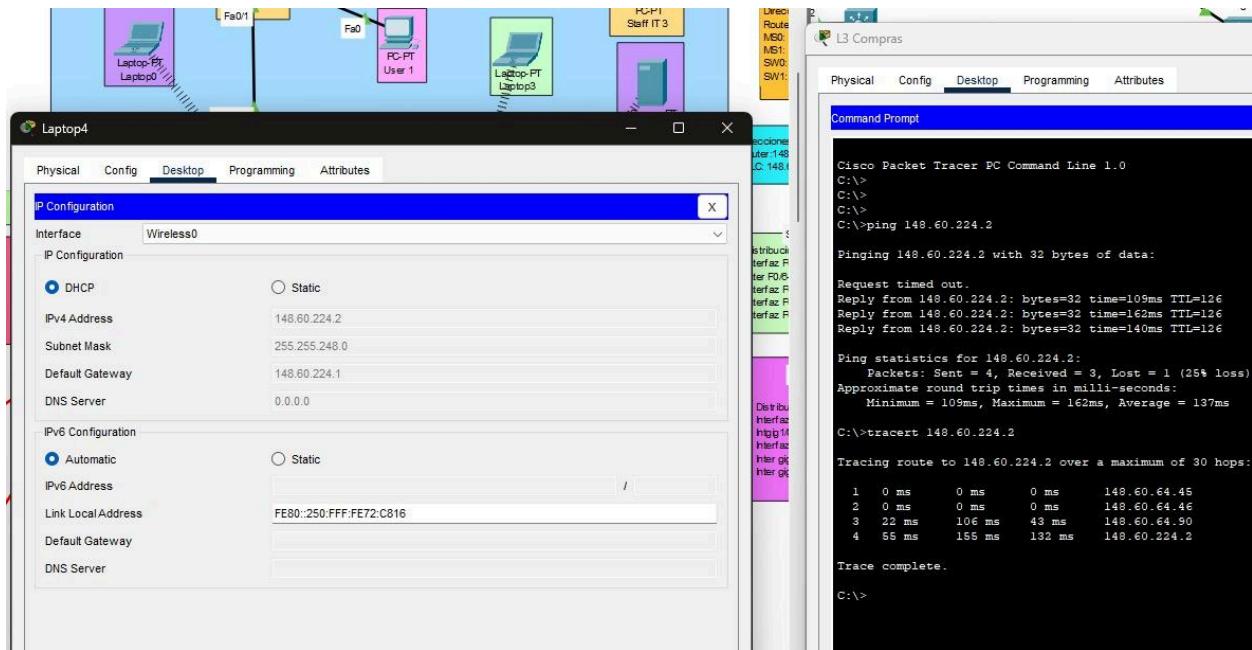
Tracert  
 Noroeste -> Noreste  
 PC7 -> L3 Compras



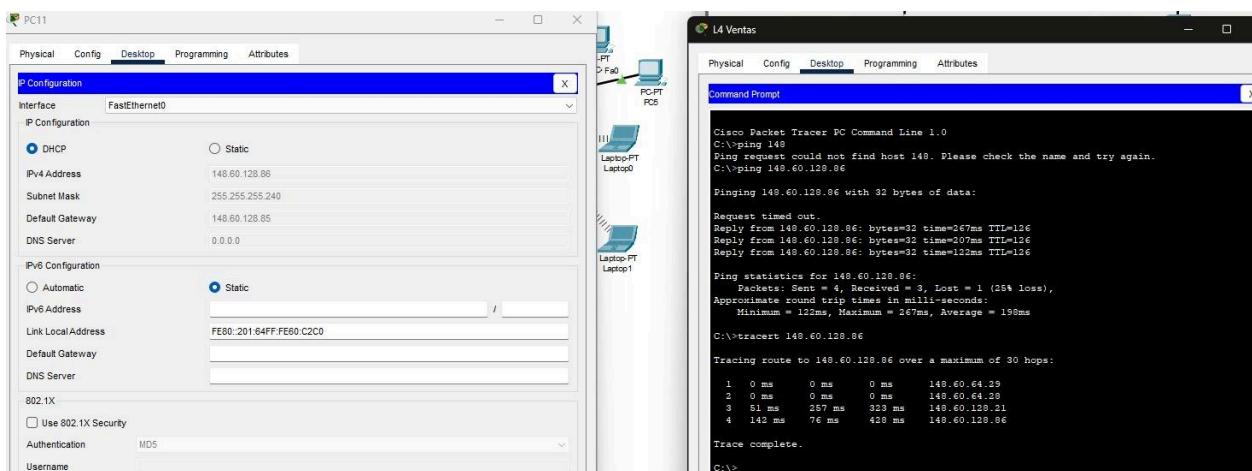
Tracert  
 Centro -> Noreste  
 Staff IT 2 -> L2 Ventas



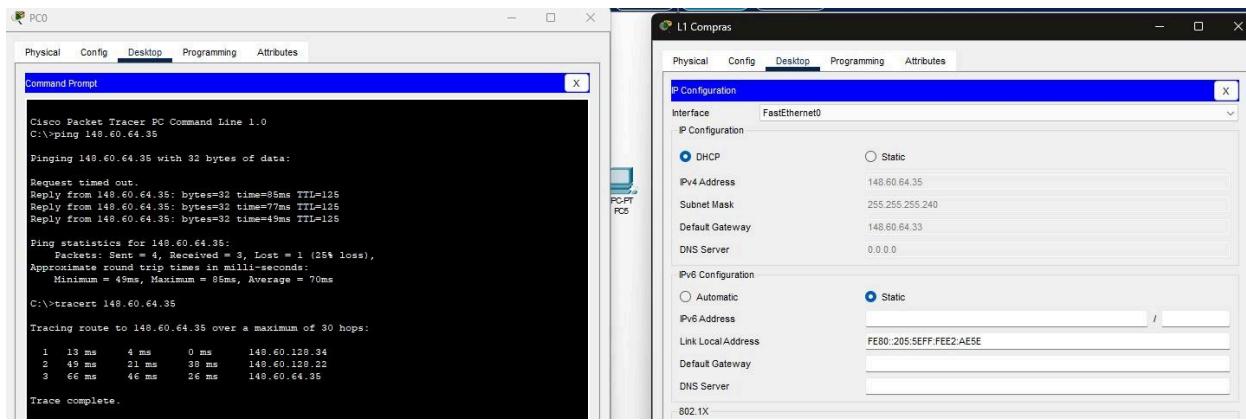
Tracert  
Noreste -> Centro  
L3 Compras -> Laptop4



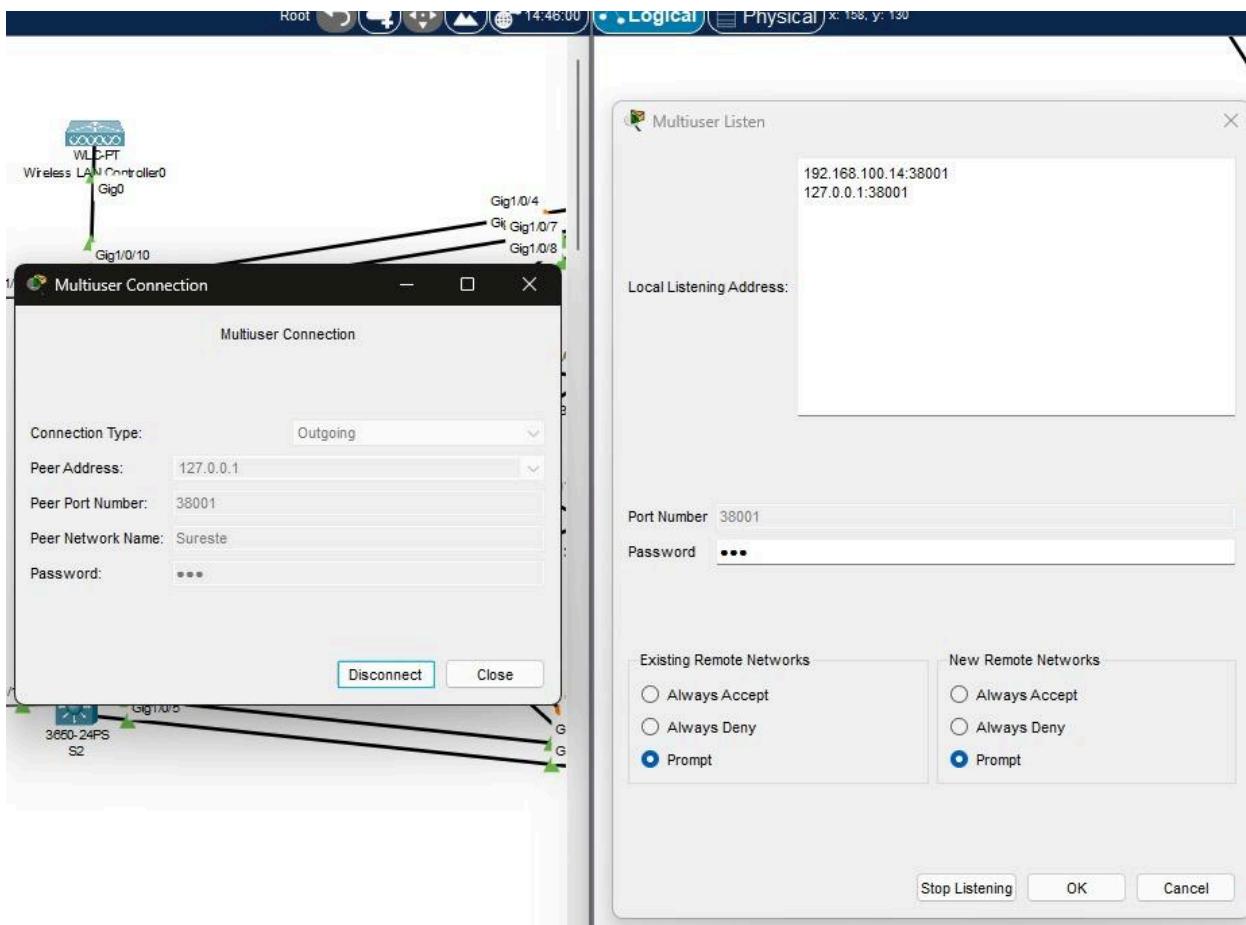
Ping+Tracert  
Noreste -> Sureste  
L4 Ventas -> PC11



Ping+Tracert  
Sureste->Noreste  
PC0->L1 Compras

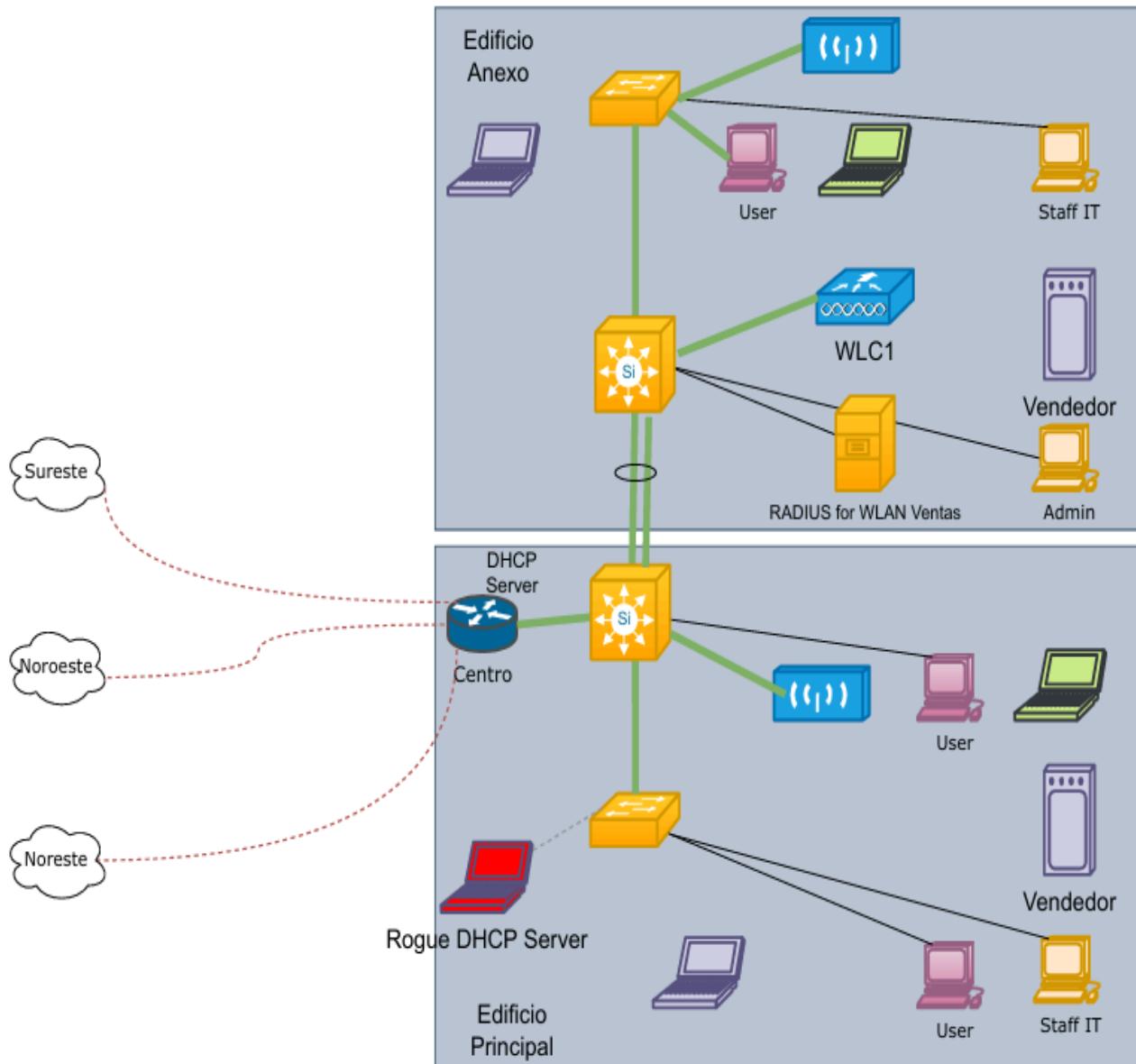


### Conexión Sureste Noreste



# Centro

Topología Esperada:



## VLANs

- 33: Gestión de TI
- 34: Gestión de WLAN
- 35: Ventas(WLAN)
- 36: Compras
- 37: Practicante(WLAN)

## Región Centro

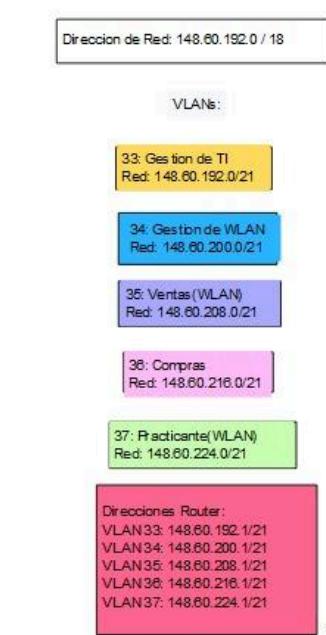
Configure la controladora de WLAN para que de acceso a las WLAN en los dos edificios.

Configure VTP

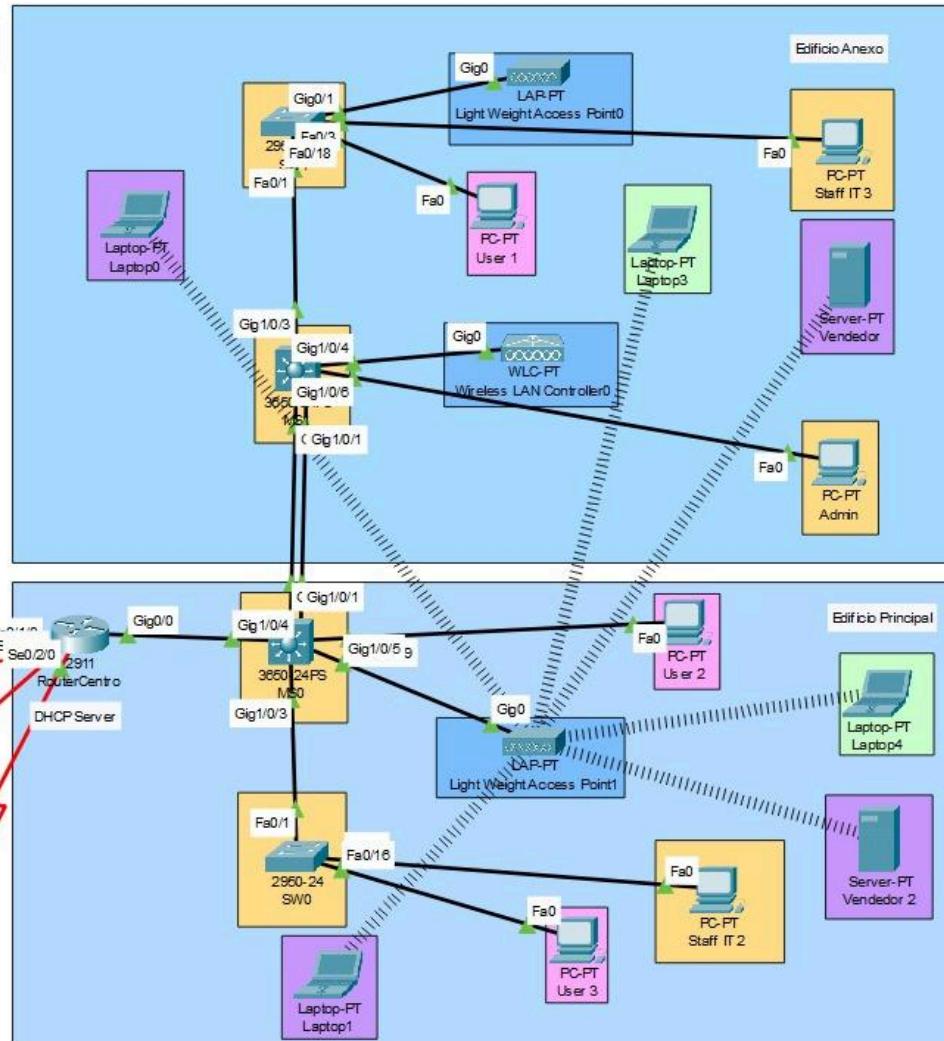
Configure la seguridad de puertos para prevenir ataques a la Tabla MAC  
Configure DAI para evitar un servidor DHCP no autorizado

CE

# Topología



# Final



# Centro



## Tabla de Direccionamiento

	IP		IP de Red en Bits																
Nombre:	Numero VLAN:	IP de Red en Bits				IP Resultante:		IP de Host en Bits				IP de Host Resultante		IP de Broadcast en Bits				IP de Broadcast Resultante	
Red Centro:	148.60.192.0/21	148	60	11000000	00000000														
Gestion de TI	33	148	60	11000 000	00000000	148.60.192.0/21	148	60	11000 000	00000001	148.60.192.1/21	148	60	11000 111	11111111	148.60.199.255/21			
Gestion de WLAN	34	148	60	11001 000	00000000	148.60.200.0/21	148	60	11001 000	00000001	148.60.200.1/21	148	60	11001 111	11111111	148.60.207.255/21			
Ventas (WLAN)	35	148	60	11010 000	00000000	148.60.208.0/21	148	60	11010 000	00000001	148.60.208.1/21	148	60	11010 111	11111111	148.60.215.255/21			
Compras	36	148	60	11011 000	00000000	148.60.216.0/21	148	60	11011 000	00000001	148.60.216.1/21	148	60	11011 111	11111111	148.60.223.255/21			
Practicante (WLAN)	37	148	60	11100 000	00000000	148.60.224.0/21	148	60	11100 000	00000001	148.60.224.1/21	148	60	11100 111	11111111	148.60.231.255/21			

# Explicación Configuraciones

## Tareas Específicas

### WLAN

En el caso de la WLAN, el proceso de configuración consistió en crear las Vlans que son utilizadas para los dispositivos inalámbricos, en este caso la vlan 35 y vlan 37. Puesto que no funcionó la interfaz gráfica por medio de conexión de ip se configuró en el management la ip y el default-gateway.

#### Configuración WLC Centro

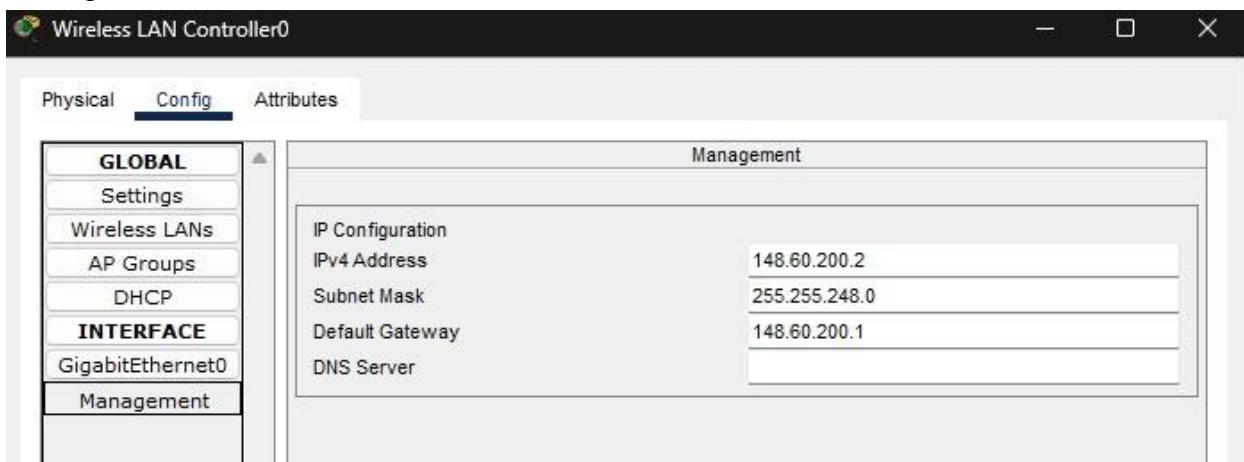
AP groups - Esto demuestra la creación de las Vlans y la detección de los Access Points.

The screenshot shows the 'Config' tab of the Wireless LAN Controller0 interface. On the left, a sidebar lists 'GLOBAL', 'Settings', 'Wireless LANs', 'AP Groups' (which is selected), 'DHCP', 'INTERFACE' (disabled), 'GigabitEthernet0', and 'Management'. The main area is titled 'AP Groups' and shows a table with 'Select AP Group' set to 'WLAN35'. A second table under 'Wireless LANs' shows 'WLAN37' and 'WLAN35' assigned to the 'WLAN35' group. Below this is an 'Access Points' section with a table listing four access points: 'Light Weight Access Point0' and 'Light Weight Access Point1' are online, while '00D0.D309.8C01' and '000B.BE98.2A01' are offline. At the bottom are 'New', 'Remove', and 'Save' buttons.

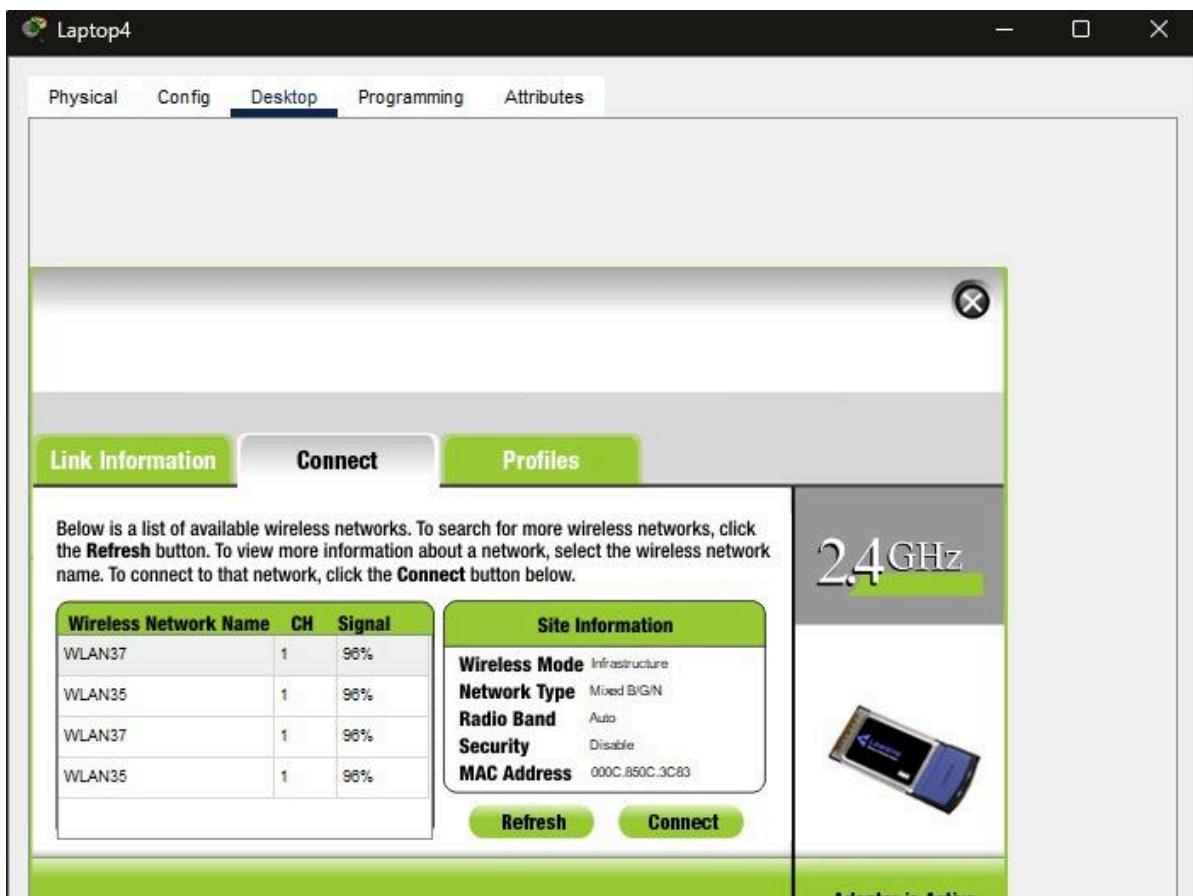
In AP Group	Name	SSID
<input checked="" type="checkbox"/>	WLAN37	WLAN37
<input checked="" type="checkbox"/>	WLAN35	WLAN35

In AP Group	Name	MAC Address	Status
<input type="checkbox"/>	00D0.D309.8C01	00D0.D309.8C01	Offline
<input checked="" type="checkbox"/>	Light Weight Access Point0	0060.7017.3037	Online
<input type="checkbox"/>	000B.BE98.2A01	000B.BE98.2A01	Offline
<input checked="" type="checkbox"/>	Light Weight Access Point1	0001.9714.206A	Online

## Management



Abajo se muestra la vista de los dispositivos finales al tratar de conectarse a un Access Point.



# Configuración de Dispositivos

## Router/DHCP Server

Sirviendo como ruteador y DHCP server, se implementa el rip, crea DHCP pools y exclusiones de direcciones IP.

### Running-Config

```
hostname RouterCentro
!
!
!
!
ip dhcp excluded-address 148.60.192.1 148.60.192.5
ip dhcp excluded-address 148.60.200.1 148.60.200.2
ip dhcp excluded-address 148.60.208.1
ip dhcp excluded-address 148.60.216.1
ip dhcp excluded-address 148.60.224.1
!
ip dhcp pool pool-vlan-33
  network 148.60.192.0 255.255.248.0
  default-router 148.60.192.1
ip dhcp pool pool-vlan-34
  network 148.60.200.0 255.255.248.0
  default-router 148.60.200.1
ip dhcp pool pool-vlan-35
  network 148.60.208.0 255.255.248.0
  default-router 148.60.208.1
ip dhcp pool pool-vlan-36
  network 148.60.216.0 255.255.248.0
  default-router 148.60.216.1
ip dhcp pool pool-vlan-37
  network 148.60.224.0 255.255.248.0
  default-router 148.60.224.1
.
.
.
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
license udi pid CISCO2911/K9 sn FTX15240125-
!
!
ip ssh version 2
ip domain-name juanmark.com
!
!
spanning-tree mode pvst
```

```
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
!
interface GigabitEthernet0/0.33
encapsulation dot1Q 33
ip address 148.60.192.1 255.255.248.0
!
interface GigabitEthernet0/0.34
encapsulation dot1Q 34
ip address 148.60.200.1 255.255.248.0
!
interface GigabitEthernet0/0.35
encapsulation dot1Q 35
ip address 148.60.208.1 255.255.248.0
!
interface GigabitEthernet0/0.36
encapsulation dot1Q 36
ip address 148.60.216.1 255.255.248.0
!
interface GigabitEthernet0/0.37
encapsulation dot1Q 37
ip address 148.60.224.1 255.255.248.0
!
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
:
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
!
interface Serial0/1/0
ip address 148.60.64.90 255.255.255.252
!
interface Serial0/1/1
ip address 148.60.232.2 255.255.255.252
!
.
router rip
version 2
network 148.60.0.0
!
ip classless
!
ip flow-export version 9
```

```
line con 0
!
line aux 0
!
line vty 0 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
```

## IP Route

```
RouterCentro(config)#do sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

      148.60.0.0/16 is variably subnetted, 10 subnets, 2 masks
C        148.60.192.0/21 is directly connected, GigabitEthernet0/0.33
L        148.60.192.1/32 is directly connected, GigabitEthernet0/0.33
C        148.60.200.0/21 is directly connected, GigabitEthernet0/0.34
L        148.60.200.1/32 is directly connected, GigabitEthernet0/0.34
C        148.60.208.0/21 is directly connected, GigabitEthernet0/0.35
L        148.60.208.1/32 is directly connected, GigabitEthernet0/0.35
C        148.60.216.0/21 is directly connected, GigabitEthernet0/0.36
L        148.60.216.1/32 is directly connected, GigabitEthernet0/0.36
C        148.60.224.0/21 is directly connected, GigabitEthernet0/0.37
L        148.60.224.1/32 is directly connected, GigabitEthernet0/0.37
```

## IP Interface Brief

```
RouterCentro#sh ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  unassigned      YES unset  up           up
GigabitEthernet0/0.33 148.60.192.1  YES manual up          up
GigabitEthernet0/0.34 148.60.200.1  YES manual up          up
GigabitEthernet0/0.35 148.60.208.1  YES manual up          up
GigabitEthernet0/0.36 148.60.216.1  YES manual up          up
GigabitEthernet0/0.37 148.60.224.1  YES manual up          up
GigabitEthernet0/1   unassigned      YES unset  administratively down down
GigabitEthernet0/2   unassigned      YES unset  administratively down down
Serial0/1/0         148.60.64.90   YES manual down        down
Serial0/1/1         148.60.232.2   YES manual down        down
Serial0/2/0         148.60.128.26  YES manual down        down
Serial0/2/1         unassigned      YES unset  administratively down down
GigabitEthernet0/3/0 unassigned      YES unset  administratively down down
Vlan1              unassigned      YES unset  administratively down down
-----*
```

## Vlan Brief

```
RouterCentro#do sh vlan brief
RouterCentro(config-if)#do sh vlan brief
```

VLAN	Name	Status	Ports
1	default	active	
1002	fdci-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

## Switch Multicapa #0 (MS0)

### Running-Config

```
| hostname MS0
| !
```

```
interface Port-channell
switchport trunk allowed vlan 33-37
switchport mode trunk
!
interface GigabitEthernet1/0/1
switchport trunk allowed vlan 33-37
switchport mode trunk
channel-group 1 mode active
!
interface GigabitEthernet1/0/2
switchport trunk allowed vlan 33-37
switchport mode trunk
channel-group 1 mode active
!
interface GigabitEthernet1/0/3
switchport trunk allowed vlan 33-37
switchport mode trunk
!
interface GigabitEthernet1/0/4
switchport trunk allowed vlan 33-37
switchport mode trunk
!
interface GigabitEthernet1/0/5
switchport trunk native vlan 34
switchport mode trunk
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/6
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
```

```
interface GigabitEthernet1/0/7
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/8
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/9
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/10
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/11
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/12
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
..
```

```
interface GigabitEthernet1/0/13
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/14
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/15
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/16
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/17
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/18
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
```

```
interface GigabitEthernet1/0/19
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/20
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/21
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/22
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/23
switchport access vlan 37
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface GigabitEthernet1/0/24
switchport access vlan 37
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface Vlan1
no ip address
shutdown
!
interface Vlan33
mac-address 0090.2186.8001
ip address 148.60.192.2 255.255.248.0
!
ip default-gateway 148.60.192.1
ip classless
!
ip flow-export version 9
.
line con 0
!
line aux 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
```

## IP Interface Brief

```
MS0(config)#do sh ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
Port-channel1      unassigned      YES unset up           up
GigabitEthernet1/0/1 unassigned      YES unset up           up
GigabitEthernet1/0/2 unassigned      YES unset up           up
GigabitEthernet1/0/3 unassigned      YES unset up           up
GigabitEthernet1/0/4 unassigned      YES unset up           up
GigabitEthernet1/0/5 unassigned      YES unset up           up
GigabitEthernet1/0/6 unassigned      YES unset down        down
GigabitEthernet1/0/7 unassigned      YES unset down        down
GigabitEthernet1/0/8 unassigned      YES unset down        down
GigabitEthernet1/0/9 unassigned      YES unset down        down
GigabitEthernet1/0/10 unassigned     YES unset down        down
GigabitEthernet1/0/11 unassigned     YES unset down        down
GigabitEthernet1/0/12 unassigned     YES unset down        down
GigabitEthernet1/0/13 unassigned     YES unset down        down
GigabitEthernet1/0/14 unassigned     YES unset down        down
GigabitEthernet1/0/15 unassigned     YES unset down        down
GigabitEthernet1/0/16 unassigned     YES unset up           up
GigabitEthernet1/0/17 unassigned     YES unset down        down
GigabitEthernet1/0/18 unassigned     YES unset down        down
GigabitEthernet1/0/19 unassigned     YES unset down        down
GigabitEthernet1/0/20 unassigned     YES unset down        down
GigabitEthernet1/0/21 unassigned     YES unset down        down
GigabitEthernet1/0/22 unassigned     YES unset down        down
GigabitEthernet1/0/23 unassigned     YES unset down        down
GigabitEthernet1/0/24 unassigned     YES unset down        down
GigabitEthernet1/1/1 unassigned     YES unset down        down
GigabitEthernet1/1/2 unassigned     YES unset down        down
GigabitEthernet1/1/3 unassigned     YES unset down        down
GigabitEthernet1/1/4 unassigned     YES unset down        down
Vlan1              unassigned      YES unset administratively down down
Vlan33             148.60.192.2   YES manual up           up
```

## Vlan Brief

```
MS0(config)#do sh vlan brief
VLAN Name          Status    Ports
---- -----
1    default        active    Gig1/1/1, Gig1/1/2, Gig1/1/3, Gig1/1/4
33   VLAN0033       active    Gig1/0/6, Gig1/0/7, Gig1/0/8, Gig1/0/9
34   VLAN0034       active    Gig1/0/10, Gig1/0/11, Gig1/0/12,
                             Gig1/0/13
35   VLAN0035       active    Gig1/0/14, Gig1/0/15, Gig1/0/16,
                             Gig1/0/17
36   VLAN0036       active    Gig1/0/18, Gig1/0/19, Gig1/0/20,
                             Gig1/0/21
37   VLAN0037       active    Gig1/0/23, Gig1/0/24
1002 fddi-default  active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default   active
```

## Interfaces Trunk

```
MS0(config)#do sh interfaces trunk
Port      Mode       Encapsulation  Status      Native vlan
Po1       on        802.1q         trunking    1
Gi1/0/3   on        802.1q         trunking    1
Gi1/0/4   on        802.1q         trunking    1
Gi1/0/5   on        802.1q         trunking    34

Port      Vlans allowed on trunk
Po1       33-37
Gi1/0/3   33-37
Gi1/0/4   33-37
Gi1/0/5   1-1005

Port      Vlans allowed and active in management domain
Po1       33,34,35,36,37
Gi1/0/3   33,34,35,36,37
Gi1/0/4   33,34,35,36,37
Gi1/0/5   1,33,34,35,36,37

Port      Vlans in spanning tree forwarding state and not pruned
Po1       33,34,35,36,37
Gi1/0/3   33,34,35,36,37
Gi1/0/4   33,34,35,36,37
Gi1/0/5   1,33,34,35,36,37
```

## Switch Multicapa #1 (MS1)

### Running-Config

```
-----+
MS1(config)#do sh run
Building configuration...

Current configuration : 2956 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname MS1
!
username juan secret 5 $1$mERr$g4BPZdYZ1rbx6s4ntdIwb.
!
!
:
ip ssh version 2
ip domain-name juanmark.com
!
```

```
interface Port-channell
  switchport trunk allowed vlan 33-37
  switchport mode trunk
!
interface GigabitEthernet1/0/1
  switchport trunk allowed vlan 33-37
  switchport mode trunk
  channel-group 1 mode active
!
interface GigabitEthernet1/0/2
  switchport trunk allowed vlan 33-37
  switchport mode trunk
  channel-group 1 mode active
!
interface GigabitEthernet1/0/3
  switchport trunk allowed vlan 33-37
  switchport mode trunk
!
interface GigabitEthernet1/0/4
  switchport trunk native vlan 34
  switchport mode trunk
!
interface GigabitEthernet1/0/5
  switchport access vlan 33
  switchport mode access
!
interface GigabitEthernet1/0/6
  switchport access vlan 33
  switchport trunk allowed vlan 33-37
  switchport mode access
!
interface GigabitEthernet1/0/7
  switchport access vlan 33
  switchport mode access
```

```
interface GigabitEthernet1/0/8
switchport access vlan 33
switchport mode access
!
interface GigabitEthernet1/0/9
switchport access vlan 33
switchport mode access
!
interface GigabitEthernet1/0/10
switchport access vlan 34
switchport mode access
!
interface GigabitEthernet1/0/11
switchport access vlan 34
switchport trunk native vlan 34
switchport mode trunk
!
interface GigabitEthernet1/0/12
switchport access vlan 34
switchport mode access
!
interface GigabitEthernet1/0/13
switchport access vlan 34
switchport mode access
!
interface GigabitEthernet1/0/14
switchport access vlan 35
switchport mode access
!
interface GigabitEthernet1/0/15
switchport access vlan 35
switchport mode access
!
```

```
interface GigabitEthernet1/0/16
switchport access vlan 35
switchport mode access
!
interface GigabitEthernet1/0/17
switchport access vlan 35
switchport mode access
!
interface GigabitEthernet1/0/18
switchport access vlan 36
switchport mode access
!
interface GigabitEthernet1/0/19
switchport access vlan 36
switchport mode access
!
interface GigabitEthernet1/0/20
switchport access vlan 36
switchport mode access
!
interface GigabitEthernet1/0/21
switchport access vlan 36
switchport mode access
!
interface GigabitEthernet1/0/22
switchport access vlan 36
switchport mode access
!
interface GigabitEthernet1/0/23
switchport access vlan 37
switchport mode access
!
interface GigabitEthernet1/0/24
switchport access vlan 37
switchport mode access
'
interface Vlan1
no ip address
shutdown
!
interface Vlan33
mac-address 000b.belc.a501
ip address 148.60.192.3 255.255.248.0
!
ip default-gateway 148.60.192.1
ip classless
!
ip flow-export version 9
'
line con 0
!
line aux 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
'
```

## IP Interface Brief

```
MS1(config)#do sh ip int brief
Interface          IP-Address      OK? Method Status      Protocol
Port-channel1     unassigned      YES unset up           up
GigabitEthernet1/0/1 unassigned    YES unset up           up
GigabitEthernet1/0/2 unassigned    YES unset up           up
GigabitEthernet1/0/3 unassigned    YES unset up           up
GigabitEthernet1/0/4 unassigned    YES unset up           up
GigabitEthernet1/0/5 unassigned    YES unset down        down
GigabitEthernet1/0/6 unassigned    YES unset up           up
GigabitEthernet1/0/7 unassigned    YES unset down        down
GigabitEthernet1/0/8 unassigned    YES unset down        down
GigabitEthernet1/0/9 unassigned    YES unset down        down
GigabitEthernet1/0/10 unassigned   YES unset down        down
GigabitEthernet1/0/11 unassigned   YES unset down        down
GigabitEthernet1/0/12 unassigned   YES unset down        down
GigabitEthernet1/0/13 unassigned   YES unset down        down
GigabitEthernet1/0/14 unassigned   YES unset down        down
GigabitEthernet1/0/15 unassigned   YES unset down        down
GigabitEthernet1/0/16 unassigned   YES unset down        down
GigabitEthernet1/0/17 unassigned   YES unset down        down
GigabitEthernet1/0/18 unassigned   YES unset down        down
GigabitEthernet1/0/19 unassigned   YES unset down        down
GigabitEthernet1/0/20 unassigned   YES unset down        down
GigabitEthernet1/0/21 unassigned   YES unset down        down
GigabitEthernet1/0/22 unassigned   YES unset down        down
GigabitEthernet1/0/23 unassigned   YES unset down        down
GigabitEthernet1/0/24 unassigned   YES unset down        down
GigabitEthernet1/1/1 unassigned   YES unset down        down
GigabitEthernet1/1/2 unassigned   YES unset down        down
GigabitEthernet1/1/3 unassigned   YES unset down        down
GigabitEthernet1/1/4 unassigned   YES unset down        down
Vlan1             unassigned      YES unset administratively down down
Vlan33            148.60.192.3   YES manual up          up
....
```

## Vlan Brief

```
MS1(config)#do sh vlan brief
VLAN Name          Status    Ports
---- -----
1    default        active    Gig1/1/1, Gig1/1/2, Gig1/1/3, Gig1/1/4
33   VLAN0033       active    Gig1/0/5, Gig1/0/6, Gig1/0/7, Gig1/0/8
                                Gig1/0/9
34   VLAN0034       active    Gig1/0/10, Gig1/0/11, Gig1/0/12,
Gig1/0/13
35   VLAN0035       active    Gig1/0/14, Gig1/0/15, Gig1/0/16,
Gig1/0/17
36   VLAN0036       active    Gig1/0/18, Gig1/0/19, Gig1/0/20,
Gig1/0/21
37   VLAN0037       active    Gig1/0/23, Gig1/0/24
1002 fddi-default  active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default  active
```

## Interfaces Trunk

```
|MS1(config)#do sh interfaces trunk
|Port      Mode       Encapsulation  Status      Native vlan
|Po1       on         802.1q        trunking    1
|Gig1/0/3  on         802.1q        trunking    1
|Gig1/0/4  on         802.1q        trunking    34
|
|Port      Vlans allowed on trunk
|Po1       33-37
|Gig1/0/3  33-37
|Gig1/0/4  1-1005
|
|Port      Vlans allowed and active in management domain
|Po1       33,34,35,36,37
|Gig1/0/3  33,34,35,36,37
|Gig1/0/4  1,33,34,35,36,37
|
|Port      Vlans in spanning tree forwarding state and not pruned
|Po1       33,34,35,36,37
|Gig1/0/3  33,34,35,36,37
|Gig1/0/4  1,33,34,35,36,37
```

## Switch Capa 2 #0 (SW0)

### Running-Config

```
|sw0(config)#do sh run
Building configuration...
.
.
.
Current configuration : 2458 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname sw0
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
```

```
interface FastEthernet0/1
switchport trunk allowed vlan 33-37
switchport mode trunk
!
interface FastEthernet0/2
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/3
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/4
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/5
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/6
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
--M~v~--
```

```
interface FastEthernet0/7
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/8
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/9
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/10
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/11
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/12
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
```

```
:  
interface FastEthernet0/13  
switchport access vlan 35  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/14  
switchport access vlan 35  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/15  
switchport access vlan 35  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/16  
switchport access vlan 36  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/17  
switchport access vlan 36  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/18  
switchport access vlan 36  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
..
```

```
:  
interface FastEthernet0/19  
switchport access vlan 36  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/20  
switchport access vlan 36  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/21  
switchport access vlan 37  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/22  
switchport access vlan 37  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/23  
switchport access vlan 37  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
!  
interface FastEthernet0/24  
switchport access vlan 37  
switchport mode access  
switchport port-security mac-address sticky  
switchport port-security violation restrict  
..  
  
interface Vlan1  
no ip address  
shutdown  
!  
interface Vlan33  
ip address 148.60.192.4 255.255.248.0  
!  
ip default-gateway 148.60.192.1  
!  
!  
!  
!  
line con 0  
!  
line vty 0 4  
login local  
transport input ssh  
line vty 5 15  
login local  
transport input ssh
```

## IP Interface Brief

```
sw0(config)#do sh ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/1    unassigned      YES manual up       up
FastEthernet0/2    unassigned      YES manual up       up
FastEthernet0/3    unassigned      YES manual down    down
FastEthernet0/4    unassigned      YES manual down    down
FastEthernet0/5    unassigned      YES manual down    down
FastEthernet0/6    unassigned      YES manual down    down
FastEthernet0/7    unassigned      YES manual down    down
FastEthernet0/8    unassigned      YES manual down    down
FastEthernet0/9    unassigned      YES manual down    down
FastEthernet0/10   unassigned      YES manual down    down
FastEthernet0/11   unassigned      YES manual down    down
FastEthernet0/12   unassigned      YES manual down    down
FastEthernet0/13   unassigned      YES manual down    down
FastEthernet0/14   unassigned      YES manual down    down
FastEthernet0/15   unassigned      YES manual down    down
FastEthernet0/16   unassigned      YES manual up       up
FastEthernet0/17   unassigned      YES manual down    down
FastEthernet0/18   unassigned      YES manual down    down
FastEthernet0/19   unassigned      YES manual down    down
FastEthernet0/20   unassigned      YES manual down    down
FastEthernet0/21   unassigned      YES manual down    down
FastEthernet0/22   unassigned      YES manual down    down
FastEthernet0/23   unassigned      YES manual down    down
FastEthernet0/24   unassigned      YES manual down    down
Vlan1             unassigned      YES manual administratively down down
Vlan33            148.60.192.4  YES manual up       up
...
```

## Vlan Brief

```
sw0(config)#do sh vlan brief
VLAN Name          Status     Ports
--- -----
1    default        active
33   VLAN0033      active    Fa0/2, Fa0/3, Fa0/4, Fa0/5
34   VLAN0034      active    Fa0/6, Fa0/7, Fa0/8, Fa0/9
                  Fa0/10
35   VLAN0035      active    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                  Fa0/15
36   VLAN0036      active    Fa0/16, Fa0/17, Fa0/18, Fa0/19
                  Fa0/20
37   VLAN0037      active    Fa0/21, Fa0/22, Fa0/23, Fa0/24
1002  fddi-default active
1003  token-ring-default active
1004  fddinet-default active
1005  trnet-default  active
```

## Interfaces Trunk

```
sw0(config)#do sh interfaces trunk
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1    on        802.1q         trunking      1

Port      Vlans allowed on trunk
Fa0/1    1-1005

Port      Vlans allowed and active in management domain
Fa0/1    1,33,34,35,36,37

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1    1,33,34,35,36,37
```

## Switch Capa 2 #1 (SW1)

### Running-Config

```
SW1(config)#do sh run
Building configuration...

Current configuration : 2618 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW1
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
username juan secret 5 $1$mERr$g4BPZdYZ1rbx6s4ntdIwb.
.
```

```
interface FastEthernet0/1
switchport trunk allowed vlan 33-37
switchport mode trunk
!
interface FastEthernet0/2
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/3
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/4
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/5
switchport access vlan 33
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/6
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
```

```
interface FastEthernet0/7
switchport trunk native vlan 34
switchport mode trunk
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/8
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/9
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/10
switchport access vlan 34
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/11
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/12
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
```

```
interface FastEthernet0/13
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/14
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/15
switchport access vlan 35
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/16
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/17
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/18
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
```

```
interface FastEthernet0/19
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/20
switchport access vlan 36
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/21
switchport access vlan 37
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/22
switchport access vlan 37
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/23
switchport access vlan 37
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
interface FastEthernet0/24
switchport access vlan 37
switchport mode access
switchport port-security mac-address sticky
switchport port-security violation restrict
!
*
*
*
!
interface GigabitEthernet0/1
switchport trunk native vlan 34
switchport mode trunk
```

## IP Interface Brief

```
interface Vlan1
  no ip address
  shutdown
!
interface Vlan33
  ip address 148.60.192.5 255.255.248.0
!
ip default-gateway 148.60.192.1
!
!
!
line con 0
!
line vty 0 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
!

SW1(config-if-range)#do sh ip int brief
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/1    unassigned      YES manual up       up
FastEthernet0/2    unassigned      YES manual up       up
FastEthernet0/3    unassigned      YES manual up       up
FastEthernet0/4    unassigned      YES manual down    down
FastEthernet0/5    unassigned      YES manual down    down
FastEthernet0/6    unassigned      YES manual down    down
FastEthernet0/7    unassigned      YES manual down    down
FastEthernet0/8    unassigned      YES manual down    down
FastEthernet0/9    unassigned      YES manual down    down
FastEthernet0/10   unassigned      YES manual down    down
FastEthernet0/11   unassigned      YES manual down    down
FastEthernet0/12   unassigned      YES manual down    down
FastEthernet0/13   unassigned      YES manual down    down
FastEthernet0/14   unassigned      YES manual down    down
FastEthernet0/15   unassigned      YES manual down    down
FastEthernet0/16   unassigned      YES manual down    down
FastEthernet0/17   unassigned      YES manual down    down
FastEthernet0/18   unassigned      YES manual down    down
FastEthernet0/19   unassigned      YES manual down    down
FastEthernet0/20   unassigned      YES manual down    down
FastEthernet0/21   unassigned      YES manual down    down
FastEthernet0/22   unassigned      YES manual down    down
FastEthernet0/23   unassigned      YES manual down    down
FastEthernet0/24   unassigned      YES manual down    down
GigabitEthernet0/1 unassigned      YES manual up       up
GigabitEthernet0/2 unassigned      YES manual down    down
Vlan1             unassigned      YES manual administratively down down
Vlan33            148.60.192.5  YES manual up       up
SW1(config-if-range)#

```

## Vlan Brief

VLAN	Name	Status	Ports
1	default	active	Fa0/7, Gig0/2
33	VLAN0033	active	Fa0/2, Fa0/3, Fa0/4, Fa0/5
34	VLAN0034	active	Fa0/6, Fa0/8, Fa0/9, Fa0/10
35	VLAN0035	active	Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15
36	VLAN0036	active	Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20
37	VLAN0037	active	Fa0/21, Fa0/22, Fa0/23, Fa0/24
1002	fdci-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

## Interfaces Trunk

```
SW1(config-if-range)#do sh interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/1    on        802.1q         trunking    1
Gig0/1   on        802.1q         trunking    34

Port      Vlans allowed on trunk
Fa0/1    33-37
Gig0/1   1-1005

Port      Vlans allowed and active in management domain
Fa0/1    33,34,35,36,37
Gig0/1   1,33,34,35,36,37

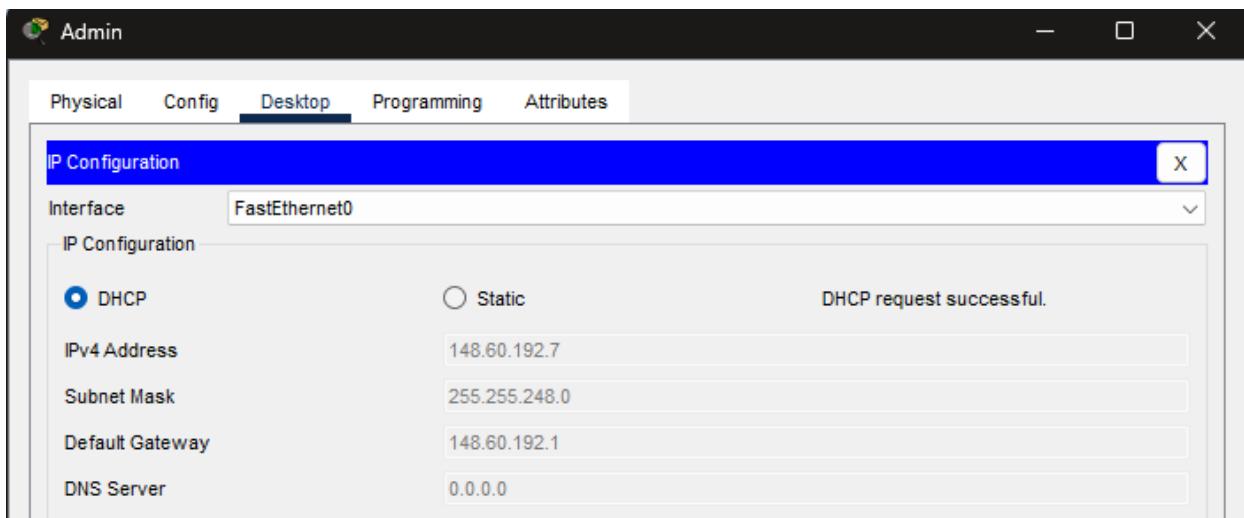
Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1    33,34,35,36,37
Gig0/1   1,33,34,35,36,37
```

## Pruebas DHCP Server

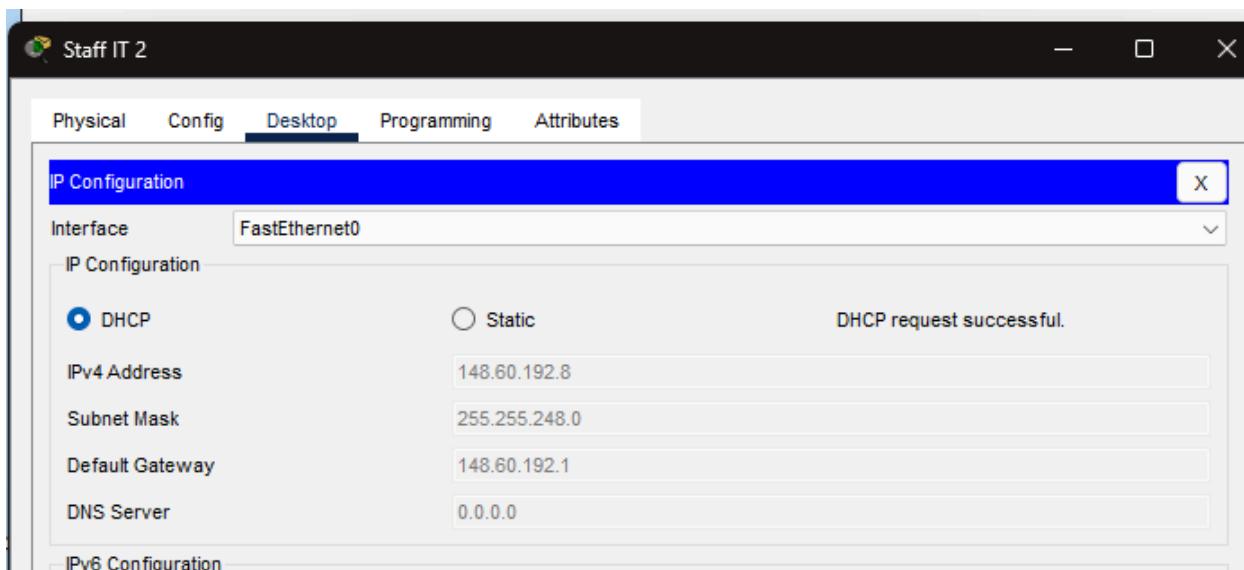
### DHCP Físico

VLAN 33 Rango IPs Útiles 148.60.192.6 - 148.60.199.254

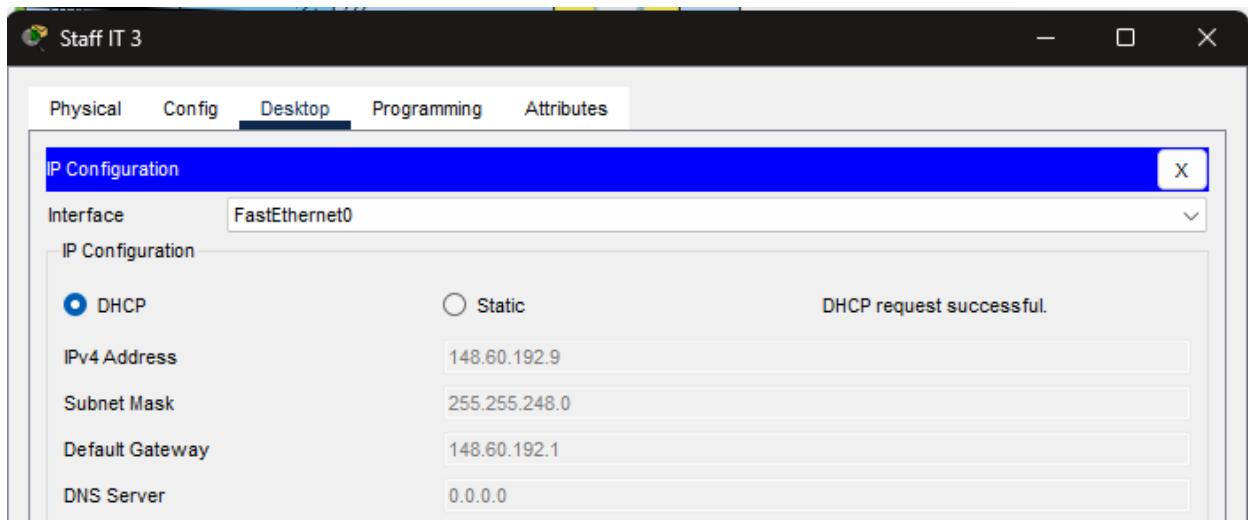
PC-Admin:



PC-Staff-IT-2:



PC-Staff-IT-3:



VLAN 34 Rango IPs Útiles 148.60.200.3 - 148.60.207.254

LW Access Point 0:

This is a configuration dialog for "Gateway/DNS IPv4". It features two radio buttons: "DHCP" (selected) and "Static". Below the radio buttons are two input fields: "Default Gateway" (148.60.200.1) and "DNS Server" (empty).

LW Access Point 1:

This is a configuration dialog for "Gateway/DNS IPv4". It features two radio buttons: "DHCP" (selected) and "Static". Below the radio buttons are two input fields: "Default Gateway" (148.60.200.1) and "DNS Server" (empty).

VLAN 36 Rango IPs Útiles 148.60.216.2 - 148.60.223.254:

User 1

IP Configuration

Interface	FastEthernet0	
IP Configuration		
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static	DHCP request successful.
IPv4 Address	148.60.216.3	
Subnet Mask	255.255.248.0	
Default Gateway	148.60.216.1	
DNS Server	0.0.0.0	

User 2

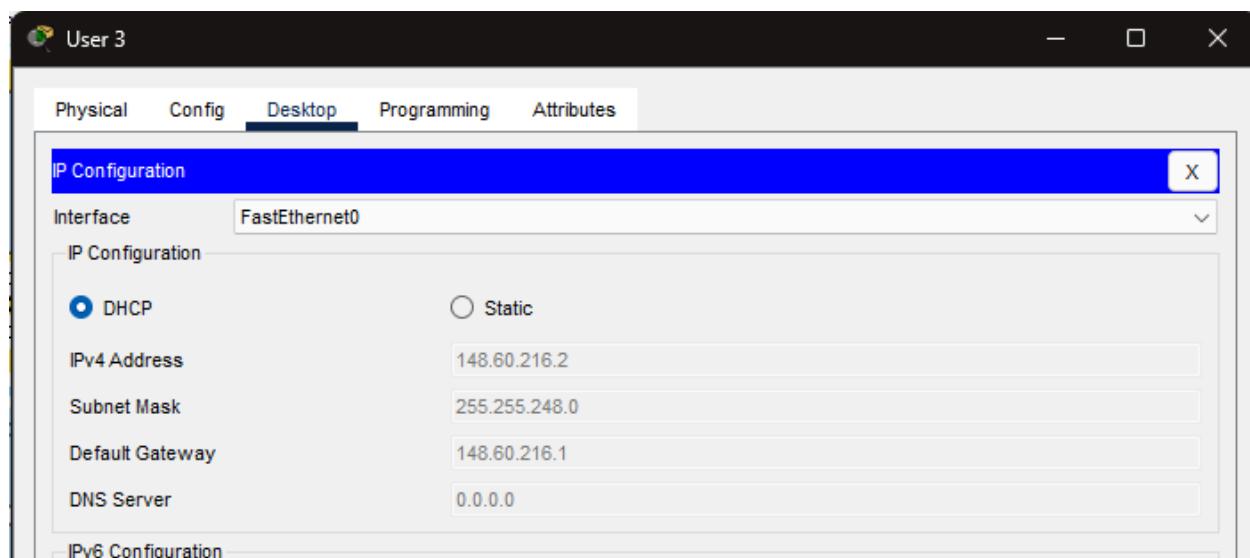
User 2

Physical Config Desktop Programming Attributes

IP Configuration

Interface	FastEthernet0	
IP Configuration		
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static	DHCP request successful.
IPv4 Address	148.60.216.4	
Subnet Mask	255.255.248.0	
Default Gateway	148.60.216.1	
DNS Server	0.0.0.0	

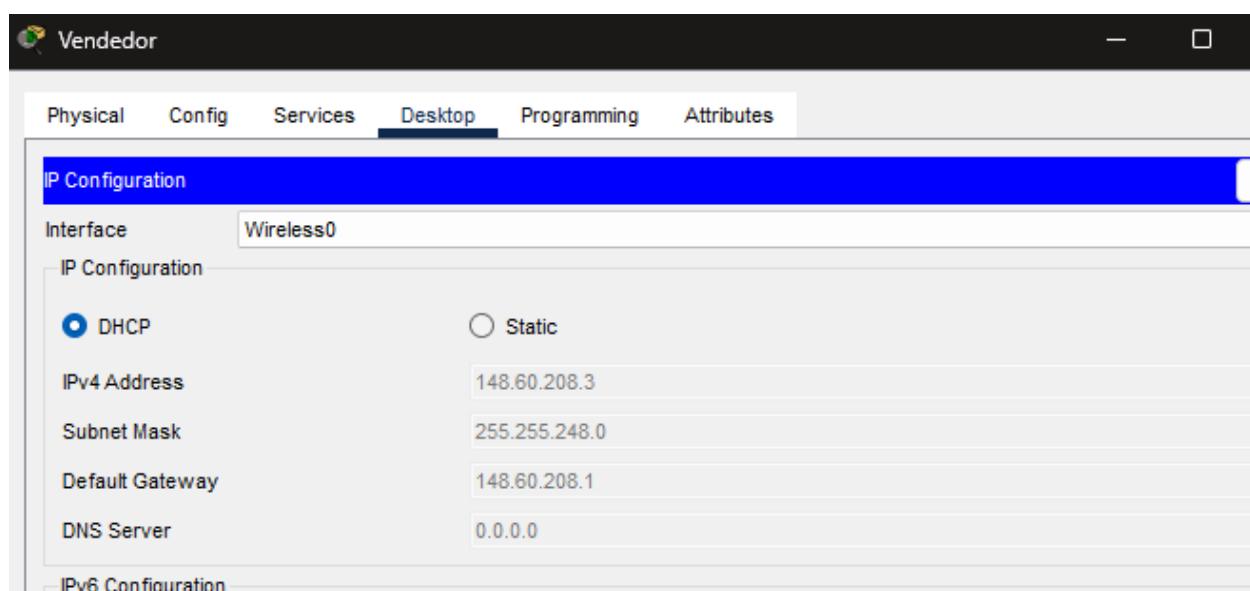
### User 3



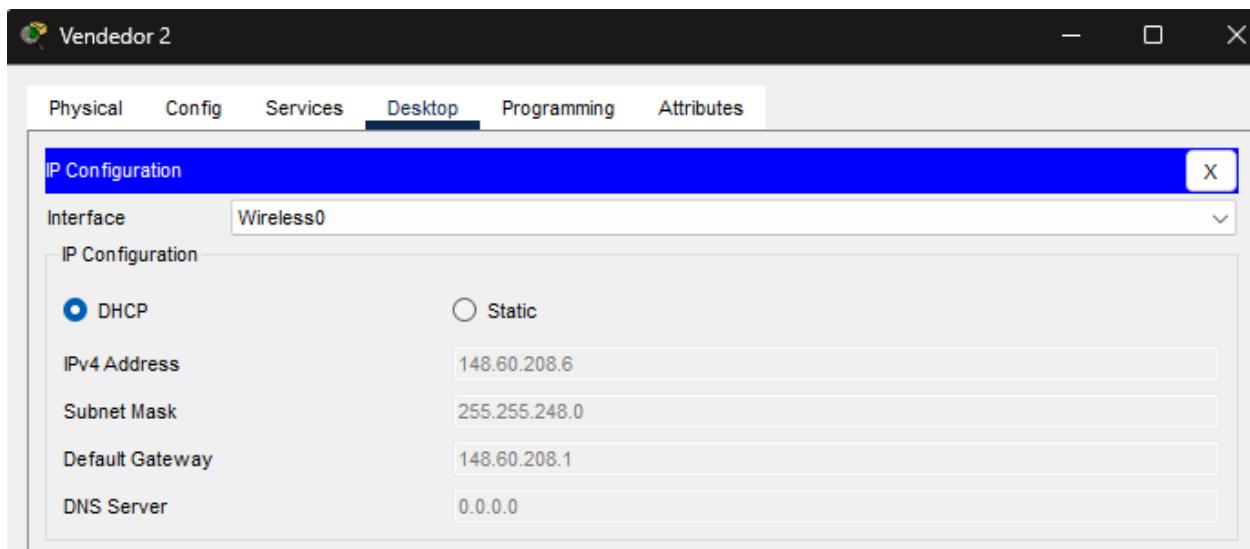
DHCP Inalámbrico:

Vlan 35 Rangos IPs Útiles: 148.60.208.2 - 148.60.215.254

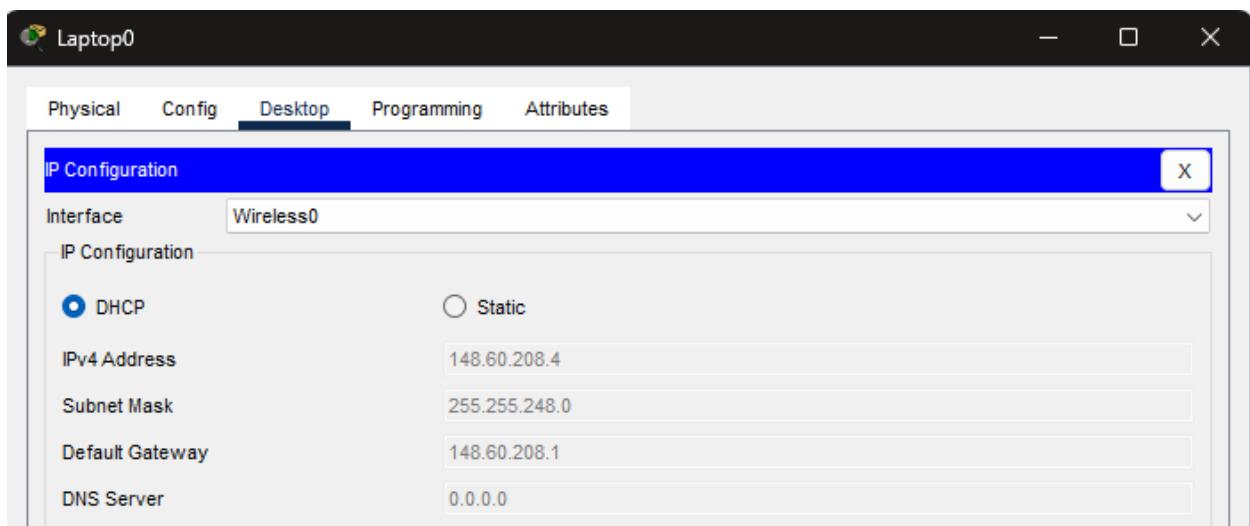
### Server-Vendedor 1



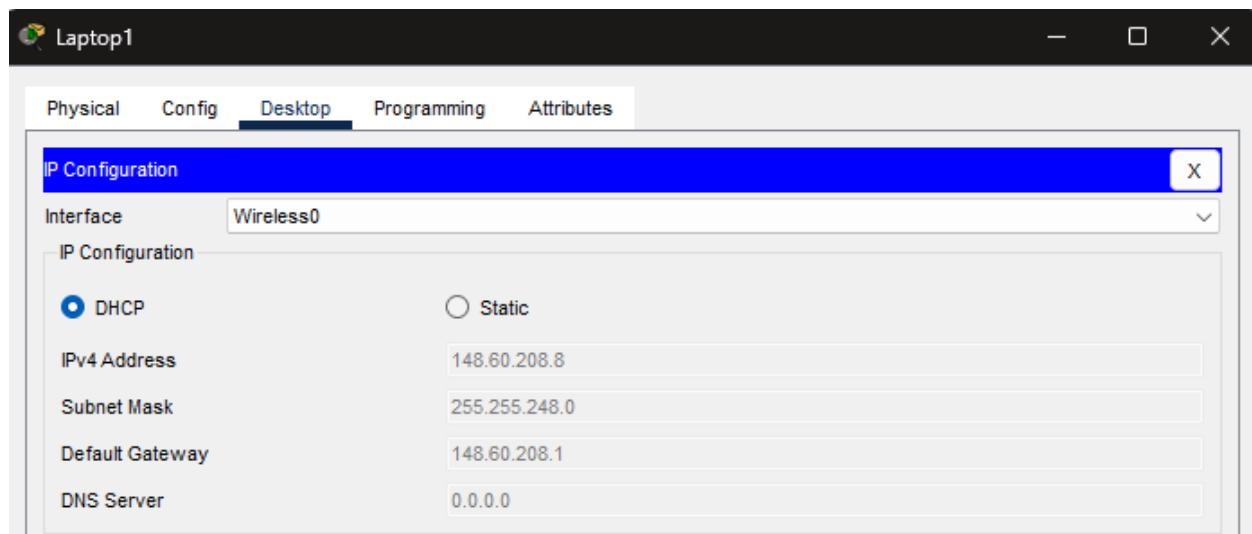
## Server-Vendedor 2



## Laptop0

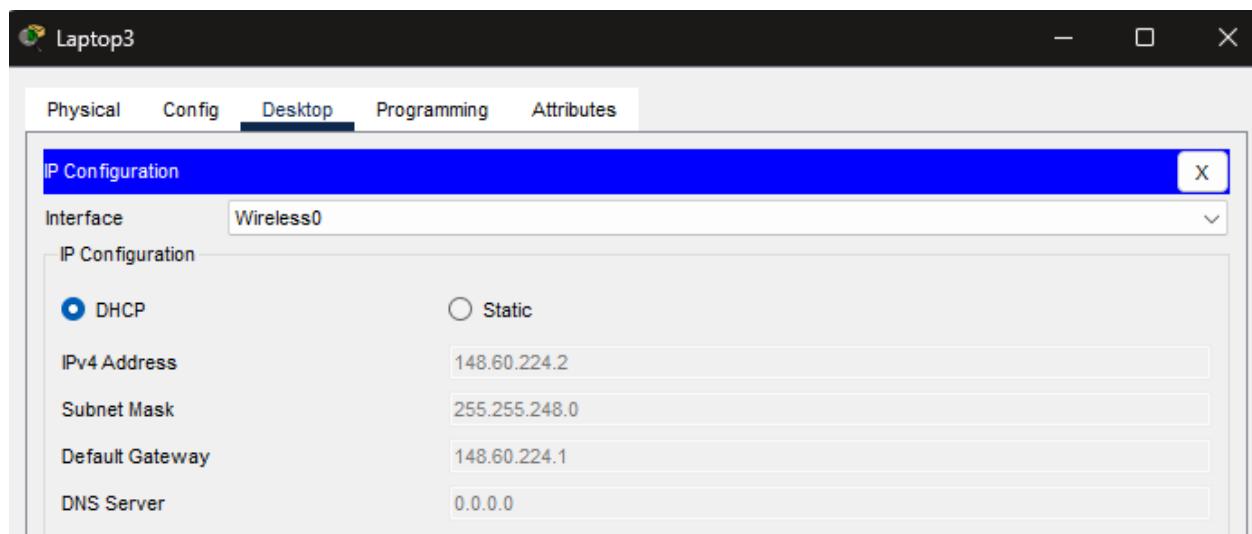


### Laptop1

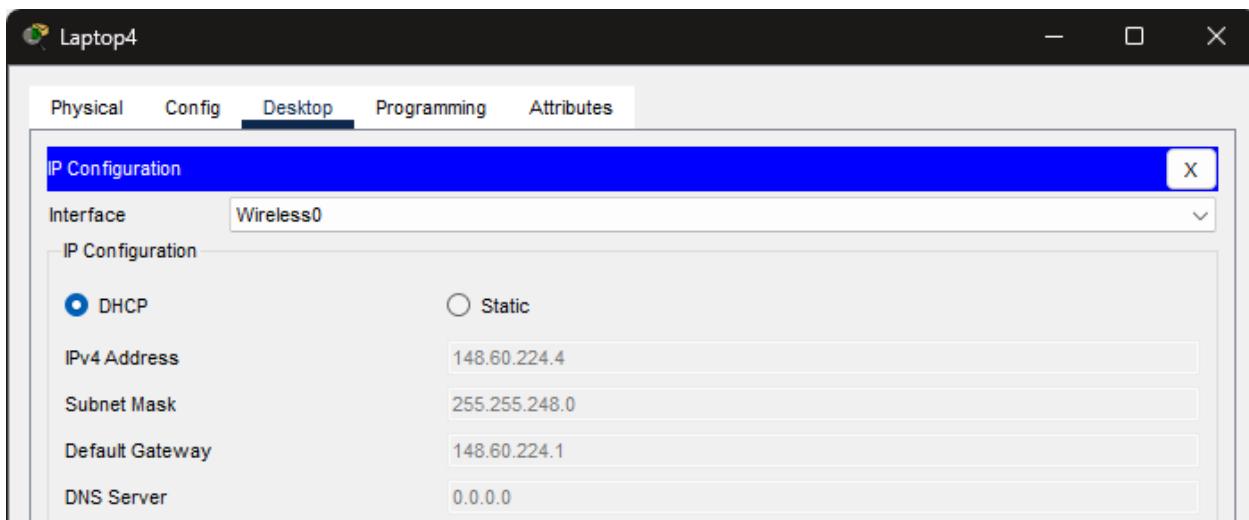


Vlan 37 Rangos IPs Útiles: 148.60.224.2 - 148.60.231.254

### Laptop3



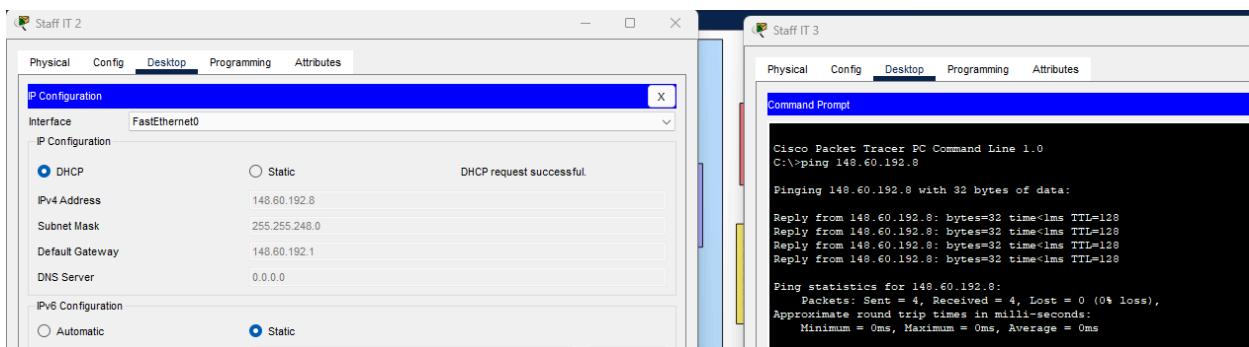
## Laptop4



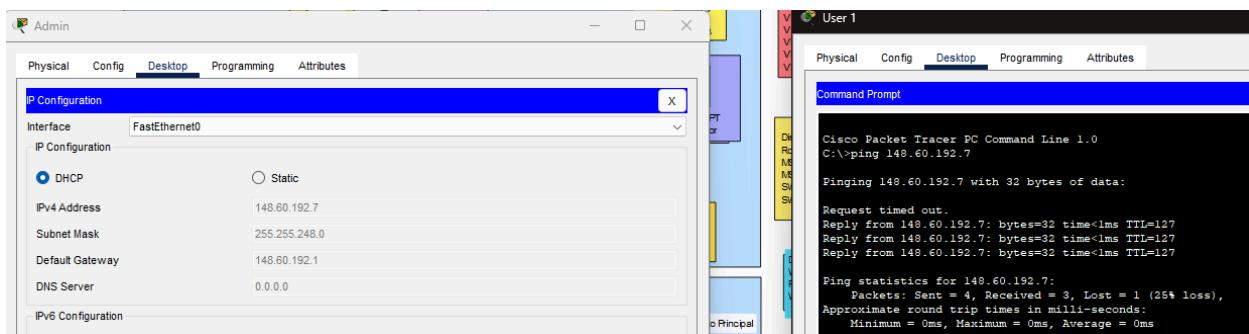
## Pruebas de Conexión

Fisico -> Fisico

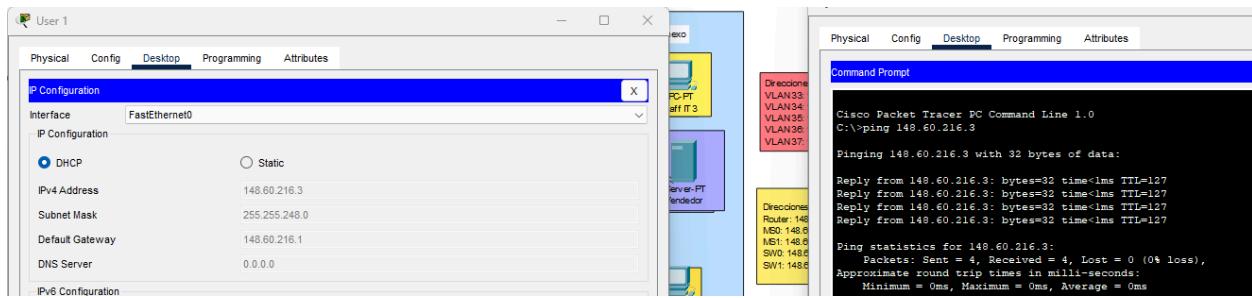
Staff IT 3 -> Staff IT 2



User 1 -> Admin

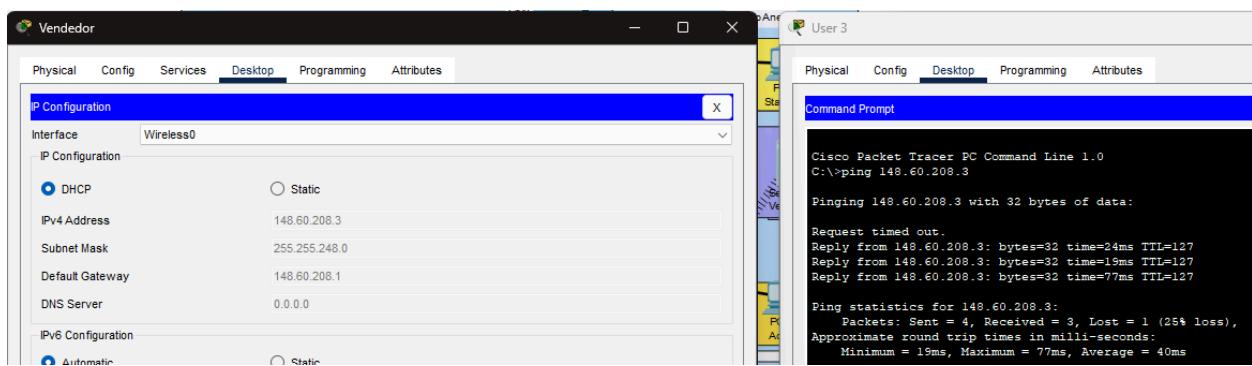


## Staff IT 2 -> User 1

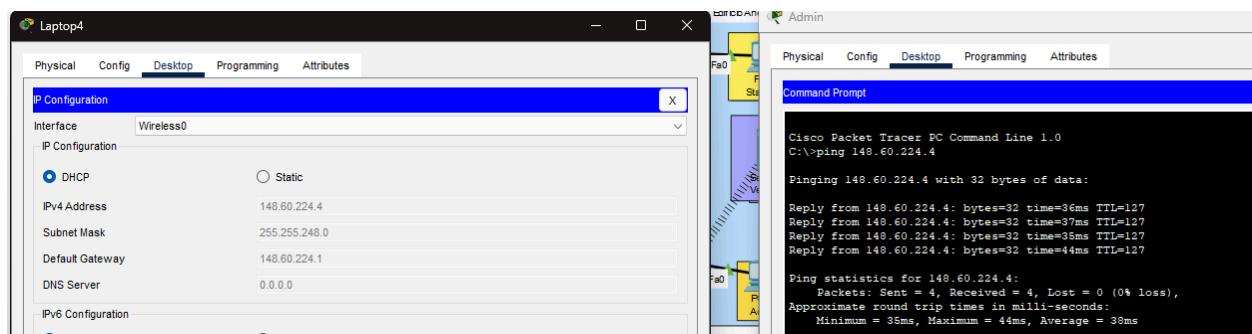


## Fisico -> Inalambrico

### User 3 -> Vendedor 1

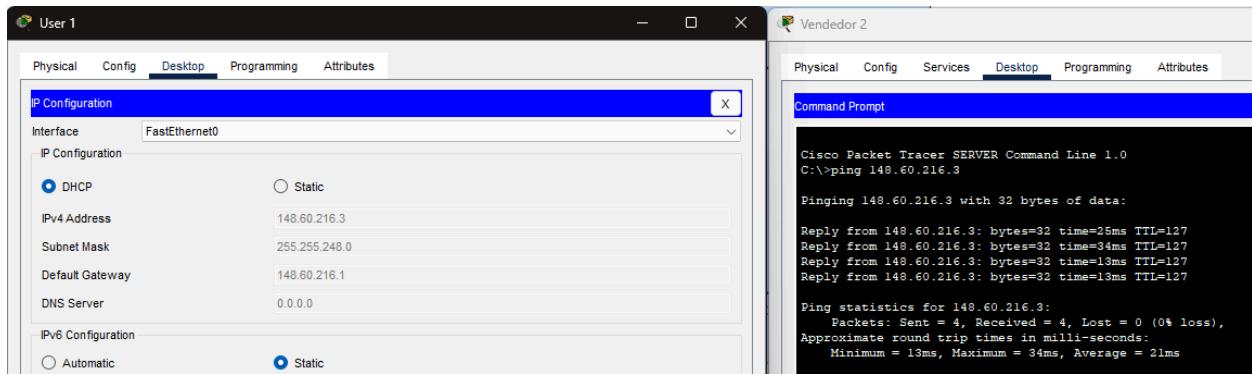


### Admin -> Laptop 3

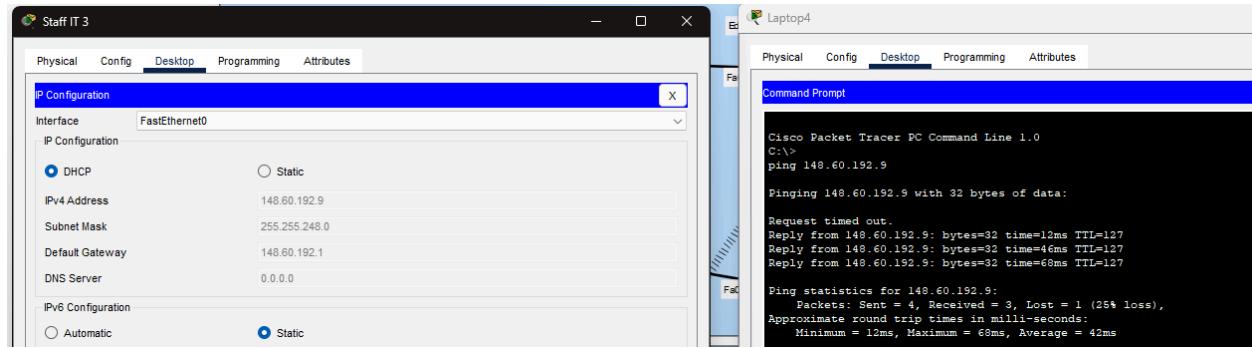


## Inalambrico -> Fisico

Vendedor 2 -> User 1

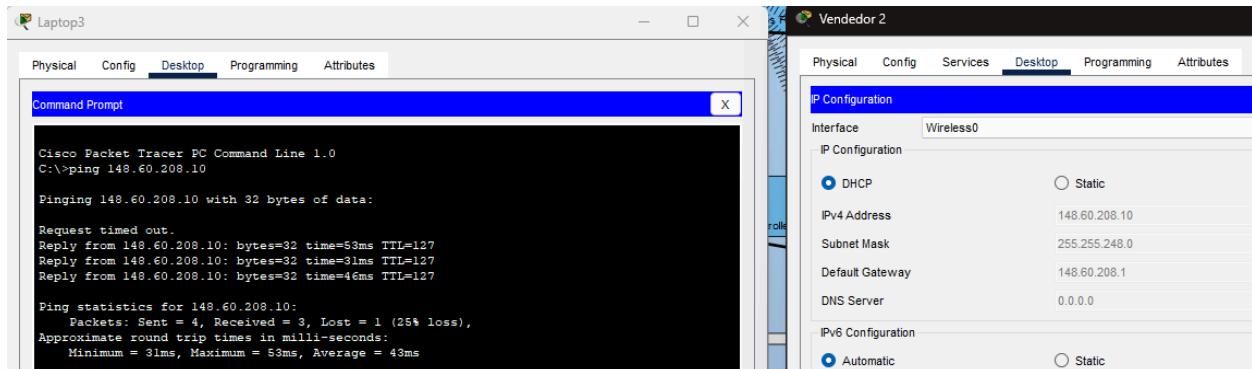


Laptop 4 -> Staff IT 3



Inalambrico -> Inalambrico

Laptop3 -> Vendedor 2

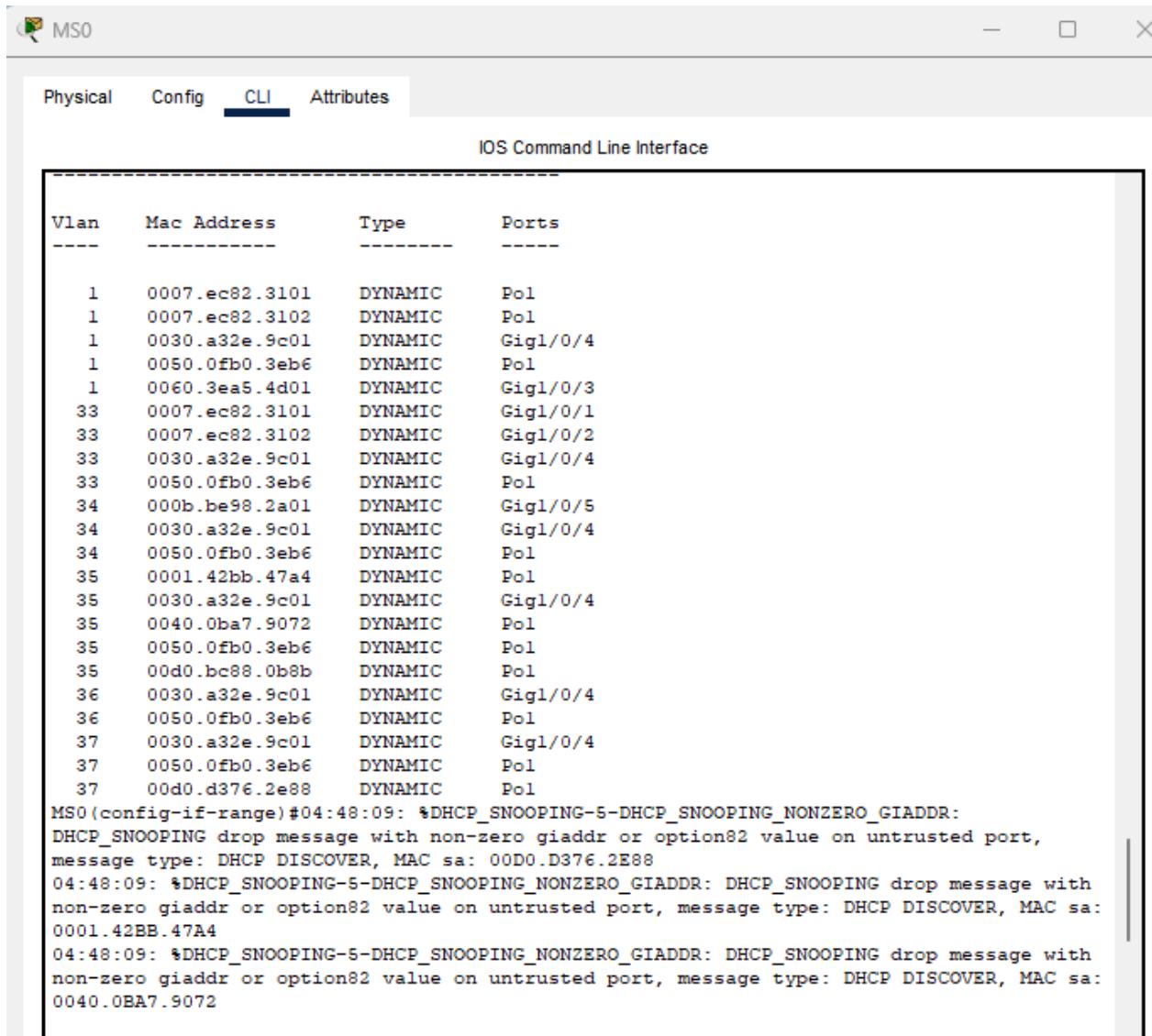


## Problemas o Complicaciones

Problema con ARP y DAI para prevención de Rogue DHCP.

Cuando se habilitaba el DHCP Snooping y ARP inspection este habilita la tecnología para definir servidores de DHCP de confianza, el conflicto ocurre que solo se puede definir puertos físicos como de confianza, no Channel groups, esto causa que los switches multicapa que forman parte del etherchannel rechacen de forma constante la conexión como se puede visualizar abajo.

MS0:



The screenshot shows the CLI interface for a Cisco switch named 'MS0'. The 'CLI' tab is selected in the top navigation bar. Below the header, there is a table output:

Vlan	Mac Address	Type	Ports
1	0007.ec82.3101	DYNAMIC	Port
1	0007.ec82.3102	DYNAMIC	Port
1	0030.a32e.9c01	DYNAMIC	Gig1/0/4
1	0050.0fb0.3eb6	DYNAMIC	Port
1	0060.3ea5.4d01	DYNAMIC	Gig1/0/3
33	0007.ec82.3101	DYNAMIC	Gig1/0/1
33	0007.ec82.3102	DYNAMIC	Gig1/0/2
33	0030.a32e.9c01	DYNAMIC	Gig1/0/4
33	0050.0fb0.3eb6	DYNAMIC	Port
34	000b.be98.2a01	DYNAMIC	Gig1/0/5
34	0030.a32e.9c01	DYNAMIC	Gig1/0/4
34	0050.0fb0.3eb6	DYNAMIC	Port
35	0001.42bb.47a4	DYNAMIC	Port
35	0030.a32e.9c01	DYNAMIC	Gig1/0/4
35	0040.0ba7.9072	DYNAMIC	Port
35	0050.0fb0.3eb6	DYNAMIC	Port
35	00d0.bc88.0b8b	DYNAMIC	Port
36	0030.a32e.9c01	DYNAMIC	Gig1/0/4
36	0050.0fb0.3eb6	DYNAMIC	Port
37	0030.a32e.9c01	DYNAMIC	Gig1/0/4
37	0050.0fb0.3eb6	DYNAMIC	Port
37	00d0.d376.2e88	DYNAMIC	Port

Below the table, several log messages are displayed:

```
MS0(config-if-range)#04:48:09: %DHCP_SNOOPING-5-DHCP_SNOOPING_NONZERO_GIADDR:  
DHCP_SNOOPING drop message with non-zero giaddr or option82 value on untrusted port,  
message type: DHCP DISCOVER, MAC sa: 00D0.D376.2E88  
04:48:09: %DHCP_SNOOPING-5-DHCP_SNOOPING_NONZERO_GIADDR: DHCP_SNOOPING drop message with  
non-zero giaddr or option82 value on untrusted port, message type: DHCP DISCOVER, MAC sa:  
0001.42BB.47A4  
04:48:09: %DHCP_SNOOPING-5-DHCP_SNOOPING_NONZERO_GIADDR: DHCP_SNOOPING drop message with  
non-zero giaddr or option82 value on untrusted port, message type: DHCP DISCOVER, MAC sa:  
0040.0BA7.9072
```

MS1:

```
vlan  Mac Address      type   ports
----  -----
1    000d.bd35.ad01   DYNAMIC  Po1
1    000d.bd35.ad02   DYNAMIC  Po1
1    000d.bdeb.bb42   DYNAMIC  Po1
1    0030.f235.2801   DYNAMIC  Gig1/0/3
33   000d.bd35.ad01   DYNAMIC  Gig1/0/1
33   000d.bd35.ad02   DYNAMIC  Gig1/0/2
33   0030.a32e.9c01   DYNAMIC  Po1
33   0030.f235.2801   DYNAMIC  Gig1/0/3
34   000b.be98.2a01   DYNAMIC  Po1
34   0030.a32e.9c01   DYNAMIC  Po1
34   0030.f235.2801   DYNAMIC  Gig1/0/3
34   0060.5cdb.6424   DYNAMIC  Gig1/0/4
34   00d0.d309.8c01   DYNAMIC  Gig1/0/3
35   0001.42bb.47a4   DYNAMIC  Gig1/0/3
35   0030.a32e.9c01   DYNAMIC  Po1
35   0030.f235.2801   DYNAMIC  Gig1/0/3
35   0040.0ba7.9072   DYNAMIC  Gig1/0/3
35   00d0.bc88.0b8b   DYNAMIC  Gig1/0/3
36   0030.a32e.9c01   DYNAMIC  Po1
36   0030.f235.2801   DYNAMIC  Gig1/0/3
37   0030.a32e.9c01   DYNAMIC  Po1
37   0030.f235.2801   DYNAMIC  Gig1/0/3
37   00d0.d376.2e88   DYNAMIC  Gig1/0/3
MS1(config)#
MS1(config)#
MS1(config)#
MS1(config)#
MS1(config)#
MS1(config)#
MS1(config)#
MS1(config)#
MS1(config)#04:53:22: %DHCP_SNOOPING-5-DHCP_SNOOPING_NONZERO_GIADDR: DHCP_SNOOPING drop
message with non-zero giaddr or option82 value on untrusted port, message type: DHCP
DISCOVER, MAC sa: 000B.BE98.2A01
```

Esto lastimosamente no llevó a tomar la decisión de descartar la funcionalidad de seguridad de DAI.

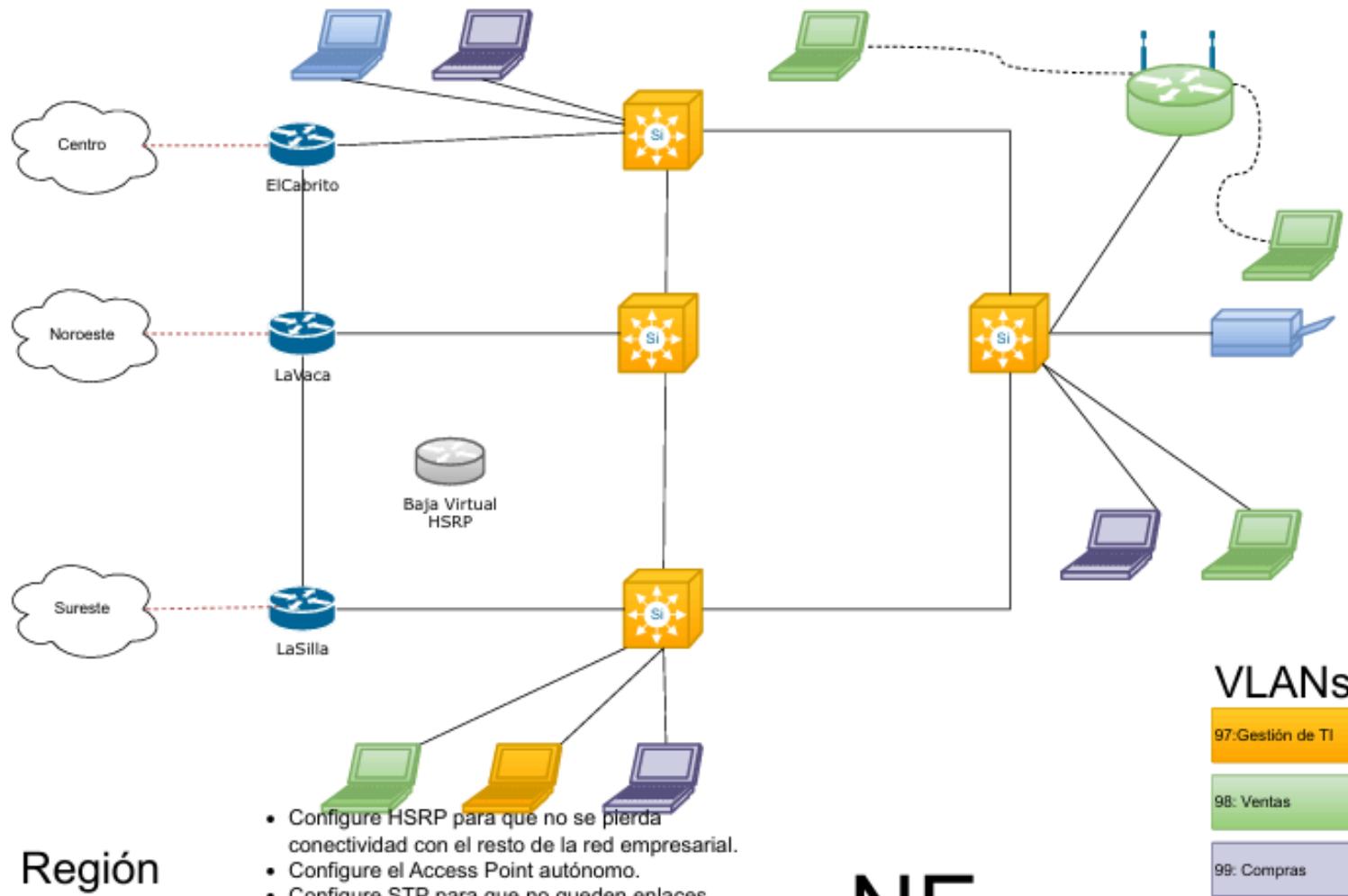
Problema con configuración de WLC en GUI por medio de Web browser.

Existe un problema en packet tracer que imposibilita la configuración de WLC desde una PC, dando el error Server Reset Connection.

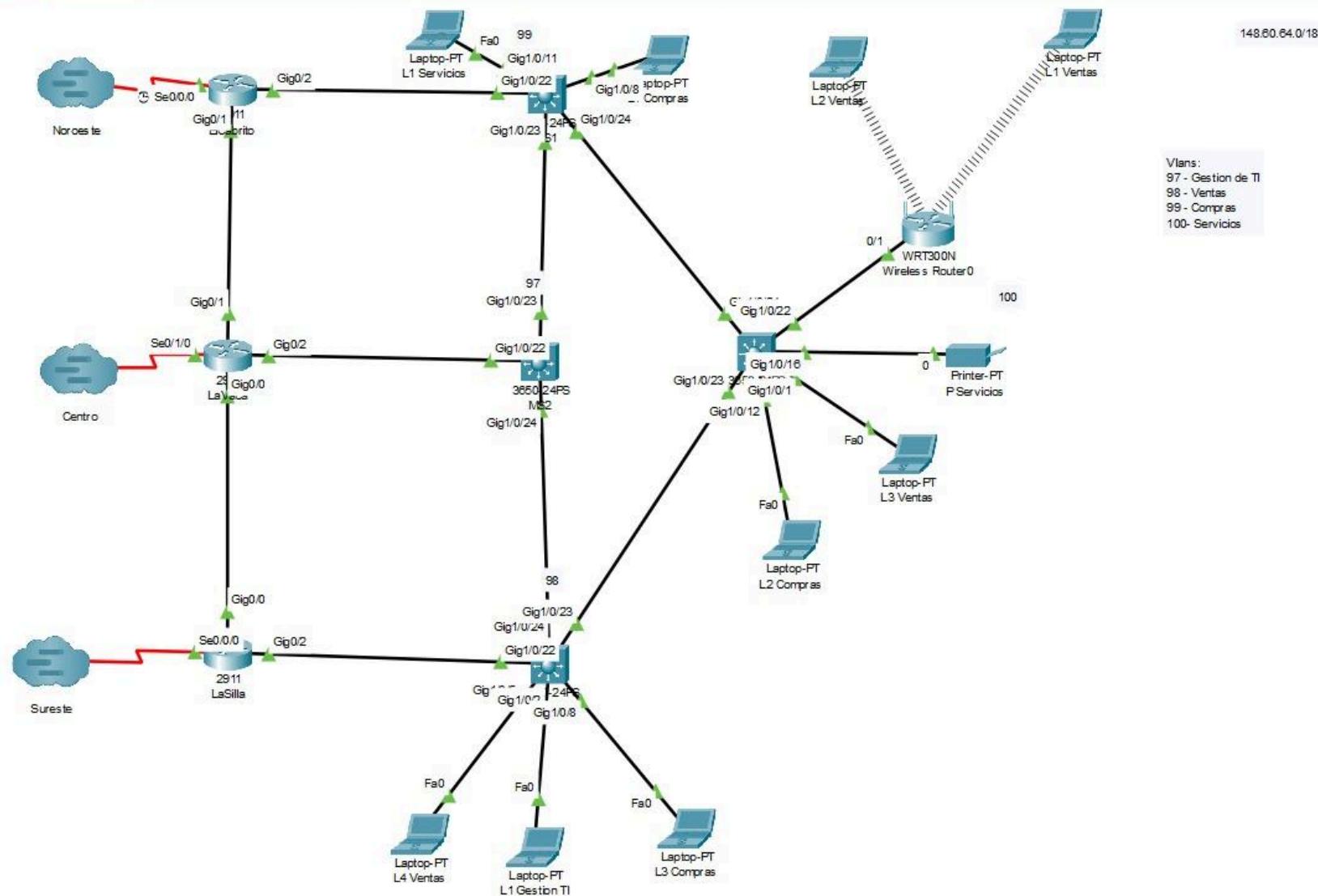
Esto nos llevo a utilizar el WLC-PT y configurar sus Lans desde su pestaña de packet traces.

# Noreste

## Topología Esperada



# Topologia Final



## Direccionamiento

Ipv4 Noreste: 148.60.64.0 /18

Vlans	Nombre	Ipv4
97	Gestion de TI	148.60.64.0 /28
98	Ventas	148.60.64.16 /28
99	Compras	148.60.64.32 /28
100	Servicios	148.60.64.48 /28

## Explicación Configuraciones

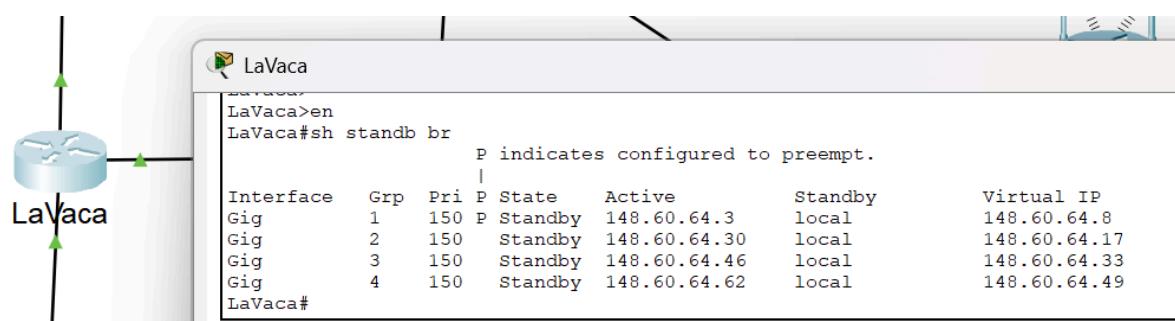
### Tareas Específicas

- Configuración HSRP

Para evitar la pérdida de conectividad entre nuestra red y el resto de la red empresarial Los routers ElCabrito, La Vaca y La Silla forman un router virtual con HSRP. Se configuró un grupo <>standby>> diferente para cada vlan. Esta configuración, a la vez, se tuvo que hacer en los tres routers

Configuración para una de las subinterfaces del router (esto se tiene que replicar en cada router que forma parte del HSRP y para cada VLAN diferente, en este caso, 4 vlans)

```
interface g0/2.97
standby 1 ip 148.60.64.8
standby 1 priority 150
```



Cada grupo tiene una ip diferente asignada; la primera de cada segmento de red que se le asignó a las vlans. Esto para que cada vlan tenga su propia puerta predeterminada.

Al momento de querer comunicarse con un dispositivo de otra VLAN, irán a su puerta

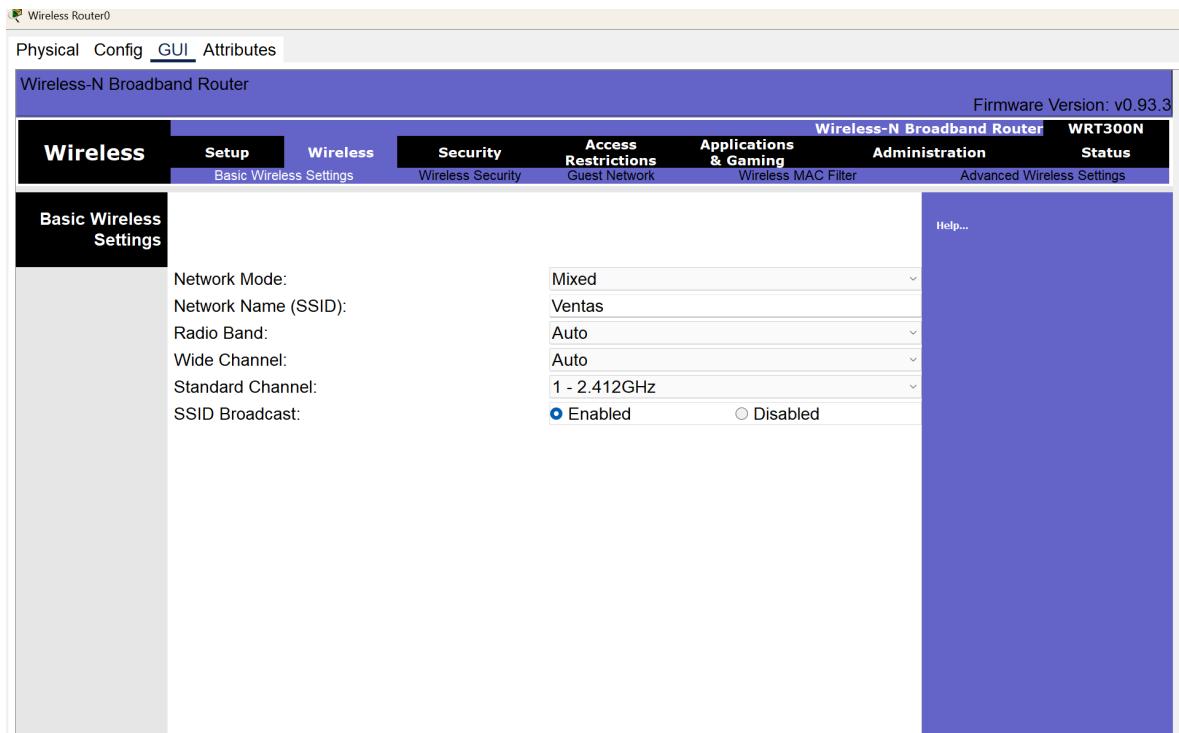
predeterminada (el HSRP), este hará el ruteo intervlan y reenviará el paquete al destino que se quiere enviar un paquete.

- Configure el Access Point autónomo para dar conexión Wi-Fi independiente sin necesidad de un controlador central.

The screenshot shows the configuration interface for a Wireless Router0. At the top, there are tabs for Physical, Config, GUI, and Attributes. The main title is "Wireless-N Broadband Router". The top right corner displays "Firmware Version: v0.93.3". Below the title, there is a navigation menu with tabs: Setup, Wireless, Security, Access Restrictions, Applications & Gaming, Wireless-N Broadband Router, Administration, and Status. The "Setup" tab is selected, and its sub-tabs are Basic Setup, Wireless, Security, Access Restrictions, Applications & Gaming, and Advanced Routing. The "Internet Setup" section contains fields for Internet Connection type (set to Automatic Configuration - DHCP), Host Name, Domain Name, and MTU. The "Network Setup" section contains fields for Router IP (IP Address: 148.60.64.21, Subnet Mask: 255.255.255.240), DHCP Server Settings (DHCP Server: Enabled), and Client Lease Time (0 minutes). There is also a "DHCP Reservation" button.

Primero se desactiva el servidor DHCP que tiene el Router remoto, para después asignarle una IP (que excluimos en nuestro servidor DHCP) que pertenezca a la vlan de Ventas.

Al tener el DHCP desconfigurado, enviará el DHCP REQUEST a través de su conexión con el switch, mismo que es el servidor DHCP que le hará un DHCP OFFER



Así también, se le da un nombre a la red para que se conecten los dispositivos.

Wireless Network Name	CH	Signal
Ventas	1	

**Site Information**  
 Wireless Mode: Infrastructure  
 Network Type: Mixed B/G/N  
 Radio Band: Auto  
 Security: Disable  
 MAC Address: 0090.21C2.6906

Refresh      Connect

2.4GHz

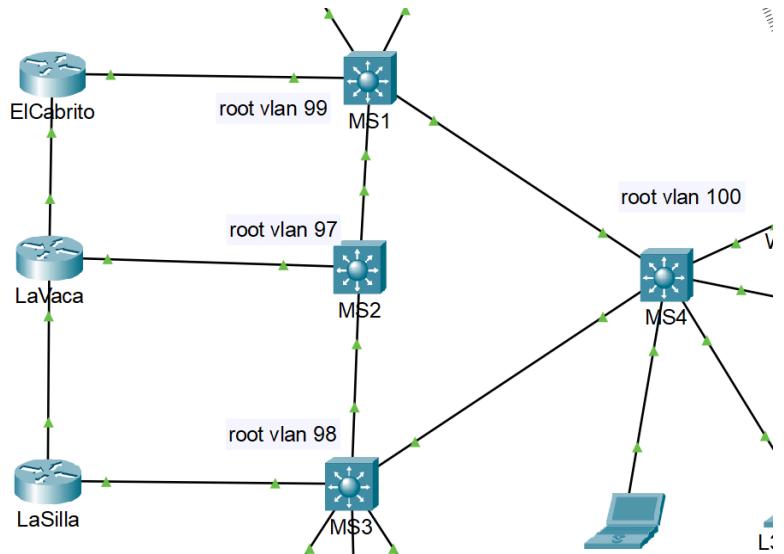
Adapter is Active

Wireless-N Notebook Adapter      Wireless Network Monitor v1.0      Model No. WPC300N

De forma que ahora a los dispositivos cuando revisen las redes inalámbricas, encontrarán la red del wireless router.

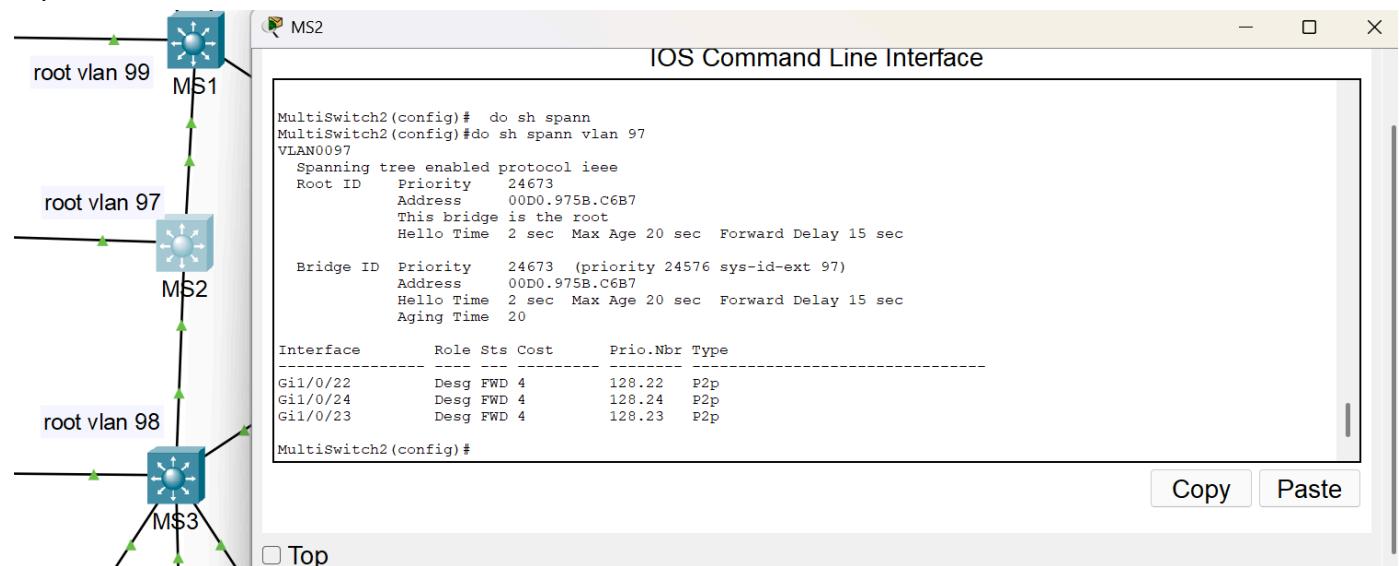
- Configuración STP

Para evitar enlaces desconectados, minimizar bloqueos y optimizar la topología.

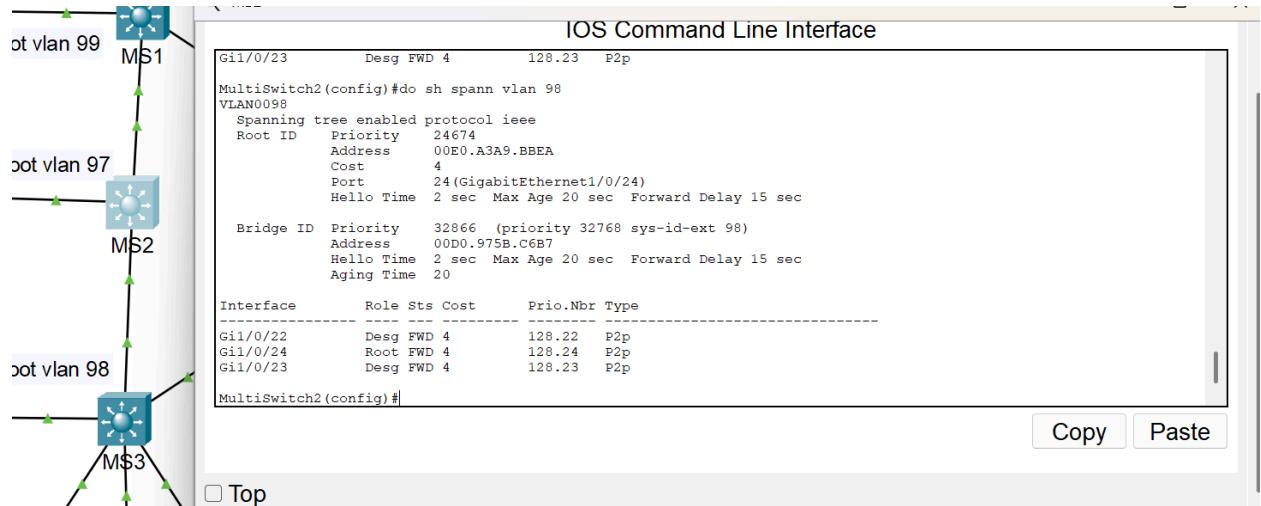


Para evitar las tormentas de broadcast, el protocolo de árbol de expansión desactiva algunos puertos de forma automática para evitar colapsar la red.

Por ello, y para no desperdiciar conexiones, le asignamos a cada switch que sea el root de una vlan diferente, así pues, todas las conexiones son necesarias pues el raíz del árbol de expansión de cada VLAN cambia.



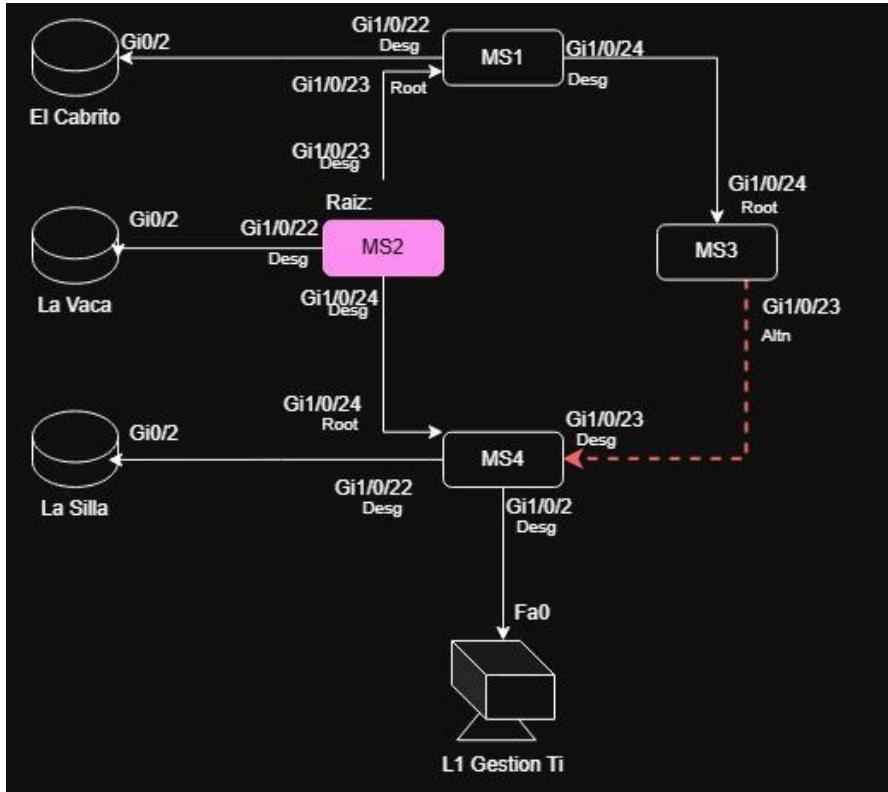
De forma que al ver el Spanning-tree de la vlan 97, podemos observar que todos los puertos configurados como troncales están como Designados, al igual que el <>Root ID>> coincide con el <>Bridge ID>> (el del switch actual)



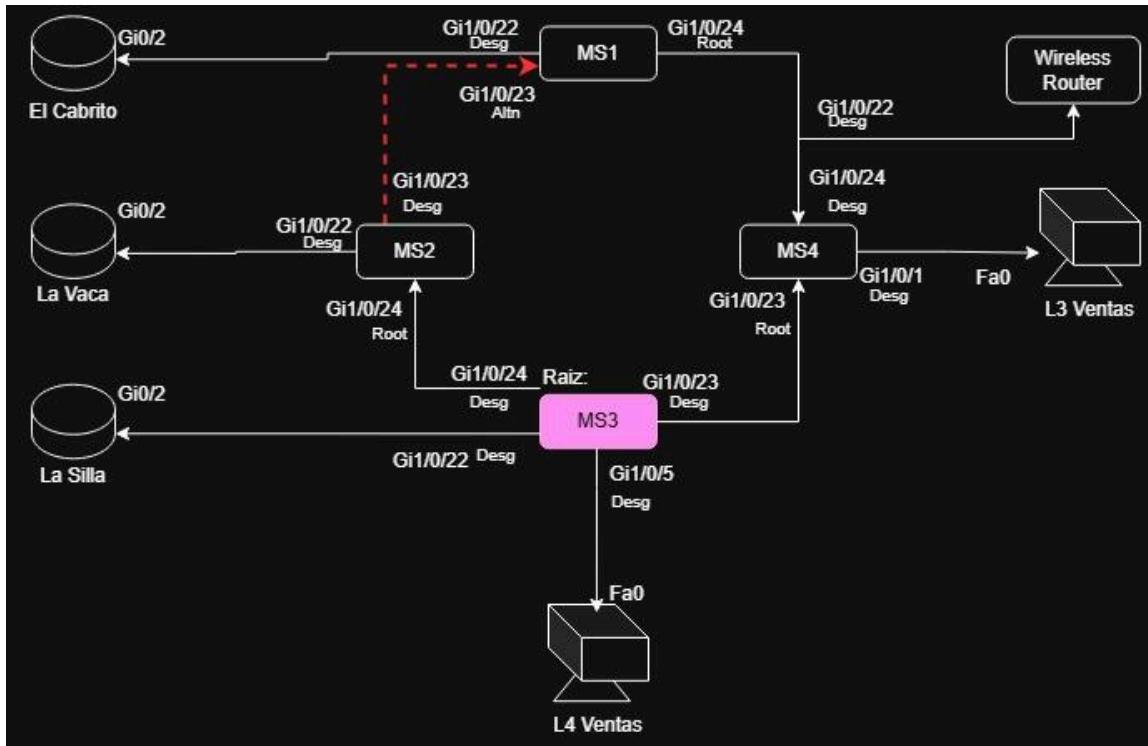
Pero al ver el Spanning-tree de una vlan la cual no es el root, podemos ver que puertos son los Root y cuales los designados para ese árbol de expansión

# Topología STP por VLAN

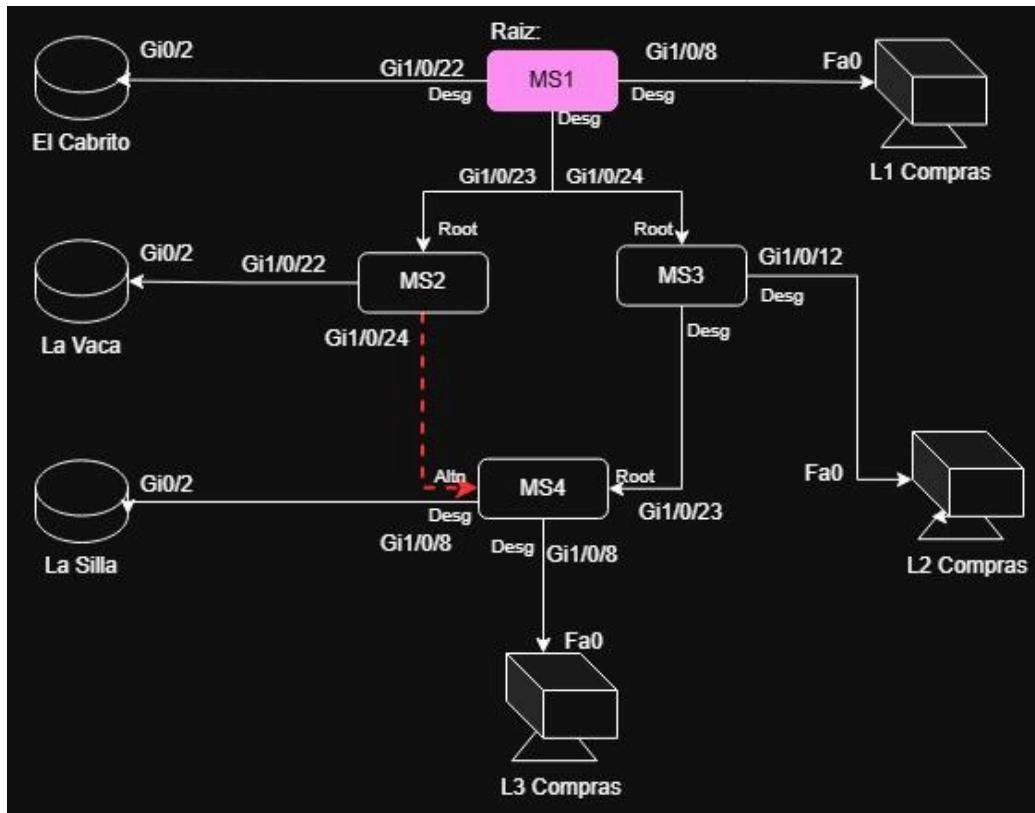
VLAN 97 Gestión TI



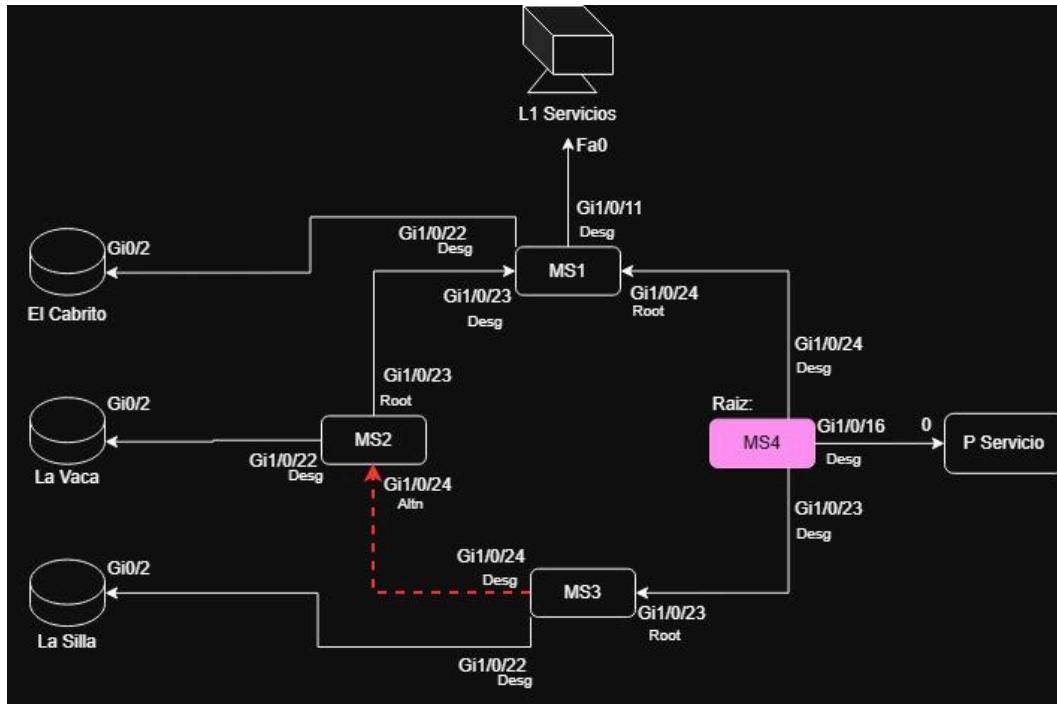
VLAN 98 Ventas



VLAN 99 Compras



VLAN 100



# Configuración de Dispositivos

## ElCabrito (Router)

### Running Config

```
Current configuration : 1625 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname ElCabrito
!
!
!
!
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
license udi pid CISCO2911/K9 sn FTX1524HXQF-
!
```

```
!
interface GigabitEthernet0/0
 ip address 148.60.64.65 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address 148.60.64.81 255.255.255.252
 duplex auto
 speed auto
 standby 0 track GigabitEthernet0/1
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 standby version 2
!
interface GigabitEthernet0/2.97
 encapsulation dot1Q 97
 ip address 148.60.64.1 255.255.255.240
 ip helper-address 148.60.64.9
 standby 1 ip 148.60.64.8
 standby 1 priority 150
 standby 1 preempt
!
interface GigabitEthernet0/2.98
 encapsulation dot1Q 98
 ip address 148.60.64.30 255.255.255.240
 ip helper-address 148.60.64.9
 standby 2 ip 148.60.64.17
 standby 2 priority 150
;
interface GigabitEthernet0/2.99
 encapsulation dot1Q 99
 ip address 148.60.64.46 255.255.255.240
 ip helper-address 148.60.64.9
 standby 3 ip 148.60.64.33
 standby 3 priority 150
!
interface GigabitEthernet0/2.100
 encapsulation dot1Q 100
 ip address 148.60.64.62 255.255.255.240
 ip helper-address 148.60.64.9
 standby 4 ip 148.60.64.49
 standby 4 priority 150
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 network 148.60.0.0
 no auto-summary
!
ip classless
!
ip flow-export version 9
!
```

```
-----+-----+  
!  
interface Serial0/0/0  
 ip address 148.60.64.89 255.255.255.252  
 clock rate 2000000  
!  
.no ip cef  
no ipv6 cef  
!  
!  
username juan secret 5 $1$mERr$g4BPZdYZ1rbx6s4ntdIwb.  
!  
!  
license udi pid CISCO2911/K9 sn FTX1524HXQF-  
!  
!  
!  
!  
!  
!  
!  
!  
ip ssh version 2  
ip domain-name juanmark.com  
!  
!  
spanning-tree mode pvst  
!
```

```
!
interface Vlan1
no ip address
shutdown
!
router rip
version 2
network 148.60.0.0
no auto-summary
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
!
!
!
end
```

Ip	Route
----	-------

```

ElCabrito# show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

  148.60.0.0/16 is variably subnetted, 11 subnets, 3 masks
C        148.60.64.0/28 is directly connected, GigabitEthernet0/2.97
L        148.60.64.1/32 is directly connected, GigabitEthernet0/2.97
C        148.60.64.16/28 is directly connected, GigabitEthernet0/2.98
L        148.60.64.30/32 is directly connected, GigabitEthernet0/2.98
C        148.60.64.32/28 is directly connected, GigabitEthernet0/2.99
L        148.60.64.46/32 is directly connected, GigabitEthernet0/2.99
C        148.60.64.48/28 is directly connected, GigabitEthernet0/2.100
L        148.60.64.62/32 is directly connected, GigabitEthernet0/2.100
C        148.60.64.80/30 is directly connected, GigabitEthernet0/1
L        148.60.64.81/32 is directly connected, GigabitEthernet0/1
R        148.60.64.84/30 [120/1] via 148.60.64.82, 00:00:03, GigabitEthernet0/1
                  [120/1] via 148.60.64.2, 00:00:03, GigabitEthernet0/2.97
                  [120/1] via 148.60.64.45, 00:00:03, GigabitEthernet0/2.99
                  [120/1] via 148.60.64.29, 00:00:03, GigabitEthernet0/2.98

```

## Ip Interface Brief

```

ElCabrito#show ip int br
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  148.60.64.65   YES manual up       down
GigabitEthernet0/1  148.60.64.81   YES manual up       up
GigabitEthernet0/2  unassigned     YES manual up       up
GigabitEthernet0/2.97 148.60.64.1   YES manual up       up
GigabitEthernet0/2.98 148.60.64.30  YES manual up       up
GigabitEthernet0/2.99 148.60.64.46  YES manual up       up
GigabitEthernet0/2.100 148.60.64.62 YES manual up       up
Vlan1              unassigned     YES unset administratively down down
ElCabrito#

```

## Vlan Brief

VLAN Name	Status	Ports
1 default	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

## LaVaca (Router)

### Running Config

```
Current configuration : 1810 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LaVaca
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
license udi pid CISCO2911/K9 sn FTX15243HQG-
!
```

```
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
 ip address 148.60.64.85 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address 148.60.64.82 255.255.255.252
 duplex auto
 speed auto
 standby 0 track GigabitEthernet0/1
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 standby version 2
!
interface GigabitEthernet0/2.97
 encapsulation dot1Q 97
 ip address 148.60.64.2 255.255.255.240
 ip helper-address 148.60.64.9
 standby 1 ip 148.60.64.8
 standby 1 priority 150
 standby 1 preempt
!
```

```
!
interface GigabitEthernet0/2.98
  encapsulation dot1Q 98
  ip address 148.60.64.29 255.255.255.240
  ip helper-address 148.60.64.9
  standby 2 ip 148.60.64.17
  standby 2 priority 150
!
interface GigabitEthernet0/2.99
  encapsulation dot1Q 99
  ip address 148.60.64.45 255.255.255.240
  ip helper-address 148.60.64.9
  standby 3 ip 148.60.64.33
  standby 3 priority 150
!
interface GigabitEthernet0/2.100
  encapsulation dot1Q 100
  ip address 148.60.64.61 255.255.255.240
  ip helper-address 148.60.64.9
  standby 4 ip 148.60.64.49
  standby 4 priority 150
!
interface FastEthernet0/0/0
  switchport mode access
!
interface FastEthernet0/0/1
  switchport mode access
!
interface FastEthernet0/0/2
  switchport mode access
!
interface FastEthernet0/0/3
  switchport mode access
```

```
!
interface FastEthernet0/0/2
switchport mode access
!
interface FastEthernet0/0/3
switchport mode access
!
interface Vlan1
no ip address
shutdown
!
router rip
version 2
network 148.60.0.0
no auto-summary
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login
line vty 5 15
login
!
!
```

```
!
interface Serial0/1/0
ip address 148.60.64.85 255.255.255.252
!
```

## Ip Router

```
LaVaca# show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

  148.60.0.0/16 is variably subnetted, 12 subnets, 3 masks
C        148.60.64.0/28 is directly connected, GigabitEthernet0/2.97
L        148.60.64.2/32 is directly connected, GigabitEthernet0/2.97
C        148.60.64.16/28 is directly connected, GigabitEthernet0/2.98
L        148.60.64.29/32 is directly connected, GigabitEthernet0/2.98
C        148.60.64.32/28 is directly connected, GigabitEthernet0/2.99
L        148.60.64.45/32 is directly connected, GigabitEthernet0/2.99
C        148.60.64.48/28 is directly connected, GigabitEthernet0/2.100
L        148.60.64.61/32 is directly connected, GigabitEthernet0/2.100
C        148.60.64.80/30 is directly connected, GigabitEthernet0/1
L        148.60.64.82/32 is directly connected, GigabitEthernet0/1
C        148.60.64.84/30 is directly connected, GigabitEthernet0/0
L        148.60.64.85/32 is directly connected, GigabitEthernet0/0
.
.
```

## Ip Interface Brief

```
LaVaca#show ip int br
Interface          IP-Address      OK? Method Status           Protocol
GigabitEthernet0/0  148.60.64.85   YES manual up            up
GigabitEthernet0/1  148.60.64.82   YES manual up            up
GigabitEthernet0/2  unassigned     YES manual up            up
GigabitEthernet0/2.97 148.60.64.2   YES manual up            up
GigabitEthernet0/2.98 148.60.64.29  YES manual up            up
GigabitEthernet0/2.99 148.60.64.45  YES manual up            up
GigabitEthernet0/2.100 148.60.64.61 YES manual up            up
FastEthernet0/0/0    unassigned     YES unset up             down
FastEthernet0/0/1    unassigned     YES unset up             down
FastEthernet0/0/2    unassigned     YES unset up             down
FastEthernet0/0/3    unassigned     YES unset up             down
Vlan1              unassigned     YES unset administratively down down
LaVaca#
```

## Vlan Brief

```
LaVaca#show vlan br
.
.
.
VLAN Name                  Status    Ports
----- -----
1   default                 active   Fa0/0/0, Fa0/0/1, Fa0/0/2, Fa0/0/3
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active
LaVaca#
```

## LaSilla (Router)

### Running Config

```
Current configuration : 1571 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LaSilla
!
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
license udi pid CISCO2911/K9 sn FTX1524E9UR-
!
```

```
ip domain-name juanmark.com
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
 ip address 148.60.64.86 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 standby version 2
!
interface GigabitEthernet0/2.97
 encapsulation dot1Q 97
 ip address 148.60.64.3 255.255.255.240
 ip helper-address 148.60.64.9
 standby 1 ip 148.60.64.8
 standby 1 priority 150
 standby 1 preempt
```

```
!
interface GigabitEthernet0/2.98
encapsulation dot1Q 98
ip address 148.60.64.28 255.255.255.240
ip helper-address 148.60.64.9
standby 2 ip 148.60.64.17
standby 2 priority 150
!
interface GigabitEthernet0/2.99
encapsulation dot1Q 99
ip address 148.60.64.44 255.255.255.240
ip helper-address 148.60.64.9
standby 3 ip 148.60.64.33
standby 3 priority 150
!
interface GigabitEthernet0/2.100
encapsulation dot1Q 100
ip address 148.60.64.60 255.255.255.240
ip helper-address 148.60.64.9
standby 4 ip 148.60.64.49
standby 4 priority 150
!
interface Vlan1
no ip address
shutdown
!
router rip
version 2
network 148.60.0.0
no auto-summary
!
ip classless
!
ip flow-export version 9
```

```
!
line con 0
!
line aux 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
end
```

## Ip Router

```
-----  
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP  
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP  
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area  
      * - candidate default, U - per-user static route, o - ODR  
      P - periodic downloaded static route
```

```
Gateway of last resort is not set
```

```
    148.60.0.0/16 is variably subnetted, 11 subnets, 3 masks  
C      148.60.64.0/28 is directly connected, GigabitEthernet0/2.97  
L      148.60.64.3/32 is directly connected, GigabitEthernet0/2.97  
C      148.60.64.16/28 is directly connected, GigabitEthernet0/2.98  
L      148.60.64.28/32 is directly connected, GigabitEthernet0/2.98  
C      148.60.64.32/28 is directly connected, GigabitEthernet0/2.99  
L      148.60.64.44/32 is directly connected, GigabitEthernet0/2.99  
C      148.60.64.48/28 is directly connected, GigabitEthernet0/2.100  
L      148.60.64.60/32 is directly connected, GigabitEthernet0/2.100  
R      148.60.64.80/30 [120/1] via 148.60.64.85, 00:00:25, GigabitEthernet0/0  
                  [120/1] via 148.60.64.2, 00:00:25, GigabitEthernet0/2.97  
                  [120/1] via 148.60.64.29, 00:00:25, GigabitEthernet0/2.98  
                  [120/1] via 148.60.64.45, 00:00:25, GigabitEthernet0/2.99  
C      148.60.64.84/30 is directly connected, GigabitEthernet0/0  
L      148.60.64.86/32 is directly connected, GigabitEthernet0/0
```

## Ip Interface Brief

```
LaSilla#show ip int br  
Interface          IP-Address      OK? Method Status      Protocol  
GigabitEthernet0/0  148.60.64.86  YES manual up       up  
GigabitEthernet0/1  unassigned     YES unset  administratively down down  
GigabitEthernet0/2  unassigned     YES manual up       up  
GigabitEthernet0/2.97 148.60.64.3   YES manual up       up  
GigabitEthernet0/2.98 148.60.64.28  YES manual up       up  
GigabitEthernet0/2.99 148.60.64.44  YES manual up       up  
GigabitEthernet0/2.100 148.60.64.60 YES manual up       up  
Vlan1              unassigned     YES unset  administratively down down  
LaSilla#
```

## Vlan Brief

VLAN	Name	Status	Ports
1	default	active	
1002	fdci-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
LaSilla#
```

## MSI1 (Switch capa 3)

### Running Config

```
Building configuration...

Current configuration : 2610 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname MultiSwitch1
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
!
!
!
!
!
ip ssh version 1
ip domain-name juanmark.com
!
!
spanning-tree mode pvst
spanning-tree vlan 99 priority 24576
!
```

```
:  
interface GigabitEthernet1/0/7  
switchport access vlan 99  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
!  
interface GigabitEthernet1/0/8  
switchport access vlan 99  
switchport mode access  
switchport nonegotiate  

```

```
!  
interface GigabitEthernet1/0/21  
switchport mode trunk  
!  
interface GigabitEthernet1/0/22  

```

```
interface Vlan1
no ip address
shutdown
!
interface Vlan97
mac-address 000d.bd9d.4a01
ip address 148.60.64.5 255.255.255.240
!
interface Vlan99
mac-address 000d.bd9d.4a02
no ip address
!
interface Vlan100
mac-address 000d.bd9d.4a03
no ip address
!
ip default-gateway 148.60.64.8
ip classless
!
ip flow-export version 9
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
!
!
!
!
end
```

## Ip Interface Brief

```

MultiSwitch1# show ip int br
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet1/0/1 unassigned      YES unset down       down
GigabitEthernet1/0/2 unassigned      YES unset down       down
GigabitEthernet1/0/3 unassigned      YES unset down       down
GigabitEthernet1/0/4 unassigned      YES unset down       down
GigabitEthernet1/0/5 unassigned      YES unset down       down
GigabitEthernet1/0/6 unassigned      YES unset down       down
GigabitEthernet1/0/7 unassigned      YES unset down       down
GigabitEthernet1/0/8 unassigned      YES unset up        up
GigabitEthernet1/0/9 unassigned      YES unset down       down
GigabitEthernet1/0/10 unassigned     YES unset down       down
GigabitEthernet1/0/11 unassigned     YES unset up        up
GigabitEthernet1/0/12 unassigned     YES unset down       down
GigabitEthernet1/0/13 unassigned     YES unset down       down
GigabitEthernet1/0/14 unassigned     YES unset down       down
GigabitEthernet1/0/15 unassigned     YES unset down       down
GigabitEthernet1/0/16 unassigned     YES unset down       down
GigabitEthernet1/0/17 unassigned     YES unset down       down
GigabitEthernet1/0/18 unassigned     YES unset down       down
GigabitEthernet1/0/19 unassigned     YES unset down       down
GigabitEthernet1/0/20 unassigned     YES unset down       down
GigabitEthernet1/0/21 unassigned     YES unset down       down
GigabitEthernet1/0/22 unassigned     YES manual up       up
GigabitEthernet1/0/23 unassigned     YES manual up       up
GigabitEthernet1/0/24 unassigned     YES manual up       up
GigabitEthernet1/1/1 unassigned      YES unset down       down
GigabitEthernet1/1/2 unassigned      YES unset down       down
GigabitEthernet1/1/3 unassigned      YES unset down       down
GigabitEthernet1/1/4 unassigned      YES unset down       down
Vlan1              unassigned       YES unset administratively down down
Vlan97             148.60.64.5    YES manual up        up
Vlan99             unassigned      YES unset up        up
Vlan100            unassigned      YES unset up        up
MultiSwitch1#

```

## Vlan Brief

VLAN Name	Status	Ports
1 default	active	Gig1/0/1, Gig1/0/2, Gig1/0/3, Gig1/0/4 Gig1/0/5, Gig1/0/6, Gig1/0/13, Gig1/0/14 Gig1/0/15, Gig1/0/16, Gig1/0/17, Gig1/0/18 Gig1/0/19, Gig1/0/20, Gig1/0/21, Gig1/1/1 Gig1/1/2, Gig1/1/3, Gig1/1/4
97 Gestion_de_TI	active	
98 Ventas	active	
99 Compras	active	Gig1/0/7, Gig1/0/8, Gig1/0/9
100 Servicios	active	Gig1/0/10, Gig1/0/11, Gig1/0/12
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

```

MultiSwitch1#

```

## Interface Trunk

```
multiswitch# show int tr
Port      Mode       Encapsulation  Status      Native vlan
Gig1/0/22  on        802.1q         trunking   1
Gig1/0/23  on        802.1q         trunking   1
Gig1/0/24  on        802.1q         trunking   1

Port      Vlans allowed on trunk
Gig1/0/22 1-1005
Gig1/0/23 1-1005
Gig1/0/24 1-1005

Port      Vlans allowed and active in management domain
Gig1/0/22 1,97,98,99,100
Gig1/0/23 1,97,98,99,100
Gig1/0/24 1,97,98,99,100

Port      Vlans in spanning tree forwarding state and not pruned
Gig1/0/22 1,97,98,99,100
Gig1/0/23 1,97,99,100
Gig1/0/24 1,97,98,99,100
```

## MSI2 (Switch capa 3)

### Running Config

```
Building configuration...

Current configuration : 1796 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname MultiSwitch2
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
```

```
ip ssh version 1
ip domain-name juanmark.com
!
!
spanning-tree mode pvst
spanning-tree vlan 97 priority 24576
!
!
!
interface GigabitEthernet1/0/21
switchport mode trunk
!
interface GigabitEthernet1/0/22
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/23
switchport mode trunk
!
interface GigabitEthernet1/0/24
switchport mode trunk
!
interface GigabitEthernet1/1/1
!
interface Vlan1
no ip address
shutdown
!
interface Vlan97
mac-address 00d0.975b.c601
ip address 148.60.64.6 255.255.255.240
!
ip default-gateway 148.60.64.8
ip classless
!
ip flow-export version 9
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
!
!
!
!
end
```

## Ip Interface Brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet1/0/1	unassigned	YES	unset	down	down
GigabitEthernet1/0/2	unassigned	YES	unset	down	down
GigabitEthernet1/0/3	unassigned	YES	unset	down	down
GigabitEthernet1/0/4	unassigned	YES	unset	down	down
GigabitEthernet1/0/5	unassigned	YES	unset	down	down
GigabitEthernet1/0/6	unassigned	YES	unset	down	down
GigabitEthernet1/0/7	unassigned	YES	unset	down	down
GigabitEthernet1/0/8	unassigned	YES	unset	down	down
GigabitEthernet1/0/9	unassigned	YES	unset	down	down
GigabitEthernet1/0/10	unassigned	YES	unset	down	down
GigabitEthernet1/0/11	unassigned	YES	unset	down	down
GigabitEthernet1/0/12	unassigned	YES	unset	down	down
GigabitEthernet1/0/13	unassigned	YES	unset	down	down
GigabitEthernet1/0/14	unassigned	YES	unset	down	down
GigabitEthernet1/0/15	unassigned	YES	unset	down	down
GigabitEthernet1/0/16	unassigned	YES	unset	down	down
GigabitEthernet1/0/17	unassigned	YES	unset	down	down
GigabitEthernet1/0/18	unassigned	YES	unset	down	down
GigabitEthernet1/0/19	unassigned	YES	unset	down	down
GigabitEthernet1/0/20	unassigned	YES	unset	down	down
GigabitEthernet1/0/21	unassigned	YES	unset	down	down
GigabitEthernet1/0/22	unassigned	YES	manual	up	up
GigabitEthernet1/0/23	unassigned	YES	manual	up	up
GigabitEthernet1/0/24	unassigned	YES	manual	up	up
GigabitEthernet1/1/1	unassigned	YES	unset	down	down
GigabitEthernet1/1/2	unassigned	YES	unset	down	down
GigabitEthernet1/1/3	unassigned	YES	unset	down	down
GigabitEthernet1/1/4	unassigned	YES	unset	down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan97	148.60.64.6	YES	manual	up	up

## Vlan Brief

VLAN	Name	Status	Ports
1	default	active	Gig1/0/1, Gig1/0/2, Gig1/0/3, Gig1/0/4 Gig1/0/5, Gig1/0/6, Gig1/0/7, Gig1/0/8 Gig1/0/9, Gig1/0/10, Gig1/0/11, Gig1/0/12 Gig1/0/13, Gig1/0/14, Gig1/0/15, Gig1/0/16 Gig1/0/17, Gig1/0/18, Gig1/0/19,
	Gig1/0/20		Gig1/0/21, Gig1/1/1, Gig1/1/2, Gig1/1/3 Gig1/1/4
97	Gestion_de_TI	active	
98	Ventas	active	
99	Compras	active	
100	Servicios	active	
1002	fdmi-default	active	
1003	token-ring-default	active	
1004	fdmnet-default	active	
1005	trnet-default	active	

## Interface Trunk

Port	Mode	Encapsulation	Status	Native vlan
Gig1/0/22	on	802.1q	trunking	1
Gig1/0/23	on	802.1q	trunking	1
Gig1/0/24	on	802.1q	trunking	1

Port	Vlans allowed on trunk
Gig1/0/22	1-1005
Gig1/0/23	1-1005
Gig1/0/24	1-1005

Port	Vlans allowed and active in management domain
Gig1/0/22	1,97,98,99,100
Gig1/0/23	1,97,98,99,100
Gig1/0/24	1,97,98,99,100

Port	Vlans in spanning tree forwarding state and not pruned
Gig1/0/22	1,97,98,99,100
Gig1/0/23	1,97,98,99,100
Gig1/0/24	1,97,98,99

## MSI3 (Switch capa 3)

### Running Config

```
Building configuration...

Current configuration : 3016 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname MultiSwitch3
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
```

```
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.  
!  
!  
!  
!  
!  
!  
!  
!  
ip ssh version 1  
ip domain-name juanmark.com  
!  
!  
spanning-tree mode pvst  
spanning-tree vlan 98 priority 24576  
!  
!  
interface GigabitEthernet1/0/1  
switchport access vlan 97  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
!  
interface GigabitEthernet1/0/2  
switchport access vlan 97  
switchport mode access  
switchport nonegotiate  
switchport port-security mac-address sticky  
spanning-tree portfast  
!  
interface GigabitEthernet1/0/3  
switchport access vlan 97  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
!  
interface GigabitEthernet1/0/4  
switchport access vlan 98  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
!  
interface GigabitEthernet1/0/5  
switchport access vlan 98  
switchport mode access  
switchport nonegotiate  
switchport port-security mac-address sticky  
spanning-tree portfast  
!
```

```
!
interface GigabitEthernet1/0/5
switchport access vlan 98
switchport mode access
switchport nonegotiate
switchport port-security mac-address sticky
spanning-tree portfast
!
interface GigabitEthernet1/0/6
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
!
interface GigabitEthernet1/0/7
switchport access vlan 99
switchport mode access
switchport nonegotiate
spanning-tree portfast
!
interface GigabitEthernet1/0/8
switchport access vlan 99
switchport mode access
switchport nonegotiate
switchport port-security mac-address sticky
spanning-tree portfast
!
interface GigabitEthernet1/0/9
switchport access vlan 99
switchport mode access
switchport nonegotiate
spanning-tree portfast
,
!
interface GigabitEthernet1/0/22
switchport trunk allowed vlan 97-100
switchport mode trunk
!
interface GigabitEthernet1/0/23
switchport trunk allowed vlan 97-100
switchport mode trunk
!
interface GigabitEthernet1/0/24
switchport trunk allowed vlan 97-100
switchport mode trunk
,
```

```
interface Vlan1
no ip address
shutdown
!
interface Vlan97
mac-address 00e0.a3a9.bb01
ip address 148.60.64.7 255.255.255.240
!
interface Vlan98
mac-address 00e0.a3a9.bb02
no ip address
!
interface Vlan99
mac-address 00e0.a3a9.bb03
no ip address
!
ip default-gateway 148.60.64.8
ip classless
!
ip flow-export version 9
!
!
line con 0
!
line aux 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
!
!
!
!
end
```

## Ip Interface Brief

```

multiswitch3# show ip int br
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet1/0/1 unassigned      YES unset down       down
GigabitEthernet1/0/2 unassigned      YES unset up        up
GigabitEthernet1/0/3 unassigned      YES unset down      down
GigabitEthernet1/0/4 unassigned      YES unset down      down
GigabitEthernet1/0/5 unassigned      YES unset up        up
GigabitEthernet1/0/6 unassigned      YES unset down      down
GigabitEthernet1/0/7 unassigned      YES unset down      down
GigabitEthernet1/0/8 unassigned      YES unset up        up
GigabitEthernet1/0/9 unassigned      YES unset down      down
GigabitEthernet1/0/10 unassigned     YES unset down      down
GigabitEthernet1/0/11 unassigned     YES unset down      down
GigabitEthernet1/0/12 unassigned     YES unset down      down
GigabitEthernet1/0/13 unassigned     YES unset down      down
GigabitEthernet1/0/14 unassigned     YES unset down      down
GigabitEthernet1/0/15 unassigned     YES unset down      down
GigabitEthernet1/0/16 unassigned     YES unset down      down
GigabitEthernet1/0/17 unassigned     YES unset down      down
GigabitEthernet1/0/18 unassigned     YES unset down      down
GigabitEthernet1/0/19 unassigned     YES unset down      down
GigabitEthernet1/0/20 unassigned     YES unset down      down
GigabitEthernet1/0/21 unassigned     YES unset down      down
GigabitEthernet1/0/22 unassigned     YES manual up       up
GigabitEthernet1/0/23 unassigned     YES manual up       up
GigabitEthernet1/0/24 unassigned     YES manual up       up
GigabitEthernet1/1/1 unassigned      YES unset down      down
GigabitEthernet1/1/2 unassigned      YES unset down      down
GigabitEthernet1/1/3 unassigned      YES unset down      down
GigabitEthernet1/1/4 unassigned      YES unset down      down
Vlan1              unassigned       YES unset administratively down down
Vlan97             148.60.64.7    YES manual up       up
Vlan98             unassigned      YES unset up        up
Vlan99             unassigned      YES unset up        up
MultiSwitch3#

```

## Vlan Brief

VLAN Name	Status	Ports
1 default	active	Gig1/0/10, Gig1/0/11, Gig1/0/12,
Gig1/0/13		Gig1/0/14, Gig1/0/15, Gig1/0/16,
Gig1/0/17		Gig1/0/18, Gig1/0/19, Gig1/0/20,
Gig1/0/21		Gig1/1/1, Gig1/1/2, Gig1/1/3, Gig1/1/4
97 Gestion_de_TI	active	Gig1/0/1, Gig1/0/2, Gig1/0/3
98 Ventas	active	Gig1/0/4, Gig1/0/5, Gig1/0/6
99 Compras	active	Gig1/0/7, Gig1/0/8, Gig1/0/9
100 Servicios	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	
MultiSwitch3#		

## Interface Trunk

```
-----  
Port      Mode       Encapsulation  Status      Native vlan  
Gig1/0/22  on        802.1q         trunking   1  
Gig1/0/23  on        802.1q         trunking   1  
Gig1/0/24  on        802.1q         trunking   1  
  
Port      Vlans allowed on trunk  
Gig1/0/22  97-100  
Gig1/0/23  97-100  
Gig1/0/24  97-100  
  
Port      Vlans allowed and active in management domain  
Gig1/0/22  97,98,99,100  
Gig1/0/23  97,98,99,100  
Gig1/0/24  97,98,99,100  
  
Port      Vlans in spanning tree forwarding state and not pruned  
Gig1/0/22  97,98,99,100  
Gig1/0/23  97,98,99,100  
Gig1/0/24  97,98,100
```

## MSI4 (Switch capa 3)

### Running Config

```
-----  
MultiSwitch4#show run  
Building configuration...  
  
Current configuration : 5337 bytes  
!  
version 16.3.2  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption  
!  
hostname MultiSwitch4  
!  
!  
!  
ip dhcp excluded-address 148.60.64.1 148.60.64.3  
ip dhcp excluded-address 148.60.64.5 148.60.64.10  
ip dhcp excluded-address 148.60.64.17  
ip dhcp excluded-address 148.60.64.28 148.60.64.30  
ip dhcp excluded-address 148.60.64.33  
ip dhcp excluded-address 148.60.64.44 148.60.64.46  
ip dhcp excluded-address 148.60.64.49  
ip dhcp excluded-address 148.60.64.60 148.60.64.62  
ip dhcp excluded-address 148.60.64.34  
ip dhcp excluded-address 148.60.64.50  
ip dhcp excluded-address 148.60.64.20 148.60.64.21  
!
```

```
:  
ip dhcp pool Gestion_de_TI  
network 148.60.64.0 255.255.255.240  
default-router 148.60.64.8  
ip dhcp pool Ventas  
network 148.60.64.16 255.255.255.240  
default-router 148.60.64.17  
ip dhcp pool Compras  
network 148.60.64.32 255.255.255.240  
default-router 148.60.64.33  
ip dhcp pool Servicios  
network 148.60.64.48 255.255.255.240  
default-router 148.60.64.49  
!  
!  
!  
no ip cef  
ip routing  

```

```
!
interface GigabitEthernet1/0/1
switchport access vlan 98
switchport mode access
switchport nonegotiate
switchport port-security
switchport port-security mac-address sticky
switchport port-security mac-address sticky 00E0.B0E8.609D
spanning-tree portfast
!
interface GigabitEthernet1/0/2
switchport access vlan 98
switchport mode access
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/3
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/4
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
```

```
interface GigabitEthernet1/0/5
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/6
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/7
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/8
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/9
switchport access vlan 98
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
,
```

```
:  
interface GigabitEthernet1/0/11  
switchport access vlan 99  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
shutdown  
!  
interface GigabitEthernet1/0/12  
switchport access vlan 99  
switchport mode access  
switchport nonegotiate  
switchport port-security  
switchport port-security mac-address sticky  
switchport port-security mac-address sticky 000A.F398.0A85  
spanning-tree portfast  
!  
interface GigabitEthernet1/0/13  
switchport access vlan 99  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
shutdown  
!  
interface GigabitEthernet1/0/14  
switchport access vlan 99  
switchport mode access  
switchport nonegotiate  
spanning-tree portfast  
shutdown  
!
```

```
!
interface GigabitEthernet1/0/14
switchport access vlan 99
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/15
switchport access vlan 100
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/16
switchport access vlan 100
switchport mode access
switchport nonegotiate
switchport port-security mac-address sticky
spanning-tree portfast
!
interface GigabitEthernet1/0/17
switchport access vlan 100
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
!
interface GigabitEthernet1/0/18
switchport access vlan 100
switchport mode access
switchport nonegotiate
spanning-tree portfast
shutdown
```

---

```
!
interface GigabitEthernet1/0/20
shutdown
!
interface GigabitEthernet1/0/21
shutdown
!
interface GigabitEthernet1/0/22
switchport access vlan 98
switchport mode access
switchport port-security mac-address sticky
!
interface GigabitEthernet1/0/23
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/24
switchport mode trunk
!
interface GigabitEthernet1/1/1
shutdown
!
interface GigabitEthernet1/1/2
shutdown
!
interface GigabitEthernet1/1/3
shutdown
!
interface GigabitEthernet1/1/4
shutdown
!
!
interface Vlan1
no ip address
shutdown
!
interface Vlan97
mac-address 000d.bde6.7701
ip address 148.60.64.9 255.255.255.240
!
interface Vlan98
mac-address 000d.bde6.7702
ip address 148.60.64.20 255.255.255.240
!
interface Vlan99
mac-address 000d.bde6.7703
ip address 148.60.64.34 255.255.255.240
!
interface Vlan100
mac-address 000d.bde6.7704
ip address 148.60.64.50 255.255.255.240
!
ip classless
!
ip flow-export version 9
!
```

```

!
line con 0
!
line aux 0
!
line vty 0 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
!
!
!
!
end

```

## Ip Interface Brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet1/0/1	unassigned	YES	unset	up	up
GigabitEthernet1/0/2	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/3	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/4	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/5	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/6	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/7	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/8	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/9	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/10	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/11	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/12	unassigned	YES	unset	up	up
GigabitEthernet1/0/13	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/14	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/15	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/16	unassigned	YES	unset	up	up
GigabitEthernet1/0/17	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/18	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/19	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/20	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/21	unassigned	YES	unset	administratively down	down
GigabitEthernet1/0/22	unassigned	YES	unset	up	up
GigabitEthernet1/0/23	unassigned	YES	manual	up	up
GigabitEthernet1/0/24	unassigned	YES	manual	up	up
GigabitEthernet1/1/1	unassigned	YES	unset	administratively down	down
GigabitEthernet1/1/2	unassigned	YES	unset	administratively down	down
GigabitEthernet1/1/3	unassigned	YES	unset	administratively down	down
GigabitEthernet1/1/4	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan97	148.60.64.9	YES	manual	up	up
Vlan98	148.60.64.20	YES	manual	up	up
Vlan99	148.60.64.34	YES	manual	up	up
Vlan100	148.60.64.50	YES	manual	up	up

MultiSwitch4\$

## Vlan Brief

VLAN Name	Status	Ports
1 default	active	Gig1/0/20, Gig1/0/21, Gig1/1/1, Gig1/1/2 Gig1/1/3, Gig1/1/4
97 Gestion_de_TI	active	
98 Ventas	active	Gig1/0/1, Gig1/0/2, Gig1/0/3, Gig1/0/4 Gig1/0/5, Gig1/0/6, Gig1/0/7, Gig1/0/8 Gig1/0/9, Gig1/0/10, Gig1/0/22
99 Compras Gig1/0/14	active	Gig1/0/11, Gig1/0/12, Gig1/0/13,
100 Servicios Gig1/0/18	active	Gig1/0/15, Gig1/0/16, Gig1/0/17, Gig1/0/19
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	
M...1+10...+~hA+		

## Interface Trunk

Port	Mode	Encapsulation	Status	Native vlan
Gig1/0/23	on	802.1q	trunking	1
Gig1/0/24	on	802.1q	trunking	1

Port	Vlans allowed on trunk
Gig1/0/23	1-1005
Gig1/0/24	1-1005

Port	Vlans allowed and active in management domain
Gig1/0/23	1,97,98,99,100
Gig1/0/24	1,97,98,99,100

Port	Vlans in spanning tree forwarding state and not pruned
Gig1/0/23	1,98,99,100
Gig1/0/24	1,97,98,99,100

## WR ventas (Wireless Router)

The screenshot shows the 'Network Setup' section of a Wireless Router configuration page. Under 'Router IP', the IP Address is set to 148.60.64.21 with a Subnet Mask of 255.255.255.240. The 'DHCP Server Settings' section has 'Enabled' selected for the DHCP Server. It specifies a Start IP Address of 192.168.1.100, a Maximum number of Users of 50, and an IP Address Range of 192.168.1.100 - 149. The Client Lease Time is set to 0 minutes (0 means one day). There are four static DNS entries, all set to 0.0.0.0, and a WINS entry also set to 0.0.0.0.

## Pruebas DHCP server

L1 Servicios:

The screenshot shows the 'IP Configuration' interface for the 'FastEthernet0' interface. The 'Interface' dropdown is set to 'FastEthernet0'. Under the 'IP Configuration' tab, 'DHCP' is selected instead of 'Static'. The configuration fields are as follows: IPv4 Address: 148.60.64.54, Subnet Mask: 255.255.255.240, Default Gateway: 148.60.64.49, and DNS Server: 0.0.0.0. A separate 'IPv6 Configuration' tab is also visible.

### L1 Compras:

IP Configuration	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	148.60.64.36
Subnet Mask	255.255.255.240
Default Gateway	148.60.64.33
DNS Server	0.0.0.0

### L4 Ventas:

IP Configuration	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	148.60.64.18
Subnet Mask	255.255.255.240
Default Gateway	148.60.64.17
DNS Server	0.0.0.0

### L1 Gestión TI

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	148.60.64.4
Subnet Mask	255.255.255.240
Default Gateway	148.60.64.8
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::202:4AFF:FE25:368C

### L3 Compras:

IP Configuration	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
IPv4 Address	148.60.64.35
Subnet Mask	255.255.255.240
Default Gateway	148.60.64.33
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static

### L2 Compras

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	169.254.10.134
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	
<input type="radio"/> Automatic	<input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::20A:F3FF:FE98:A85
Default Gateway	
DNS Server	

### L3 Ventas

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input checked="" type="radio"/> DHCP	<input type="radio"/> Static
DHCP request successful.	
IPv4 Address	148.60.64.27
Subnet Mask	255.255.255.240
Default Gateway	148.60.64.17
DNS Server	0.0.0.0
IPv6 Configuration	

## P Servicios:

Display Name P Servicios

Gateway/DNS IPv4

DHCP  
 Static

Default Gateway 148.60.64.49

DNS Server

Gateway/DNS IPv6

...

## L1 Ventas

L1 Ventas

Physical Config Desktop Programming Attributes

IP Configuration

Interface Wireless0

IP Configuration

DHCP  Static

IPv4 Address 148.60.64.26

Subnet Mask 255.255.255.240

Default Gateway 148.60.64.17

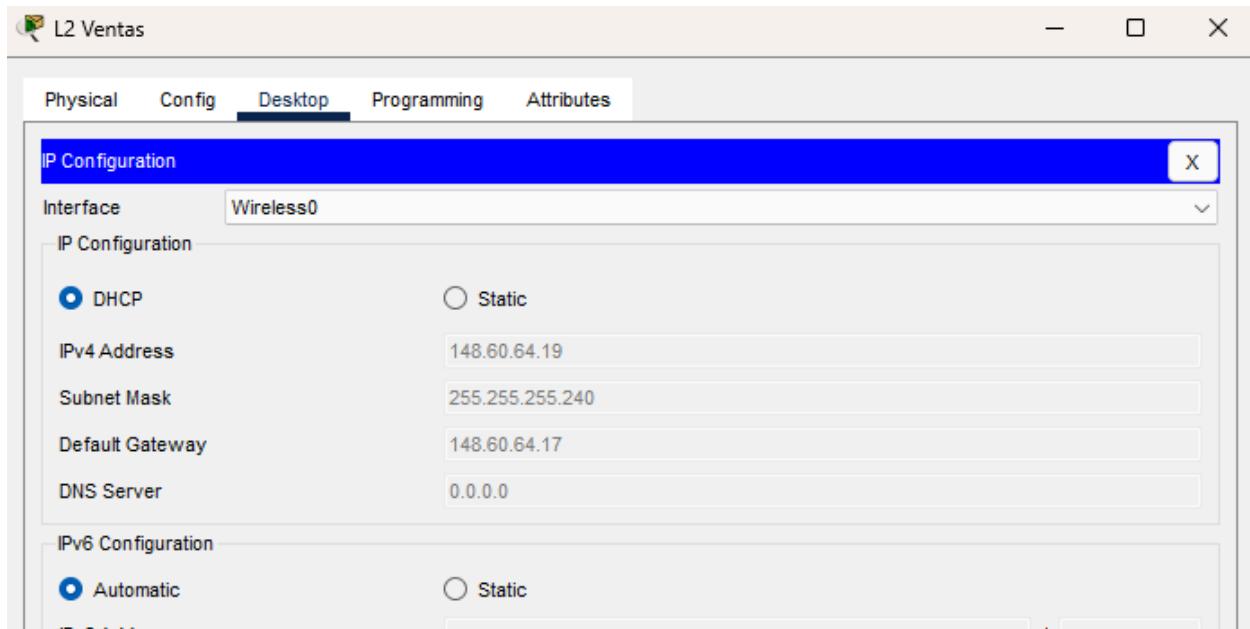
DNS Server 0.0.0.0

IPv6 Configuration

Automatic  Static

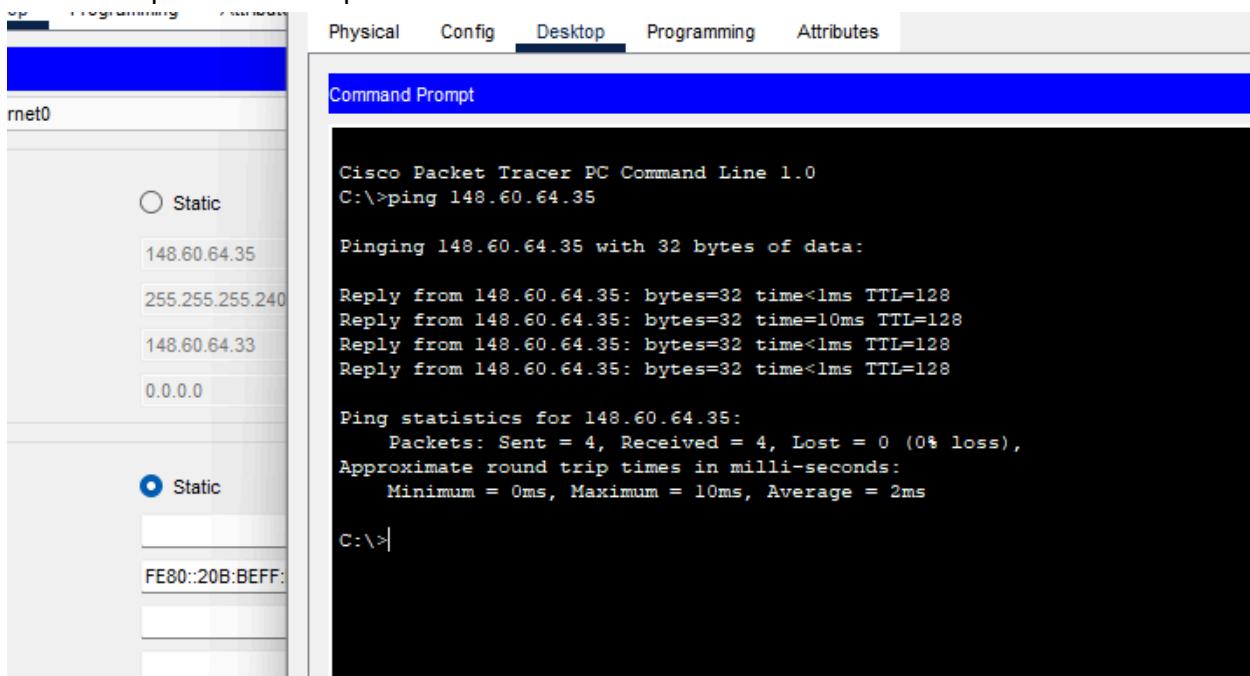
IPv6 Address /

## L2 Ventas



## Pruebas de Conexion

### De L1 Compras a L3 Compras



## De L1 Ventas a L2 Ventas y L4 Ventas

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 148.60.64.18

Pinging 148.60.64.18 with 32 bytes of data:

Reply from 148.60.64.18: bytes=32 time=27ms TTL=128
Reply from 148.60.64.18: bytes=32 time=13ms TTL=128
Reply from 148.60.64.18: bytes=32 time=27ms TTL=128
Reply from 148.60.64.18: bytes=32 time=5ms TTL=128

Ping statistics for 148.60.64.18:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 5ms, Maximum = 27ms, Average = 18ms

C:\>ping 148.60.64.19

Pinging 148.60.64.19 with 32 bytes of data:

Reply from 148.60.64.19: bytes=32 time=32ms TTL=128
Reply from 148.60.64.19: bytes=32 time=15ms TTL=128
Reply from 148.60.64.19: bytes=32 time=14ms TTL=128
Reply from 148.60.64.19: bytes=32 time=18ms TTL=128

Ping statistics for 148.60.64.19:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 32ms, Average = 19ms

C:\>
```

## De L1 Servicios a P servicios

```
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 148.60.64.49

Pinging 148.60.64.49 with 32 bytes of data:

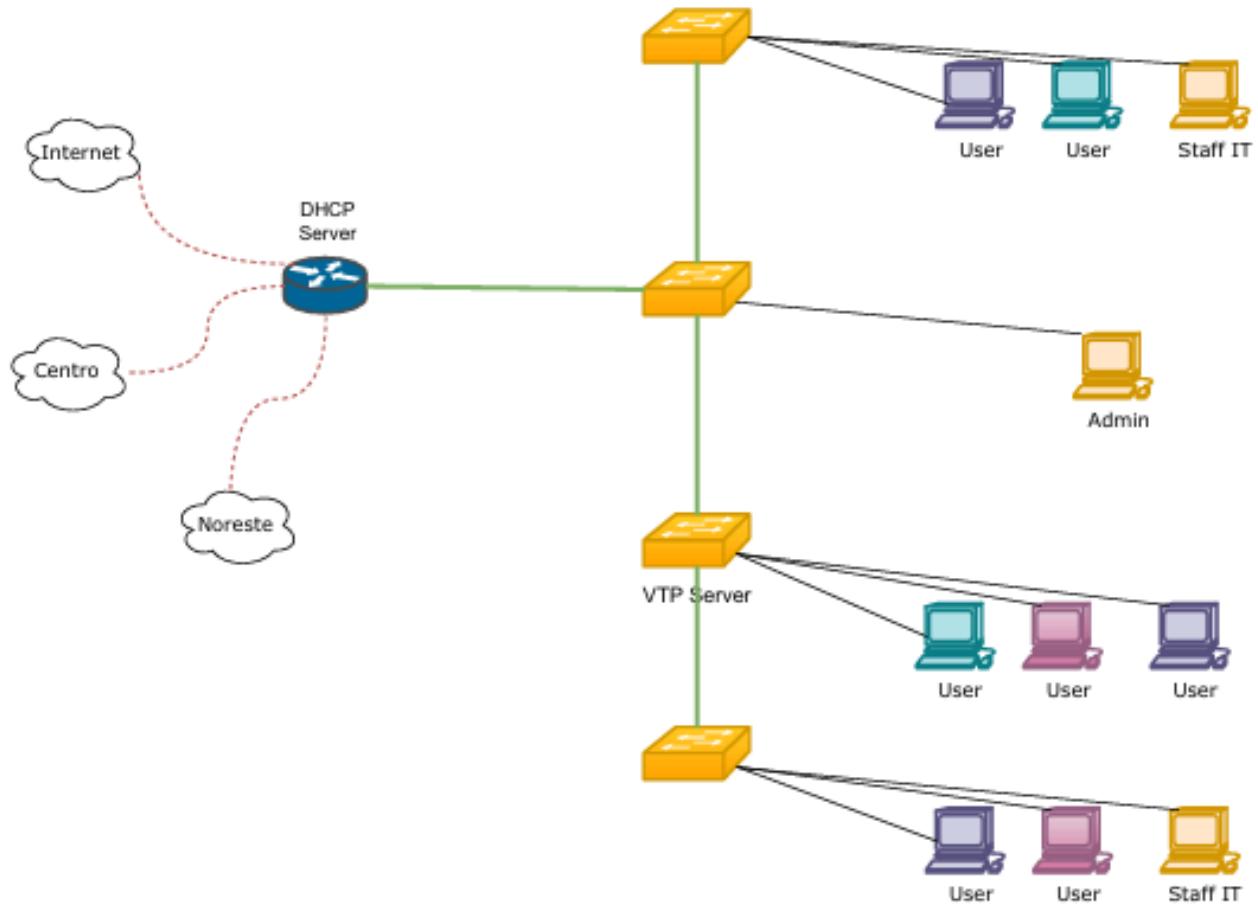
Reply from 148.60.64.49: bytes=32 time<1ms TTL=255

Ping statistics for 148.60.64.49:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

# Noroeste

## Topología Esperada



## VLANs

9:Gestión de TI

5:Mkt

6:Ventas

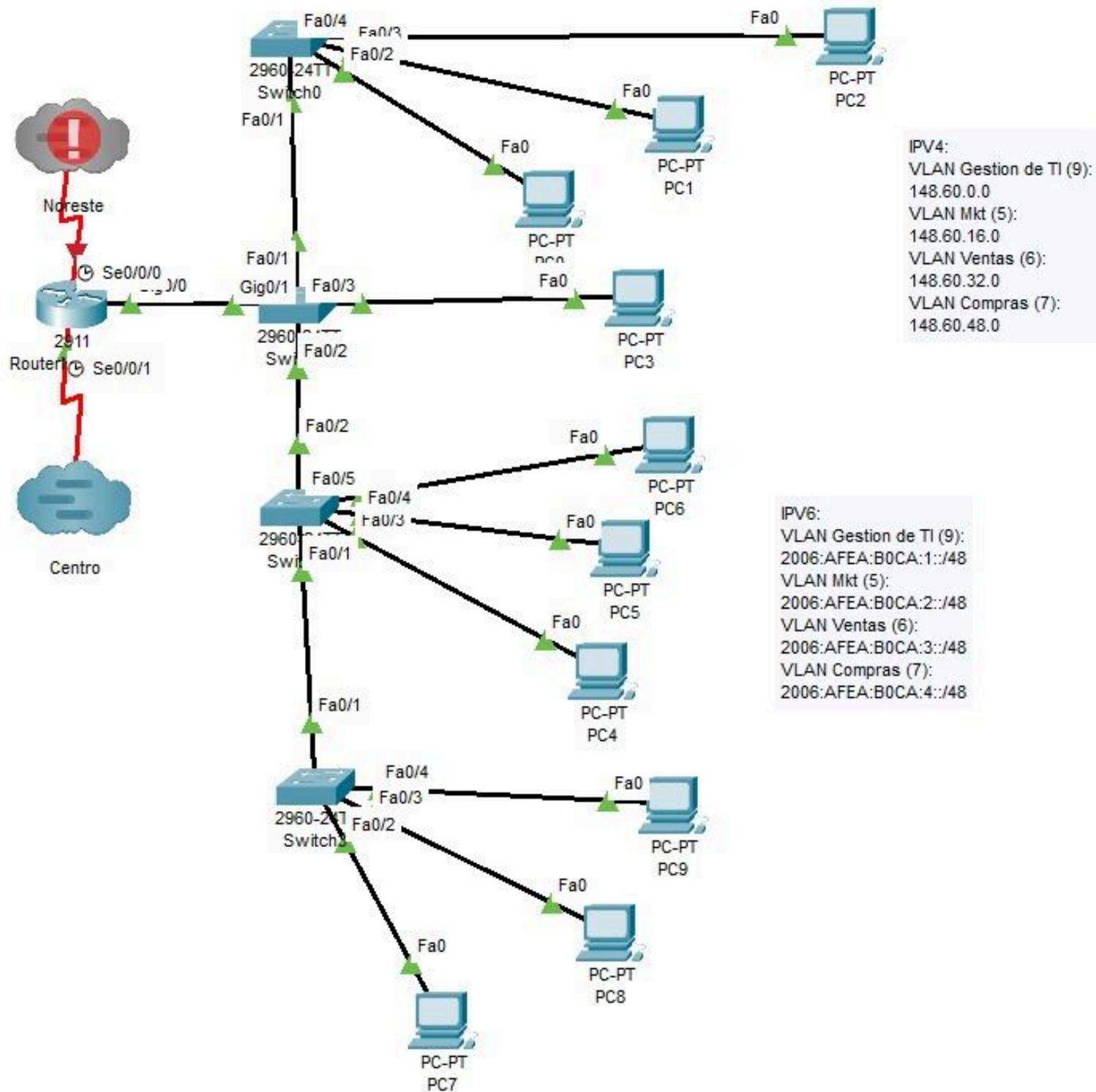
7:Compras

NW

Implemente IPv4 e IPv6 (Dual Stack) con el Network ID: 2006:AFEAB0CA::/48.  
Configure VTP

Región  
Noroeste

## Topología Final



## Direccionamiento

Ipv4 Noroeste: 148.60.0.0 /18

Ipv6 Noroeste: 2006:AFEAB0CA::/48

Vlans	Nombres	Ipv4	Ipv6
9	Gestion de TI	148.60.0.0 /20	2006:AFEAB0CA:1:: /64
5	Mkt	148.60.16.0 /20	2006:AFEAB0CA:2:: /64
6	Ventas	148.60.32.0 /20	2006:AFEAB0CA:3:: /64
7	Compras	148.60.48.0 /20	2006:AFEAB0CA:4:: /64

## Explicación Configuraciones

### Tareas Específicas

- Implemente IPv4 e IPv6 (Dual Stack):

La región Noroeste opera bajo un esquema Dual Stack, lo que permite utilizar IPv4 e IPv6 al mismo tiempo, esta configuración permite asignar direcciones mediante DHCPv4 y DHCPv6, asegurando compatibilidad con equipos modernos y heredados.

- Configure VTP Server:

El Switch 2 fue configurado en modo VTP Server, siendo el encargado de crear y distribuir las VLANs hacia los demás switches clientes.

Las VLANs implementadas en esta región son:

- ❖ VLAN 5 – Mkt
- ❖ VLAN 6 – Ventas
- ❖ VLAN 7 – Compras
- ❖ VLAN 9 – Gestión de TI

Esto facilita la administración centralizada y la propagación automática de la segmentación de red.

- Configure DHCP y DHCPv6:

El router de la región fue configurado como servidor tanto para DHCPv4 como DHCPv6, se crearon pools específicos para cada VLAN de las permitidas que son las: 5, 6, 7 y 9.

- A. En IPv4, cada pool asigna direcciones y gateway correspondientes a su subred.
  - B. En IPv6 se utilizó DHCPv6 Stateful, permitiendo recibir dirección IPv6 completa por parte del servidor.
- Ruteo inter VLAN:

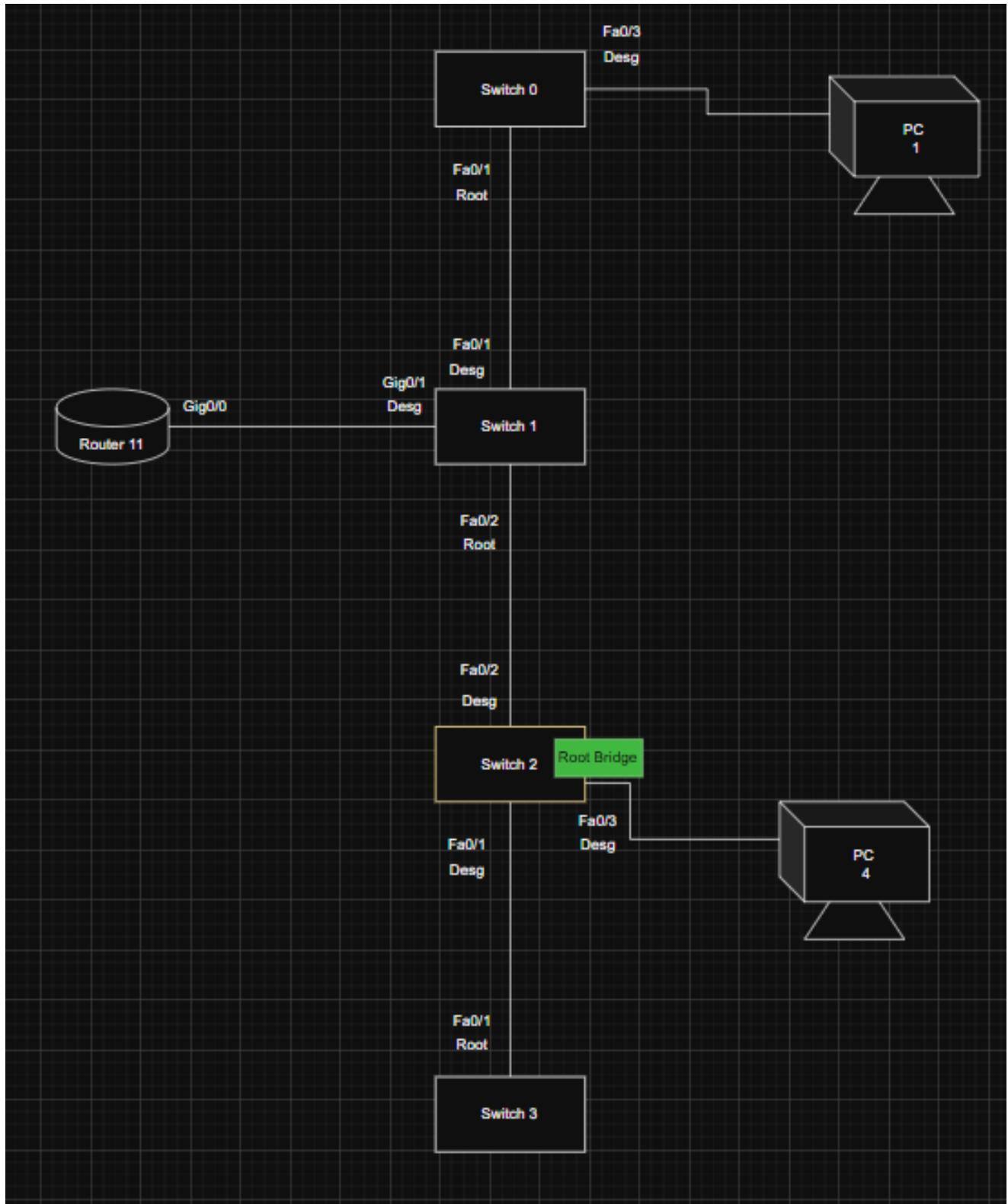
Para el ruteo inter VLAN se implementó un esquema router-on-a-stick, utilizando subinterfaces en el router, a cada subinterfaz se le aplicó:

1. Encapsulamiento dot1Q
2. Direcciones IPv4 e IPv6 correspondientes a la VLAN

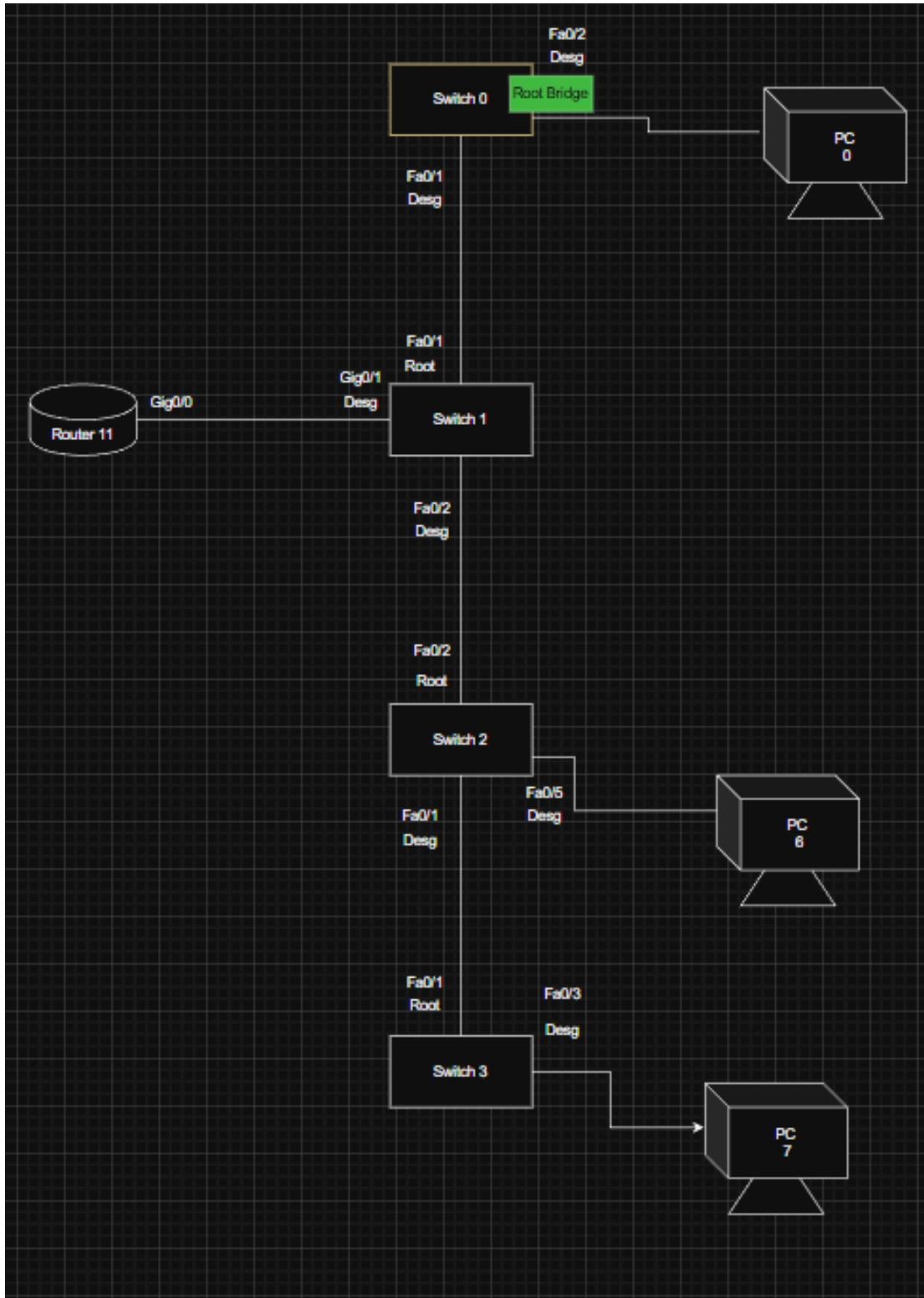
Este diseño permite que las distintas VLANs puedan comunicarse entre sí a través del router.

# Topologia STP por VLAN

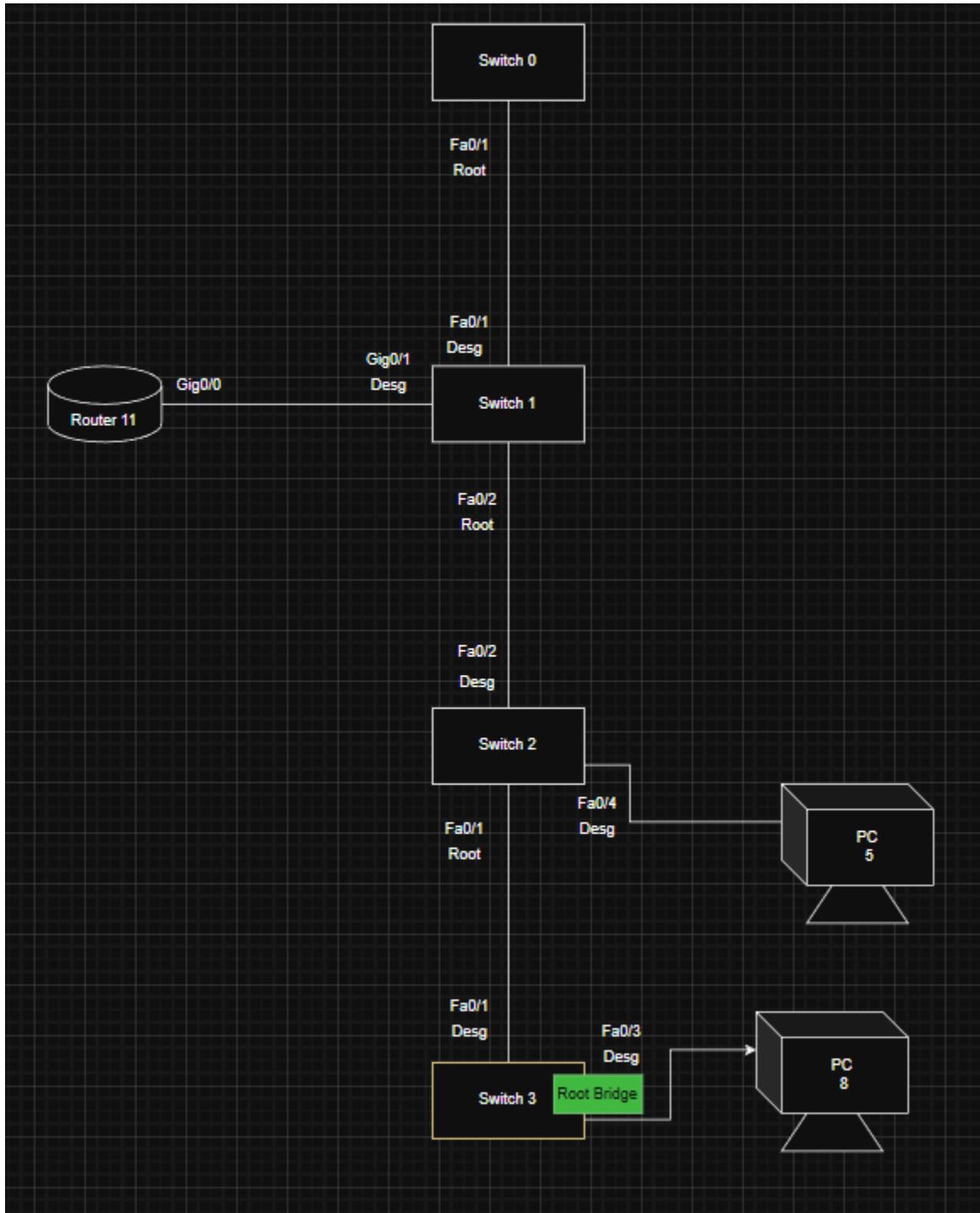
VLAN 5



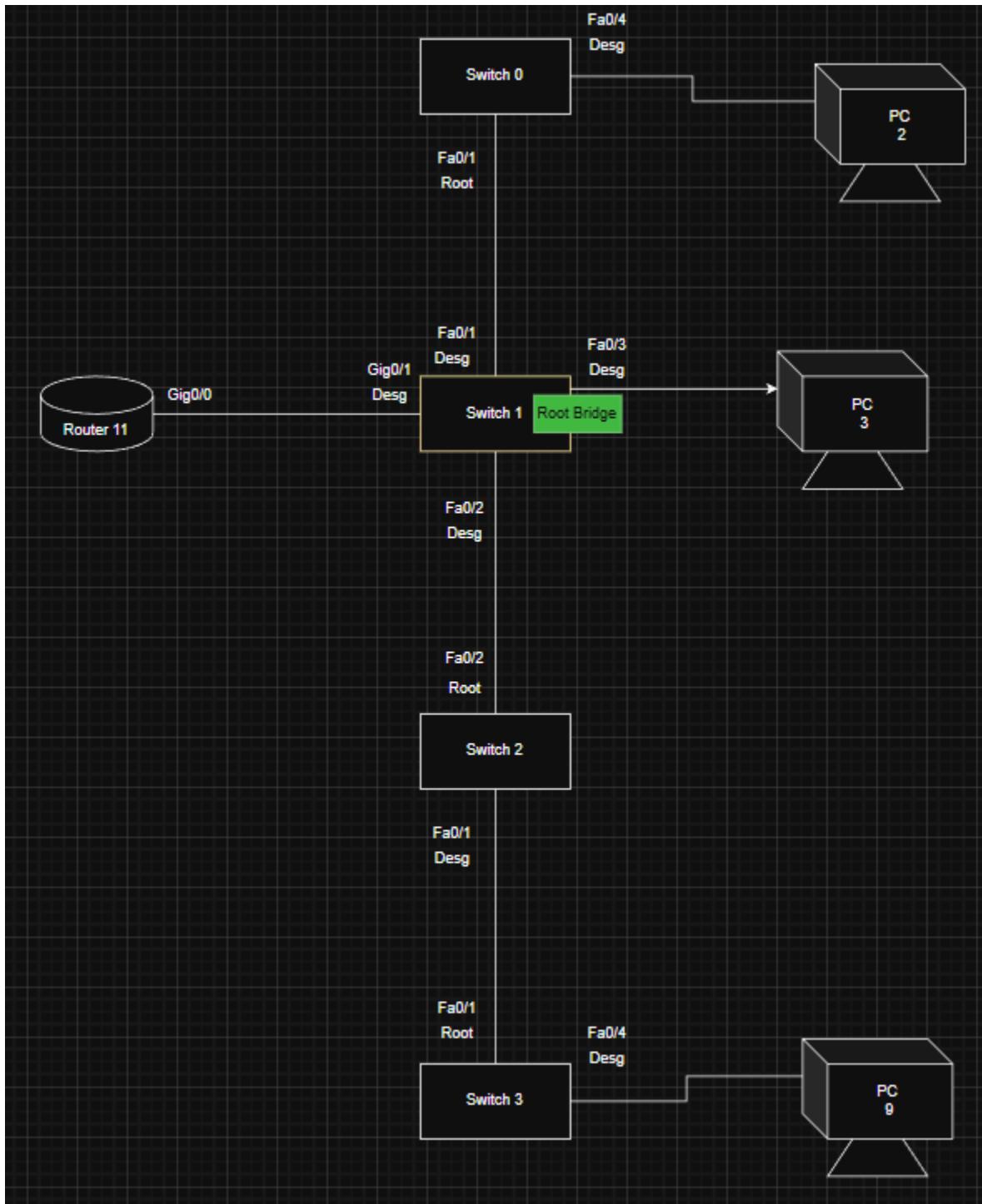
## VLAN 6



## VLAN 7



VLAN 9:



# Configuración de Dispositivos

## Router11

Running Config:

```
R11#show run
Building configuration...

Current configuration : 2553 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R11
!
!
!
!
ip dhcp excluded-address 148.60.0.1 148.60.0.10
ip dhcp excluded-address 148.60.16.1 148.60.16.10
ip dhcp excluded-address 148.60.32.1 148.60.32.10
ip dhcp excluded-address 148.60.48.1 148.60.48.10
!
ip dhcp pool Gestion_De_TI
  network 148.60.0.0 255.255.240.0
  default-router 148.60.0.1
ip dhcp pool Mkt
  network 148.60.16.0 255.255.240.0
  default-router 148.60.16.1
ip dhcp pool Ventas
  network 148.60.32.0 255.255.240.0
  default-router 148.60.32.1
ip dhcp pool Compras
  network 148.60.48.0 255.255.240.0
  default-router 148.60.48.1
!
!
!
ip cef
ipv6 unicast-routing
'
```

```
!
ipv6 dhcp pool Gestion_De_TiV6
  address prefix 2006:AFEAA:BOCA:1::/64 lifetime 172800 86400
!
ipv6 dhcp pool MktV6
  address prefix 2006:AFEAA:BOCA:2::/64 lifetime 172800 86400
!
ipv6 dhcp pool VentasV6
  address prefix 2006:AFEAA:BOCA:3::/64 lifetime 172800 86400
!
ipv6 dhcp pool ComprasV6
  address prefix 2006:AFEAA:BOCA:4::/64 lifetime 172800 86400
!
!
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
license udi pid CISCO2911/K9 sn FTX152475R1-
!
!
!
!
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
!
spanning-tree mode pvst
!
```

```
:  
interface GigabitEthernet0/0  
no ip address  
duplex auto  
speed auto  
!  
interface GigabitEthernet0/0.5  
encapsulation dot1Q 5  
ip address 148.60.16.1 255.255.240.0  
ipv6 address 2006:AFEA:B0CA:2::1/64  
ipv6 nd managed-config-flag  
ipv6 dhcp server MktV6  
!  
interface GigabitEthernet0/0.6  
encapsulation dot1Q 6  
ip address 148.60.32.1 255.255.240.0  
ipv6 address 2006:AFEA:B0CA:3::1/64  
ipv6 nd managed-config-flag  
ipv6 dhcp server VentasV6  
!  
interface GigabitEthernet0/0.7  
encapsulation dot1Q 7  
ip address 148.60.48.1 255.255.240.0  
ipv6 address 2006:AFEA:B0CA:4::1/64  
ipv6 nd managed-config-flag  
ipv6 dhcp server ComprasV6  
!  
interface GigabitEthernet0/0.9  
encapsulation dot1Q 9  
ip address 148.60.0.1 255.255.240.0  
ipv6 address 2006:AFEA:B0CA:1::1/64  
ipv6 nd managed-config-flag  
ipv6 dhcp server Gestion_De_TiV6  
!  
  
interface GigabitEthernet0/1  
no ip address  
duplex auto  
speed auto  
shutdown  
!  
interface GigabitEthernet0/2  
no ip address  
duplex auto  
speed auto  
shutdown  
!  
interface Vlan1  
no ip address  
shutdown  
!  
router rip  
version 2  
network 148.60.0.0  
!  
ip classless  
!  
ip flow-export version 9
```

```

interface Serial0/0/0
 ip address 148.60.64.86 255.255.255.252
 clock rate 2000000
!
interface Serial0/0/1
 ip address 148.60.232.1 255.255.255.252
 clock rate 2000000
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login local
 transport input ssh
line vty 5 15
 login local
 transport input ssh
!
!
!
end

```

## Ip Router

```

R11# Show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

      148.60.0.0/16 is variably subnetted, 8 subnets, 2 masks
C        148.60.0.0/20 is directly connected, GigabitEthernet0/0.9
L        148.60.0.1/32 is directly connected, GigabitEthernet0/0.9
C        148.60.16.0/20 is directly connected, GigabitEthernet0/0.5
L        148.60.16.1/32 is directly connected, GigabitEthernet0/0.5
C        148.60.32.0/20 is directly connected, GigabitEthernet0/0.6
L        148.60.32.1/32 is directly connected, GigabitEthernet0/0.6
C        148.60.48.0/20 is directly connected, GigabitEthernet0/0.7
L        148.60.48.1/32 is directly connected, GigabitEthernet0/0.7

```

Ip interface brief

```
R11#show ip int brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0 unassigned      YES unset  up           up
GigabitEthernet0/0.5 148.60.16.1   YES manual up        up
GigabitEthernet0/0.6 148.60.32.1   YES manual up        up
GigabitEthernet0/0.7 148.60.48.1   YES manual up        up
GigabitEthernet0/0.9 148.60.0.1    YES manual up        up
GigabitEthernet0/1   unassigned      YES unset  administratively down down
GigabitEthernet0/2   unassigned      YES unset  administratively down down
Vlan1              unassigned      YES unset  administratively down down
...
```

Vlan Brief

```
R11#show vlan brief
VLAN Name          Status     Ports
---- -
1    default        active
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
R11#
```

## Switch0 Capa 2

### Running Config

```
Building configuration...

Current configuration : 1830 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW0
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
spanning-tree vlan 6 priority 24576
!
interface FastEthernet0/1
!
interface FastEthernet0/2
switchport access vlan 6
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/3
switchport access vlan 5
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/4
switchport access vlan 9
switchport mode access
spanning-tree portfast
!
```

```
interface Vlan1
  no ip address
  shutdown
!
interface Vlan6
  no ip address
!
interface Vlan9
  ip address 148.60.0.2 255.255.240.0
!
ip default-gateway 148.60.0.1
!
!
!
!
line con 0
!
line vty 0 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
!
!
!
!
end
```

## Ip interface brief

```
SWU#show ip int brief
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/1    unassigned      YES manual up        up
FastEthernet0/2    unassigned      YES manual up        up
FastEthernet0/3    unassigned      YES manual up        up
FastEthernet0/4    unassigned      YES manual up        up
FastEthernet0/5    unassigned      YES manual administratively down down
FastEthernet0/6    unassigned      YES manual administratively down down
FastEthernet0/7    unassigned      YES manual administratively down down
FastEthernet0/8    unassigned      YES manual administratively down down
FastEthernet0/9    unassigned      YES manual administratively down down
FastEthernet0/10   unassigned      YES manual administratively down down
FastEthernet0/11   unassigned      YES manual administratively down down
FastEthernet0/12   unassigned      YES manual administratively down down
FastEthernet0/13   unassigned      YES manual administratively down down
FastEthernet0/14   unassigned      YES manual administratively down down
FastEthernet0/15   unassigned      YES manual administratively down down
FastEthernet0/16   unassigned      YES manual administratively down down
FastEthernet0/17   unassigned      YES manual administratively down down
FastEthernet0/18   unassigned      YES manual administratively down down
FastEthernet0/19   unassigned      YES manual administratively down down
FastEthernet0/20   unassigned      YES manual administratively down down
FastEthernet0/21   unassigned      YES manual administratively down down
FastEthernet0/22   unassigned      YES manual administratively down down
FastEthernet0/23   unassigned      YES manual administratively down down
FastEthernet0/24   unassigned      YES manual administratively down down
GigabitEthernet0/1 unassigned      YES manual administratively down down
GigabitEthernet0/2 unassigned      YES manual administratively down down
Vlan1              unassigned      YES manual administratively down down
Vlan6              unassigned      YES manual up        up
Vlan9              148.60.0.2    YES manual up        up

```

## Vlan

## Brief

```
SWO# show vlan brief
VLAN Name          Status     Ports
--- -----
1    default        active    Fa0/1, 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
5    Mkt            active    Fa0/3
6    Ventas         active    Fa0/2
7    Compras        active
9    Gestion_de_TI active    Fa0/4
1002 fddi-default  active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default  active
```

## Switch1 Capa 2

### Running Config

```
Building configuration...

Current configuration : 1817 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW1
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
spanning-tree vlan 9 priority 24576
!
interface FastEthernet0/1
switchport trunk allowed vlan 5-7,9
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/2
!
interface FastEthernet0/3
switchport access vlan 9
switchport mode access
spanning-tree portfast
!
```

```
:  
interface GigabitEthernet0/1  
switchport trunk allowed vlan 5-7,9  
switchport mode trunk  
switchport nonegotiate  
!  
interface GigabitEthernet0/2  
shutdown  
!  
interface Vlan1  
no ip address  
shutdown  
!  
interface Vlan9  
ip address 148.60.0.3 255.255.240.0  
!  
ip default-gateway 148.60.0.1  
!  
!  
!  
!  
line con 0  
!  
line vty 0 4  
login local  
transport input ssh  
line vty 5 15  
login local  
transport input ssh  
!  
!  
!  
!  
end
```

Ip	interface	brief
SW1#show ip int brief		
Interface	IP-Address	OK? Method Status Protocol
FastEthernet0/1	unassigned	YES manual up up
FastEthernet0/2	unassigned	YES manual up up
FastEthernet0/3	unassigned	YES manual up up
FastEthernet0/4	unassigned	YES manual administratively down down
FastEthernet0/5	unassigned	YES manual administratively down down
FastEthernet0/6	unassigned	YES manual administratively down down
FastEthernet0/7	unassigned	YES manual administratively down down
FastEthernet0/8	unassigned	YES manual administratively down down
FastEthernet0/9	unassigned	YES manual administratively down down
FastEthernet0/10	unassigned	YES manual administratively down down
FastEthernet0/11	unassigned	YES manual administratively down down
FastEthernet0/12	unassigned	YES manual administratively down down
FastEthernet0/13	unassigned	YES manual administratively down down
FastEthernet0/14	unassigned	YES manual administratively down down
FastEthernet0/15	unassigned	YES manual administratively down down
FastEthernet0/16	unassigned	YES manual administratively down down
FastEthernet0/17	unassigned	YES manual administratively down down
FastEthernet0/18	unassigned	YES manual administratively down down
FastEthernet0/19	unassigned	YES manual administratively down down
FastEthernet0/20	unassigned	YES manual administratively down down
FastEthernet0/21	unassigned	YES manual administratively down down
FastEthernet0/22	unassigned	YES manual administratively down down
FastEthernet0/23	unassigned	YES manual administratively down down
FastEthernet0/24	unassigned	YES manual administratively down down
GigabitEthernet0/1	unassigned	YES manual up up
GigabitEthernet0/2	unassigned	YES manual administratively down down
Vlan1	unassigned	YES manual administratively down down
Vlan9	148.60.0.3	YES manual up up
***		

Vlan	Brief
VLAN Name	Status Ports
1 default	active Fa0/2, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/2
5 Mkt	active
6 Ventas	active
7 Compras	active
9 Gestion_de_TI	active Fa0/3
1002 fddi-default	active
1003 token-ring-default	active
1004 fddinet-default	active
1005 trnet-default	active
SW1#	

Interface trunk

```
SW1#show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/2, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/2
5	Mkt	active	
6	Ventas	active	
7	Compras	active	
9	Gestion_de_TI	active	Fa0/3
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fdnet-default	active	
1005	trnet-default	active	
SW1#show int trunk			
Port	Mode	Encapsulation	Status Native vlan
Fa0/1	on	802.1q	trunking 1
Gig0/1	on	802.1q	trunking 1
Port	Vlans allowed on trunk		
Fa0/1	5-7,9		
Gig0/1	5-7,9		
Port	Vlans allowed and active in management domain		
Fa0/1	5,6,7,9		
Gig0/1	5,6,7,9		
Port	Vlans in spanning tree forwarding state and not pruned		
Fa0/1	5,6,7,9		
Gig0/1	5,6,7,9		

## Switch2 Capa 2

### Running Config

```
Building configuration...

Current configuration : 2292 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW2
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
spanning-tree vlan 5 priority 24576
!
interface FastEthernet0/1
switchport trunk allowed vlan 5-7,9
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 4
switchport port-security mac-address sticky
!
interface FastEthernet0/2
switchport trunk allowed vlan 5-7,9
switchport mode trunk
switchport nonegotiate
switchport port-security maximum 128
switchport port-security mac-address sticky
!
interface FastEthernet0/3
switchport access vlan 5
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/4
switchport access vlan 7
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
!
interface FastEthernet0/5
switchport access vlan 6
switchport mode access
switchport port-security mac-address sticky
spanning-tree portfast
```

```
!
interface Vlan5
no ip address
!
interface Vlan9
ip address 148.60.0.4 255.255.240.0
!
ip default-gateway 148.60.0.1
!
!
!
line con 0
!
line vty 0 4
login local
transport input ssh
line vty 5 15
login local
transport input ssh
!
!
!
end
```

Ip	interface	brief	
SW2# show ip int br			
Interface	IP-Address	OK? Method Status	Protocol
FastEthernet0/1	unassigned	YES manual up	up
FastEthernet0/2	unassigned	YES manual up	up
FastEthernet0/3	unassigned	YES manual up	up
FastEthernet0/4	unassigned	YES manual up	up
FastEthernet0/5	unassigned	YES manual up	up
FastEthernet0/6	unassigned	YES manual administratively down	down
FastEthernet0/7	unassigned	YES manual administratively down	down
FastEthernet0/8	unassigned	YES manual administratively down	down
FastEthernet0/9	unassigned	YES manual administratively down	down
FastEthernet0/10	unassigned	YES manual administratively down	down
FastEthernet0/11	unassigned	YES manual administratively down	down
FastEthernet0/12	unassigned	YES manual administratively down	down
FastEthernet0/13	unassigned	YES manual administratively down	down
FastEthernet0/14	unassigned	YES manual administratively down	down
FastEthernet0/15	unassigned	YES manual administratively down	down
FastEthernet0/16	unassigned	YES manual administratively down	down
FastEthernet0/17	unassigned	YES manual administratively down	down
FastEthernet0/18	unassigned	YES manual administratively down	down
FastEthernet0/19	unassigned	YES manual administratively down	down
FastEthernet0/20	unassigned	YES manual administratively down	down
FastEthernet0/21	unassigned	YES manual administratively down	down
FastEthernet0/22	unassigned	YES manual administratively down	down
FastEthernet0/23	unassigned	YES manual administratively down	down
FastEthernet0/24	unassigned	YES manual administratively down	down
GigabitEthernet0/1	unassigned	YES manual administratively down	down
GigabitEthernet0/2	unassigned	YES manual administratively down	down
Vlan1	unassigned	YES manual administratively down	down
Vlan5	unassigned	YES manual up	up
Vlan9	148.60.0.4	YES manual up	up

Vlan	Brief
VLAN Name	Status Ports
1 default	active 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
5 Mkt	active Fa0/3
6 Ventas	active Fa0/5
7 Compras	active Fa0/4
9 Gestion_de_TI	active
1002 fddi-default	active
1003 token-ring-default	active
1004 fddinet-default	active
1005 trnet-default	active

## Interface trunk

VLAN	Name	Status	Ports
1	default	active	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
5	Mkt	active	Fa0/3
6	Ventas	active	Fa0/5
7	Compras	active	Fa0/4
9	Gestion_de_TI	active	
1002	fdmi-default	active	
1003	token-ring-default	active	
1004	fdmynet-default	active	
1005	trnet-default	active	

SW2# show int tr

Port	Mode	Encapsulation	Status	Native vlan
Fa0/1	on	802.1q	trunking	1
Fa0/2	on	802.1q	trunking	1

Port Vlans allowed on trunk

Fa0/1	5-7,9
Fa0/2	5-7,9

Port Vlans allowed and active in management domain

Fa0/1	5,6,7,9
Fa0/2	5,6,7,9

Port Vlans in spanning tree forwarding state and not pruned

Fa0/1	5,6,7,9
Fa0/2	5,6,7,9

## Switch3 Capa 2

### Running Config

```
Building configuration...

Current configuration : 1830 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW3
!
!
!
ip ssh version 2
ip domain-name juanmark.com
!
username juan secret 5 $1$mERr$g4BPZdYZlrbx6s4ntdIwb.
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
spanning-tree vlan 7 priority 24576
!
interface FastEthernet0/1
!
interface FastEthernet0/2
switchport access vlan 6
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/3
switchport access vlan 7
switchport mode access
spanning-tree portfast
!
interface FastEthernet0/4
switchport access vlan 9
switchport mode access
spanning-tree portfast
```

```
interface Vlan1
  no ip address
  shutdown
!
interface Vlan7
  no ip address
!
interface Vlan9
  ip address 148.60.0.5 255.255.240.0
!
ip default-gateway 148.60.0.1
!
!
!
line con 0
!
line vty 0 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
!
!
!
end
```

Ip	interface	brief
SW3# show ip int br		
Interface	IP-Address	OK? Method Status Protocol
FastEthernet0/1	unassigned	YES manual up up
FastEthernet0/2	unassigned	YES manual up up
FastEthernet0/3	unassigned	YES manual up up
FastEthernet0/4	unassigned	YES manual up up
FastEthernet0/5	unassigned	YES manual administratively down down
FastEthernet0/6	unassigned	YES manual administratively down down
FastEthernet0/7	unassigned	YES manual administratively down down
FastEthernet0/8	unassigned	YES manual administratively down down
FastEthernet0/9	unassigned	YES manual administratively down down
FastEthernet0/10	unassigned	YES manual administratively down down
FastEthernet0/11	unassigned	YES manual administratively down down
FastEthernet0/12	unassigned	YES manual administratively down down
FastEthernet0/13	unassigned	YES manual administratively down down
FastEthernet0/14	unassigned	YES manual administratively down down
FastEthernet0/15	unassigned	YES manual administratively down down
FastEthernet0/16	unassigned	YES manual administratively down down
FastEthernet0/17	unassigned	YES manual administratively down down
FastEthernet0/18	unassigned	YES manual administratively down down
FastEthernet0/19	unassigned	YES manual administratively down down
FastEthernet0/20	unassigned	YES manual administratively down down
FastEthernet0/21	unassigned	YES manual administratively down down
FastEthernet0/22	unassigned	YES manual administratively down down
FastEthernet0/23	unassigned	YES manual administratively down down
FastEthernet0/24	unassigned	YES manual administratively down down
GigabitEthernet0/1	unassigned	YES manual administratively down down
GigabitEthernet0/2	unassigned	YES manual administratively down down
Vlan1	unassigned	YES manual administratively down down
Vlan7	unassigned	YES manual up up
Vlan9	148.60.0.5	YES manual up up

Vlan	Brief
VLAN Name	Status Ports
-----	-----
1 default	active Fa0/1, 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
5 Mkt	active
6 Ventas	active Fa0/2
7 Compras	active Fa0/3
9 Gestion_de_TI	active Fa0/4
1002 fddi-default	active
1003 token-ring-default	active
1004 fddinet-default	active
1005 trnet-default	active
....	

## Pruebas DHCP Server

PC0

IP Configuration

X

Interface FastEthernet0

IP Configuration

DHCP       Static

IPv4 Address: 169.254.35.109

Subnet Mask: 255.255.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic       Static

IPv6 Address: /

Link Local Address: FE80::207:ECFF:FE4C:236D

Default Gateway: FE80::290:CFF:FEA6:9C80

DNS Server: /

R02 1X

PC1

Interface FastEthernet0

IP Configuration

DHCP       Static

IPv4 Address: 169.254.219.16

Subnet Mask: 255.255.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic       Static

IPv6 Address: /

Link Local Address: FE80::230:F2FF:FE43:DB10

Default Gateway: FE80::290:CFF:FEA6:9C80

DNS Server: /

R02 1X

## PC2

IP Configuration

Interface: FastEthernet0

IP Configuration

DHCP       Static

IPv4 Address:

Subnet Mask:

Default Gateway:  0.0.0.0

DNS Server:  0.0.0.0

IPv6 Configuration

Automatic       Static

IPv6 Address:  /

Link Local Address:  FE80::230:A3FF:FE29:411B

Default Gateway:  FE80::290:CFF:FEA6:9C80

DNS Server:

OK Cancel

## PC3

IP Configuration

Interface: FastEthernet0

IP Configuration

DHCP       Static

IPv4 Address:  148.60.0.11

Subnet Mask:  255.255.240.0

Default Gateway:  148.60.0.1

DNS Server:  0.0.0.0

IPv6 Configuration

Automatic       Static

IPv6 Address:  /  64

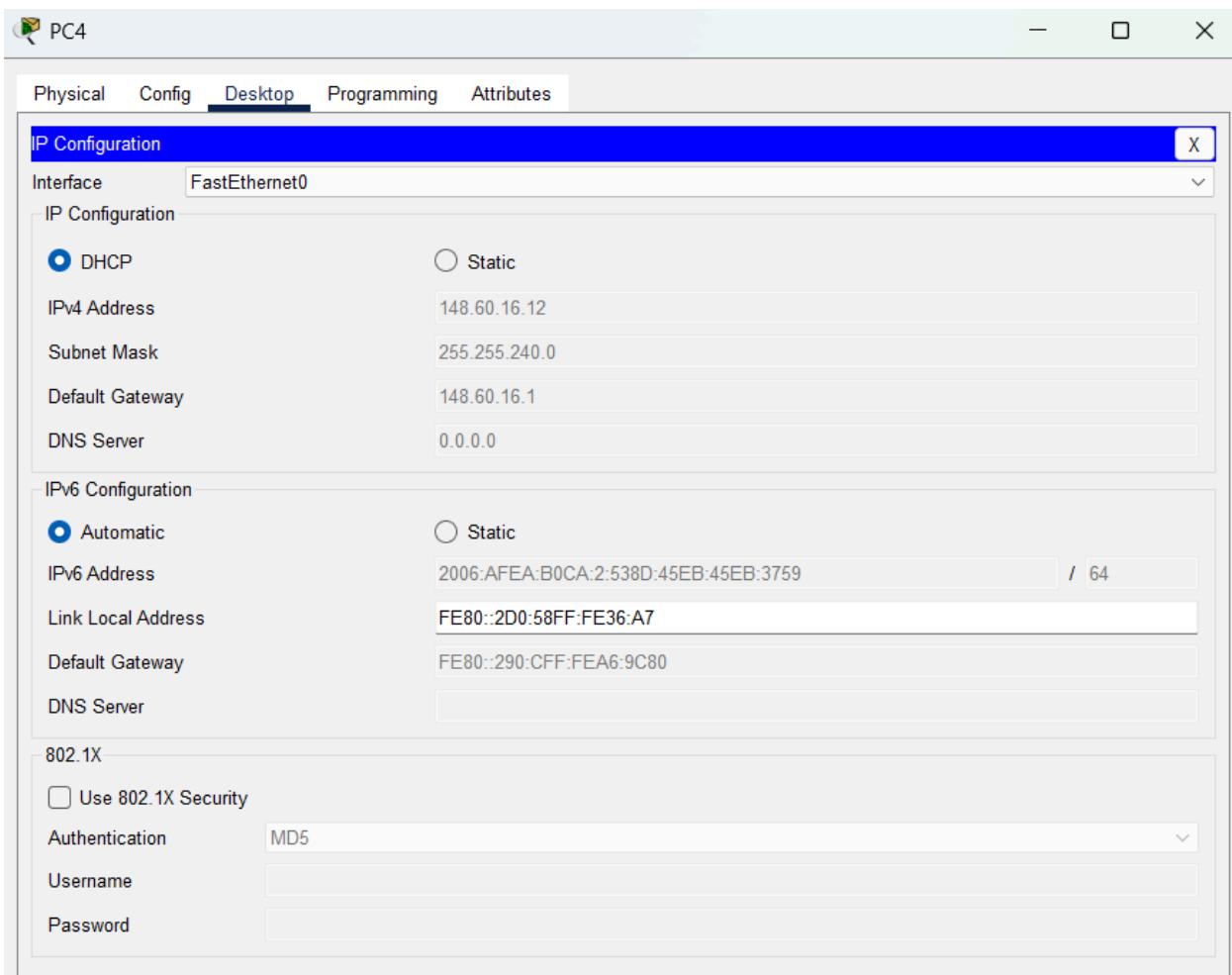
Link Local Address:  FE80::2E0:B0FF:FE1E:3793

Default Gateway:  FE80::290:CFF:FEA6:9C80

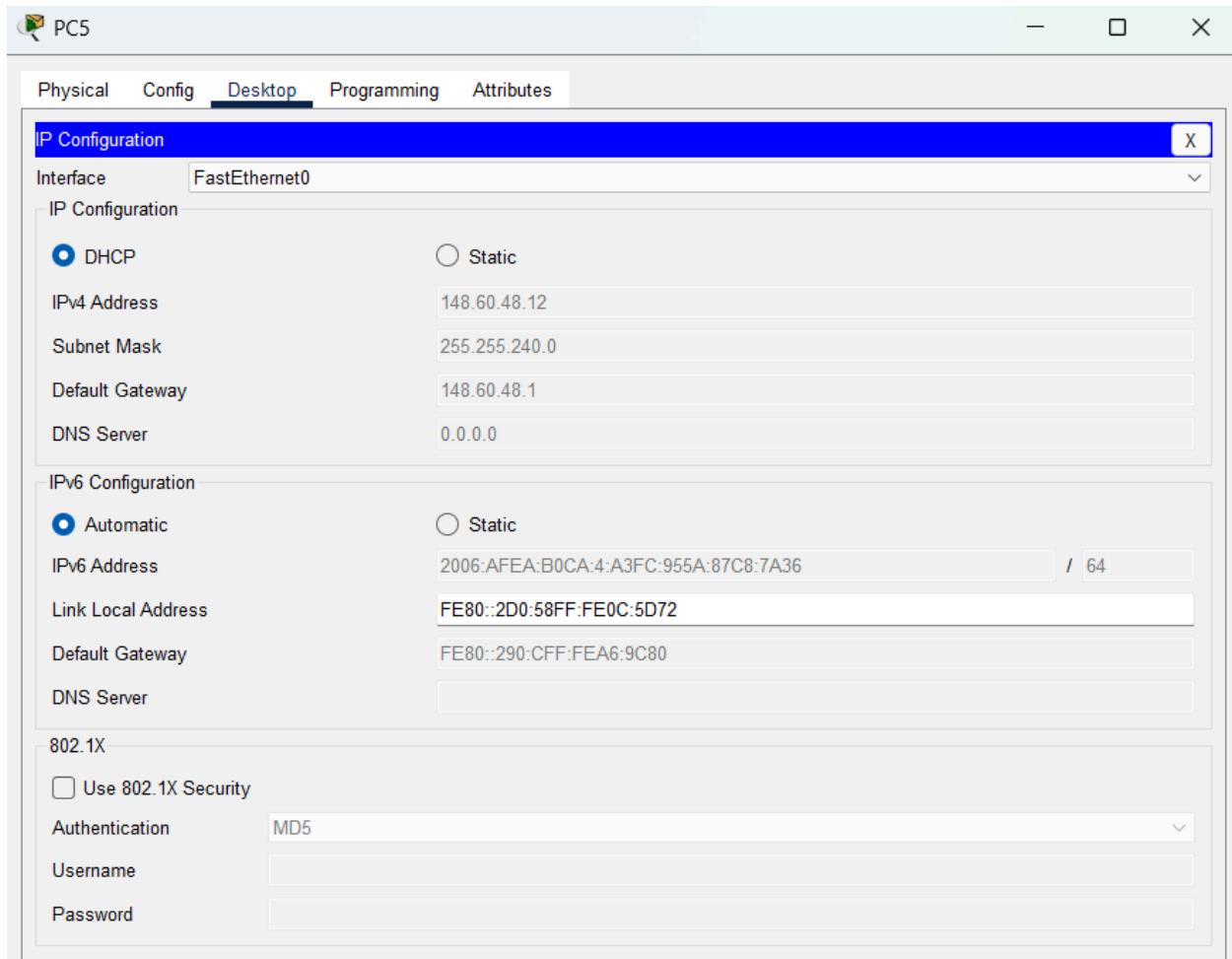
DNS Server:

OK Cancel

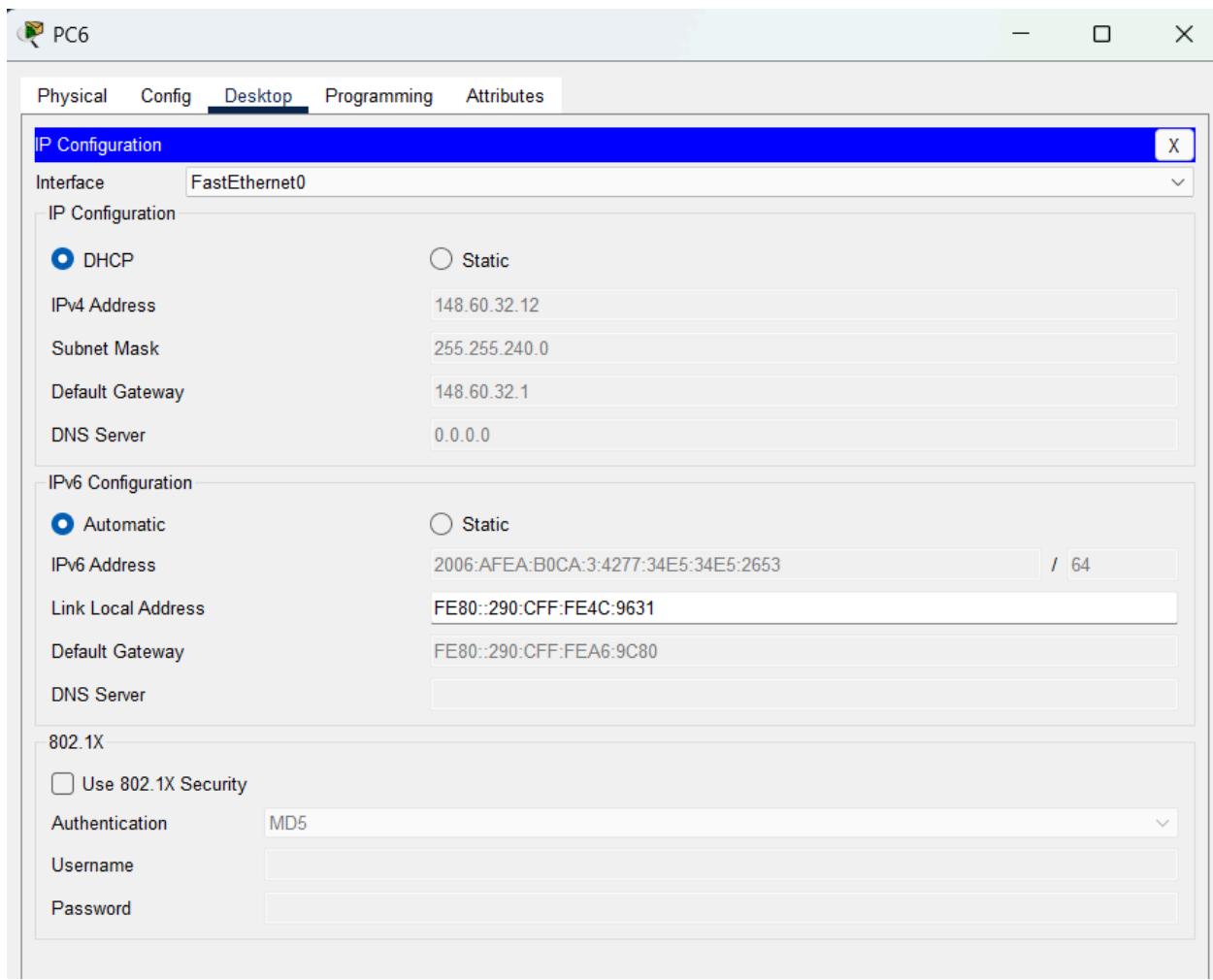
PC4



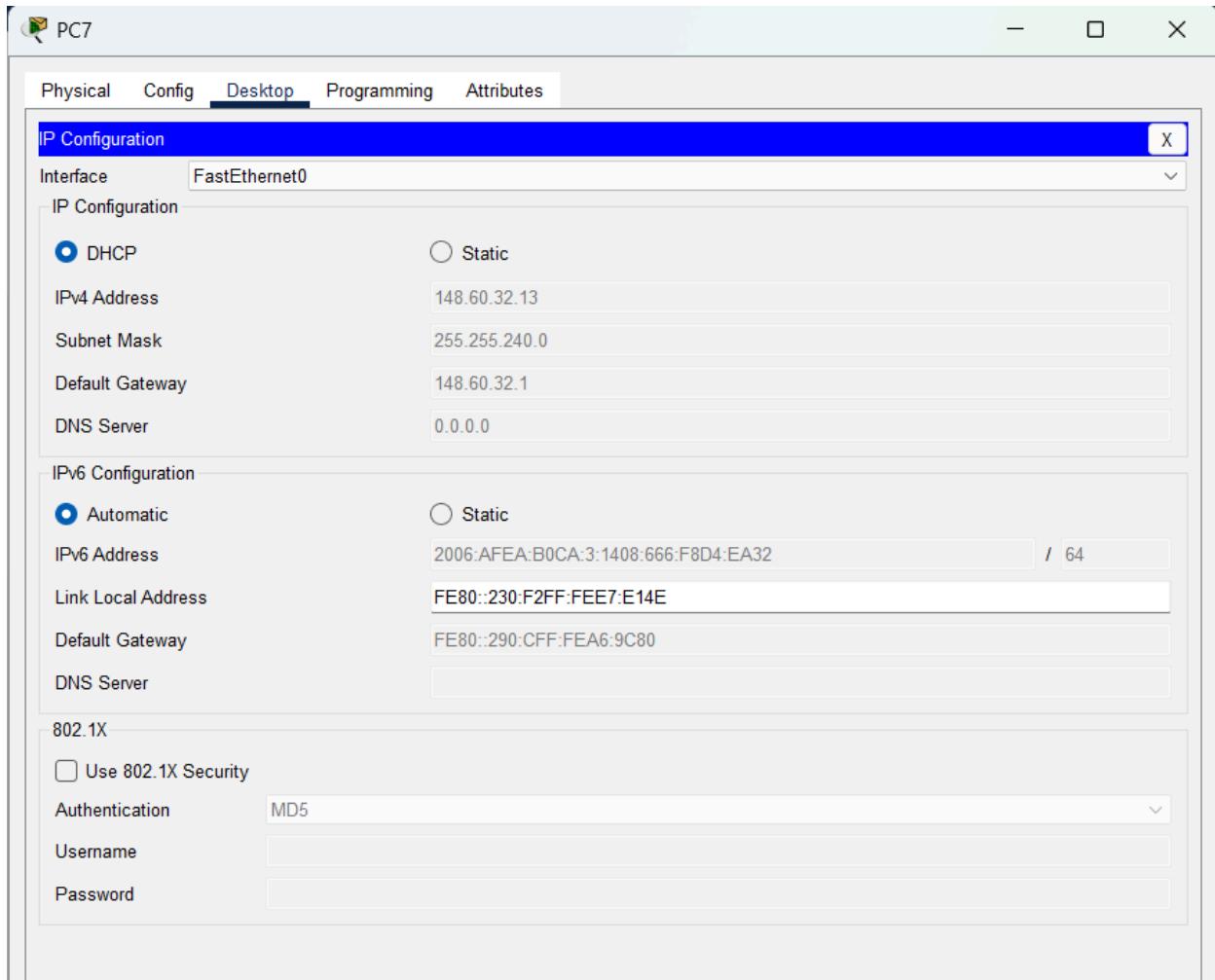
PC5



PC6



PC7



PC8

PC8

Physical Config Desktop Programming Attributes

**IP Configuration**

Interface: FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address: 148.60.48.11

Subnet Mask: 255.255.240.0

Default Gateway: 148.60.48.1

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic  Static

IPv6 Address: 2006:AFEAB0CA:4:CE10:B08E:A2EB:A2EB / 64

Link Local Address: FE80::2E0:F7FF:FE81:C148

Default Gateway: FE80::290:CFF:FEA6:9C80

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

PC9

PC9

Physical Config Desktop Programming Attributes

### IP Configuration

Interface: FastEthernet0

IP Configuration

DHCP  Static

IPv4 Address: 148.60.0.13

Subnet Mask: 255.255.240.0

Default Gateway: 148.60.0.1

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic  Static

IPv6 Address: 2006:AFEAB0CA:1:F421:E69E:E69E:D80C / 64

Link Local Address: FE80::20B:BEFF:FE30:75DE

Default Gateway: FE80::290:CFF:FEA6:9C80

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

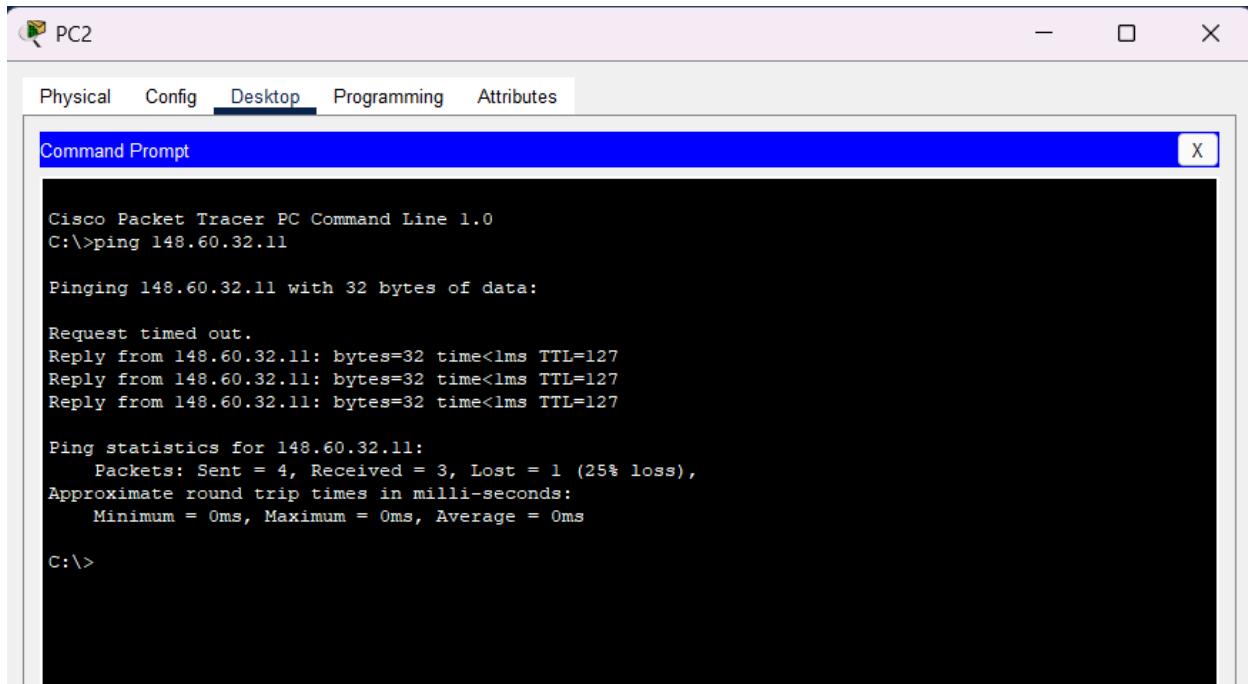
Username:

Password:

## Pruebas de Conexion

- IPv4:

Ping de PC2 conectado al Switch 0 hacia la PC 7 conectada al Switch 3.



```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 148.60.32.11

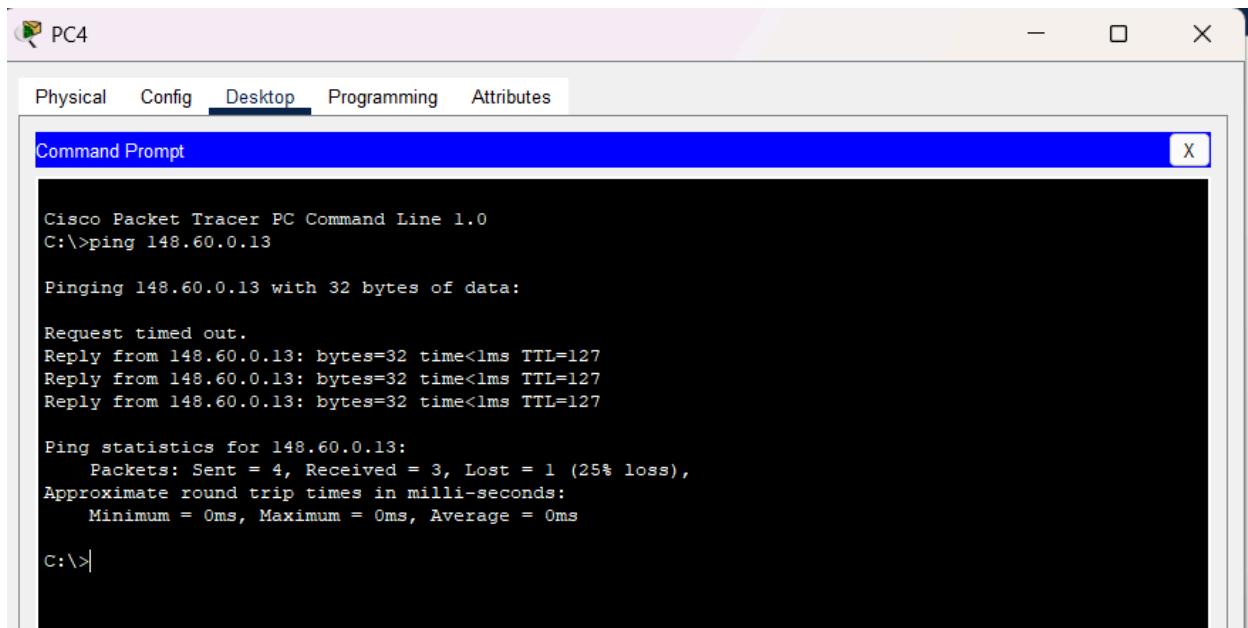
Pinging 148.60.32.11 with 32 bytes of data:

Request timed out.
Reply from 148.60.32.11: bytes=32 time<1ms TTL=127
Reply from 148.60.32.11: bytes=32 time<1ms TTL=127
Reply from 148.60.32.11: bytes=32 time<1ms TTL=127

Ping statistics for 148.60.32.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Ping de PC 4 conectado al Switch 2 hacia la PC 3 conectada al Switch 1.



```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 148.60.0.13

Pinging 148.60.0.13 with 32 bytes of data:

Request timed out.
Reply from 148.60.0.13: bytes=32 time<1ms TTL=127
Reply from 148.60.0.13: bytes=32 time<1ms TTL=127
Reply from 148.60.0.13: bytes=32 time<1ms TTL=127

Ping statistics for 148.60.0.13:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

- IPv6:

Ping de PC2 conectado al Switch 0 hacia la PC 7 conectada al Switch 3.

```
C:\>ping 2006:AFE:A:BOCA:3:828E:6659:58C7:4A25

Pinging 2006:AFE:A:BOCA:3:828E:6659:58C7:4A25 with 32 bytes of data:

Reply from 2006:AFE:A:BOCA:3:828E:6659:58C7:4A25: bytes=32 time<1ms TTL=127

Ping statistics for 2006:AFE:A:BOCA:3:828E:6659:58C7:4A25:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Ping de PC 4 conectado al Switch 2 hacia la PC 3 conectada al Switch 1.

```
C:\>ping 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C

Pinging 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C with 32 bytes of data:

Reply from 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C: bytes=32 time<1ms TTL=127
Reply from 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C: bytes=32 time=1ms TTL=127
Reply from 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C: bytes=32 time<1ms TTL=127
Reply from 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C: bytes=32 time<1ms TTL=127

Ping statistics for 2006:AFE:A:BOCA:1:B342:A5A0:971E:897C:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

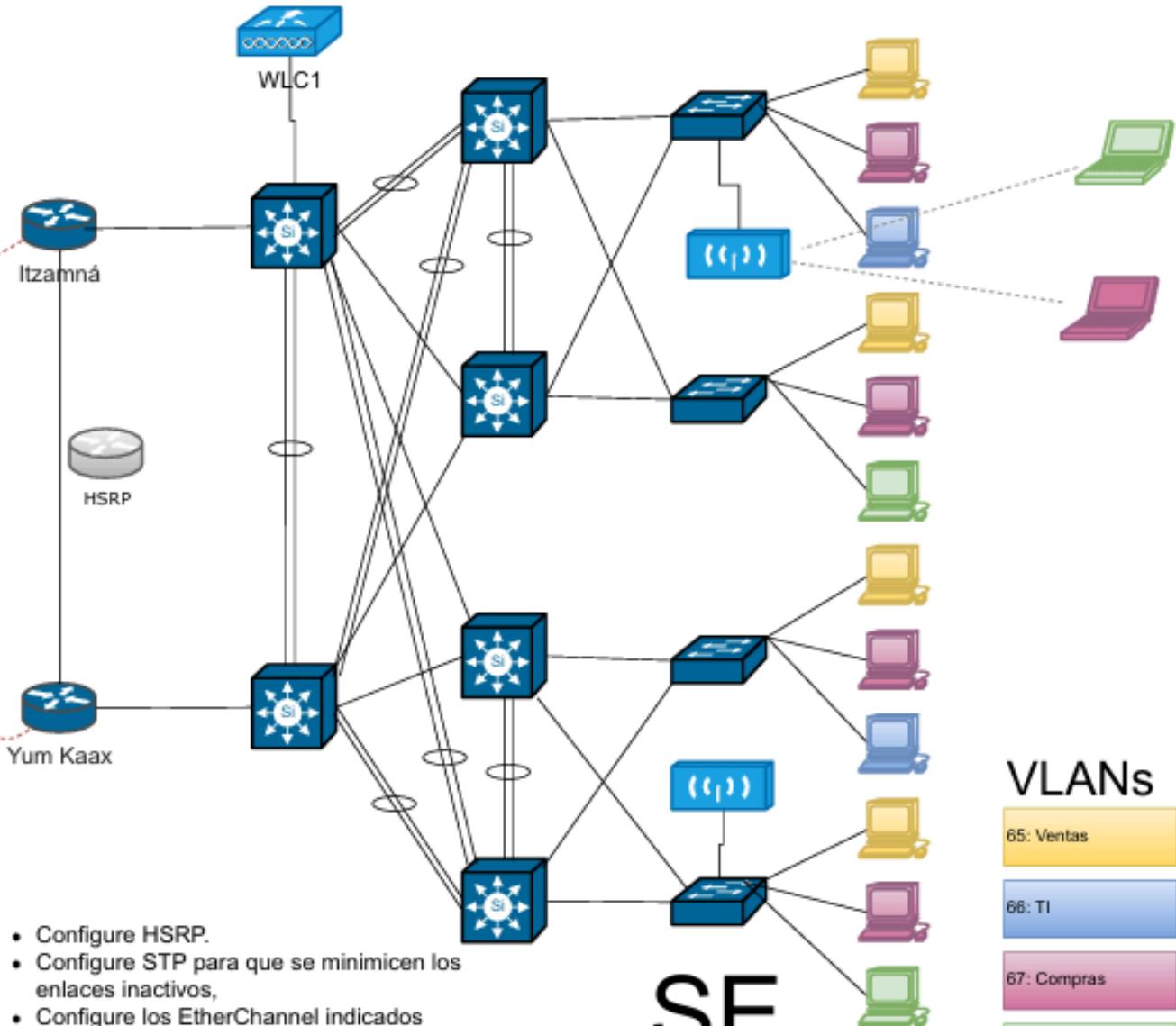
C:\>
```

## Problemas y Complicaciones

La realización del DHCPv6: Me tomó más tiempo del esperado debido a que pensaba que como en IPv4 se debían excluir ciertas direcciones, cosa que aprendí que no es necesaria debido a que hay tanta infinidad de IPs disponibles con IPv6 que jamás se asignan automáticamente las primeras disponibles.

# Sureste

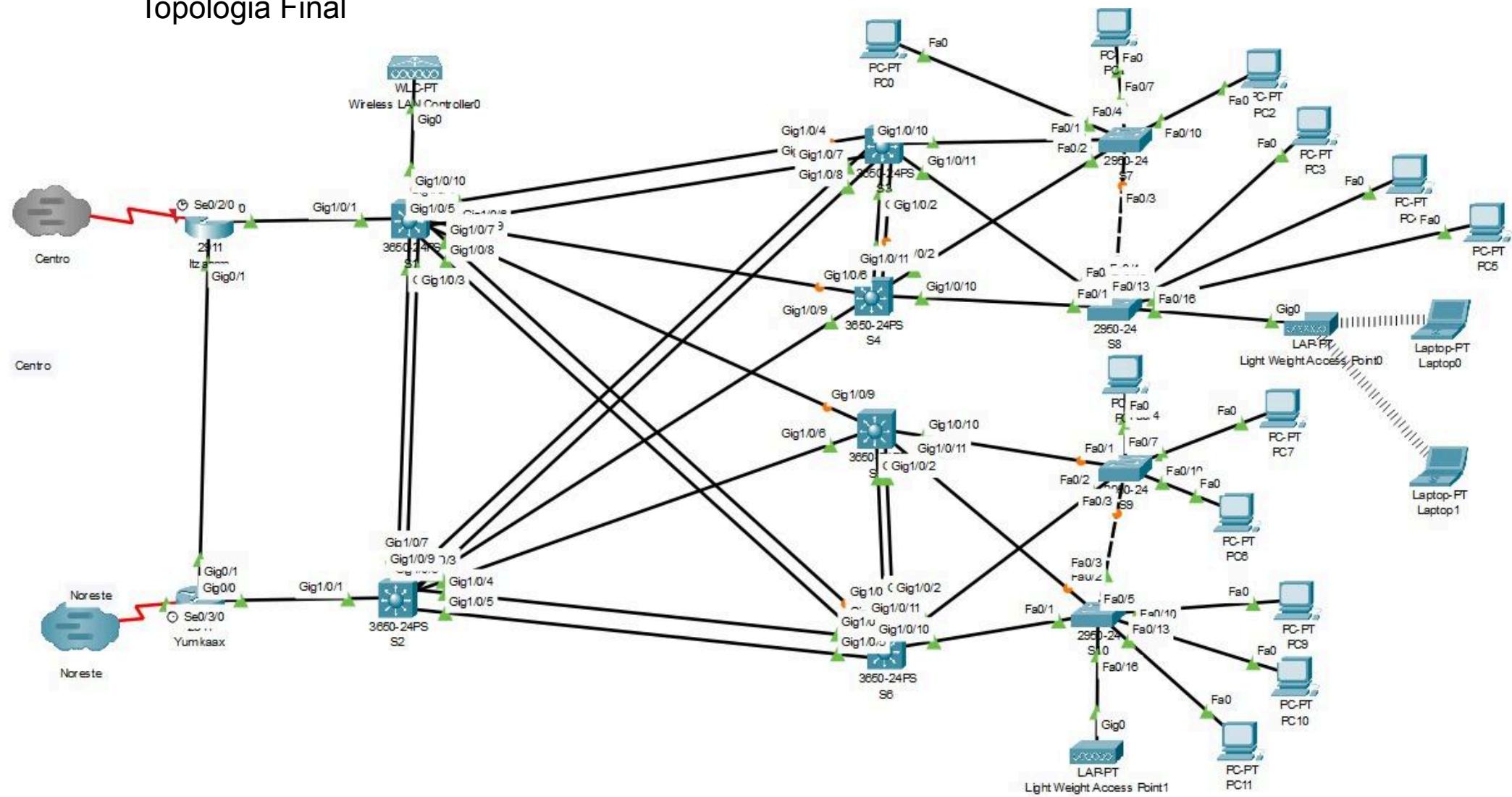
## Topología Esperada



- Configure HSRP.
- Configure STP para que se minimicen los enlaces inactivos,
- Configure los EtherChannel indicados
- Configure VTP
- Los diferentes departamentos tienen acceso a la red por WiFi y por cable. Configure la controladora.

Región  
Sureste

## Topologia Final



## Direccionamiento

Ipv4 Sureste: 148.60.128.32 /28

Vlans	Nombre	Ipv4
65	Ventas	148.60.128.32 /28
66	TI	148.60.128.48 /28
67	Compras	148.60.128.64 /28
68	Mkt	148.60.128.80 /28
69	Admon	148.60.128.96 /28

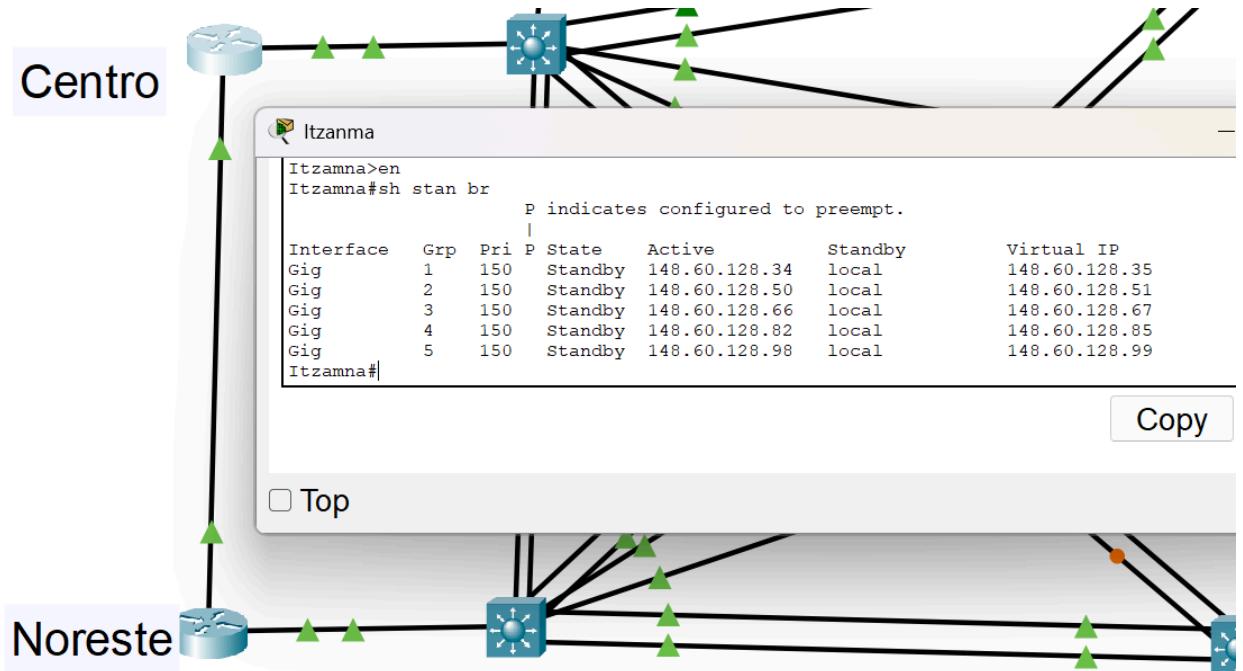
Red HSRP: 148.60.128.0 /28

Red de Routers a Switch mas cercano: 148.60.128.16 /28

## Explicación Configuraciones

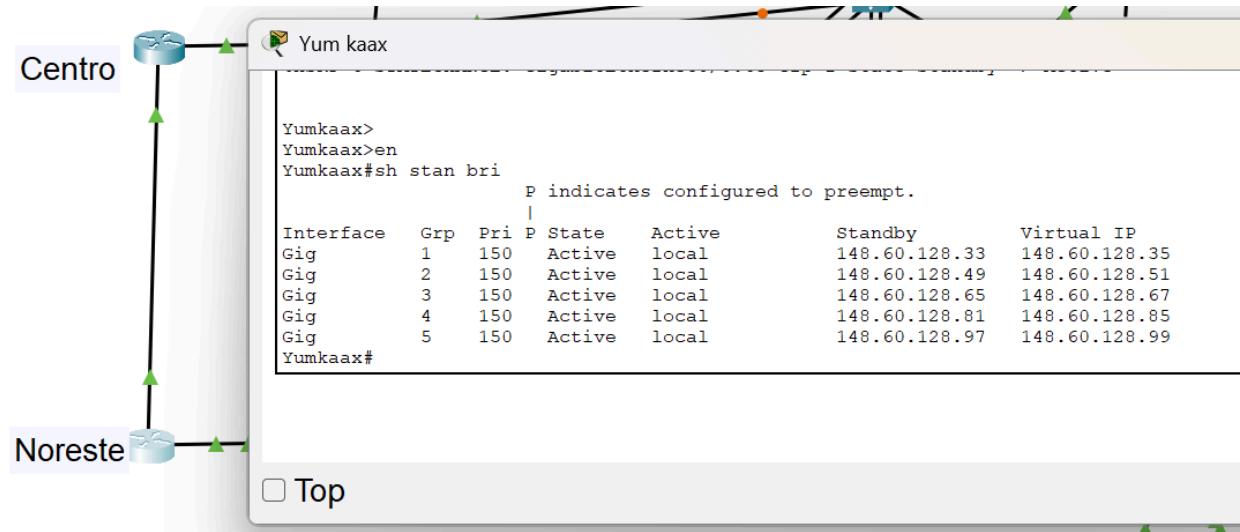
### Tareas Específicas

- Configuración HSRP



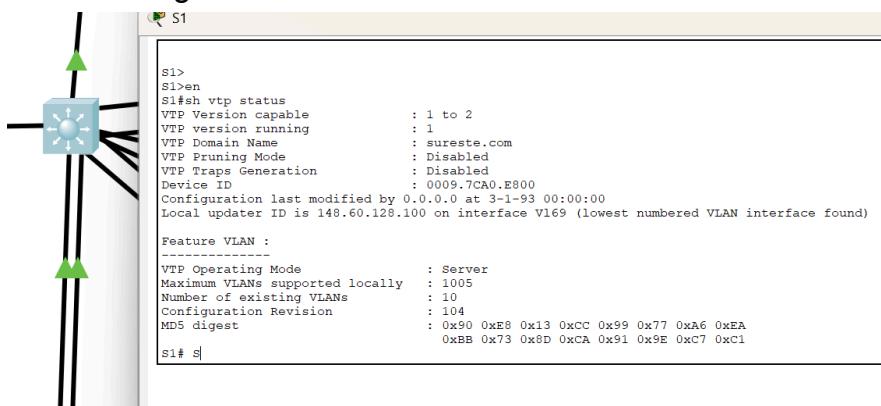
La configuración del HSRP lo hacemos con un grupo standby diferente para cada vlan, de forma que cada subinterfaz va a tener una IP, y la IP virtual de la subinterfaz tendrá una IP diferente pero en el mismo segmento de red, de forma que la puerta predeterminada de los dispositivos será la IP virtual, así pues, si se llega a caer el router principal, su responsabilidad caerá sobre el otro router. En este momento este router es el secundario.

S



Al ver el otro router, podemos ver que ese es el principal, así como la IP virtual para cada grupo

- Configuración VTP Server



Aquí configuraremos un servidor VTP; para dar de alta todas las vlan en este switch y que distribuya la configuración a todos los demás switches configurados como clientes que estén en el mismo dominio.

```

S2>
S2>en
S2#sh vtp stat
VTP Version capable      : 1 to 2
VTP version running     : 1
VTP Domain Name          : sureste.com
VTP Pruning Mode         : Disabled
VTP Traps Generation    : Disabled
Device ID                : 0002.4AEA.AC90
Configuration last modified by 0.0.0.0 at 3-1-93 00:00:00

Feature VLAN :
-----
VTP Operating Mode       : Client
Maximum VLANs supported locally : 1005
Number of existing VLANs   : 10
Configuration Revision    : 104
MD5 digest               : 0x90 0xE8 0x13 0xCC 0x99 0x77 0xA6 0xEA
                           : 0xBB 0x73 0x8D 0xCA 0x91 0x9E 0xC7 0xC1
S2#

```

Y aquí la configuración de un VTP cliente suscrito al mismo dominio

- Configuración STP
- EtherChannel
- WLAN

## Configuración de Dispositivos

### Itzanma (Router)

Running Config

```
Current configuration : 1865 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Itzamna
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
license udi pid CISCO2911/K9 sn FTX1524CE1S-
!
!
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
interface GigabitEthernet0/0
  no ip address
  duplex auto
  speed auto
  standby version 2
!
interface GigabitEthernet0/0.65
  encapsulation dot1Q 65
  ip address 148.60.128.33 255.255.255.240
  ip helper-address 148.60.128.100
  standby 1 ip 148.60.128.35
  standby 1 priority 150
!
interface GigabitEthernet0/0.66
  encapsulation dot1Q 66
  ip address 148.60.128.49 255.255.255.240
  ip helper-address 148.60.128.100
  standby 2 ip 148.60.128.51
  standby 2 priority 150
!
interface GigabitEthernet0/0.67
  encapsulation dot1Q 67
  ip address 148.60.128.65 255.255.255.240
  ip helper-address 148.60.128.100
  standby 3 ip 148.60.128.67
  standby 3 priority 150
!
interface GigabitEthernet0/0.68
  encapsulation dot1Q 68
  ip address 148.60.128.81 255.255.255.240
  ip helper-address 148.60.128.100
  standby 4 ip 148.60.128.85
  standby 4 priority 150
!
interface GigabitEthernet0/0.69
  encapsulation dot1Q 69
  ip address 148.60.128.97 255.255.255.240
  ip helper-address 148.60.128.100
  standby 5 ip 148.60.128.99
  standby 5 priority 150
!
```

```

interface GigabitEthernet0/1
 ip address 148.60.128.17 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/2/0
 ip address 148.60.128.25 255.255.255.252
 clock rate 2000000
!
interface Serial0/2/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 network 148.60.0.0
 no auto-summary
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0

```

## Ip interface brief

```

Itzamna#sh ip int br
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  unassigned      YES manual up       up
GigabitEthernet0/0.65 148.60.128.33  YES manual up       up
GigabitEthernet0/0.66 148.60.128.49  YES manual up       up
GigabitEthernet0/0.67 148.60.128.65  YES manual up       up
GigabitEthernet0/0.68 148.60.128.81  YES manual up       up
GigabitEthernet0/0.69 148.60.128.97  YES manual up       up
GigabitEthernet0/1   148.60.128.17  YES manual up       up
GigabitEthernet0/2   unassigned      YES unset administratively down down
Serial0/2/0         148.60.128.25  YES manual down     down
Serial0/2/1         unassigned      YES unset administratively down down
Vlan1              unassigned      YES unset administratively down down
Itzamna#

```

---

Vlan Brief

Itzamna#sh wlan

VLAN	Name	Status	Ports							
1	default	active								
1002	fddi-default	active								
1003	token-ring-default	active								
1004	fdдинет-default	active								
1005	trnet-default	active								
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Transl	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Transl	Trans2

Remote SPAN VLANs			
Primary	Secondary	Type	Ports
Itzamna#			

## Ip Route

```
Itzamna#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

      148.60.0.0/16 is variably subnetted, 12 subnets, 3 masks
C        148.60.128.16/30 is directly connected, GigabitEthernet0/1
L        148.60.128.17/32 is directly connected, GigabitEthernet0/1
C        148.60.128.32/28 is directly connected, GigabitEthernet0/0.65
L        148.60.128.33/32 is directly connected, GigabitEthernet0/0.65
C        148.60.128.48/28 is directly connected, GigabitEthernet0/0.66
L        148.60.128.49/32 is directly connected, GigabitEthernet0/0.66
C        148.60.128.64/28 is directly connected, GigabitEthernet0/0.67
L        148.60.128.65/32 is directly connected, GigabitEthernet0/0.67
C        148.60.128.80/28 is directly connected, GigabitEthernet0/0.68
L        148.60.128.81/32 is directly connected, GigabitEthernet0/0.68
C        148.60.128.96/28 is directly connected, GigabitEthernet0/0.69
L        148.60.128.97/32 is directly connected, GigabitEthernet0/0.69

Itzamna#
```

## Yum kaax (Router)

### Running Config

```
Building configuration...

Current configuration : 1831 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Yumkaax
!
!
!
!
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
license udi pid CISCO2911/K9 sn FTX1524XWZ1-
!
```

```
spanning-tree mode pvst
!
!
!
!
!
interface GigabitEthernet0/0
    no ip address
    duplex auto
    speed auto
    standby version 2
!
interface GigabitEthernet0/0.65
    encapsulation dot1Q 65
    ip address 148.60.128.34 255.255.255.240
    ip helper-address 148.60.128.100
    standby 1 ip 148.60.128.35
    standby 1 priority 150
!
interface GigabitEthernet0/0.66
    encapsulation dot1Q 66
    ip address 148.60.128.50 255.255.255.240
    ip helper-address 148.60.128.100
    standby 2 ip 148.60.128.51
    standby 2 priority 150
!
interface GigabitEthernet0/0.67
    encapsulation dot1Q 67
    ip address 148.60.128.66 255.255.255.240
    ip helper-address 148.60.128.100
    standby 3 ip 148.60.128.67
    standby 3 priority 150
!
```

```
interface GigabitEthernet0/0.68
encapsulation dot1Q 68
ip address 148.60.128.82 255.255.255.240
ip helper-address 148.60.128.100
standby 4 ip 148.60.128.85
standby 4 priority 150
!
interface GigabitEthernet0/0.69
encapsulation dot1Q 69
ip address 148.60.128.98 255.255.255.240
standby 5 ip 148.60.128.99
standby 5 priority 150
!
interface GigabitEthernet0/1
ip address 148.60.128.18 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/3/0
ip address 148.60.128.21 255.255.255.252
clock rate 2000000
!
interface Serial0/3/1
no ip address
clock rate 2000000
shutdown
!
interface Vlan1
no ip address
shutdown
```

---

```
router rip
version 2
network 148.60.0.0
no auto-summary
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
  login
!
!
!
end
```

#### Ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	manual	up	up
GigabitEthernet0/0.65	148.60.128.34	YES	manual	up	up
GigabitEthernet0/0.66	148.60.128.50	YES	manual	up	up
GigabitEthernet0/0.67	148.60.128.66	YES	manual	up	up
GigabitEthernet0/0.68	148.60.128.82	YES	manual	up	up
GigabitEthernet0/0.69	148.60.128.98	YES	manual	up	up
GigabitEthernet0/1	148.60.128.18	YES	manual	up	up
GigabitEthernet0/2	unassigned	YES	unset	administratively down	down
Serial0/3/0	148.60.128.21	YES	manual	down	down
Serial0/3/1	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

## Vlan brief

```
Yumkaax#sh vlan

VLAN Name          Status    Ports
---- -----
1    default        active
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active

VLAN Type   SAID      MTU     Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- -----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----
1    enet    100001   1500    -       -       -       -       0       0
1002 fddi    101002   1500    -       -       -       -       0       0
1003 tr    101003   1500    -       -       -       -       0       0
1004 fdnet  101004   1500    -       -       -       ieee   -       0       0
1005 trnet  101005   1500    -       -       -       ibm   -       0       0

VLAN Type   SAID      MTU     Parent RingNo BridgeNo Stp  BrdgMode Trans1 Trans2
---- -----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----
-----
```

Remote SPAN VLANs

```
Primary Secondary Type          Ports
----- -----  -----  -----
Yumkaax# |
```

## Ip route

```
Yumkaax# sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
148.60.0.0/16 is variably subnetted, 12 subnets, 3 masks
C    148.60.128.16/30 is directly connected, GigabitEthernet0/1
L    148.60.128.18/32 is directly connected, GigabitEthernet0/1
C    148.60.128.32/28 is directly connected, GigabitEthernet0/0.65
L    148.60.128.34/32 is directly connected, GigabitEthernet0/0.65
C    148.60.128.48/28 is directly connected, GigabitEthernet0/0.66
L    148.60.128.50/32 is directly connected, GigabitEthernet0/0.66
C    148.60.128.64/28 is directly connected, GigabitEthernet0/0.67
L    148.60.128.66/32 is directly connected, GigabitEthernet0/0.67
C    148.60.128.80/28 is directly connected, GigabitEthernet0/0.68
L    148.60.128.82/32 is directly connected, GigabitEthernet0/0.68
C    148.60.128.96/28 is directly connected, GigabitEthernet0/0.69
L    148.60.128.98/32 is directly connected, GigabitEthernet0/0.69
```

```
Yumkaax#
```

## S1 (Switch Capa 3)

### Running Config

```
Building configuration...

Current configuration : 3836 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S1
!
!
!
ip dhcp excluded-address 148.60.128.33
ip dhcp excluded-address 148.60.128.49
ip dhcp excluded-address 148.60.128.65
ip dhcp excluded-address 148.60.128.81
ip dhcp excluded-address 148.60.128.97
ip dhcp excluded-address 148.60.128.33 148.60.128.35
ip dhcp excluded-address 148.60.128.49 148.60.128.51
ip dhcp excluded-address 148.60.128.65 148.60.128.67
ip dhcp excluded-address 148.60.128.81 148.60.128.82
ip dhcp excluded-address 148.60.128.85
!
ip dhcp pool Ventas
  network 148.60.128.32 255.255.255.240
  default-router 148.60.128.35
ip dhcp pool TI
  network 148.60.128.48 255.255.255.240
  default-router 148.60.128.51
ip dhcp pool Compras
  network 148.60.128.64 255.255.255.240
  default-router 148.60.128.67
ip dhcp pool Mkt
  network 148.60.128.80 255.255.255.240
  default-router 148.60.128.85
!
```



```
interface Port-channel3
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
!
interface GigabitEthernet1/0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 1 mode desirable
!
interface GigabitEthernet1/0/3
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 1 mode desirable
!
interface GigabitEthernet1/0/4
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 2 mode desirable
!
interface GigabitEthernet1/0/5
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 2 mode desirable
!
```

```
interface GigabitEthernet1/0/6
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/7
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 3 mode desirable
!
interface GigabitEthernet1/0/8
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 3 mode desirable
!
interface GigabitEthernet1/0/9
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/10
switchport trunk native vlan 69
switchport mode trunk
!
interface GigabitEthernet1/0/11
!
interface GigabitEthernet1/0/12
!
interface GigabitEthernet1/0/13
|
interface GigabitEthernet1/0/14
!
interface GigabitEthernet1/0/15
!
```

```
interface GigabitEthernet1/0/16
!
interface GigabitEthernet1/0/17
!
interface GigabitEthernet1/0/18
!
interface GigabitEthernet1/0/19
!
interface GigabitEthernet1/0/20
!
interface GigabitEthernet1/0/21
!
interface GigabitEthernet1/0/22
!
interface GigabitEthernet1/0/23
!
interface GigabitEthernet1/0/24
!
interface GigabitEthernet1/1/1
!
interface GigabitEthernet1/1/2
!
interface GigabitEthernet1/1/3
!
interface GigabitEthernet1/1/4
!
interface Vlan1
  no ip address
  shutdown
!
interface Vlan65
  mac-address 0007.ec09.6a01
  no ip address
!
```

```
interface Vlan66
  mac-address 0007.ec09.6a02
  no ip address
!
interface Vlan67
  mac-address 0007.ec09.6a03
  no ip address
!
interface Vlan68
  mac-address 0007.ec09.6a04
  no ip address
!
interface Vlan69
  mac-address 0007.ec09.6a05
  ip address 148.60.128.100 255.255.255.240
!
ip classless
ip route 0.0.0.0 0.0.0.0 148.60.128.97
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
  login
!
```

---

## Ip interface brief

```
S1#sh ip int br
Interface          IP-Address      OK? Method Status       Protocol
Port-channel11    unassigned      YES unset up        up
Port-channel12    unassigned      YES unset up        up
Port-channel13    unassigned      YES unset up        up
GigabitEthernet1/0/1  unassigned   YES unset up        up
GigabitEthernet1/0/2  unassigned   YES unset up        up
GigabitEthernet1/0/3  unassigned   YES unset up        up
GigabitEthernet1/0/4  unassigned   YES unset up        up
GigabitEthernet1/0/5  unassigned   YES unset up        up
GigabitEthernet1/0/6  unassigned   YES unset up        up
GigabitEthernet1/0/7  unassigned   YES unset up        up
GigabitEthernet1/0/8  unassigned   YES unset up        up
GigabitEthernet1/0/9  unassigned   YES unset up        up
GigabitEthernet1/0/10 unassigned   YES unset up        up
GigabitEthernet1/0/11 unassigned   YES unset down     down
GigabitEthernet1/0/12 unassigned   YES unset down     down
GigabitEthernet1/0/13 unassigned   YES unset down     down
GigabitEthernet1/0/14 unassigned   YES unset down     down
GigabitEthernet1/0/15 unassigned   YES unset down     down
GigabitEthernet1/0/16 unassigned   YES unset down     down
GigabitEthernet1/0/17 unassigned   YES unset down     down
GigabitEthernet1/0/18 unassigned   YES unset down     down
GigabitEthernet1/0/19 unassigned   YES unset down     down
GigabitEthernet1/0/20 unassigned   YES unset down     down
GigabitEthernet1/0/21 unassigned   YES unset down     down
GigabitEthernet1/0/22 unassigned   YES unset down     down
GigabitEthernet1/0/23 unassigned   YES unset down     down
GigabitEthernet1/0/24 unassigned   YES unset down     down
GigabitEthernet1/1/1  unassigned   YES unset down     down
GigabitEthernet1/1/2  unassigned   YES unset down     down
GigabitEthernet1/1/3  unassigned   YES unset down     down
GigabitEthernet1/1/4  unassigned   YES unset down     down
Vlan1              unassigned      YES unset administratively down down
Vlan65             unassigned      YES unset up        up
Vlan66             unassigned      YES unset up        up
Vlan67             unassigned      YES unset up        up
Vlan68             unassigned      YES unset up        up
Vlan69             unassigned      YES manual up      up
c1#
```

## Vlan Brief

```
S1#sh vlan br

VLAN Name          Status    Ports
---- -----
1     default      active    Gig1/0/11, Gig1/0/12, Gig1/0/13,
Gig1/0/14
                                         Gig1/0/15, Gig1/0/16, Gig1/0/17,
                                         Gig1/0/18
                                         Gig1/0/19, Gig1/0/20, Gig1/0/21,
                                         Gig1/0/22
                                         Gig1/0/23, Gig1/0/24, Gig1/1/1, Gig1/1/2
                                         Gig1/1/3, Gig1/1/4
65   Ventas       active
66   TI            active
67   Compras       active
68   Mkt           active
69   Admon         active
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
S1# |
```

---

## Interface trunk

```
S1# sh int tr
Port      Mode       Encapsulation  Status      Native vlan
Po1       on         802.1q        trunking   1
Po2       on         802.1q        trunking   1
Po3       on         802.1q        trunking   1
Gig1/0/1  on         802.1q        trunking   1
Gig1/0/6  on         802.1q        trunking   1
Gig1/0/9  on         802.1q        trunking   1
Gig1/0/10 on         802.1q        trunking   69

Port      Vlans allowed on trunk
Po1      65-69
Po2      65-69
Po3      65-69
Gig1/0/1 65-69
Gig1/0/6 65-69
Gig1/0/9 65-69
Gig1/0/10 1-1005

Port      Vlans allowed and active in management domain
Po1      65,66,67,68,69
Po2      65,66,67,68,69
Po3      65,66,67,68,69
Gig1/0/1 65,66,67,68,69
Gig1/0/6 65,66,67,68,69
Gig1/0/9 65,66,67,68,69
Gig1/0/10 1,65,66,67,68,69

Port      Vlans in spanning tree forwarding state and not pruned
Po1      65,66,67,68,69
Po2      65,66,67,68,69
Po3      65,66,67,68,69
Gig1/0/1 65,66,67,68,69
Gig1/0/6 65,66,67,68,69
Gig1/0/9 65,66,67,68,69
Gig1/0/10 1,65,66,67,68,69

S1#
```

## Etherchannel summary

```
S1#sh etherchannel summ
Flags: D - down      P - in port-channel
      I - stand-alone S - suspended
      H - Hot-standby (LACP only)
      R - Layer3       S - Layer2
      U - in use       f - failed to allocate aggregator
      u - unsuitable for bundling
      w - waiting to be aggregated
      d - default port

Number of channel-groups in use: 3
Number of aggregators: 3

Group Port-channel Protocol Ports
-----+-----+-----+
1     Po1 (SU)        PAgP   Gig1/0/2(P) Gig1/0/3(P)
2     Po2 (SU)        PAgP   Gig1/0/4(P) Gig1/0/5(P)
3     Po3 (SU)        PAgP   Gig1/0/7(P) Gig1/0/8(P)
S1#
```

## S2 (Switch Capa 3)

## Running Config

```
Current configuration : 2917 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S2
!
!
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
```

```
interface Port-channell
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface Port-channel4
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface Port-channel5
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
!
interface GigabitEthernet1/0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 1 mode desirable
!
interface GigabitEthernet1/0/3
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 1 mode desirable
!
interface GigabitEthernet1/0/4
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 5 mode desirable
```

```
interface GigabitEthernet1/0/5
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 5 mode desirable
!
interface GigabitEthernet1/0/6
switchport trunk allowed vlan 65-68
switchport mode trunk
!
interface GigabitEthernet1/0/7
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface GigabitEthernet1/0/8
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface GigabitEthernet1/0/9
switchport trunk allowed vlan 65-68
switchport mode trunk
!
interface GigabitEthernet1/0/10
!
interface GigabitEthernet1/0/11
!
interface GigabitEthernet1/0/12
!
interface GigabitEthernet1/0/13
!
interface GigabitEthernet1/0/14
```

```
interface GigabitEthernet1/0/15
!
interface GigabitEthernet1/0/16
!
interface GigabitEthernet1/0/17
!
interface GigabitEthernet1/0/18
!
interface GigabitEthernet1/0/19
!
interface GigabitEthernet1/0/20
!
interface GigabitEthernet1/0/21
!
interface GigabitEthernet1/0/22
!
interface GigabitEthernet1/0/23
!
interface GigabitEthernet1/0/24
!
interface GigabitEthernet1/1/1
!
interface GigabitEthernet1/1/2
!
interface GigabitEthernet1/1/3
!
interface GigabitEthernet1/1/4
!
interface Vlan1
  no ip address
  shutdown
!
interface Vlan65
  mac-address 0001.4358.8201
  no ip address
!
```

```
interface Vlan66
  mac-address 0001.4358.8202
  no ip address
!
interface Vlan67
  mac-address 0001.4358.8203
  no ip address
!
interface Vlan68
  mac-address 0001.4358.8204
  no ip address
!
interface Vlan69
  mac-address 0001.4358.8205
  no ip address
!
interface Vlan97
  mac-address 0001.4358.8206
  no ip address
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
  login
```

Ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
Port-channel1	unassigned	YES	unset	up	up
Port-channel4	unassigned	YES	unset	up	up
Port-channel5	unassigned	YES	unset	up	up
GigabitEthernet1/0/1	unassigned	YES	unset	up	up
GigabitEthernet1/0/2	unassigned	YES	unset	up	up
GigabitEthernet1/0/3	unassigned	YES	unset	up	up
GigabitEthernet1/0/4	unassigned	YES	unset	up	up
GigabitEthernet1/0/5	unassigned	YES	unset	up	up
GigabitEthernet1/0/6	unassigned	YES	unset	up	up
GigabitEthernet1/0/7	unassigned	YES	unset	up	up
GigabitEthernet1/0/8	unassigned	YES	unset	up	up
GigabitEthernet1/0/9	unassigned	YES	unset	up	up
GigabitEthernet1/0/10	unassigned	YES	unset	down	down
GigabitEthernet1/0/11	unassigned	YES	unset	down	down
GigabitEthernet1/0/12	unassigned	YES	unset	down	down
GigabitEthernet1/0/13	unassigned	YES	unset	down	down
GigabitEthernet1/0/14	unassigned	YES	unset	down	down
GigabitEthernet1/0/15	unassigned	YES	unset	down	down
GigabitEthernet1/0/16	unassigned	YES	unset	down	down
GigabitEthernet1/0/17	unassigned	YES	unset	down	down
GigabitEthernet1/0/18	unassigned	YES	unset	down	down
GigabitEthernet1/0/19	unassigned	YES	unset	down	down
GigabitEthernet1/0/20	unassigned	YES	unset	down	down
GigabitEthernet1/0/21	unassigned	YES	unset	down	down
GigabitEthernet1/0/22	unassigned	YES	unset	down	down
GigabitEthernet1/0/23	unassigned	YES	unset	down	down
GigabitEthernet1/0/24	unassigned	YES	unset	down	down
GigabitEthernet1/1/1	unassigned	YES	unset	down	down
GigabitEthernet1/1/2	unassigned	YES	unset	down	down
GigabitEthernet1/1/3	unassigned	YES	unset	down	down
GigabitEthernet1/1/4	unassigned	YES	unset	down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan65	unassigned	YES	unset	up	up
Vlan66	unassigned	YES	unset	up	up
Vlan67	unassigned	YES	unset	up	up
Vlan68	unassigned	YES	unset	up	up
Vlan69	unassigned	YES	unset	up	up
Vlan97	unassigned	YES	unset	down	down

S2#

## Vlan Brief

S2#sh vlan

VLAN	Name	Status	Ports							
1	default	active	Gig1/0/10, Gig1/0/11, Gig1/0/12, Gig1/0/13 Gig1/0/14, Gig1/0/15, Gig1/0/16, Gig1/0/17 Gig1/0/18, Gig1/0/19, Gig1/0/20, Gig1/0/21 Gig1/0/22, Gig1/0/23, Gig1/0/24, Gig1/1/1 Gig1/1/2, Gig1/1/3, Gig1/1/4							
65	Ventas	active								
66	TI	active								
67	Compras	active								
68	Mkt	active								
69	Admon	active								
1002	fddi-default	active								
1003	token-ring-default	active								
1004	fddinet-default	active								
1005	trnet-default	active								
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	0	0	
65	enet	100065	1500	-	-	-	-	0	0	
66	enet	100066	1500	-	-	-	-	0	0	
67	enet	100067	1500	-	-	-	-	0	0	
68	enet	100068	1500	-	-	-	-	0	0	
69	enet	100069	1500	-	-	-	-	0	0	
1002	fddi	101002	1500	-	-	-	-	0	0	
1003	tr	101003	1500	-	-	-	-	0	0	
1004	fdnet	101004	1500	-	-	ieee	-	0	0	
1005	trnet	101005	1500	-	-	ibm	-	0	0	
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2

---

Remote SPAN VLANs

---

Primary	Secondary	Type	Ports
---------	-----------	------	-------

## Interface trunk

```
S2#sh int trunk
Port      Mode       Encapsulation  Status      Native vlan
Po1       on         802.1q        trunking   1
Po4       on         802.1q        trunking   1
Po6       on         802.1q        trunking   1
Gig1/0/1  on         802.1q        trunking   1
Gig1/0/6  on         802.1q        trunking   1
Gig1/0/9  on         802.1q        trunking   1

Port      Vlans allowed on trunk
Po1       65-69
Po4       65-69
Po6       65-69
Gig1/0/1  65-69
Gig1/0/6  65-68
Gig1/0/9  65-68

Port      Vlans allowed and active in management domain
Po1       65,66,67,68,69
Po4       65,66,67,68,69
Po6       65,66,67,68,69
Gig1/0/1  65,66,67,68,69
Gig1/0/6  65,66,67,68
Gig1/0/9  65,66,67,68

Port      Vlans in spanning tree forwarding state and not pruned
Po1       65,66,67,68,69
Po4       65,66,67,68,69
Po6       65,66,67,68,69
Gig1/0/1  65,66,67,68,69
Gig1/0/6  65,66,67,68
Gig1/0/9  65,66,67,68

S2#
```

## Etherchannel summary

```
S2# sh etherchannel summ
Flags:  D - down      P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use        f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port
```

```
Number of channel-groups in use: 3
Number of aggregators:          3
```

Group	Port-channel	Protocol	Ports
1	Po1 (SU)	PAgP	Gig1/0/2(P) Gig1/0/3(P)
4	Po4 (SU)	PAgP	Gig1/0/7(P) Gig1/0/8(P)
5	Po5 (SU)	PAgP	Gig1/0/4(P) Gig1/0/5(P)

```
S2# |
```

## S3 (Switch Capa 3)

## Running Config

```
interface Port-channel2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface Port-channel4
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface Port-channel6
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 6 mode desirable
!
interface GigabitEthernet1/0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 6 mode desirable
!
interface GigabitEthernet1/0/3
!
interface GigabitEthernet1/0/4
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 2 mode desirable
!
```

```
interface GigabitEthernet1/0/5
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 2 mode desirable
!
interface GigabitEthernet1/0/6
!
interface GigabitEthernet1/0/7
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface GigabitEthernet1/0/8
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface GigabitEthernet1/0/9
!
interface GigabitEthernet1/0/10
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/11
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/12
!
interface GigabitEthernet1/0/13
:
```

```
interface GigabitEthernet1/0/14
!
interface GigabitEthernet1/0/15
!
interface GigabitEthernet1/0/16
!
interface GigabitEthernet1/0/17
!
interface GigabitEthernet1/0/18
!
interface GigabitEthernet1/0/19
!
interface GigabitEthernet1/0/20
!
interface GigabitEthernet1/0/21
!
interface GigabitEthernet1/0/22
!
interface GigabitEthernet1/0/23
!
interface GigabitEthernet1/0/24
!
interface GigabitEthernet1/1/1
!
interface GigabitEthernet1/1/2
!
interface GigabitEthernet1/1/3
!
interface GigabitEthernet1/1/4
!
interface Vlan1
  no ip address
  shutdown
!
```

```
interface Vlan65
  mac-address 000c.85ee.d701
  no ip address
!
interface Vlan66
  mac-address 000c.85ee.d702
  no ip address
!
interface Vlan67
  mac-address 000c.85ee.d703
  no ip address
!
interface Vlan68
  mac-address 000c.85ee.d704
  no ip address
!
interface Vlan69
  mac-address 000c.85ee.d705
  no ip address
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
  login
```

Ip interface brief

```
***  
S3#sh ip int br  
Interface          IP-Address      OK? Method Status      Protocol  
Port-channel2     unassigned      YES unset up           up  
Port-channel4     unassigned      YES unset up           up  
Port-channel6     unassigned      YES unset up           up  
GigabitEthernet1/0/1 unassigned    YES unset up           up  
GigabitEthernet1/0/2 unassigned    YES unset up           up  
GigabitEthernet1/0/3 unassigned    YES unset down        down  
GigabitEthernet1/0/4 unassigned    YES unset up           up  
GigabitEthernet1/0/5 unassigned    YES unset up           up  
GigabitEthernet1/0/6 unassigned    YES unset down        down  
GigabitEthernet1/0/7 unassigned    YES unset up           up  
GigabitEthernet1/0/8 unassigned    YES unset up           up  
GigabitEthernet1/0/9 unassigned    YES unset down        down  
GigabitEthernet1/0/10 unassigned   YES unset up           up  
GigabitEthernet1/0/11 unassigned   YES unset up           up  
GigabitEthernet1/0/12 unassigned   YES unset down        down  
GigabitEthernet1/0/13 unassigned   YES unset down        down  
GigabitEthernet1/0/14 unassigned   YES unset down        down  
GigabitEthernet1/0/15 unassigned   YES unset down        down  
GigabitEthernet1/0/16 unassigned   YES unset down        down  
GigabitEthernet1/0/17 unassigned   YES unset down        down  
GigabitEthernet1/0/18 unassigned   YES unset down        down  
GigabitEthernet1/0/19 unassigned   YES unset down        down  
GigabitEthernet1/0/20 unassigned   YES unset down        down  
GigabitEthernet1/0/21 unassigned   YES unset down        down  
GigabitEthernet1/0/22 unassigned   YES unset down        down  
GigabitEthernet1/0/23 unassigned   YES unset down        down  
GigabitEthernet1/0/24 unassigned   YES unset down        down  
GigabitEthernet1/1/1 unassigned   YES unset down        down  
GigabitEthernet1/1/2 unassigned   YES unset down        down  
GigabitEthernet1/1/3 unassigned   YES unset down        down  
GigabitEthernet1/1/4 unassigned   YES unset down        down  
Vlan1             unassigned      YES unset administratively down down  
Vlan65            unassigned      YES unset up           up  
Vlan66            unassigned      YES unset up           up  
Vlan67            unassigned      YES unset up           up  
Vlan68            unassigned      YES unset up           up  
Vlan69            unassigned      YES unset up           up  
S3#
```

## Vlan Brief

```
S3#sh vlan
```

VLAN	Name	Status	Ports
1	default	active	Gig1/0/3, Gig1/0/6, Gig1/0/9, Gig1/0/12 Gig1/0/13, Gig1/0/14, Gig1/0/15,
	Gig1/0/16		Gig1/0/17, Gig1/0/18, Gig1/0/19,
	Gig1/0/20		Gig1/0/21, Gig1/0/22, Gig1/0/23,
	Gig1/0/24		Gig1/1/1, Gig1/1/2, Gig1/1/3, Gig1/1/4
65	Ventas	active	
66	TI	active	
67	Compras	active	
68	Mkt	active	
69	Admon	active	
1002	fdmi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
65	enet	100065	1500	-	-	-	-	-	0	0
66	enet	100066	1500	-	-	-	-	-	0	0
67	enet	100067	1500	-	-	-	-	-	0	0
68	enet	100068	1500	-	-	-	-	-	0	0
69	enet	100069	1500	-	-	-	-	-	0	0
1002	fdmi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2

Remote SPAN VLANs

Primary	Secondary	Type	Ports

```
S3#
```

## Interface trunk

```
S3#sh int trunk
Port      Mode       Encapsulation  Status      Native vlan
Po2       on         802.1q        trunking   1
Po4       on         802.1q        trunking   1
Po6       on         802.1q        trunking   1
Gig1/0/10  on         802.1q        trunking   1
Gig1/0/11  on         802.1q        trunking   1

Port      Vlans allowed on trunk
Po2       65-69
Po4       65-69
Po6       65-69
Gig1/0/10 65-69
Gig1/0/11 65-69

Port      Vlans allowed and active in management domain
Po2       65,66,67,68,69
Po4       65,66,67,68,69
Po6       65,66,67,68,69
Gig1/0/10 65,66,67,68,69
Gig1/0/11 65,66,67,68,69

Port      Vlans in spanning tree forwarding state and not pruned
Po2       none
Po4       65,66,67,68,69
Po6       65,66,67,68,69
Gig1/0/10 65,66,67,68,69
Gig1/0/11 65,66,67,68,69

S3#
```

---

## Etherchannel summary

```
S3#sh etherchannel summ
Flags: D - down      P - in port-channel
      I - stand-alone  s - suspended
      H - Hot-standby (LACP only)
      R - Layer3       S - Layer2
      U - in use        f - failed to allocate aggregator
      u - unsuitable for bundling
      w - waiting to be aggregated
      d - default port

Number of channel-groups in use: 3
Number of aggregators:          3

Group  Port-channel  Protocol    Ports
-----+-----+-----+
2      Po2 (SU)     PAgP        Gig1/0/4(P) Gig1/0/5(P)
4      Po4 (SU)     PAgP        Gig1/0/7(P) Gig1/0/8(P)
6      Po6 (SU)     PAgP        Gig1/0/1(P) Gig1/0/2(P)

S3#
```

---

## S4 (Switch Capa 3)

## Running Config

```
interface Port-channel6
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface GigabitEthernet1/0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 6 mode desirable
!
interface GigabitEthernet1/0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
channel-group 6 mode desirable
!
interface GigabitEthernet1/0/3
!
interface GigabitEthernet1/0/4
!
interface GigabitEthernet1/0/5
!
interface GigabitEthernet1/0/6
!
interface GigabitEthernet1/0/7
!
interface GigabitEthernet1/0/8
!
interface GigabitEthernet1/0/9
!
interface GigabitEthernet1/0/10
switchport trunk allowed vlan 65-68
switchport mode trunk
!
```

```
interface GigabitEthernet1/0/11
switchport trunk allowed vlan 65-68
switchport mode trunk
!
interface GigabitEthernet1/0/12
!
interface GigabitEthernet1/0/13
!
interface GigabitEthernet1/0/14
!
interface GigabitEthernet1/0/15
!
interface GigabitEthernet1/0/16
!
interface GigabitEthernet1/0/17
!
interface GigabitEthernet1/0/18
!
interface GigabitEthernet1/0/19
!
interface GigabitEthernet1/0/20
!
interface GigabitEthernet1/0/21
!
interface GigabitEthernet1/0/22
!
interface GigabitEthernet1/0/23
!
interface GigabitEthernet1/0/24
!
interface GigabitEthernet1/1/1
!
interface GigabitEthernet1/1/2
!
interface GigabitEthernet1/1/3
```

---

```
interface GigabitEthernet1/1/4
!
interface Vlan1
  no ip address
  shutdown
!
interface Vlan65
  mac-address 0030.a322.6c01
  no ip address
!
interface Vlan66
  mac-address 0030.a322.6c02
  no ip address
!
interface Vlan67
  mac-address 0030.a322.6c03
  no ip address
!
interface Vlan68
  mac-address 0030.a322.6c04
  no ip address
!
interface Vlan69
  mac-address 0030.a322.6c05
  no ip address
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
  login
!
!
!
end
```

Ip interface brief

```
S4# sh ip int br
Interface          IP-Address      OK? Method Status      Protocol
Port-channel6     unassigned      YES unset up           up
GigabitEthernet1/0/1  unassigned      YES unset up           up
GigabitEthernet1/0/2  unassigned      YES unset up           up
GigabitEthernet1/0/3  unassigned      YES unset down        down
GigabitEthernet1/0/4  unassigned      YES unset down        down
GigabitEthernet1/0/5  unassigned      YES unset down        down
GigabitEthernet1/0/6  unassigned      YES unset up           up
GigabitEthernet1/0/7  unassigned      YES unset down        down
GigabitEthernet1/0/8  unassigned      YES unset down        down
GigabitEthernet1/0/9  unassigned      YES unset up           up
GigabitEthernet1/0/10 unassigned      YES unset up           up
GigabitEthernet1/0/11 unassigned      YES unset up           up
GigabitEthernet1/0/12 unassigned      YES unset down        down
GigabitEthernet1/0/13 unassigned      YES unset down        down
GigabitEthernet1/0/14 unassigned      YES unset down        down
GigabitEthernet1/0/15 unassigned      YES unset down        down
GigabitEthernet1/0/16 unassigned      YES unset down        down
GigabitEthernet1/0/17 unassigned      YES unset down        down
GigabitEthernet1/0/18 unassigned      YES unset down        down
GigabitEthernet1/0/19 unassigned      YES unset down        down
GigabitEthernet1/0/20 unassigned      YES unset down        down
GigabitEthernet1/0/21 unassigned      YES unset down        down
GigabitEthernet1/0/22 unassigned      YES unset down        down
GigabitEthernet1/0/23 unassigned      YES unset down        down
GigabitEthernet1/0/24 unassigned      YES unset down        down
GigabitEthernet1/1/1  unassigned      YES unset down        down
GigabitEthernet1/1/2  unassigned      YES unset down        down
GigabitEthernet1/1/3  unassigned      YES unset down        down
GigabitEthernet1/1/4  unassigned      YES unset down        down
Vlan1             unassigned      YES unset administratively down down
Vlan65            unassigned      YES unset up           up
Vlan66            unassigned      YES unset up           up
Vlan67            unassigned      YES unset up           up
Vlan68            unassigned      YES unset up           up
Vlan69            unassigned      YES unset up           up
S4#
```

---

## Vlan Brief

S4#sh vlan

VLAN	Name	Status	Ports							
1	default	active	Gig1/0/3, Gig1/0/4, Gig1/0/5, Gig1/0/6 Gig1/0/7, Gig1/0/8, Gig1/0/12, Gig1/0/13 Gig1/0/14, Gig1/0/15, Gig1/0/16, Gig1/0/17 Gig1/0/18, Gig1/0/19, Gig1/0/20, Gig1/0/21 Gig1/0/22, Gig1/0/23, Gig1/0/24, Gig1/1/1 Gig1/1/2, Gig1/1/3, Gig1/1/4							
65	Ventas	active								
66	TI	active								
67	Compras	active								
68	Mkt	active								
69	Admon	active								
1002	fddi-default	active								
1003	token-ring-default	active								
1004	fddinet-default	active								
1005	trnet-default	active								
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	0	0	
65	enet	100065	1500	-	-	-	-	0	0	
66	enet	100066	1500	-	-	-	-	0	0	
67	enet	100067	1500	-	-	-	-	0	0	
68	enet	100068	1500	-	-	-	-	0	0	
69	enet	100069	1500	-	-	-	-	0	0	
1002	fddi	101002	1500	-	-	-	-	0	0	
1003	tr	101003	1500	-	-	-	-	0	0	
1004	fdnet	101004	1500	-	-	-	ieee	0	0	
1005	trnet	101005	1500	-	-	ibm	-	0	0	
VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
-----										
Remote SPAN VLANs										
Primary	Secondary	Type	Ports							
-----										

S4#

## Interface trunk

```
S4#sh int tr
Port      Mode       Encapsulation  Status      Native vlan
Po6       on        802.1q         trunking   1
Gig1/0/9  auto      n-802.1q      trunking   1
Gig1/0/10 on        802.1q         trunking   1
Gig1/0/11 on        802.1q         trunking   1

Port      Vlans allowed on trunk
Po6       65-69
Gig1/0/9  1-1005
Gig1/0/10 65-68
Gig1/0/11 65-68

Port      Vlans allowed and active in management domain
Po6       65,66,67,68,69
Gig1/0/9  1,65,66,67,68,69
Gig1/0/10 65,66,67,68
Gig1/0/11 65,66,67,68

Port      Vlans in spanning tree forwarding state and not pruned
Po6       69
Gig1/0/9  1,65,66,67,68,69
Gig1/0/10 65,66,67,68
Gig1/0/11 65,66,67,68

S4#
```

## Etherchannel summary

```
S4#sh etherchannel summary
Flags:  D - down          P - in port-channel
        I - stand-alone    s - suspended
        H - Hot-standby   (LACP only)
        R - Layer3         S - Layer2
        U - in use          f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol     Ports
-----+-----+-----+
6      Po6 (SU)      PAgP        Gig1/0/1(P) Gig1/0/2(P)

S4#
```

## S5 (Switch Capa 3)

### Running Config

```
Switch#show run
Building configuration...

Current configuration : 2008 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface Port-channel7
 switchport trunk allowed vlan 65-69
 switchport mode trunk
 switchport nonegotiate
!
interface GigabitEthernet1/0/1
 switchport trunk allowed vlan 65-69
 switchport mode trunk
 switchport nonegotiate
 channel-group 7 mode desirable
!
interface GigabitEthernet1/0/2
 switchport trunk allowed vlan 65-69
 switchport mode trunk
 switchport nonegotiate
 channel-group 7 mode desirable
!
```

```
interface Vlan1
no ip address
shutdown
!
interface Vlan65
mac-address 00d0.588c.1601
no ip address
!
interface Vlan66
mac-address 00d0.588c.1603
no ip address
!
interface Vlan67
mac-address 00d0.588c.1604
no ip address
!
interface Vlan68
mac-address 00d0.588c.1605
no ip address
!
interface Vlan69
mac-address 00d0.588c.1606
no ip address
!
ip classless
!
ip flow-export version 9
!
!
no cdp run
!
!
```

```
!
line con 0
!
line aux 0
!
line vty 0 4
login
!
!
!
end
```

Ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
Port-channel17	unassigned	YES	unset	up	up
GigabitEthernet1/0/1	unassigned	YES	unset	up	up
GigabitEthernet1/0/2	unassigned	YES	unset	up	up
GigabitEthernet1/0/3	unassigned	YES	unset	down	down
GigabitEthernet1/0/4	unassigned	YES	unset	down	down
GigabitEthernet1/0/5	unassigned	YES	unset	down	down
GigabitEthernet1/0/6	unassigned	YES	unset	up	up
GigabitEthernet1/0/7	unassigned	YES	unset	down	down
GigabitEthernet1/0/8	unassigned	YES	unset	down	down
GigabitEthernet1/0/9	unassigned	YES	unset	up	up
GigabitEthernet1/0/10	unassigned	YES	unset	up	up
GigabitEthernet1/0/11	unassigned	YES	unset	up	up
GigabitEthernet1/0/12	unassigned	YES	unset	down	down
GigabitEthernet1/0/13	unassigned	YES	unset	down	down
GigabitEthernet1/0/14	unassigned	YES	unset	down	down
GigabitEthernet1/0/15	unassigned	YES	unset	down	down
GigabitEthernet1/0/16	unassigned	YES	unset	down	down
GigabitEthernet1/0/17	unassigned	YES	unset	down	down
GigabitEthernet1/0/18	unassigned	YES	unset	down	down
GigabitEthernet1/0/19	unassigned	YES	unset	down	down
GigabitEthernet1/0/20	unassigned	YES	unset	down	down
GigabitEthernet1/0/21	unassigned	YES	unset	down	down
GigabitEthernet1/0/22	unassigned	YES	unset	down	down
GigabitEthernet1/0/23	unassigned	YES	unset	down	down
GigabitEthernet1/0/24	unassigned	YES	unset	down	down
GigabitEthernet1/1/1	unassigned	YES	unset	down	down
GigabitEthernet1/1/2	unassigned	YES	unset	down	down
GigabitEthernet1/1/3	unassigned	YES	unset	down	down
GigabitEthernet1/1/4	unassigned	YES	unset	down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan65	unassigned	YES	unset	up	up
Vlan66	unassigned	YES	unset	up	up
Vlan67	unassigned	YES	unset	up	up
Vlan68	unassigned	YES	unset	up	up
Vlan69	unassigned	YES	unset	up	up

Switch#

## Vlan brief

VLAN Name	Status	Ports
1 default	active	Gig1/0/3, Gig1/0/4, Gig1/0/5, Gig1/0/7 Gig1/0/8, Gig1/0/9, Gig1/0/10, Gig1/0/11 Gig1/0/12, Gig1/0/13, Gig1/0/14,
Gig1/0/15		Gig1/0/16, Gig1/0/17, Gig1/0/18,
Gig1/0/19		Gig1/0/20, Gig1/0/21, Gig1/0/22,
Gig1/0/23		Gig1/0/24, Gig1/1/1, Gig1/1/2, Gig1/1/3 Gig1/1/4
65 Ventas	active	
66 TI	active	
67 Compras	active	
68 Mkt	active	
69 Admon	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	
Switch#		

## Interface trunk

```
Switch#show int tr
Port      Mode       Encapsulation  Status      Native vlan
Po7       on         802.1q        trunking    1
Gig1/0/6  auto       n-802.1q     trunking    1

Port      Vlans allowed on trunk
Po7       65-69
Gig1/0/6  1-1005

Port      Vlans allowed and active in management domain
Po7       65,66,67,68,69
Gig1/0/6  1,65,66,67,68,69

Port      Vlans in spanning tree forwarding state and not pruned
Po7       69
Gig1/0/6  1,65,66,67,68,69
```

## S6 (Switch Capa 3)

### Running Config

```
Switch#show run
Building configuration...

Current configuration : 2692 bytes
!
version 16.3.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
```

```
spanning-tree mode pvst
!
!
!
!
!
!
interface Port-channel3
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
!
interface Port-channel5
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
!
interface Port-channel7
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
!
interface GigabitEthernet1/0/1
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
  channel-group 7 mode desirable
!
interface GigabitEthernet1/0/2
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
  channel-group 7 mode desirable
.
.
.
interface GigabitEthernet1/0/4
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
  channel-group 5 mode desirable
!
interface GigabitEthernet1/0/5
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
  channel-group 5 mode desirable
!
interface GigabitEthernet1/0/6
!
interface GigabitEthernet1/0/7
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
  channel-group 3 mode desirable
!
interface GigabitEthernet1/0/8
  switchport trunk allowed vlan 65-69
  switchport mode trunk
  switchport nonegotiate
  channel-group 3 mode desirable
!
```

Interface

```
!
interface Vlan1
no ip address
shutdown
!
interface Vlan65
mac-address 000b.be72.db01
no ip address
!
interface Vlan66
mac-address 000b.be72.db02
no ip address
!
interface Vlan67
mac-address 000b.be72.db03
no ip address
!
interface Vlan68
mac-address 000b.be72.db04
no ip address
!
interface Vlan69
mac-address 000b.be72.db05
no ip address
!
ip classless
!
ip flow-export version 9
!
!
no cdp run
!
```

```
:
!
line con 0
!
line aux 0
!
line vty 0 4
  login
  !
  !
  !
end
```

Ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
Port-channel3	unassigned	YES	unset	up	up
Port-channel5	unassigned	YES	unset	up	up
Port-channel7	unassigned	YES	unset	up	up
GigabitEthernet1/0/1	unassigned	YES	unset	up	up
GigabitEthernet1/0/2	unassigned	YES	unset	up	up
GigabitEthernet1/0/3	unassigned	YES	unset	down	down
GigabitEthernet1/0/4	unassigned	YES	unset	up	up
GigabitEthernet1/0/5	unassigned	YES	unset	up	up
GigabitEthernet1/0/6	unassigned	YES	unset	down	down
GigabitEthernet1/0/7	unassigned	YES	unset	up	up
GigabitEthernet1/0/8	unassigned	YES	unset	up	up
GigabitEthernet1/0/9	unassigned	YES	unset	down	down
GigabitEthernet1/0/10	unassigned	YES	unset	up	up
GigabitEthernet1/0/11	unassigned	YES	unset	up	up
GigabitEthernet1/0/12	unassigned	YES	unset	down	down
GigabitEthernet1/0/13	unassigned	YES	unset	down	down
GigabitEthernet1/0/14	unassigned	YES	unset	down	down
GigabitEthernet1/0/15	unassigned	YES	unset	down	down
GigabitEthernet1/0/16	unassigned	YES	unset	down	down
GigabitEthernet1/0/17	unassigned	YES	unset	down	down
GigabitEthernet1/0/18	unassigned	YES	unset	down	down
GigabitEthernet1/0/19	unassigned	YES	unset	down	down
GigabitEthernet1/0/20	unassigned	YES	unset	down	down
GigabitEthernet1/0/21	unassigned	YES	unset	down	down
GigabitEthernet1/0/22	unassigned	YES	unset	down	down
GigabitEthernet1/0/23	unassigned	YES	unset	down	down
GigabitEthernet1/0/24	unassigned	YES	unset	down	down
GigabitEthernet1/1/1	unassigned	YES	unset	down	down
GigabitEthernet1/1/2	unassigned	YES	unset	down	down
GigabitEthernet1/1/3	unassigned	YES	unset	down	down
GigabitEthernet1/1/4	unassigned	YES	unset	down	down
Vlan1	unassigned	YES	unset	administratively down	down
Vlan65	unassigned	YES	unset	up	up
Vlan66	unassigned	YES	unset	up	up
Vlan67	unassigned	YES	unset	up	up
Vlan68	unassigned	YES	unset	up	up
Vlan69	unassigned	YES	unset	up	up

## Vlan brief

VLAN	Name	Status	Ports
1	default	active	Gig1/0/3, Gig1/0/6, Gig1/0/9, Gig1/0/10 Gig1/0/11, Gig1/0/12, Gig1/0/13,
	Gig1/0/14		Gig1/0/15, Gig1/0/16, Gig1/0/17,
	Gig1/0/18		Gig1/0/19, Gig1/0/20, Gig1/0/21,
	Gig1/0/22		Gig1/0/23, Gig1/0/24, Gig1/1/1, Gig1/1/2 Gig1/1/3, Gig1/1/4
65	Ventas	active	
66	TI	active	
67	Compras	active	
68	Mkt	active	
69	Admon	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fdnet-default	active	
1005	trnet-default	active	
	quit+m#		

## Interface trunk

Port	Mode	Encapsulation	Status	Native vlan
Po3	on	802.1q	trunking	1
Po5	on	802.1q	trunking	1
Po7	on	802.1q	trunking	1
Port Vlans allowed on trunk				
Po3	65-69			
Po5	65-69			
Po7	65-69			
Port Vlans allowed and active in management domain				
Po3	65,66,67,68,69			
Po5	65,66,67,68,69			
Po7	65,66,67,68,69			
Port Vlans in spanning tree forwarding state and not pruned				
Po3	none			
Po5	65,66,67,68,69			
Po7	65,66,67,68,69			
. . .				

## S7 (Switch Capa 2)

### Running Config

```
Building configuration...

Current configuration : 2750 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S7
!
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/3
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/4
switchport access vlan 65
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/5
switchport access vlan 65
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/6
switchport access vlan 66
switchport mode access
switchport port-security mac-address sticky
!
```

```
!
interface FastEthernet0/7
 switchport access vlan 66
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/8
 switchport access vlan 66
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/9
 switchport access vlan 67
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/10
 switchport access vlan 67
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/11
 switchport access vlan 67
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/12
 switchport access vlan 68
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/13
 switchport access vlan 68
 switchport mode access
 switchport port-security mac-address sticky
!
!
interface FastEthernet0/14
 switchport access vlan 68
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/15
 switchport mode access
 switchport port-security mac-address sticky
!
interface FastEthernet0/16
 switchport access vlan 69
 switchport mode access
 switchport port-security mac-address sticky
!
```

```
!
interface Vlan1
no ip address
shutdown
!
interface Vlan65
no ip address
!
interface Vlan66
no ip address
!
interface Vlan67
no ip address
!
interface Vlan68
no ip address
!
interface Vlan69
no ip address
!
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
end
```

## Ip interface brief

```
S7# show ip int br
Interface          IP-Address      OK? Method Status        Protocol
FastEthernet0/1    unassigned      YES manual up           up
FastEthernet0/2    unassigned      YES manual up           up
FastEthernet0/3    unassigned      YES manual up           up
FastEthernet0/4    unassigned      YES manual up           up
FastEthernet0/5    unassigned      YES manual down       down
FastEthernet0/6    unassigned      YES manual down       down
FastEthernet0/7    unassigned      YES manual up           up
FastEthernet0/8    unassigned      YES manual down       down
FastEthernet0/9    unassigned      YES manual down       down
FastEthernet0/10   unassigned      YES manual up           up
FastEthernet0/11   unassigned      YES manual down       down
FastEthernet0/12   unassigned      YES manual down       down
FastEthernet0/13   unassigned      YES manual down       down
FastEthernet0/14   unassigned      YES manual down       down
FastEthernet0/15   unassigned      YES manual down       down
FastEthernet0/16   unassigned      YES manual down       down
FastEthernet0/17   unassigned      YES manual administratively down down
FastEthernet0/18   unassigned      YES manual administratively down down
FastEthernet0/19   unassigned      YES manual administratively down down
FastEthernet0/20   unassigned      YES manual administratively down down
FastEthernet0/21   unassigned      YES manual administratively down down
FastEthernet0/22   unassigned      YES manual administratively down down
FastEthernet0/23   unassigned      YES manual administratively down down
FastEthernet0/24   unassigned      YES manual administratively down down
Vlan1             unassigned      YES manual administratively down down
Vlan65            unassigned      YES manual up           up
Vlan66            unassigned      YES manual up           up
Vlan67            unassigned      YES manual up           up
Vlan68            unassigned      YES manual up           up
Vlan69            unassigned      YES manual up           up
cna
```

## Vlan brief

VLAN	Name	Status	Ports
1	default	active	Fa0/15, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24
65	Ventas	active	Fa0/4, Fa0/5
66	TI	active	Fa0/6, Fa0/7, Fa0/8
67	Compras	active	Fa0/9, Fa0/10, Fa0/11
68	Mkt	active	Fa0/12, Fa0/13, Fa0/14
69	Admon	active	Fa0/16
1002	fdmi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

## Interface trunk

VLAN Name	Status	Ports
1 default	active	Fa0/15, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24
65 Ventas	active	Fa0/4, Fa0/5
66 TI	active	Fa0/6, Fa0/7, Fa0/8
67 Compras	active	Fa0/9, Fa0/10, Fa0/11
68 Mkt	active	Fa0/12, Fa0/13, Fa0/14
69 Admon	active	Fa0/16
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

S7#show int tr

Port	Mode	Encapsulation	Status	Native vlan
Fa0/1	on	802.1q	trunking	1
Fa0/2	on	802.1q	trunking	1
Fa0/3	on	802.1q	trunking	1

Port Vlans allowed on trunk

Fa0/1	65-69
Fa0/2	65-69
Fa0/3	65-69

Port Vlans allowed and active in management domain

Fa0/1	65,66,67,68,69
Fa0/2	65,66,67,68,69
Fa0/3	65,66,67,68,69

Port Vlans in spanning tree forwarding state and not pruned

Fa0/1	65,66,67,68,69
Fa0/2	69
Fa0/3	none

## S8 (Switch Capa 2)

### Running Config

```
Building configuration...

Current configuration : 2806 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S8
!
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/3
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
```

```
:  
interface FastEthernet0/4  
switchport access vlan 65  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/5  
switchport access vlan 65  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/6  
switchport access vlan 66  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/7  
switchport access vlan 66  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/8  
switchport access vlan 66  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/9  
switchport access vlan 67  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/10  
switchport access vlan 67  
switchport mode access  
switchport port-security mac-address sticky  
!
```

```
!
interface FastEthernet0/11
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/12
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/13
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/14
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/15
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/16
switchport access vlan 69
switchport trunk native vlan 69
switchport mode trunk
switchport nonegotiate
switchport port-security mac-address sticky
!
```

```
interface Vlan1
no ip address
shutdown
!
interface Vlan65
no ip address
!
interface Vlan66
no ip address
!
interface Vlan67
no ip address
!
interface Vlan68
no ip address
!
interface Vlan69
no ip address
!
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
end
```

Ip interface brief

```
S8# show ip int br
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/1    unassigned     YES manual up       up
FastEthernet0/2    unassigned     YES manual up       up
FastEthernet0/3    unassigned     YES manual up       up
FastEthernet0/4    unassigned     YES manual up       up
FastEthernet0/5    unassigned     YES manual down   down
FastEthernet0/6    unassigned     YES manual down   down
FastEthernet0/7    unassigned     YES manual down   down
FastEthernet0/8    unassigned     YES manual down   down
FastEthernet0/9    unassigned     YES manual down   down
FastEthernet0/10   unassigned     YES manual up       up
FastEthernet0/11   unassigned     YES manual down   down
FastEthernet0/12   unassigned     YES manual down   down
FastEthernet0/13   unassigned     YES manual up       up
FastEthernet0/14   unassigned     YES manual down   down
FastEthernet0/15   unassigned     YES manual down   down
FastEthernet0/16   unassigned     YES manual up       up
FastEthernet0/17   unassigned     YES manual administratively down down
FastEthernet0/18   unassigned     YES manual administratively down down
FastEthernet0/19   unassigned     YES manual administratively down down
FastEthernet0/20   unassigned     YES manual administratively down down
FastEthernet0/21   unassigned     YES manual administratively down down
FastEthernet0/22   unassigned     YES manual administratively down down
FastEthernet0/23   unassigned     YES manual administratively down down
FastEthernet0/24   unassigned     YES manual administratively down down
Vlan1             unassigned     YES manual administratively down down
Vlan65            unassigned     YES manual up       up
Vlan66            unassigned     YES manual up       up
Vlan67            unassigned     YES manual up       up
Vlan68            unassigned     YES manual up       up
Vlan69            unassigned     YES manual up       up
S8#
```

Vlan brief

VLAN	Name	Status	Ports
1	default	active	Fa0/15, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24
65	Ventas	active	Fa0/4, Fa0/5
66	TI	active	Fa0/6, Fa0/7, Fa0/8
67	Compras	active	Fa0/9, Fa0/10, Fa0/11
68	Mkt	active	Fa0/12, Fa0/13, Fa0/14
69	Admon	active	
1002	fdmi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	
	com1		

## Interface trunk

VLAN Name	Status	Ports	
1 default	active	Fa0/15, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24	
65 Ventas	active	Fa0/4, Fa0/5	
66 TI	active	Fa0/6, Fa0/7, Fa0/8	
67 Compras	active	Fa0/9, Fa0/10, Fa0/11	
68 Mkt	active	Fa0/12, Fa0/13, Fa0/14	
69 Admon	active		
1002 fddi-default	active		
1003 token-ring-default	active		
1004 fddinet-default	active		
1005 trnet-default	active		
S8#show int tr			
Port Mode	Encapsulation	Status Native vlan	
Fa0/1 on	802.1q	trunking 1	
Fa0/2 on	802.1q	trunking 1	
Fa0/3 on	802.1q	trunking 1	
Fa0/16 on	802.1q	trunking 69	
Port	Vlans allowed on trunk		
Fa0/1	65-69		
Fa0/2	65-69		
Fa0/3	65-69		
Fa0/16	1-1005		
Port	Vlans allowed and active in management domain		
Fa0/1	65,66,67,68,69		
Fa0/2	65,66,67,68,69		
Fa0/3	65,66,67,68,69		
Fa0/16	1,65,66,67,68,69		
Port	Vlans in spanning tree forwarding state and not pruned		
Fa0/1	69		
Fa0/2	65,66,67,68,69		
Fa0/3	65,66,67,68,69		
Fa0/16	1,65,66,67,68,69		

## S9 (Switch Capa 2)

### Running Config

```
-----  
S9#show run  
Building configuration...  
  
Current configuration : 2777 bytes  
!  
version 12.1  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption  
!  
hostname S9  
!  
!  
!  
!  
!  
!  
!  
spanning-tree mode pvst  
spanning-tree extend system-id  
!  
!  
interface FastEthernet0/1  
switchport trunk allowed vlan 65-69  
switchport mode trunk  
switchport nonegotiate  
!  
interface FastEthernet0/2  
switchport trunk allowed vlan 65-69  
switchport mode trunk  
switchport nonegotiate  
!  
interface FastEthernet0/3  
switchport access vlan 65  
switchport trunk allowed vlan 65-69  
switchport mode trunk  
switchport nonegotiate  
!  
interface FastEthernet0/4  
switchport access vlan 65  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/5  
switchport access vlan 65  
switchport mode access  
switchport port-security mac-address sticky  
!  
interface FastEthernet0/6  
switchport access vlan 66  
switchport mode access  
switchport port-security mac-address sticky  
!
```

```
!
interface FastEthernet0/7
switchport access vlan 66
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/8
switchport access vlan 66
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/9
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/10
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/11
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/12
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/13
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/14
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/15
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/16
switchport access vlan 69
switchport mode access
switchport port-security mac-address sticky
!
```

```
!
interface Vlan1
no ip address
shutdown
!
interface Vlan65
no ip address
!
interface Vlan66
no ip address
!
interface Vlan67
no ip address
!
interface Vlan68
no ip address
!
interface Vlan69
no ip address
!
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
end
```

## Ip interface brief

```
S9# show ip int br
Interface          IP-Address      OK? Method Status       Protocol
FastEthernet0/1    unassigned      YES manual up        up
FastEthernet0/2    unassigned      YES manual up        up
FastEthernet0/3    unassigned      YES manual up        up
FastEthernet0/4    unassigned      YES manual up        up
FastEthernet0/5    unassigned      YES manual down    down
FastEthernet0/6    unassigned      YES manual down    down
FastEthernet0/7    unassigned      YES manual up        up
FastEthernet0/8    unassigned      YES manual down    down
FastEthernet0/9    unassigned      YES manual down    down
FastEthernet0/10   unassigned      YES manual up        up
FastEthernet0/11   unassigned      YES manual down    down
FastEthernet0/12   unassigned      YES manual down    down
FastEthernet0/13   unassigned      YES manual down    down
FastEthernet0/14   unassigned      YES manual down    down
FastEthernet0/15   unassigned      YES manual down    down
FastEthernet0/16   unassigned      YES manual down    down
FastEthernet0/17   unassigned      YES manual administratively down down
FastEthernet0/18   unassigned      YES manual administratively down down
FastEthernet0/19   unassigned      YES manual administratively down down
FastEthernet0/20   unassigned      YES manual administratively down down
FastEthernet0/21   unassigned      YES manual administratively down down
FastEthernet0/22   unassigned      YES manual administratively down down
FastEthernet0/23   unassigned      YES manual administratively down down
FastEthernet0/24   unassigned      YES manual administratively down down
Vlan1             unassigned      YES manual administratively down down
Vlan65            unassigned      YES manual up        up
Vlan66            unassigned      YES manual up        up
Vlan67            unassigned      YES manual up        up
Vlan68            unassigned      YES manual up        up
Vlan69            unassigned      YES manual up        up
```

```

## Vlan brief

| VLAN Name               | Status | Ports                                                                      |
|-------------------------|--------|----------------------------------------------------------------------------|
| 1 default               | active | Fa0/15, Fa0/17, Fa0/18, Fa0/19<br>Fa0/20, Fa0/21, Fa0/22, Fa0/23<br>Fa0/24 |
| 65 Ventas               | active | Fa0/4, Fa0/5                                                               |
| 66 TI                   | active | Fa0/6, Fa0/7, Fa0/8                                                        |
| 67 Compras              | active | Fa0/9, Fa0/10, Fa0/11                                                      |
| 68 Mkt                  | active | Fa0/12, Fa0/13, Fa0/14                                                     |
| 69 Admon                | active | Fa0/16                                                                     |
| 1002 fddi-default       | active |                                                                            |
| 1003 token-ring-default | active |                                                                            |
| 1004 fddinet-default    | active |                                                                            |
| 1005 trnet-default      | active |                                                                            |

## Interface trunk

```

show int tr
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking   1
Fa0/2     on        802.1q         trunking   1
Fa0/3     on        802.1q         trunking   1

Port      Vlans allowed on trunk
Fa0/1    65-69
Fa0/2    65-69
Fa0/3    65-69

Port      Vlans allowed and active in management domain
Fa0/1    65,66,67,68,69
Fa0/2    65,66,67,68,69
Fa0/3    65,66,67,68,69

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1    65,66,67,68,69
Fa0/2    65,66,67,68,69
Fa0/3    65,66,67,68,69

```

S10 (Switch Capa 2)

## Running Config

```
Building configuration...  
  
Current configuration : 2807 bytes  
!  
version 12.1  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption  
!  
hostname S10  
!  
!  
!  
!  
!  
!  
!  
spanning-tree mode pvst  
spanning-tree extend system-id  
!
```

```
!
interface FastEthernet0/1
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/2
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/3
switchport trunk allowed vlan 65-69
switchport mode trunk
switchport nonegotiate
!
interface FastEthernet0/4
switchport access vlan 65
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/5
switchport access vlan 65
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/6
switchport access vlan 66
switchport mode access
switchport port-security mac-address sticky
!
!
interface FastEthernet0/7
switchport access vlan 66
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/8
switchport access vlan 66
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/9
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/10
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/11
switchport access vlan 67
switchport mode access
switchport port-security mac-address sticky
!
interface FastEthernet0/12
switchport access vlan 68
switchport mode access
switchport port-security mac-address sticky
!
```

```
!
interface FastEthernet0/13
  switchport access vlan 68
  switchport mode access
  switchport port-security mac-address sticky
!
interface FastEthernet0/14
  switchport access vlan 68
  switchport mode access
  switchport port-security mac-address sticky
!
interface FastEthernet0/15
  switchport mode access
  switchport port-security mac-address sticky
!
interface FastEthernet0/16
  switchport access vlan 69
  switchport trunk native vlan 69
  switchport mode trunk
  switchport nonegotiate
  switchport port-security mac-address sticky
!

!
interface Vlan1
  no ip address
  shutdown
!
interface Vlan65
  no ip address
!
interface Vlan66
  no ip address
!
interface Vlan67
  no ip address
!
interface Vlan68
  no ip address
!
interface Vlan69
  no ip address
!
!
!
!
!
line con 0
!
line vty 0 4
  login
line vty 5 15
  login
!
!
!
!
end
```

## Ip interface brief

| Interface        | IP-Address | OK? | Method | Status                | Protocol |
|------------------|------------|-----|--------|-----------------------|----------|
| FastEthernet0/1  | unassigned | YES | manual | up                    | up       |
| FastEthernet0/2  | unassigned | YES | manual | up                    | up       |
| FastEthernet0/3  | unassigned | YES | manual | up                    | up       |
| FastEthernet0/4  | unassigned | YES | manual | down                  | down     |
| FastEthernet0/5  | unassigned | YES | manual | up                    | up       |
| FastEthernet0/6  | unassigned | YES | manual | down                  | down     |
| FastEthernet0/7  | unassigned | YES | manual | down                  | down     |
| FastEthernet0/8  | unassigned | YES | manual | down                  | down     |
| FastEthernet0/9  | unassigned | YES | manual | down                  | down     |
| FastEthernet0/10 | unassigned | YES | manual | up                    | up       |
| FastEthernet0/11 | unassigned | YES | manual | down                  | down     |
| FastEthernet0/12 | unassigned | YES | manual | down                  | down     |
| FastEthernet0/13 | unassigned | YES | manual | up                    | up       |
| FastEthernet0/14 | unassigned | YES | manual | down                  | down     |
| FastEthernet0/15 | unassigned | YES | manual | down                  | down     |
| FastEthernet0/16 | unassigned | YES | manual | up                    | up       |
| FastEthernet0/17 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/18 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/19 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/20 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/21 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/22 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/23 | unassigned | YES | manual | administratively down | down     |
| FastEthernet0/24 | unassigned | YES | manual | administratively down | down     |
| Vlan1            | unassigned | YES | manual | administratively down | down     |
| Vlan65           | unassigned | YES | manual | up                    | up       |
| Vlan66           | unassigned | YES | manual | up                    | up       |
| Vlan67           | unassigned | YES | manual | up                    | up       |
| Vlan68           | unassigned | YES | manual | up                    | up       |
| Vlan69           | unassigned | YES | manual | up                    | up       |
| ~.~.~            |            |     |        |                       |          |

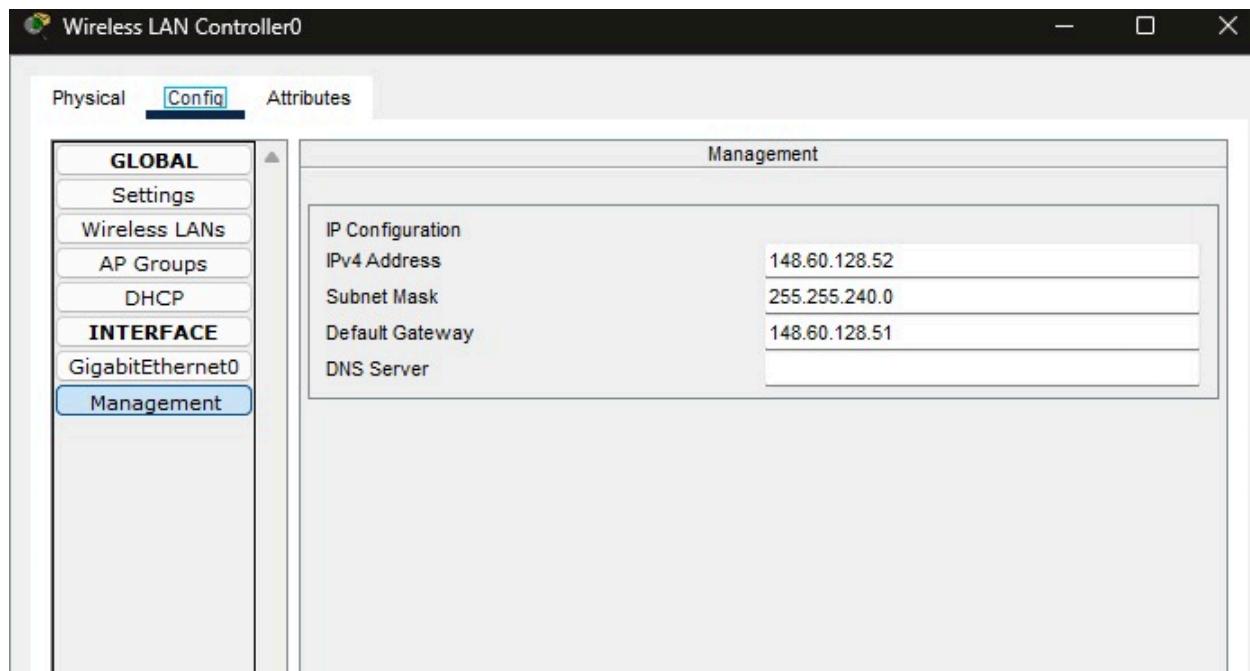
## Vlan brief

| VLAN | Name               | Status | Ports                                                                      |
|------|--------------------|--------|----------------------------------------------------------------------------|
| 1    | default            | active | Fa0/15, Fa0/17, Fa0/18, Fa0/19<br>Fa0/20, Fa0/21, Fa0/22, Fa0/23<br>Fa0/24 |
| 65   | Ventas             | active | Fa0/4, Fa0/5                                                               |
| 66   | TI                 | active | Fa0/6, Fa0/7, Fa0/8                                                        |
| 67   | Compras            | active | Fa0/9, Fa0/10, Fa0/11                                                      |
| 68   | Mkt                | active | Fa0/12, Fa0/13, Fa0/14                                                     |
| 69   | Admon              | active |                                                                            |
| 1002 | fdmi-default       | active |                                                                            |
| 1003 | token-ring-default | active |                                                                            |
| 1004 | fddinet-default    | active |                                                                            |
| 1005 | trnet-default      | active |                                                                            |
| S10# |                    |        |                                                                            |

## Interface trunk

| VLAN            | Name                                                   | Status        | Ports                                                                      |
|-----------------|--------------------------------------------------------|---------------|----------------------------------------------------------------------------|
| 1               | default                                                | active        | Fa0/15, Fa0/17, Fa0/18, Fa0/19<br>Fa0/20, Fa0/21, Fa0/22, Fa0/23<br>Fa0/24 |
| 65              | Ventas                                                 | active        | Fa0/4, Fa0/5                                                               |
| 66              | TI                                                     | active        | Fa0/6, Fa0/7, Fa0/8                                                        |
| 67              | Compras                                                | active        | Fa0/9, Fa0/10, Fa0/11                                                      |
| 68              | Mkt                                                    | active        | Fa0/12, Fa0/13, Fa0/14                                                     |
| 69              | Admon                                                  | active        |                                                                            |
| 1002            | fdmi-default                                           | active        |                                                                            |
| 1003            | token-ring-default                                     | active        |                                                                            |
| 1004            | fddinet-default                                        | active        |                                                                            |
| 1005            | trnet-default                                          | active        |                                                                            |
| S10#show int tr |                                                        |               |                                                                            |
| Port            | Mode                                                   | Encapsulation | Status Native vlan                                                         |
| Fa0/1           | on                                                     | 802.1q        | trunking 1                                                                 |
| Fa0/2           | on                                                     | 802.1q        | trunking 1                                                                 |
| Fa0/3           | on                                                     | 802.1q        | trunking 1                                                                 |
| Fa0/16          | on                                                     | 802.1q        | trunking 69                                                                |
| Port            | Vlans allowed on trunk                                 |               |                                                                            |
| Fa0/1           | 65-69                                                  |               |                                                                            |
| Fa0/2           | 65-69                                                  |               |                                                                            |
| Fa0/3           | 65-69                                                  |               |                                                                            |
| Fa0/16          | 1-1005                                                 |               |                                                                            |
| Port            | Vlans allowed and active in management domain          |               |                                                                            |
| Fa0/1           | 65,66,67,68,69                                         |               |                                                                            |
| Fa0/2           | 65,66,67,68,69                                         |               |                                                                            |
| Fa0/3           | 65,66,67,68,69                                         |               |                                                                            |
| Fa0/16          | 1,65,66,67,68,69                                       |               |                                                                            |
| Port            | Vlans in spanning tree forwarding state and not pruned |               |                                                                            |
| Fa0/1           | 65,66,67,68,69                                         |               |                                                                            |
| Fa0/2           | 65,66,67,68,69                                         |               |                                                                            |
| Fa0/3           | 65,66,67,68,69                                         |               |                                                                            |
| Fa0/16          | 1,65,66,67,68,69                                       |               |                                                                            |

## Wireless LAN Controller0



Wireless LAN Controller0

Physical Config Attributes

**GLOBAL**

Settings

Wireless LANs

**AP Groups**

DHCP

**INTERFACE**

GigabitEthernet0

Management

**AP Groups**

Select AP Group: default-group

Name: default-group

**Wireless LANs**

Each Wireless LAN can belong to multiple AP groups.

| In AP Group                         | Name    | SSID    |
|-------------------------------------|---------|---------|
| <input checked="" type="checkbox"/> | WLAN 67 | WLAN 67 |
| <input checked="" type="checkbox"/> | WLAN 68 | WLAN 68 |

**Access Points**

Each Access Point can belong to one AP group.

| In AP Group                         | Name                       | MAC Address    | Status |
|-------------------------------------|----------------------------|----------------|--------|
| <input checked="" type="checkbox"/> | Light Weight Access Point1 | 0001.42B5.BA01 | Online |
| <input checked="" type="checkbox"/> | Light Weight Access Point0 | 0001.966E.5801 | Online |

Ap groups del WLC de la región

Laptop0

Physical Config Desktop Programming Attributes

**Link Information** **Connect** **Profiles**

Below is a list of available wireless networks. To search for more wireless networks, click the Refresh button. To view more information about a network, select the wireless network name. To connect to that network, click the Connect button below.

| Wireless Network Name | CH  | Signal |
|-----------------------|-----|--------|
| WLAN 67               | 1   | 89%    |
| WLAN 67               | 1   | 89%    |
| WLAN 68               | 1   | 89%    |
| ...                   | ... | ...    |

**Site Information**

**Wireless Mode** Infrastructure  
**Network Type** Mixed B/G/N  
**Radio Band** Auto  
**Security** Disable  
**MAC Address** 0001.966E.5802

**Refresh** **Connect**

**2.4GHz**



Adapter is Inactive

**Wireless-N Notebook Adapter** **Wireless Network Monitor v1.0** Model No. **WPC300N**

## Access Point0

Global Settings

Display Name Light Weight Access Point0

Gateway/DNS IPv4

DHCP  
 Static

Default Gateway 148.60.128.51

DNS Server

## Access Point1

Light Weight Access Point1

Physical Config Attributes

GLOBAL  
Settings  
INTERFACE

Global Settings

Display Name Light Weight Access Point1

Gateway/DNS IPv4

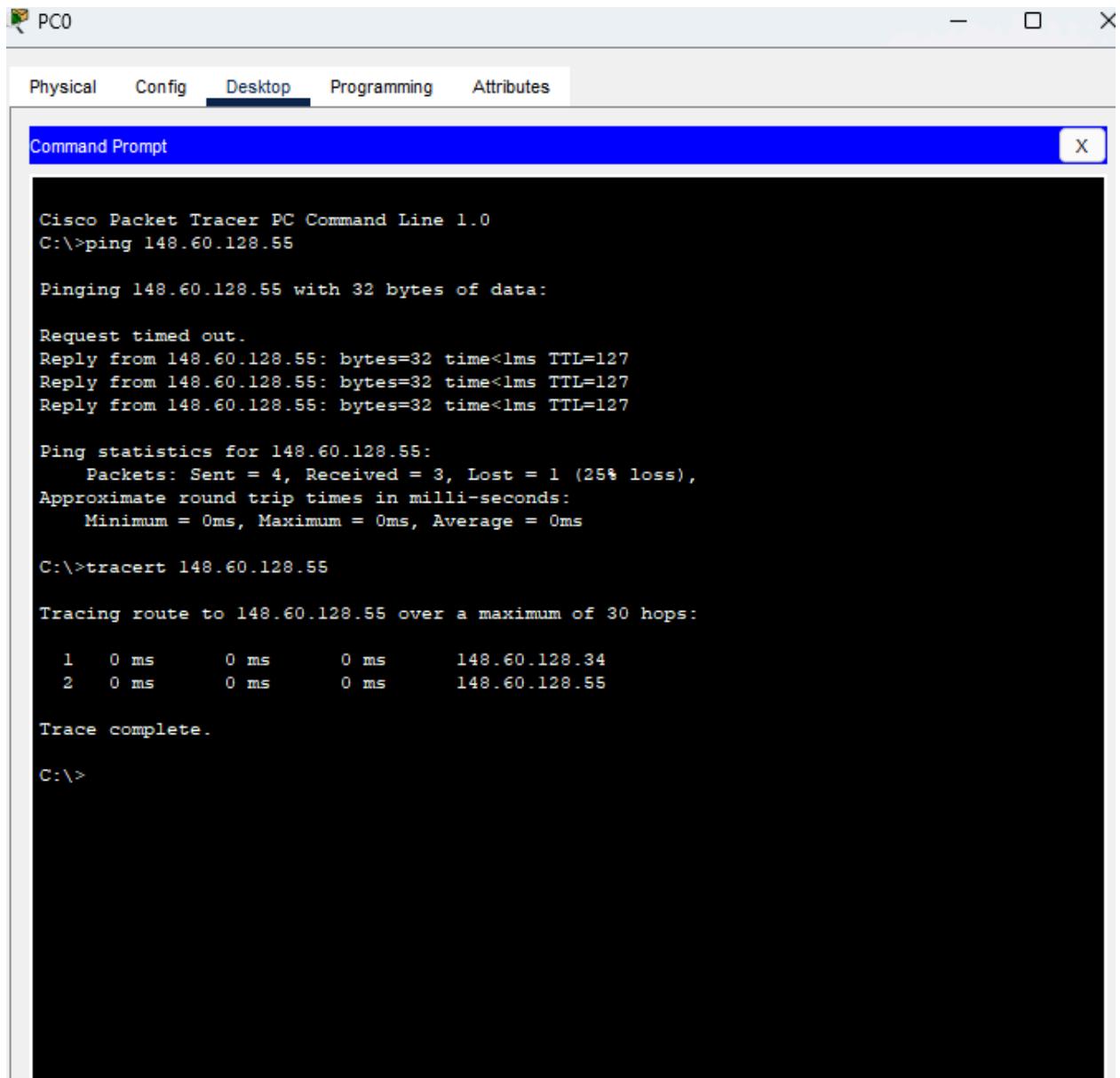
DHCP  
 Static

Default Gateway 148.60.128.51

DNS Server

## Pruebas de Conexion

Ping y Traceroute de PC0 (dentro de ventas) a PC1 dentro de TI



The screenshot shows a Windows-style window titled "PC0" with a tab bar at the top. The "Desktop" tab is selected. Below the window title is a blue header bar labeled "Command Prompt". The main area contains the output of a Cisco Packet Tracer command-line session.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 148.60.128.55

Pinging 148.60.128.55 with 32 bytes of data:

Request timed out.
Reply from 148.60.128.55: bytes=32 time<1ms TTL=127
Reply from 148.60.128.55: bytes=32 time<1ms TTL=127
Reply from 148.60.128.55: bytes=32 time<1ms TTL=127

Ping statistics for 148.60.128.55:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>tracert 148.60.128.55

Tracing route to 148.60.128.55 over a maximum of 30 hops:
  1  0 ms      0 ms      0 ms      148.60.128.34
  2  0 ms      0 ms      0 ms      148.60.128.55

Trace complete.

C:\>
```

### Ping y traceroute de PC0 a PC3 (tambien es de ventas)

```
C:\>ping 148.60.128.37

Pinging 148.60.128.37 with 32 bytes of data:

Reply from 148.60.128.37: bytes=32 time<1ms TTL=128

Ping statistics for 148.60.128.37:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>tracert 148.60.128.37

Tracing route to 148.60.128.37 over a maximum of 30 hops:
  1  0 ms      0 ms      0 ms      148.60.128.37

Trace complete.

C:\>
```

### Ping y traceroute de Pc0 a Pc (Mkt)

```
C:\>ping 148.60.128.89

Pinging 148.60.128.89 with 32 bytes of data:

Request timed out.
Reply from 148.60.128.89: bytes=32 time<1ms TTL=127
Reply from 148.60.128.89: bytes=32 time<1ms TTL=127
Reply from 148.60.128.89: bytes=32 time<1ms TTL=127

Ping statistics for 148.60.128.89:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>tracert 148.60.128.89

Tracing route to 148.60.128.89 over a maximum of 30 hops:
  1  0 ms      0 ms      0 ms      148.60.128.34
  2  1 ms      0 ms      0 ms      148.60.128.89
```

### Ping y Traceroute de PC0 al Switch multicapa S1

```
C:\>ping 148.60.128.100

Pinging 148.60.128.100 with 32 bytes of data:

Request timed out.
Reply from 148.60.128.100: bytes=32 time=1ms TTL=254
Reply from 148.60.128.100: bytes=32 time<1ms TTL=254
Reply from 148.60.128.100: bytes=32 time<1ms TTL=254

Ping statistics for 148.60.128.100:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>tracert 148.60.128.100

Tracing route to 148.60.128.100 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      148.60.128.34
  2  0 ms      0 ms      0 ms      148.60.128.100

Trace complete.

C:\>
```

### Ping y Traceroute de PC0 a laptop con conexion inalambrica a Mkt

```
C:\>ping 148.60.128.84

Pinging 148.60.128.84 with 32 bytes of data:

Request timed out.
Reply from 148.60.128.84: bytes=32 time=24ms TTL=127
Reply from 148.60.128.84: bytes=32 time=14ms TTL=127
Reply from 148.60.128.84: bytes=32 time=15ms TTL=127

Ping statistics for 148.60.128.84:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 24ms, Average = 17ms

C:\>tracert 148.60.128.84

Tracing route to 148.60.128.84 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      148.60.128.34
  2  2 ms      8 ms     12 ms      148.60.128.84

Trace complete.

C:\>
```

## Problemas y Complicaciones

Al momento de crear los channel groups la primera vez, cometí unos errores al poner mal detalles de los puertos o simple sintaxis, cosa que por alguna razón me hacía tener que borrarlos y al volver a ingresar los comandos para el channel group me suspendida los puertos por los que mi teoría es que no se borran del todo y lo que hice fue apagar el dispositivo y asegurarse de que ahora si no me equivocara en la sintaxis

## Conclusiones

Se implementó la segmentación de red mediante VLANs en todas las regiones, lo que permitió separar de forma lógica los distintos departamentos de la red nacional y optimizar el control del tráfico. La configuración de VTP en los switches y enlaces troncales facilitó la propagación y administración centralizada de las VLANs, asegurando coherencia en la infraestructura de cada región. Se configuró HSRP en los routers junto con la técnica de router-on-a-stick, lo que permitió alta disponibilidad y balanceo de carga en el enrutamiento inter-VLAN, garantizando continuidad de servicio ante fallos. Se aplicó STP, de forma que cada árbol de expansión era diferente para cada vlan, esto con total de prevenir bucles y redundancias innecesarias, optimizando el uso de enlaces y asegurando estabilidad en la topología. Se implementó EtherChannel entre switches, lo que incrementó la capacidad de los enlaces, mejoró el rendimiento y aportó redundancia adicional. Se añadió Port Security en los switches conectados a dispositivos finales, reforzando la seguridad de acceso y evitando ataques de suplantación de direcciones MAC. Se integraron controladoras WLAN y puntos de acceso inalámbricos controlados por WLC, lo que permitió extender la conectividad de manera segura y confiable a usuarios móviles.