



## Práctica No. 2

Router Serie C3640

### Montaje del Router C3640

Para instalar el Router C3640 debemos descargar la imagen de la siguiente URL:

► [Descarga Cisco IOS: Imagenes para GNS3 \[Direct Link Download\]](#)

#### 2.4. Serie C3640

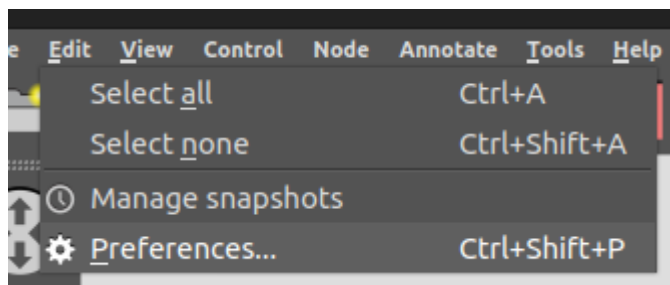
El c3640 admite hasta 4 módulos de red (máximo de 16 puertos Ethernet, 32 puertos FastEthernet o 16 puertos serie).

##### 2.4.1. IOS versión 12.4.25d (línea principal)

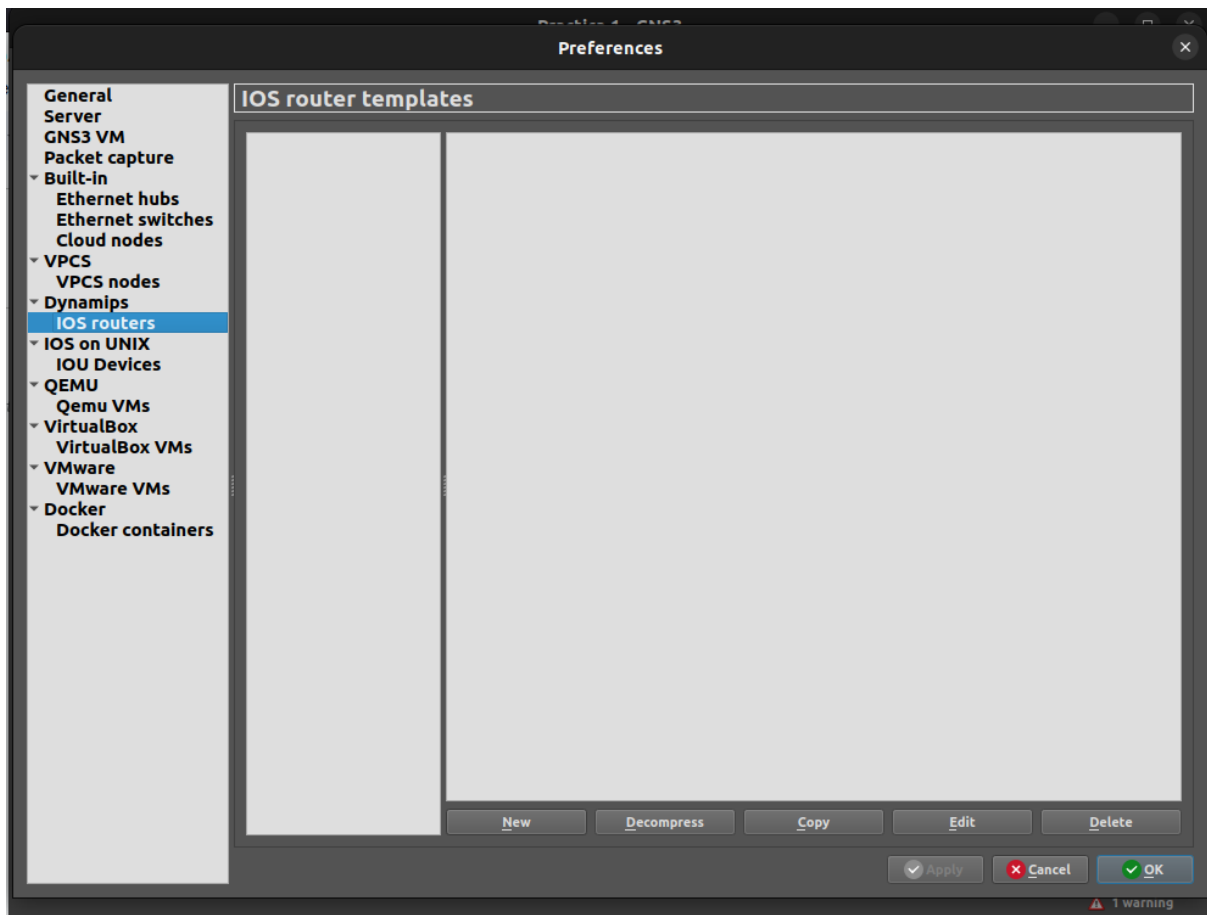
- Nombre de archivo: c3640-a3js-mz.124-25d.bin
- MD5: db9f63ca1b46d18fb835496bffffe608a
- RAM mínima: 128MB
- Valor de PC inactivo propuesto: 0x6050b114

**Descarga c3640-a3js-mz.124-25d.bin**

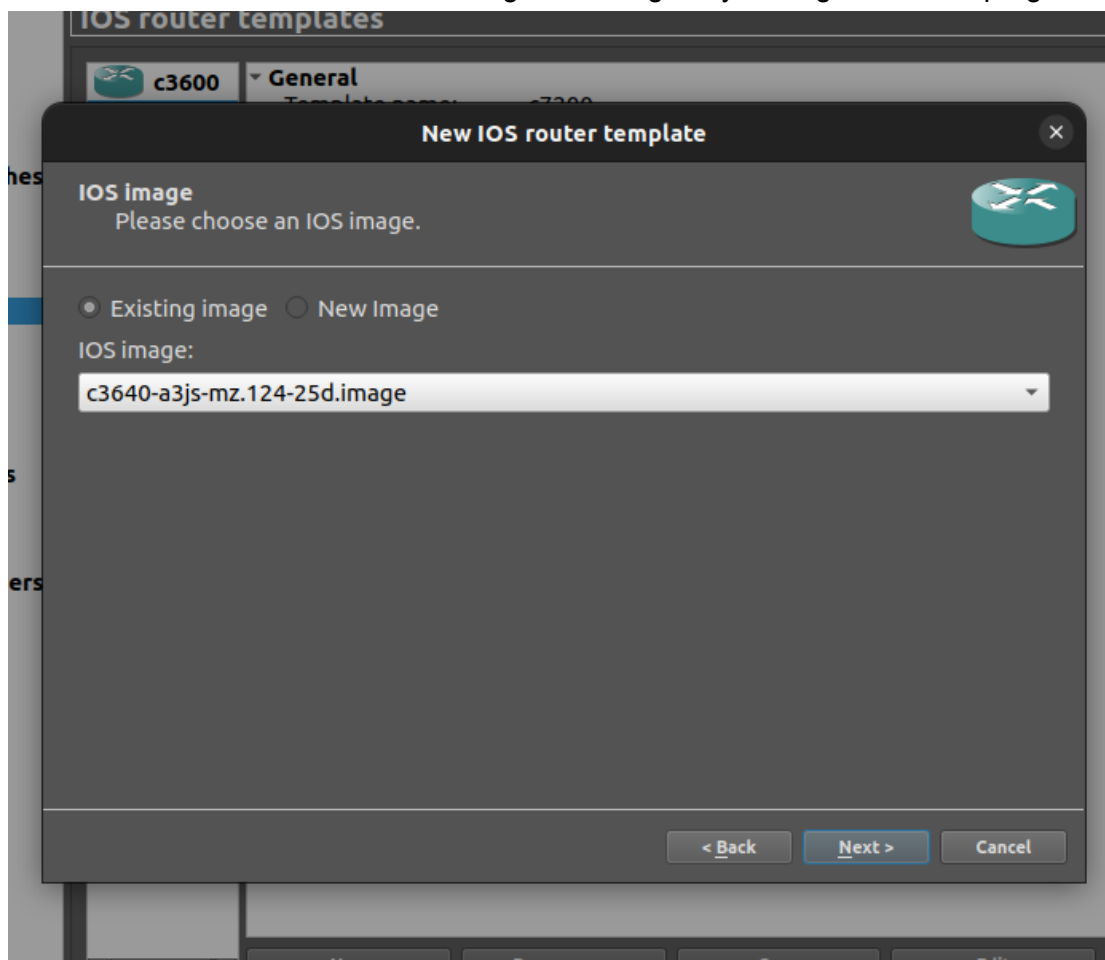
Damos click en Edit y luego en Preferences.



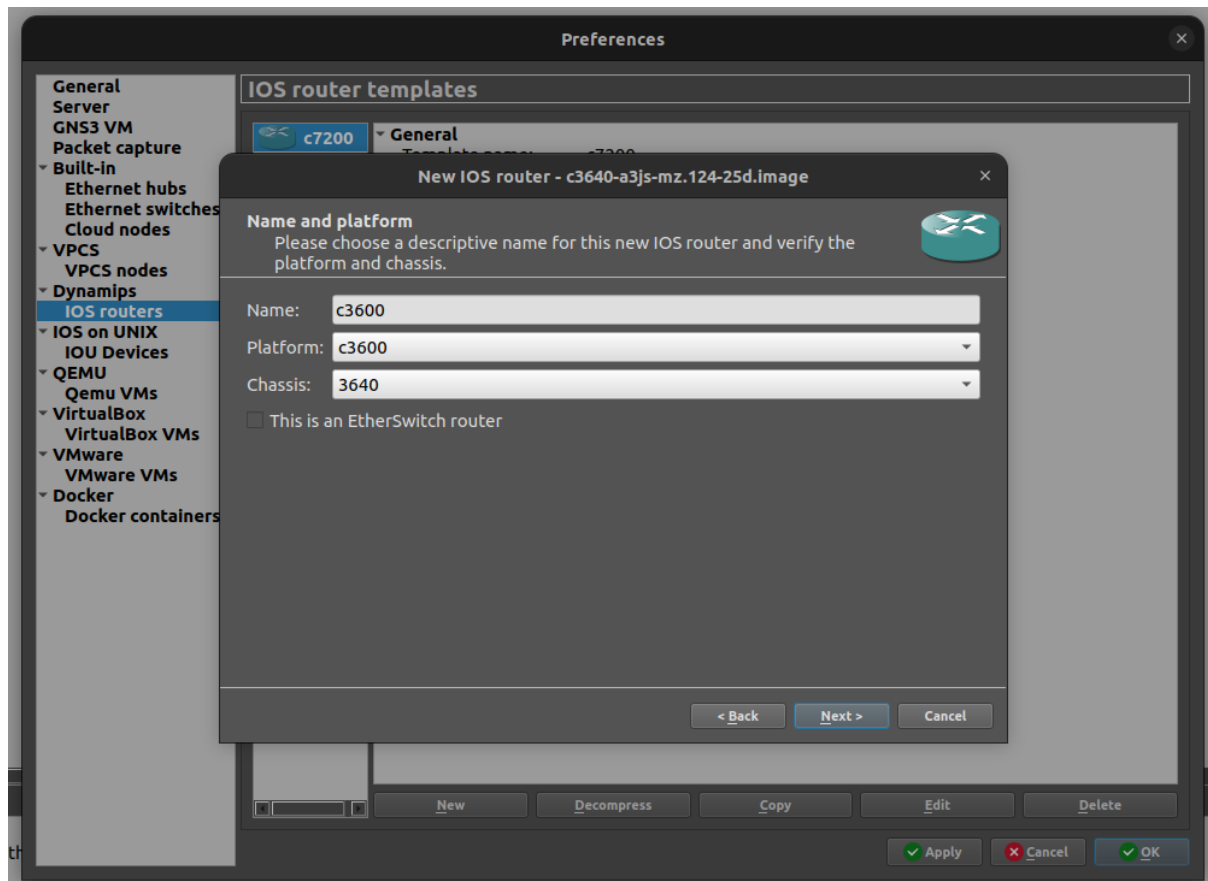
En la sección de “Dynamips” y “IOS Routers”, seleccionamos la opción “New”.



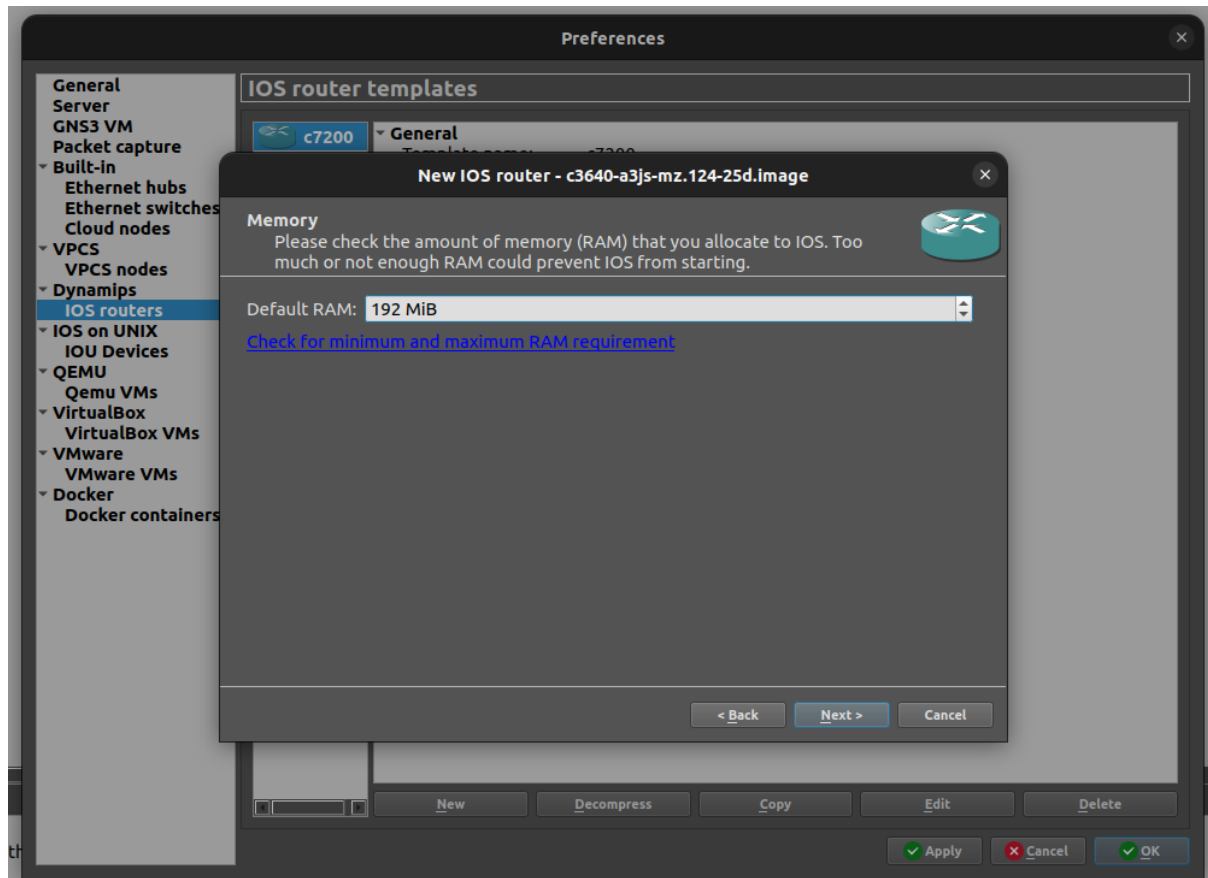
Buscamos en nuestro directorio la imagen descargada y la cargamos en el programa.



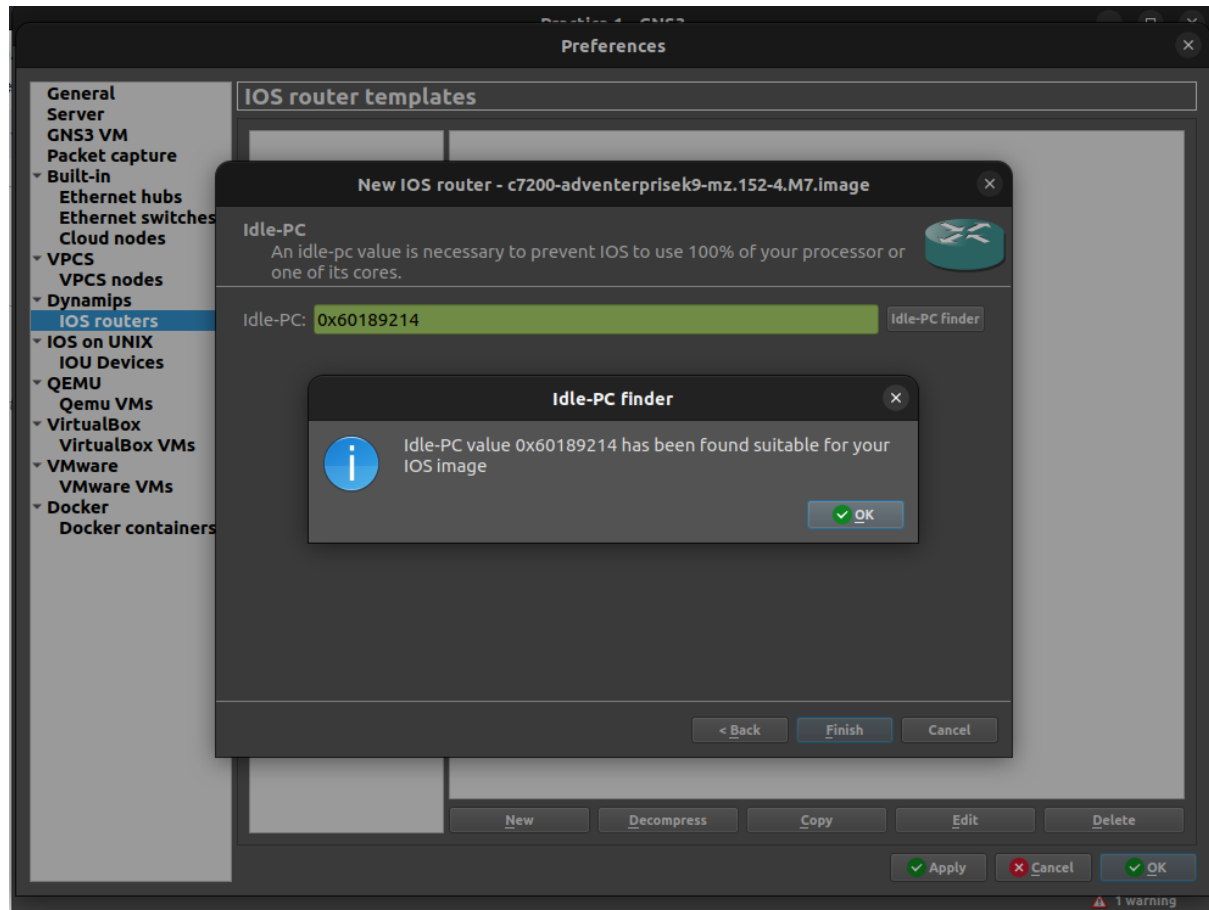
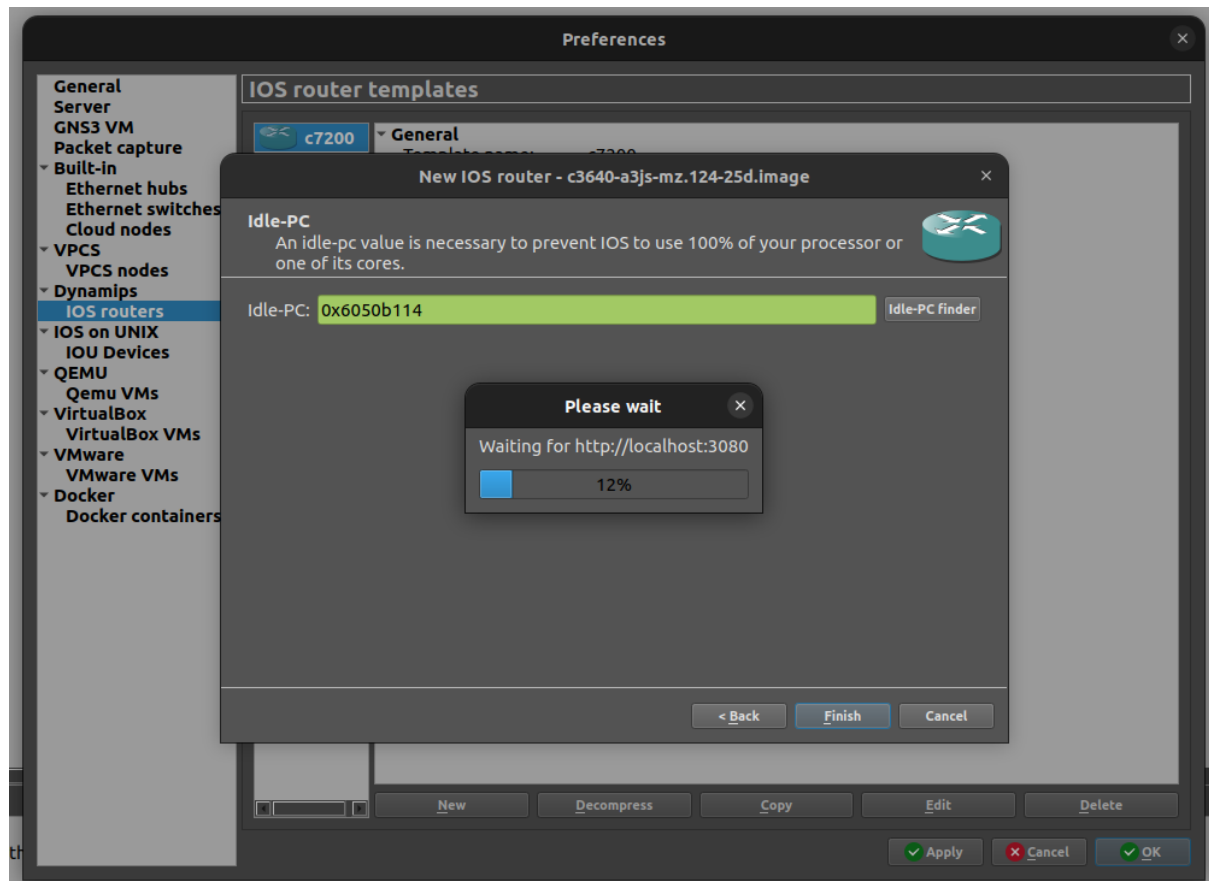
Mantenemos la configuración por default del nombre y plataforma.



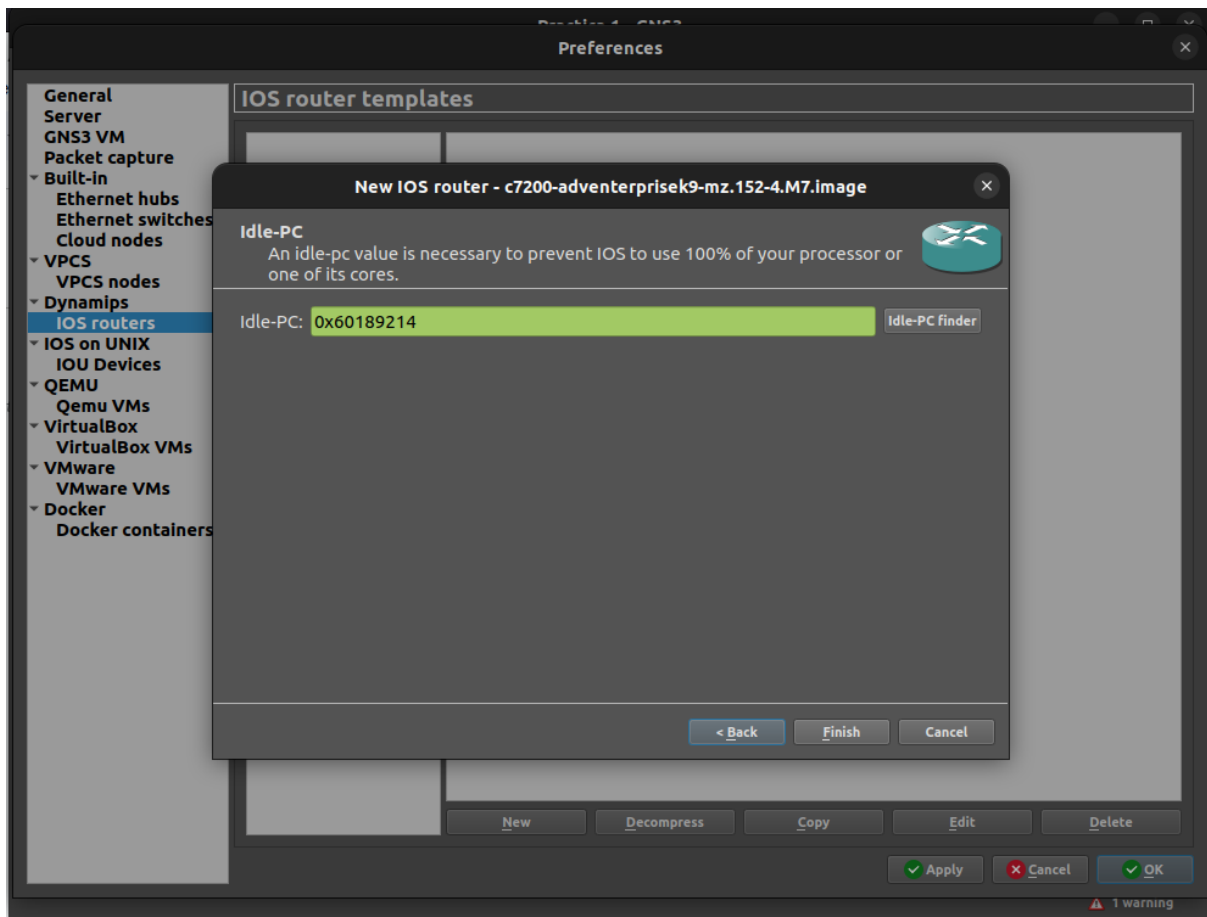
Mantenemos la configuración por defecto de la RAM.



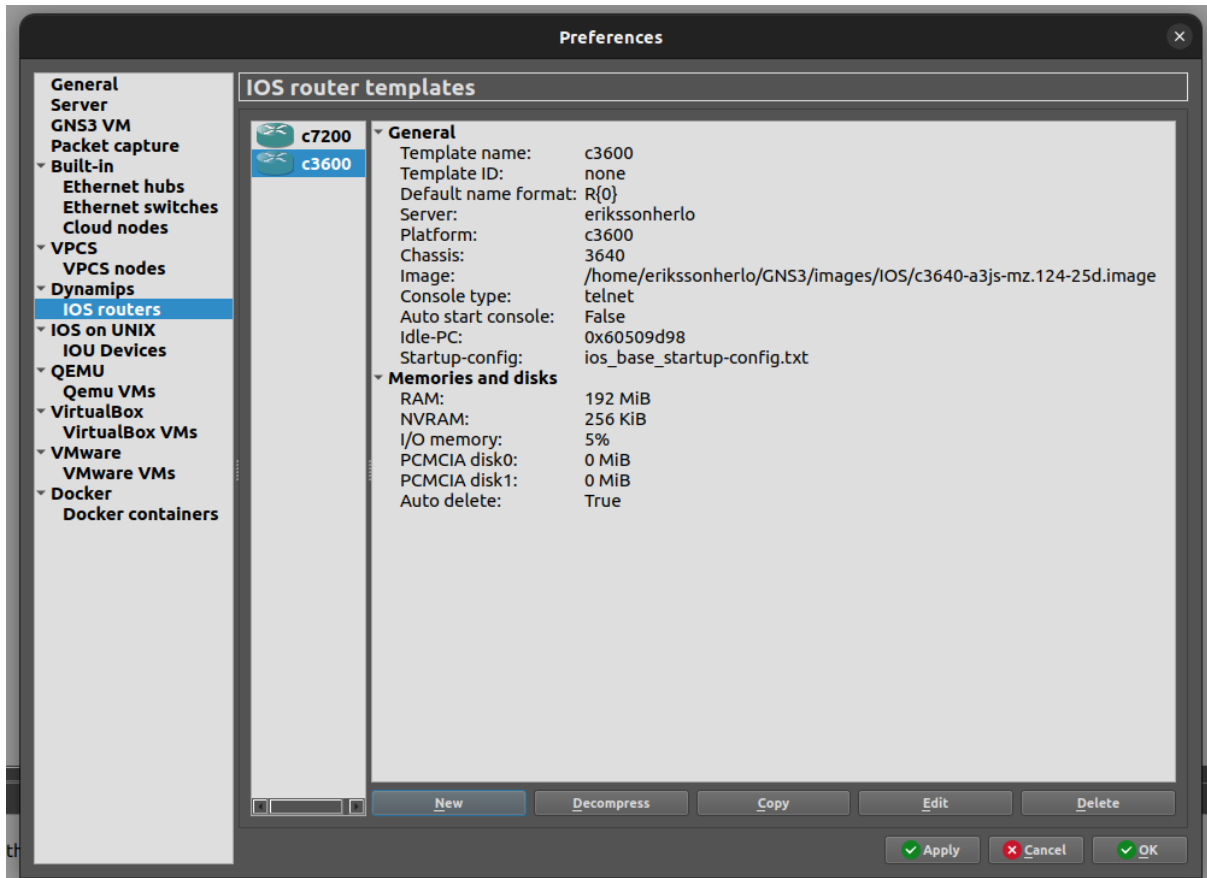
Luego debemos cargar el servicio de “Idle-PC”, el cual se estará ejecutando en el localhost:3080.



Al cargar el servicio, podremos aplicar y aceptar la configuración del router.

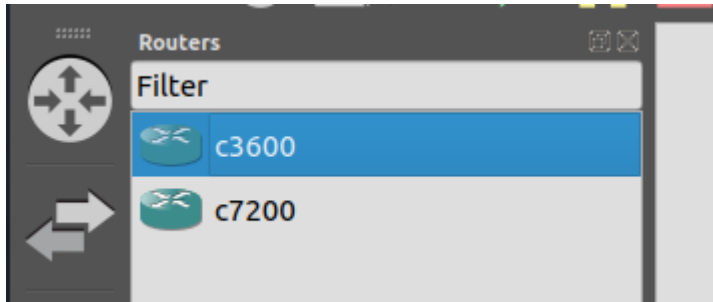


Quedando nuestra configuración de la siguiente manera:

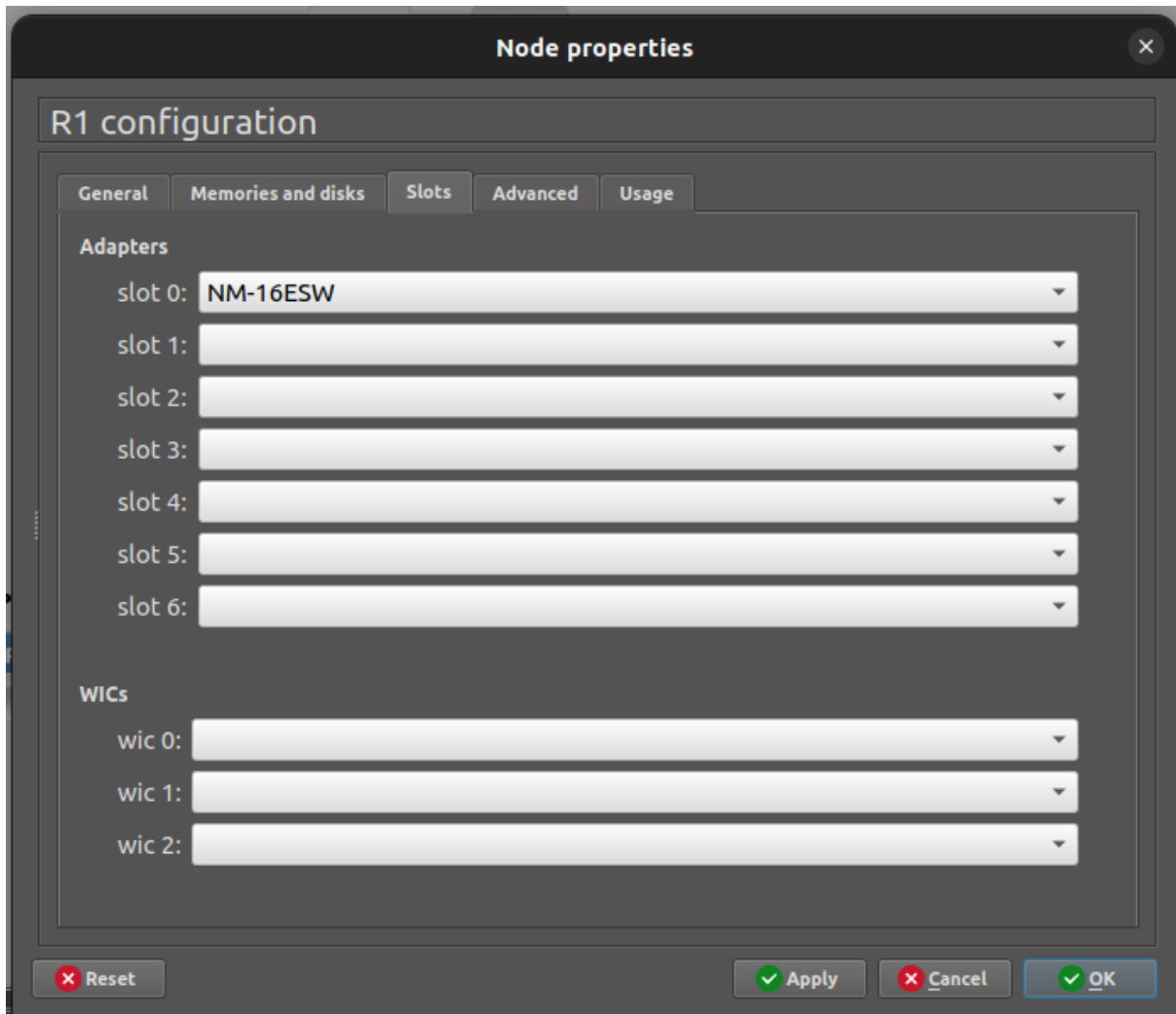


## Estructura de la Red

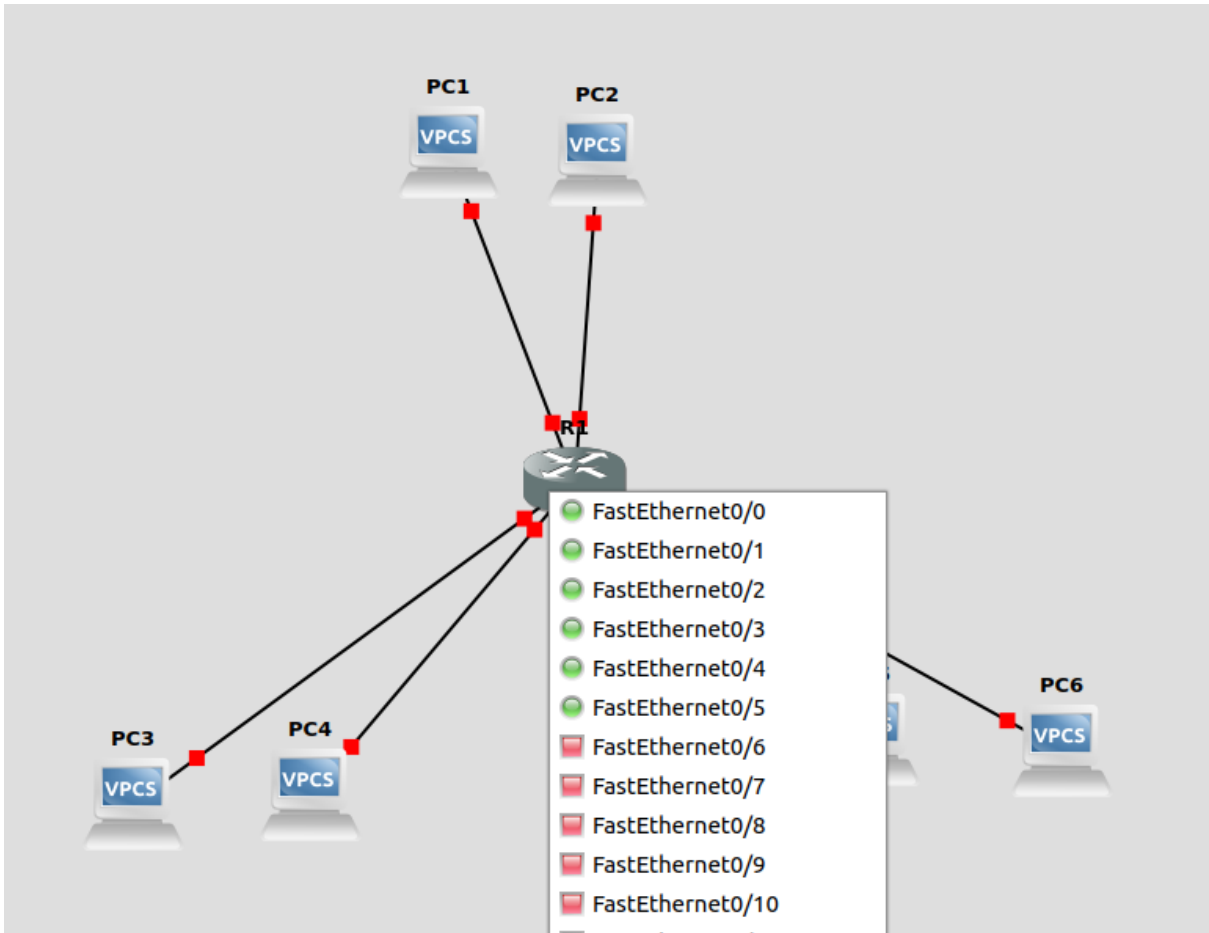
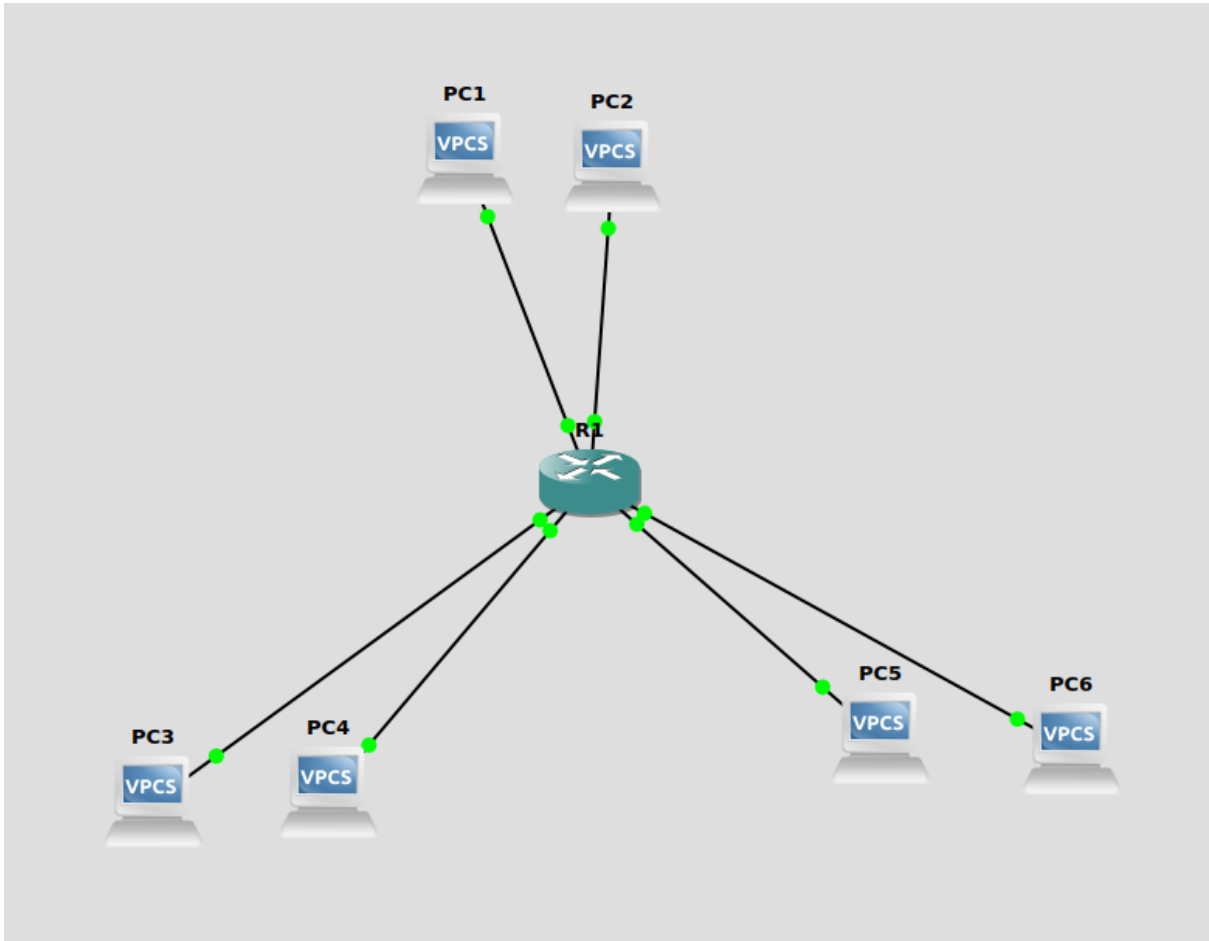
Elegimos 1 router modelo C3600.



Elegimos un Slot de Tipo NM-16ESW



Conectamos 6 Dispositivos a través del puerto FastEthernet0/0 al FastEthernet0/6



## Asignación de Direcciones IP

Nombre del Dispositivo	Dirección IP Asignada	Nombre de la VLAN
PC1	192.168.20.1	VLAN 101
PC2	192.168.20.2	
PC3	192.168.20.3	VLAN 102
PC4	192.168.20.4	
PC5	192.168.20.5	VLAN 103
PC6	192.168.20.6	

## Configuración de la Interfaz de Red

### VLANS

Para configurar las VLANS del router No. 1 debemos dar click sobre el primer router y abrir la terminal y escribir los siguientes comandos:

```
R1#vlan database
R1(vlan)#vlan 101
VLAN 101 added:
      Name: VLAN0101
R1(vlan)#vlan
Vlan1, changed state to up
R1(vlan)#vlan 102
VLAN 102 added:
      Name: VLAN0102
R1(vlan)#vlan 103
VLAN 103 added:
      Name: VLAN0103
R1(vlan)#exit
APPLY completed.
Exiting....
R1#conf t
```



```
R1# Puentes
R1#vlan database
R1(vlan)#vlan 101
VLAN 101 added:
  Name: VLAN0101
R1(vlan)#vlan 102
*Mar 1 00:00:34.095: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
R1(vlan)#vlan 102
VLAN 102 added:
  Name: VLAN0102
R1(vlan)#vlan 103
VLAN 103 added:
  Name: VLAN0103
R1(vlan)#exit
APPLY completed.
Exiting...
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#

R1(vlan)#vlan 102
VLAN 102 added:
  Name: VLAN0102
R1(vlan)#vlan 103
VLAN 103 added:
  Name: VLAN0103
R1(vlan)#exit
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#

Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface FastEthernet1/0.10
R1(config-subif)#encapsulation dot1Q 10 native
R1(config-subif)#ip address 192.168.10.1 255.255.255.0
R1(config-subif)#exit
R1(config)#interface FastEthernet1/1.20
R1(config-subif)#encapsulation dot1Q 10 native
R1(config-subif)#ip address 192.168.20.1 255.255.255.0
R1(config-subif)#exit
R1#
```

## Puertos y Acceso a las VLANs

Para configurar los puertos del router No. 1 debemos dar click sobre el primer router y abrir la terminal y escribir los siguientes comandos:

### VLAN 101

```
R1(config)#interface FastEthernet0/0
R1(config-if)#switchport access vlan 101
R1(config-if)#exit
R1(config)#
R1(config)#interface FastEthernet0/1
R1(config-if)#switchport access vlan 101
R1(config-if)#exit
```

### VLAN 102

```
R1(config)#interface FastEthernet0/2
R1(config-if)#switchport access vlan 102
R1(config-if)#exit
R1(config)#
R1(config)#interface FastEthernet0/3
R1(config-if)#switchport access vlan 102
R1(config-if)#exit
```

### VLAN 103

```
R1(config)#interface FastEthernet0/4
R1(config-if)#switchport access vlan 103
R1(config-if)#exit
R1(config)#
R1(config)#interface FastEthernet0/5
R1(config-if)#switchport access vlan 103
R1(config-if)#exit
```

```

R1(config)#interface FastEthernet0/0
R1(config-if)#switchport access vlan 101 First Project
R1(config-if)#exit insertion(+), 1 deletion(-)
R1(config)#rlo@erikssonherlo
R1(config)#interface FastEthernet0/1
R1(config-if)#switchport access vlan 101
R1(config-if)#exit sando hasta 8 hilos
R1(config)#o objetos: 100% (4/4), listo.
R1(config)#interface FastEthernet0/2 bytes | 214.00 KiB/s
R1(config-if)#switchport access vlan 102 pack-reusados 0
R1(config-if)#exit deltas: 100% (2/2), completed with 2 lo
R1(config)#interface FastEthernet0/3 jects.git
R1(config-if)#switchport access vlan 102
R1(config-if)#exit kssonherlo
R1(config)#interface FastEthernet0/4
R1(config-if)#switchport access vlan 103n'.
R1(config-if)#exit
R1(config)#interface FastEthernet0/5
R1(config-if)#switchport access vlan 103irlo a lo que se
R1(config-if)#exit l/Practica No. 2 - NO FUNCION\303\223
R1(config)#
*Mar 1 00:08:48.527: %LINEPROTO-5-UPDOWN: Line protocol

```

Visualizamos las interfaces con el comando:

```
R1#show ip interface brief
```

```

R1#show ip interface briefs 0 (delta 0), pack-reusados 0
Interface solving deltas: 1IP-Address compLOK? Method Status objects. Protocol
FastEthernet0/0 rikssonHerlo unassigned YES unset up up
FastEthernet0/1 5d67 main unassigned YES unset up up
FastEthernet0/2 erikssonherlo unassigned YES unset up up
FastEthernet0/3 unassigned YES unset up up
FastEthernet0/4 tualizada co unassigned main'. YES unset up up
FastEthernet0/5 unassigned YES unset up up
FastEthernet0/6 guimiento: unassigned YES unset up down
FastEthernet0/7 <archivo>. unassigned cluir\ YES unset up será confirmado) down
FastEthernet0/8 ca l/Practi unassigned NO FUN YES unset up 201830459 - Redes down
FastEthernet0/9 unassigned YES unset up down
FastEthernet0/10 gado al co unassigned day arc YES unset up umiento presentes (down 'git add
--More--
rlo@erikssonherlo

```

## Configuración de Dispositivos

Para configurar el dispositivo, se realiza ingresando a la terminal del dispositivo con click derecho y se asignan las IP 's que fueron designadas previamente en la tabla.

```
PC1> ip 192.168.20.1
Checking for duplicate address...
PC1 : 192.168.20.1 255.255.255.0
```

Así sucesivamente con los 6 dispositivos.

```
PC2> ip 192.168.20.2
Checking for duplicate address...
PC2 : 192.168.20.2 255.255.255.0
```

```
PC3> ip 192.168.20.3
Checking for duplicate address...
PC3 : 192.168.20.3 255.255.255.0
```

```
PC4> ip 192.168.20.4
Checking for duplicate address...
PC4 : 192.168.20.4 255.255.255.0
```

```
PC5> ip 192.168.20.5
Checking for duplicate address...
PC5 : 192.168.20.5 255.255.255.0
```

```
PC6> ip 192.168.20.6
Checking for duplicate address...
PC6 : 192.168.20.6 255.255.255.0
```

# Pruebas de Ping

## Ping dentro de la VLAN 101

```
PC1> ipconfig
192.168.20.1 icmp_seq=1 ttl=64 time=1.469 ms
Checking for duplicate address...
192.168.20.1 icmp_seq=2 ttl=64 time=1.741 ms
PC1> ping 192.168.20.2
84 bytes from 192.168.20.1 icmp_seq=3 ttl=64 time=1.740 ms
84 bytes from 192.168.20.1 icmp_seq=4 ttl=64 time=1.596 ms
PC1> ping 192.168.20.2
84 bytes from 192.168.20.2 icmp_seq=5 ttl=64 time=1.646 ms

84 bytes from 192.168.20.2 icmp_seq=1 ttl=64 time=1.417 ms
84 bytes from 192.168.20.2 icmp_seq=2 ttl=64 time=1.619 ms
84 bytes from 192.168.20.2 icmp_seq=3 ttl=64 time=1.534 ms
84 bytes from 192.168.20.2 icmp_seq=4 ttl=64 time=1.475 ms
84 bytes from 192.168.20.2 icmp_seq=5 ttl=64 time=1.475 ms

PC1> ping 192.168.20.4
host (192.168.20.4) not reachable

PC1> ping 192.168.20.6
host (192.168.20.6) not reachable
```

```
PC2> ipconfig
192.168.20.3 icmp_seq=2 ttl=64 time=0.648 ms
Checking for duplicate address...
192.168.20.3 icmp_seq=3 ttl=64 time=1.428 ms
PC2> ping 192.168.20.1
84 bytes from 192.168.20.1 icmp_seq=4 ttl=64 time=1.536 ms
84 bytes from 192.168.20.1 icmp_seq=5 ttl=64 time=1.495 ms

PC2> ping 192.168.20.1
Checking for duplicate address...
84 bytes from 192.168.20.1 icmp_seq=1 ttl=64 time=1.469 ms
84 bytes from 192.168.20.1 icmp_seq=2 ttl=64 time=1.741 ms
84 bytes from 192.168.20.1 icmp_seq=3 ttl=64 time=1.740 ms
84 bytes from 192.168.20.1 icmp_seq=4 ttl=64 time=1.596 ms
84 bytes from 192.168.20.1 icmp_seq=5 ttl=64 time=1.646 ms

PC2> ping 192.168.20.3
host (192.168.20.3) not reachable

84 bytes from 192.168.20.3 icmp_seq=1 ttl=64 time=1.430 ms
84 bytes from 192.168.20.3 icmp_seq=2 ttl=64 time=0.342 ms
PC2> ping 192.168.20.5
84 bytes from 192.168.20.5 icmp_seq=3 ttl=64 time=1.610 ms
84 bytes from 192.168.20.5 icmp_seq=4 ttl=64 time=1.691 ms
host (192.168.20.5) not reachable
84 bytes from 192.168.20.5 icmp_seq=5 ttl=64 time=1.532 ms
```



## Ping dentro de la VLAN 102

```
PC3> ip 192.168.20.3
Checking for duplicate address...
PC3 : 192.168.20.3 255.255.255.0

PC3> ping 192.168.20.2
host (192.168.20.2) not reachable
84 bytes from 192.168.20.2 icmp_seq=1 ttl=64 time=1.576 ms
84 bytes from 192.168.20.2 icmp_seq=2 ttl=64 time=0.807 ms
PC3> ping 192.168.20.4
84 bytes from 192.168.20.2 icmp_seq=3 ttl=64 time=0.591 ms
84 bytes from 192.168.20.2 icmp_seq=4 ttl=64 time=1.148 ms
84 bytes from 192.168.20.4 icmp_seq=1 ttl=64 time=1.479 ms
84 bytes from 192.168.20.4 icmp_seq=2 ttl=64 time=1.680 ms
84 bytes from 192.168.20.4 icmp_seq=3 ttl=64 time=1.786 ms
84 bytes from 192.168.20.4 icmp_seq=4 ttl=64 time=1.586 ms
84 bytes from 192.168.20.4 icmp_seq=5 ttl=64 time=1.513 ms

PC3> ping 192.168.20.6
host (192.168.20.6) not reachable

PC3> 
```

```
PC4> ip 192.168.20.4
Checking for duplicate address...
PC4 : (192.168.20.4) 255.255.255.0

PC4> ping 192.168.20.1
host (192.168.20.1) not reachable

PC4> ping 192.168.20.3
84 bytes from 192.168.20.3 icmp_seq=1 ttl=64 time=1.430 ms
84 bytes from 192.168.20.3 icmp_seq=2 ttl=64 time=0.342 ms
84 bytes from 192.168.20.3 icmp_seq=3 ttl=64 time=1.610 ms
84 bytes from 192.168.20.3 icmp_seq=4 ttl=64 time=1.691 ms
84 bytes from 192.168.20.3 icmp_seq=5 ttl=64 time=1.532 ms

PC4> ping 192.168.20.5
host (192.168.20.5) not reachable
```

## Ping dentro de la VLAN 103

```
PC5> ip 192.168.20.5
Checking for duplicate address...
PC5 : 192.168.20.5 255.255.255.0

PC5> ping 192.168.20.2
host (192.168.20.2) not reachable

PC5> ping 192.168.20.4
host (192.168.20.4) not reachable
84 bytes from 192.168.20.4 icmp_seq=1 ttl=64 time=1.479 ms
84 bytes from 192.168.20.4 icmp_seq=2 ttl=64 time=1.680 ms
PC5> ping 192.168.20.6
84 bytes from 192.168.20.4 icmp_seq=3 ttl=64 time=1.786 ms
84 bytes from 192.168.20.4 icmp_seq=4 ttl=64 time=1.586 ms
84 bytes from 192.168.20.6 icmp_seq=1 ttl=64 time=1.445 ms
84 bytes from 192.168.20.6 icmp_seq=2 ttl=64 time=1.629 ms
84 bytes from 192.168.20.6 icmp_seq=3 ttl=64 time=1.668 ms
84 bytes from 192.168.20.6 icmp_seq=4 ttl=64 time=1.742 ms
84 bytes from 192.168.20.6 icmp_seq=5 ttl=64 time=1.414 ms

PC5>
```

```
PC6> ip 192.168.20.6
Checking for duplicate address...
PC6 : 192.168.20.6 255.255.255.0

PC6> ping 192.168.20.1
host (192.168.20.1) not reachable

PC6> ping 192.168.20.3
host (192.168.20.3) not reachable

PC6> ping 192.168.20.5
84 bytes from 192.168.20.5 icmp_seq=1 ttl=64 time=1.231 ms
84 bytes from 192.168.20.5 icmp_seq=2 ttl=64 time=1.487 ms
84 bytes from 192.168.20.5 icmp_seq=3 ttl=64 time=1.306 ms
84 bytes from 192.168.20.5 icmp_seq=4 ttl=64 time=1.645 ms
84 bytes from 192.168.20.5 icmp_seq=5 ttl=64 time=1.539 ms
```

## Conclusiones

Las VLANs permiten segmentar una red física en varias redes lógicas. Esto ayuda a aislar el tráfico de diferentes departamentos, equipos o funciones, lo que mejora la seguridad y el rendimiento.

Al dividir la red en VLANs más pequeñas, se reduce la cantidad de tráfico de difusión que se envía a todos los dispositivos en una red. Esto ayuda a prevenir el congestionamiento y mejora el rendimiento general.