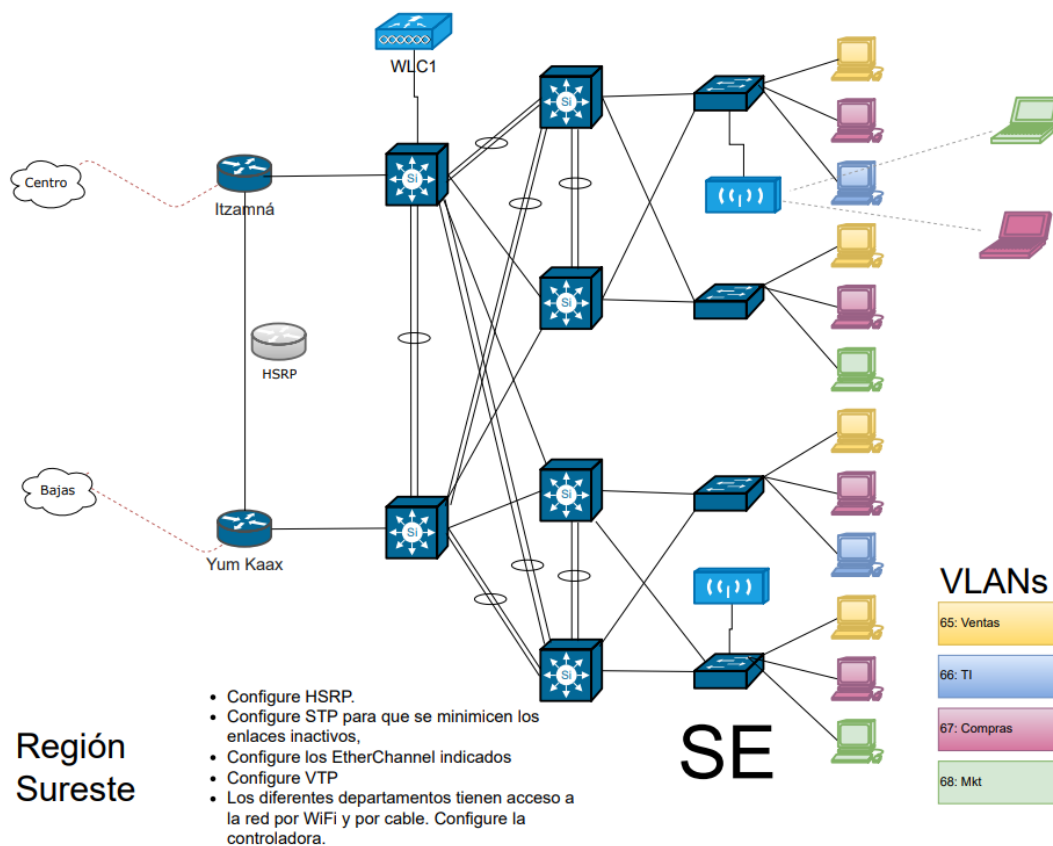


Topología 3



Vista general de la topología de red implementada en la Región Sureste. Se observa la estructura jerárquica con una capa de distribución redundante (Switches Multilayer interconectados en malla) y una capa de acceso (Switches 2960). Se destaca la configuración de enlaces EtherChannel (óvalos verdes) para la agregación de ancho de banda y la redundancia de Gateway mediante HSRP entre los routers Itzamná y Yum Kaax. También se visualizan los dispositivos inalámbricos (WLC y APs) integrados a la infraestructura.

Scripts de Configuración de Red

Router Principal (Itzamná / Router0)

```
enable
configure terminal
hostname Router_Itzamna

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption
```

! --- 1. Enrutamiento Dinámico (RIPv2) ---

router rip

```
version 2
network 148.60.0.0
no auto-summary
! Evitamos ruido RIP en las VLANs de usuarios
passive-interface g0/0/0.65
passive-interface g0/0/0.66
passive-interface g0/0/0.67
passive-interface g0/0/0.68
exit
```

! --- 2. Pools de DHCP ---

```
ip dhcp pool VENTAS
network 148.60.65.0 255.255.255.0
default-router 148.60.65.1
dns-server 8.8.8.8
```

```
ip dhcp pool TI
network 148.60.66.0 255.255.255.0
default-router 148.60.66.1
dns-server 8.8.8.8
```

```
ip dhcp pool COMPRAS
network 148.60.67.0 255.255.255.0
default-router 148.60.67.1
dns-server 8.8.8.8
```

```
ip dhcp pool MKT
network 148.60.68.0 255.255.255.0
default-router 148.60.68.1
dns-server 8.8.8.8
```

! --- 3. Subinterfaces y HSRP (Activo) ---

```

interface g0/0/0
  no shutdown
  exit

! VLAN 65 - Ventas
interface g0/0/0.65
  encapsulation dot1Q 65
  ip address 148.60.65.2 255.255.255.0
  standby 65 ip 148.60.65.1
  standby 65 priority 150
  standby 65 preempt
  exit

! VLAN 66 - TI / Gestión
interface g0/0/0.66
  encapsulation dot1Q 66
  ip address 148.60.66.2 255.255.255.0
  standby 66 ip 148.60.66.1
  standby 66 priority 150
  standby 66 preempt
  exit

! VLAN 67 - Compras
interface g0/0/0.67
  encapsulation dot1Q 67
  ip address 148.60.67.2 255.255.255.0
  standby 67 ip 148.60.67.1
  standby 67 priority 150
  standby 67 preempt
  exit

! VLAN 68 - Marketing
interface g0/0/0.68
  encapsulation dot1Q 68
  ip address 148.60.68.2 255.255.255.0
  standby 68 ip 148.60.68.1
  standby 68 priority 150
  standby 68 preempt
  exit
interface Serial0/0/1
  description Enlace_a_YumKaax
  ip address 148.60.0.1 255.255.255.252
  ! Ponemos reloj porque es cable serial
  clock rate 128000
  no shutdown
  exit

```

Router de Respaldo (Yum Kaax / Router1)

```

enable
configure terminal
hostname Router_YumKaax

```

```
ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption
```

! --- 1. Enrutamiento Dinámico ---

router rip

```
version 2
network 148.60.0.0
no auto-summary
passive-interface g0/0/0.65
passive-interface g0/0/0.66
passive-interface g0/0/0.67
passive-interface g0/0/0.68
exit
```

! --- 2. Subinterfaces y HSRP (Standby) ---

```
interface g0/0/0
  no shutdown
  exit
```

```
interface g0/0/0.65
  encapsulation dot1Q 65
  ip address 148.60.65.3 255.255.255.0
  standby 65 ip 148.60.65.1
  standby 65 priority 100
  standby 65 preempt
  exit
```

```
interface g0/0/0.66
  encapsulation dot1Q 66
  ip address 148.60.66.3 255.255.255.0
  standby 66 ip 148.60.66.1
  standby 66 priority 100
  standby 66 preempt
  exit
```

```
interface g0/0/0.67
  encapsulation dot1Q 67
  ip address 148.60.67.3 255.255.255.0
  standby 67 ip 148.60.67.1
  standby 67 priority 100
  standby 67 preempt
  exit
```

```
interface g0/0/0.68
  encapsulation dot1Q 68
```

```
ip address 148.60.68.3 255.255.255.0
standby 68 ip 148.60.68.1
standby 68 priority 100
standby 68 preempt
exit

interface Serial0/0/0
description Enlace_a_Itzamna
ip address 148.60.0.2 255.255.255.252
no shutdown
```

configuracion Switch server (DSW)

```
enable
configure terminal
hostname DSW1
vtp domain JuanMark
vtp version 2
vtp mode server
vtp password cisco

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
transport input ssh
login local
exit
service password-encryption

vlan 65
name Ventas
vlan 66
name Gestion_TI
vlan 67
name Compras
vlan 68
name MKT
exit

interface range g1/0/1-2
channel-protocol pagp
channel-group 1 mode desirable
no shutdown
exit

interface range g1/0/3-4
channel-protocol pagp
channel-group 2 mode desirable
no shutdown
exit
```

```

interface range g1/0/5-6
  channel-protocol pagp
  channel-group 3 mode desirable
  no shutdown
  exit

interface Port-channel 1
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  exit

interface Port-channel 2
  ! Si el switch es Capa 3 (Multilayer), descomenta la siguiente línea:
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  exit

interface Port-channel 3
  ! Si el switch es Capa 3 (Multilayer), descomenta la siguiente línea:
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  exit

interface gig1/0/7
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  exit

interface g1/0/24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  no shutdown
  exit
spanning-tree vlan 65,66 root primary
spanning-tree vlan 67,68 root secondary

```

Switch ASW1

```

enable
configure terminal
hostname ASW1

```

```
ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
```

```
interface range g1/0/1-2
  channel-protocol pagp
  channel-group 1 mode desirable
  no shutdown
exit
```

```
interface range g1/0/3-4
  channel-protocol pagp
  channel-group 2 mode desirable
  no shutdown
exit
```

```
interface range g1/0/5-6
  channel-protocol pagp
  channel-group 3 mode desirable
  no shutdown
exit
```

```
interface Port-channel 1
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface Port-channel 2
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface Port-channel 3
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/8
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/7
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface f0/10
  switchport mode access
  switchport access vlan 65
  spanning-tree portfast
  no shutdown
exit
```

```
interface f0/11
  switchport mode access
  switchport access vlan 66
  spanning-tree portfast
  no shutdown
exit
```

```
spanning-tree vlan 67,68 root primary
spanning-tree vlan 65,66 root secondary
```

Switch ASW2

```
enable
configure terminal
hostname ASW2

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption

vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco

interface range g1/0/1-2
```



```
channel-protocol pagp
channel-group 1 mode desirable
no shutdown
exit

interface range g1/0/3-4
channel-protocol pagp
channel-group 2 mode desirable
no shutdown
exit

interface range g1/0/5-6
channel-protocol pagp
channel-group 3 mode desirable
no shutdown
exit

interface Port-channel 1
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit

interface Port-channel 2
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit

interface Port-channel 3
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit

interface g1/0/8
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit

interface g1/0/7
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit

interface f0/10
```

```
switchport mode access
switchport access vlan 65
spanning-tree portfast
no shutdown
exit
```

```
interface f0/11
switchport mode access
switchport access vlan 66
spanning-tree portfast
no shutdown
exit
```

Switch ASW3

```
enable
configure terminal
hostname ASW3

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
transport input ssh
login local
exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
```

```
interface range g1/0/1-2
channel-protocol pagp
channel-group 1 mode desirable
no shutdown
exit
```

```
interface Port-channel 1
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/3
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/4
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/5
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/6
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

Switch ASW4

```
enable
configure terminal
hostname ASW4
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
```

```
interface range g1/0/1-2
  channel-protocol pagp
  channel-group 1 mode desirable
  no shutdown
exit
```

```
interface Port-channel 1
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/3
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/4
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/5
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

```
interface g1/0/6
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
exit
```

Switch ASW5

```
enable
configure terminal
hostname ASW5

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
```

```
interface range g1/0/1-2
  channel-protocol pagp
  channel-group 1 mode desirable
  no shutdown
exit
```

```
interface range g1/0/3-4
  channel-protocol pagp
  channel-group 2 mode desirable
  no shutdown
```

```
exit
```

```
interface range g1/0/5-6  
  channel-protocol pagp  
  channel-group 3 mode desirable  
  no shutdown  
exit
```

```
interface Port-channel 1  
  switchport trunk encapsulation dot1q  
  switchport mode trunk  
  switchport nonegotiate  
  switchport trunk allowed vlan 1,65-68  
exit
```

```
interface Port-channel 2  
  switchport trunk encapsulation dot1q  
  switchport mode trunk  
  switchport nonegotiate  
  switchport trunk allowed vlan 1,65-68  
exit
```

```
interface Port-channel 3  
  switchport trunk encapsulation dot1q  
  switchport mode trunk  
  switchport nonegotiate  
  switchport trunk allowed vlan 1,65-68  
exit
```

```
interface g1/0/8  
  switchport trunk encapsulation dot1q  
  switchport mode trunk  
  switchport nonegotiate  
  switchport trunk allowed vlan 1,65-68  
exit
```

```
interface g1/0/7  
  switchport trunk encapsulation dot1q  
  switchport mode trunk  
  switchport nonegotiate  
  switchport trunk allowed vlan 1,65-68  
exit
```

Switch ASW0_ConAP

```
enable  
configure terminal  
hostname ASW0_ConAP  
  
ip domain-name juanmark.com  
username admin secret Cisco123  
crypto key generate rsa general-keys modulus 1024
```

```
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
no ip domain-lookup
```

```
interface range g0/1-2
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  no shutdown
exit
```

```
interface f0/3
  description Link_to_AP
  switchport mode trunk
  switchport nonegotiate
  switchport trunk native vlan 66
  switchport trunk allowed vlan 1,65-68
  no shutdown
exit
```

```
interface range f0/1-2, f0/4-5
  switchport mode access
  switchport access vlan 65
  spanning-tree portfast
  switchport port-security
exit
```

```
interface range f0/6-10
  switchport mode access
  switchport access vlan 66
  spanning-tree portfast
  switchport port-security
exit
```

```
interface range f0/11-15
  switchport mode access
  switchport access vlan 67
  spanning-tree portfast
  switchport port-security
exit
```

```
interface range f0/16-20
  switchport mode access
  switchport access vlan 68
  spanning-tree portfast
```

```
switchport port-security
exit
```

Switch ASW1_ConAP

```
enable
configure terminal
hostname ASW1_ConAP

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
no ip domain-lookup
```

```
interface range g0/1-2
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  no shutdown
exit
```

```
interface f0/3
  description Link_to_AP
  switchport mode trunk
  switchport nonegotiate
  switchport trunk native vlan 66
  switchport trunk allowed vlan 1,65-68
  no shutdown
exit
```

```
interface range f0/1-2, f0/4-5
  switchport mode access
  switchport access vlan 65
  spanning-tree portfast
  switchport port-security
exit
```

```
interface range f0/6-10
  switchport mode access
  switchport access vlan 66
  spanning-tree portfast
  switchport port-security
```

```
exit
```

```
interface range f0/11-15
  switchport mode access
  switchport access vlan 67
  spanning-tree portfast
  switchport port-security
exit
```

```
interface range f0/16-20
  switchport mode access
  switchport access vlan 68
  spanning-tree portfast
  switchport port-security
exit
```

Switch ASW2_PCs

```
enable
configure terminal
hostname ASW2_PCs

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
  transport input ssh
  login local
  exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
no ip domain-lookup
```

```
interface range g0/1-2
  switchport mode trunk
  switchport nonegotiate
  switchport trunk allowed vlan 1,65-68
  no shutdown
exit
```

```
interface range f0/1-5
  switchport mode access
  switchport access vlan 65
  spanning-tree portfast
  switchport port-security
exit
```

```
interface range f0/6-10
```



```
switchport mode access
switchport access vlan 66
spanning-tree portfast
switchport port-security
exit
```

```
interface range f0/11-15
switchport mode access
switchport access vlan 67
spanning-tree portfast
switchport port-security
exit
```

```
interface range f0/16-20
switchport mode access
switchport access vlan 68
spanning-tree portfast
switchport port-security
exit
```

Switch ASW3_PCs

```
enable
configure terminal
hostname ASW3_PCs

ip domain-name juanmark.com
username admin secret Cisco123
crypto key generate rsa general-keys modulus 1024
line vty 0 4
transport input ssh
login local
exit
service password-encryption
```

```
vtp domain JuanMark
vtp version 2
vtp mode client
vtp password cisco
no ip domain-lookup
```

```
interface range g0/1-2
switchport mode trunk
switchport nonegotiate
switchport trunk allowed vlan 1,65-68
no shutdown
exit
```

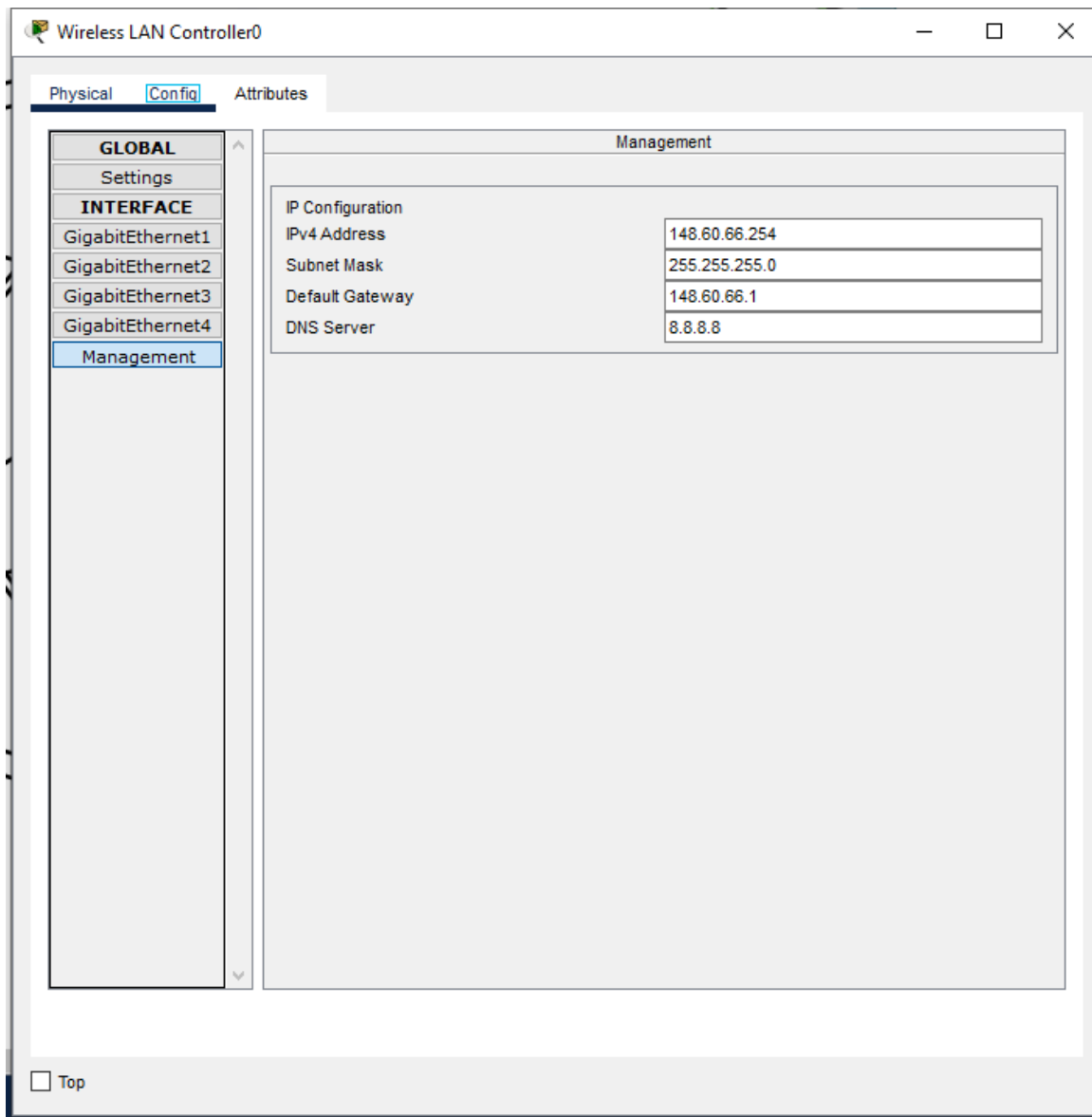
```
interface range f0/1-5
switchport mode access
switchport access vlan 65
spanning-tree portfast
```

```
    switchport port-security
exit
```

```
interface range f0/6-10
    switchport mode access
    switchport access vlan 66
    spanning-tree portfast
    switchport port-security
exit
```

```
interface range f0/11-15
    switchport mode access
    switchport access vlan 67
    spanning-tree portfast
    switchport port-security
exit
```

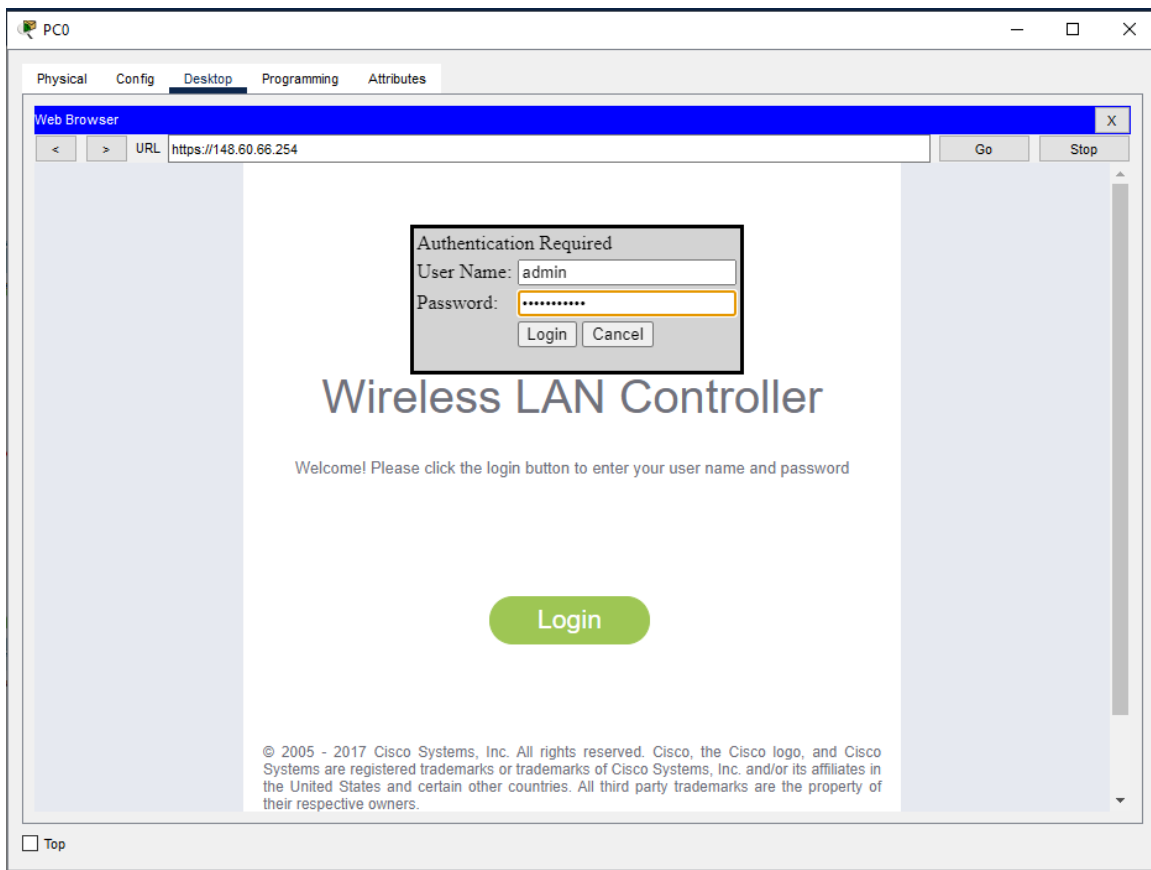
```
interface range f0/16-20
    switchport mode access
    switchport access vlan 68
    spanning-tree portfast
    switchport port-security
exit
```



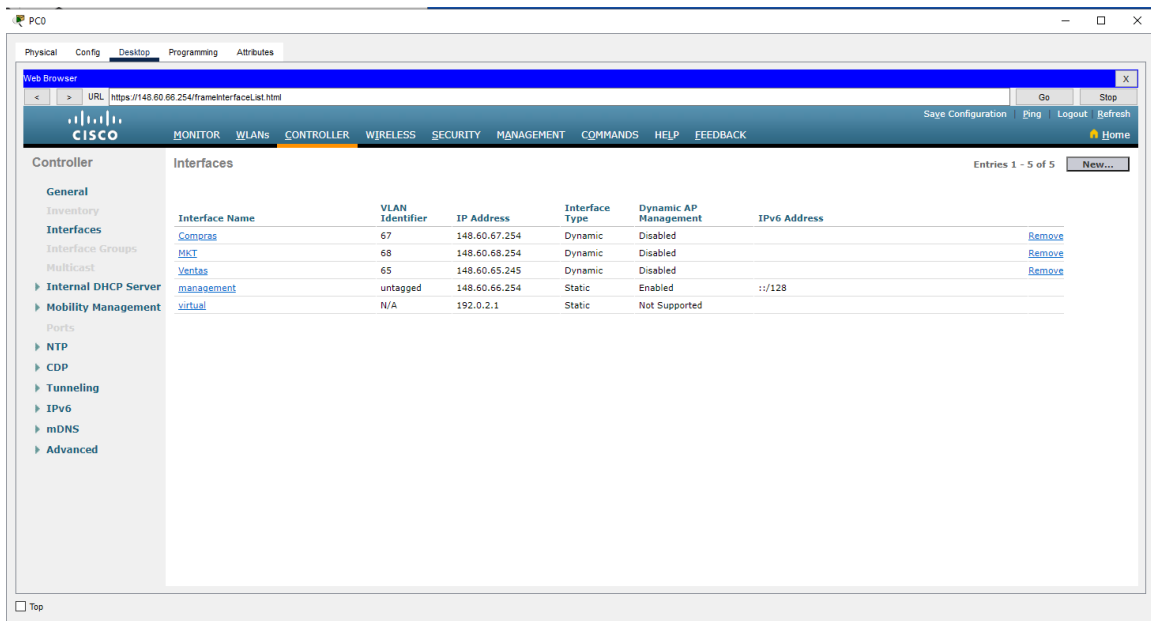
Panel de control principal (Dashboard) del Wireless LAN Controller (WLC). La sección 'Access Point Summary' confirma el estado operativo de la red inalámbrica, mostrando **2 Access Points en estado 'Up'** (verde), lo que indica que ambos APs se han unido exitosamente al controlador a través de la red de gestión (VLAN 66). También se verifica la versión de software y el tiempo de actividad del sistema.



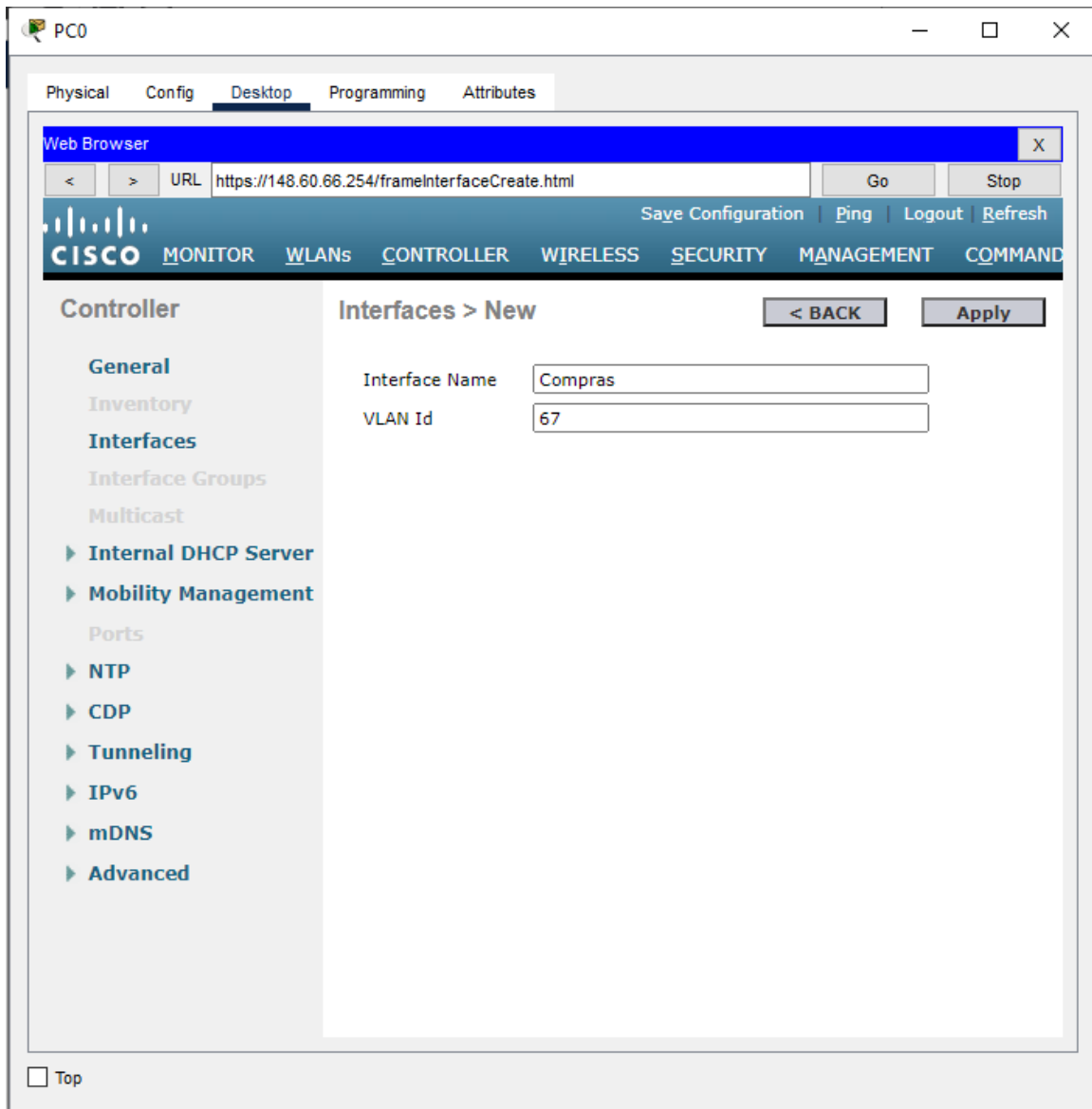
La imagen muestra el **Panel de Control Principal (Dashboard)** del Wireless LAN Controller (WLC). Esta vista es la primera que se accede después de iniciar sesión en el interfaz web seguro (<https://148.60.66.254>) y ofrece un resumen del estado de la red inalámbrica.



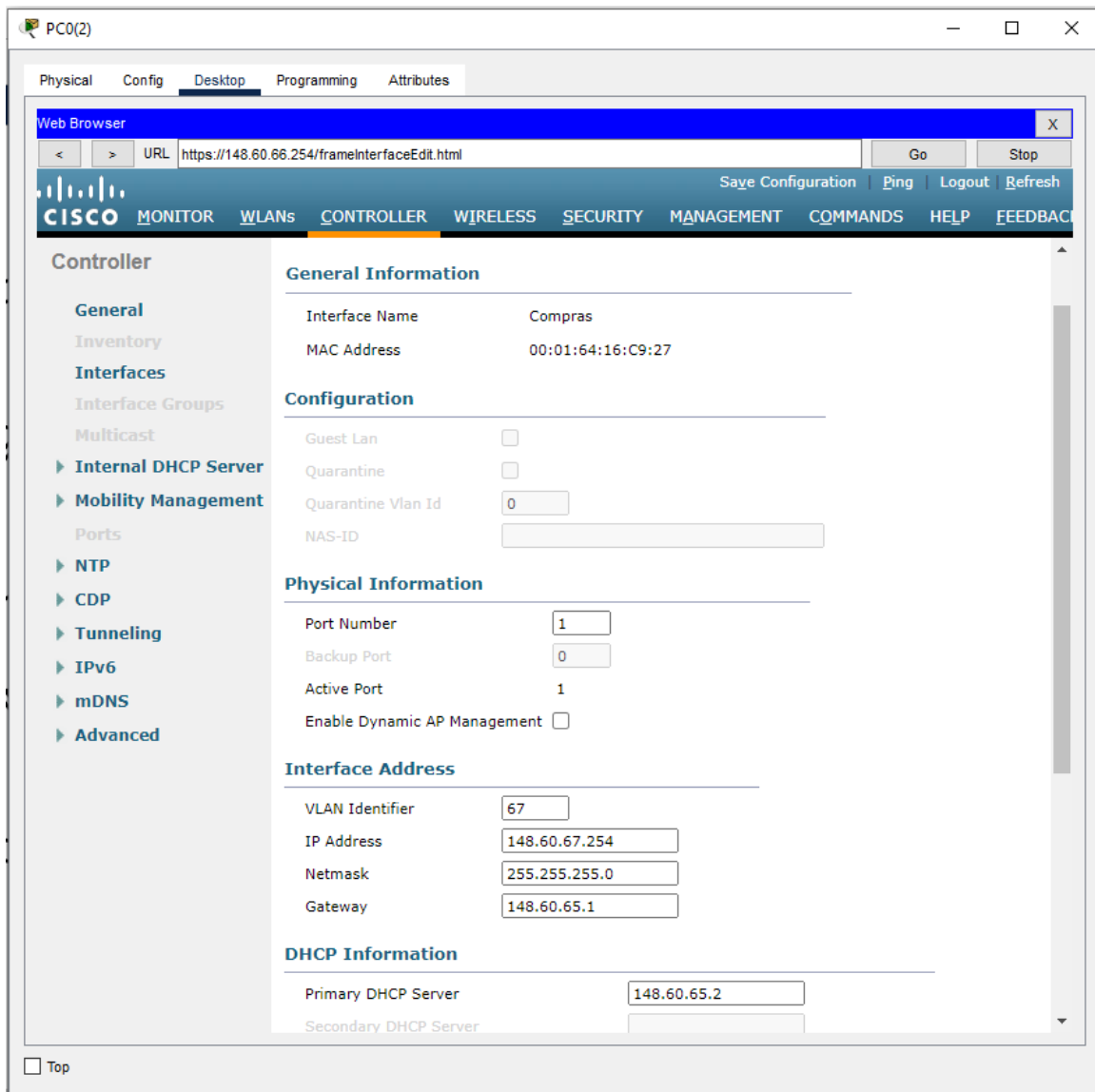
La imagen muestra la utilidad de configuración de la tarjeta de red **Wireless-N Notebook Adapter** de la Laptop. Esta interfaz confirma el estado de la conexión del cliente final a la red inalámbrica.



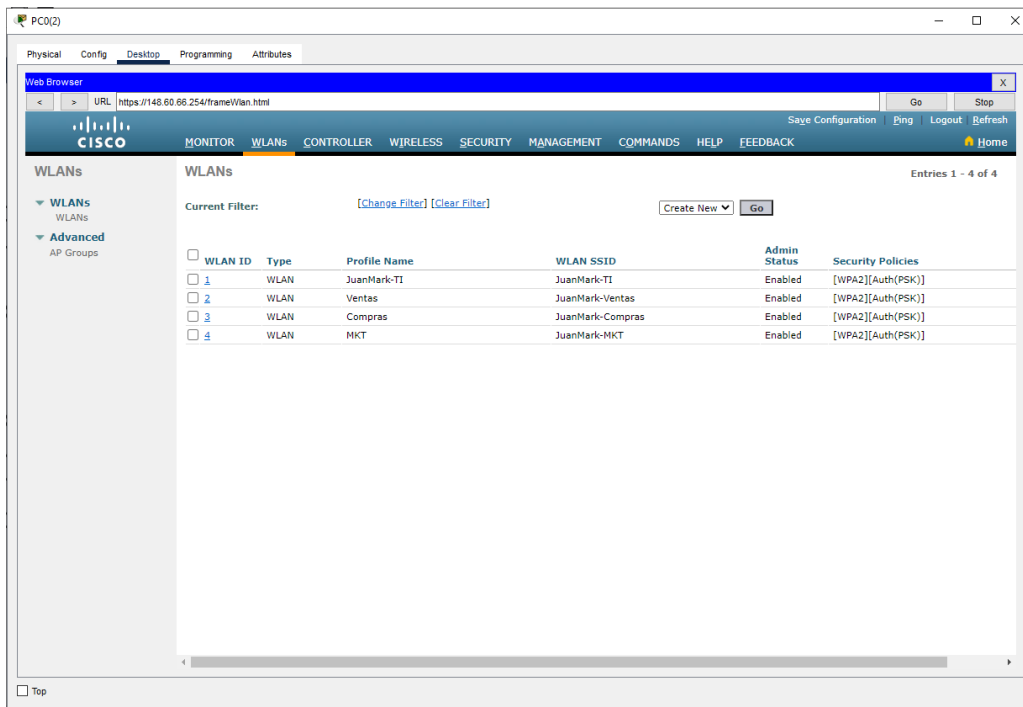
La imagen corresponde a la pestaña **Interfaces** bajo el menú **CONTROLLER** en la interfaz de gestión web del Wireless LAN Controller (WLC). Esta vista es crucial para el **enrutamiento de datos** y la segmentación de la red inalámbrica.



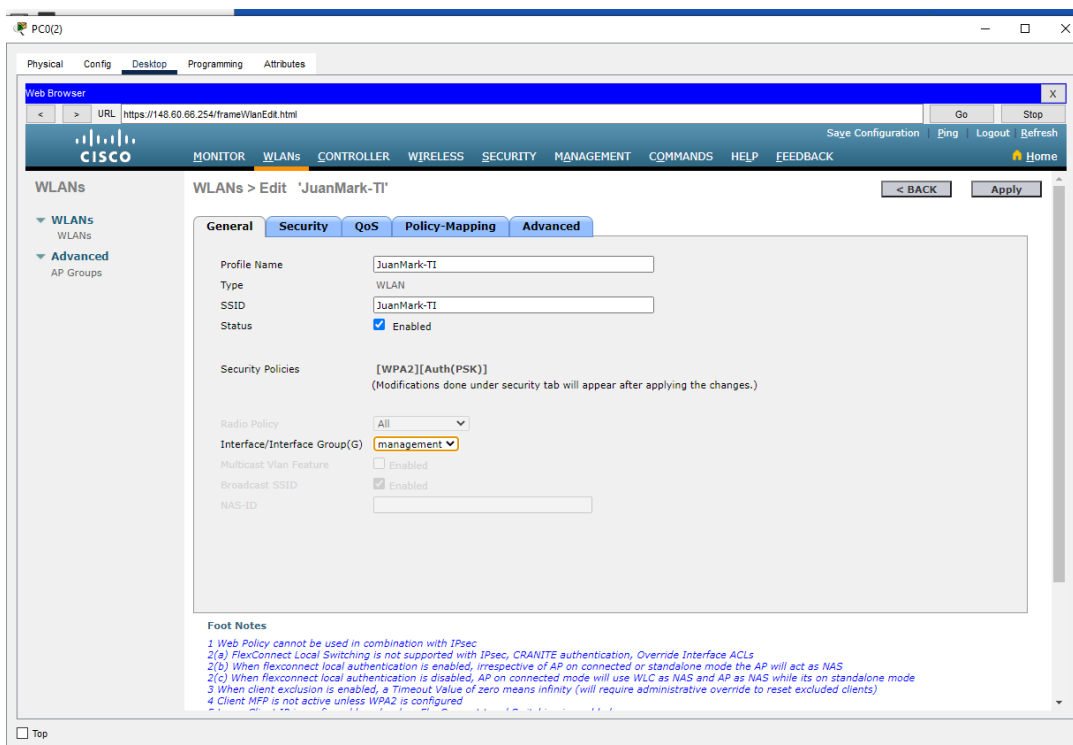
La imagen corresponde a la ventana Interfaces > New en el menú CONTROLLER de la interfaz de gestión web del Wireless LAN Controller (WLC). Esta ventana se utiliza para iniciar la creación de una Interfaz Dinámica.



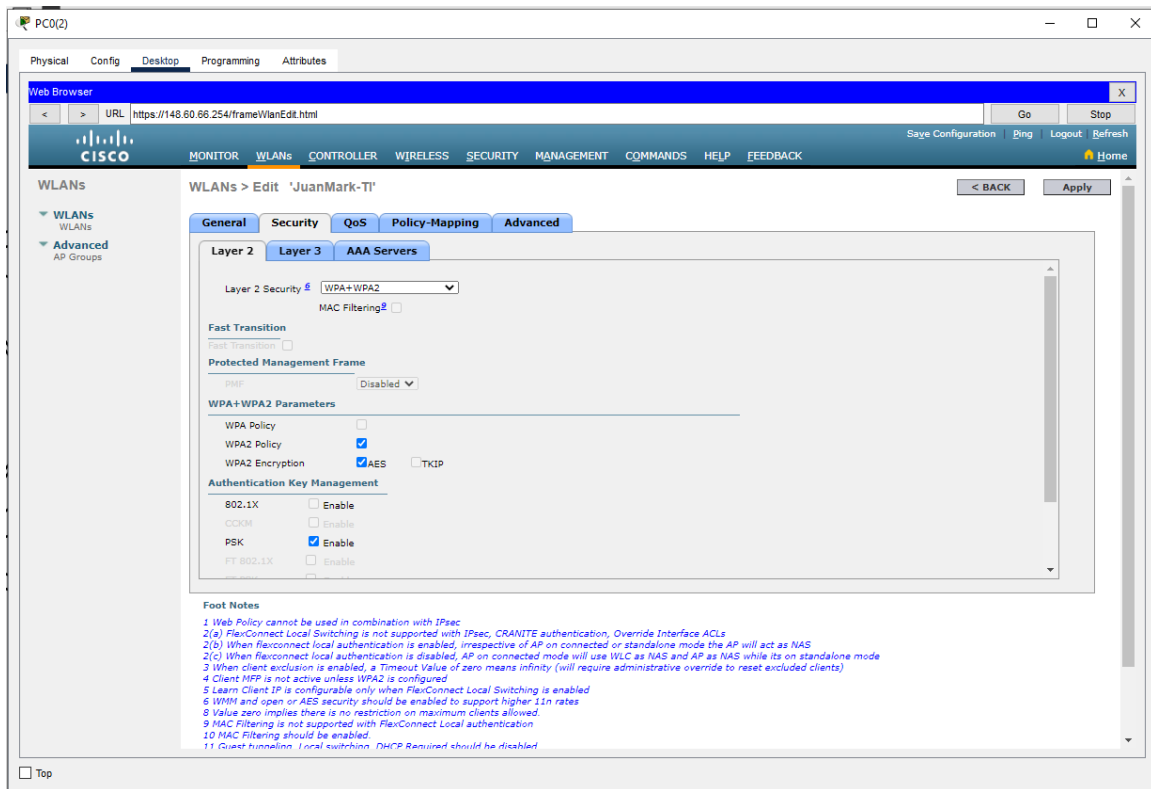
La imagen corresponde a la ventana de **edición** de la interfaz dinámica "**Compras**" en el Wireless LAN Controller (WLC). Esta vista muestra todos los parámetros de Capa 3 asociados a la **VLAN 67**.



La imagen corresponde a la pestaña **WLANs** en la interfaz de gestión web del Wireless LAN Controller (WLC). Esta vista muestra las **cuatro redes inalámbricas** que han sido creadas para la segmentación departamental en la red.



La imagen corresponde a la pestaña **General** dentro de la ventana de edición de la WLAN "JuanMark-TI" en la interfaz web del Wireless LAN Controller (WLC).



La imagen corresponde a la pestaña **Security > Layer 2** dentro de la ventana de edición de la WLAN "JuanMark-TI". Esta vista confirma la implementación del estándar de seguridad para la autenticación de los clientes.

Light Weight Access Point0(1)

Physical **Config** Attributes

GLOBAL

Settings

INTERFACE

GigabitEthernet0

Dot11Radio0

Global Settings

Display Name Light Weight Access Point0(1)

Gateway/DNS IPv4

☒ DHCP

☐ Static

Default Gateway 148.60.66.1

DNS Server 8.8.8.8

☐ Top

La imagen corresponde a la ventana de inicio de sesión o **Autenticación Requerida** del Wireless LAN Controller (WLC).