

IES. 'Santa Ana'	<i>Planificación y administración de redes</i>
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Actividad N°	x	7. Nivel de red. Router. (VLSM)	202425
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Apellidos y Nombre: Méndez Roque,Domingo Aimar	Curso: 1º GS A.S.I.R
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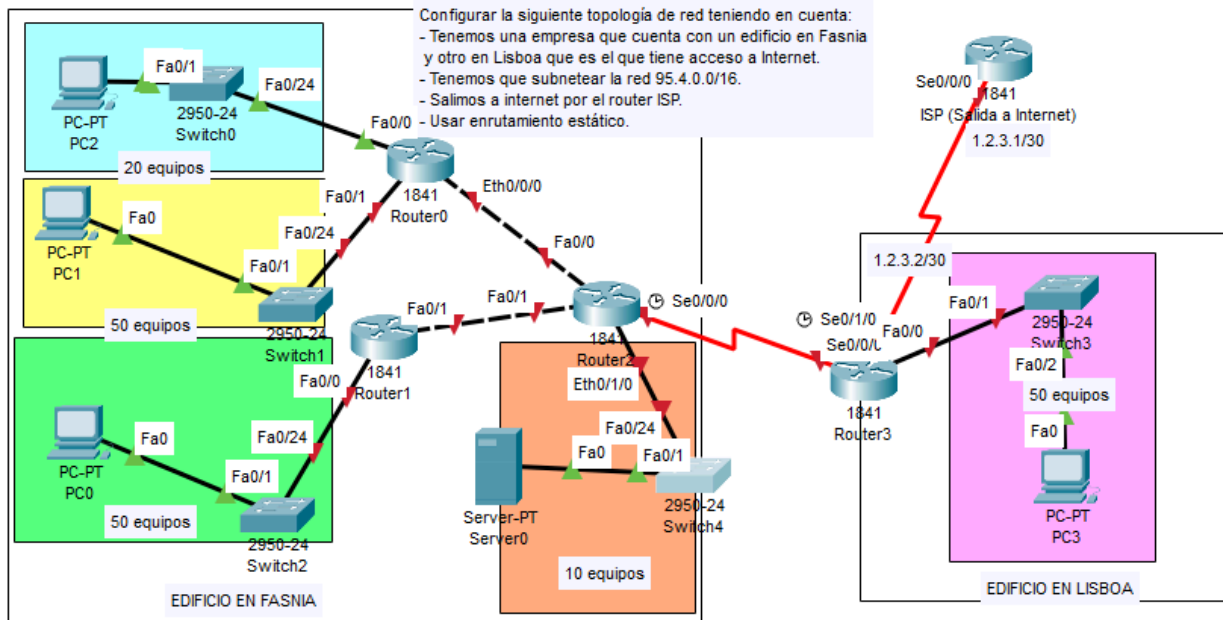
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1. Actividades:

Paso 1 – Creación del entorno



Una vez creado el entorno, usaremos la subred 95.4.0.0/16, nuestro objetivo es que todos los dispositivos se puedan conectar a internet.

Tabla VLSM

Hosts pedidos	Hosts encontrados	Máscara de subred	Nombre de subred	Primera IP válida	Última IP válida	Broadcast
50	62	255.255.255.192	95.4.0.0	95.4.0.1	95.4.0.62	95.4.0.63
50	62	255.255.255.192	95.4.0.64	95.4.0.65	95.4.0.126	95.4.0.127
50	62	255.255.255.192	95.4.0.128	95.4.0.129	95.4.0.190	95.4.0.191
20	30	255.255.255.224	95.4.0.192	95.4.0.193	95.4.0.222	95.4.0.223
10	14	255.255.255.240	95.4.0.224	95.4.0.225	95.4.0.238	95.4.0.239
2	2	255.255.255.252	95.4.0.240	95.4.0.241	95.4.0.242	95.4.0.243
2	2	255.255.255.252	95.4.0.244	95.4.0.245	95.4.0.246	95.4.0.247
2	2	255.255.255.252	95.4.0.248	95.4.0.249	95.4.0.250	95.4.0.251
2	2	255.255.255.252	95.4.0.252	95.4.0.253	95.4.0.254	95.4.0.255

Paso 2 – Asignación de IPs y configuración en routers y PCs

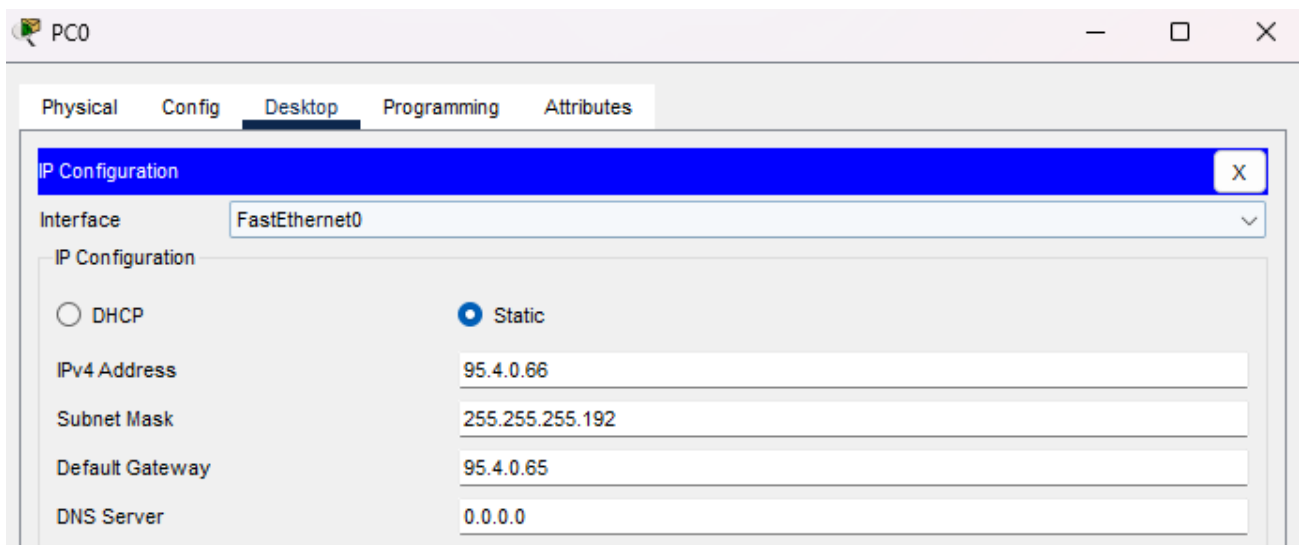
Una vez elegidas las subredes, empecé a ponerle IP a cada PC, cada interfaz de router y cada enlace. Todo quedó dentro de su rango, con la puerta de enlace bien configurada. Aquí dejo cómo lo hice:

HOST

PC0

- PC: 95.4.0.66, máscara 255.255.255.192, gateway 95.4.0.65
- Router1 (Fa0/0):

```
interface fa0/0  
ip address 95.4.0.65 255.255.255.192  
no shutdown
```



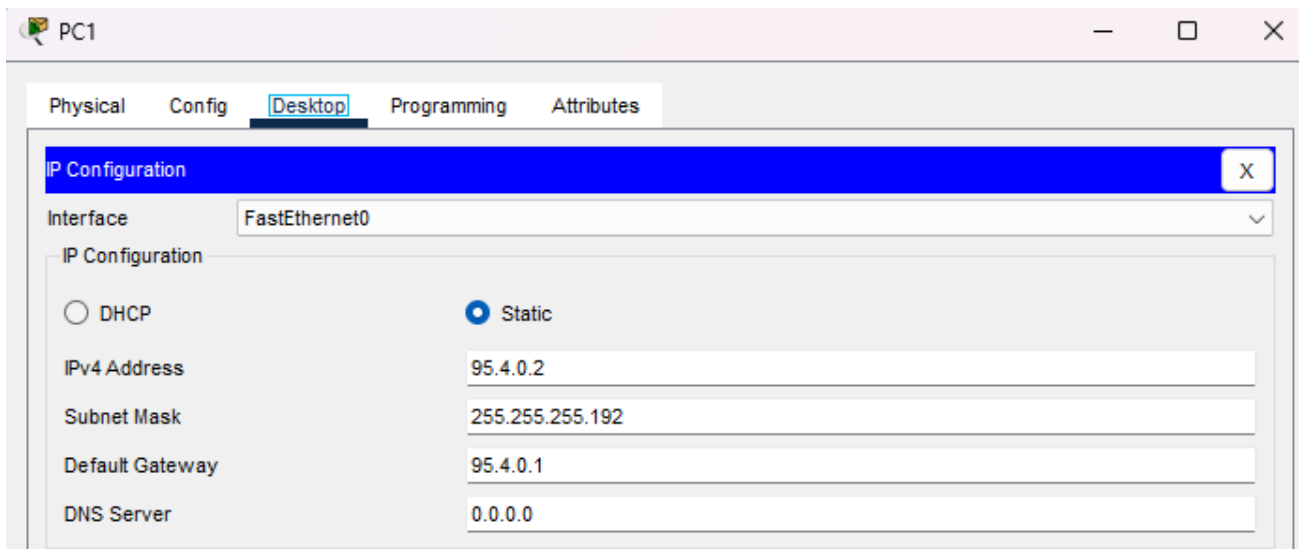
PC1

- PC: 95.4.0.2, máscara 255.255.255.192, gateway 95.4.0.1
- Router0 (Fa0/0):

interface fa0/1

ip address 95.4.0.1 255.255.255.192

no shutdown



The screenshot shows a window titled "PC1" with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there are four tabs: "Physical", "Config", "Desktop" (which is selected and highlighted), and "Attributes". Below the tabs, there is a section titled "IP Configuration" with a blue header bar and a close button (X). Under this section, the "Interface" is set to "FastEthernet0". Below the interface name, there is a sub-section "IP Configuration" with two radio buttons: "DHCP" (unselected) and "Static" (selected). Below these, there are four input fields with their corresponding values: "IPv4 Address" is 95.4.0.2, "Subnet Mask" is 255.255.255.192, "Default Gateway" is 95.4.0.1, and "DNS Server" is 0.0.0.0.

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	95.4.0.2
Subnet Mask	255.255.255.192
Default Gateway	95.4.0.1
DNS Server	0.0.0.0

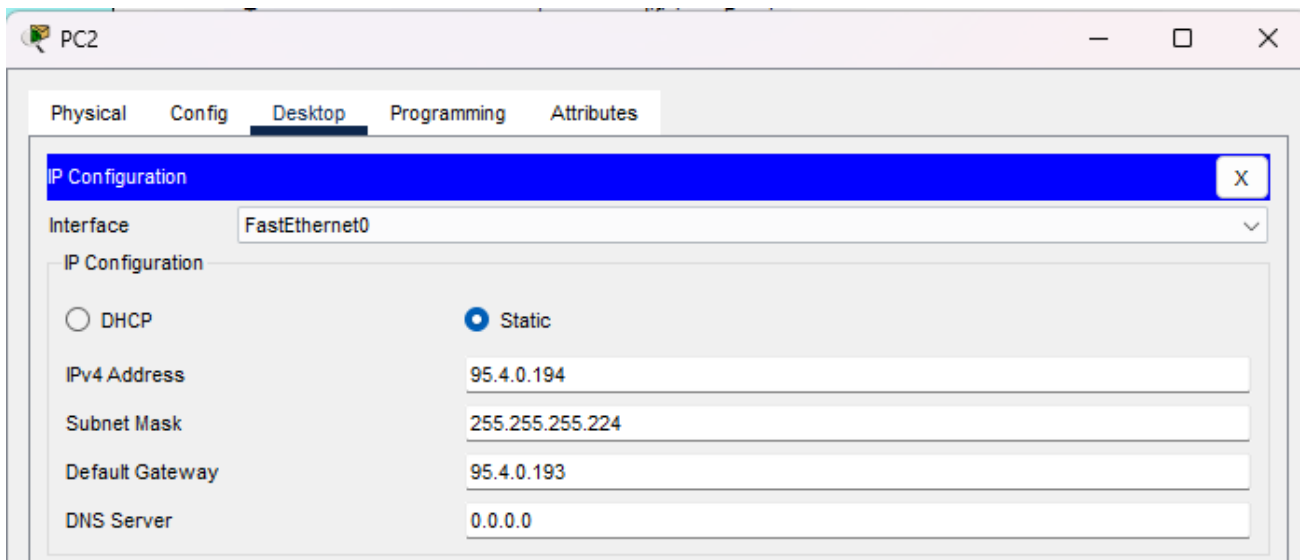
PC2

- PC: 95.4.0.194, máscara 255.255.255.224, gateway 95.4.0.193
- Router0 (Fa0/0):

interface fa0/0

ip address 95.4.0.193 255.255.255.224

no shutdown



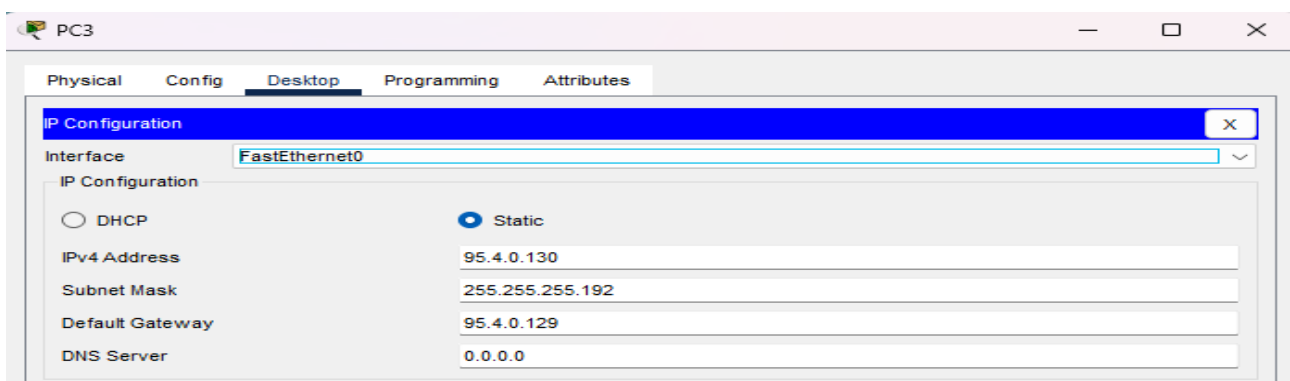
PC3

- PC: 95.4.0.130, máscara 255.255.255.192, gateway 95.4.0.129
- Router3 (Fa0/0):

interface fa0/1

ip address 95.4.0.129 255.255.255.192

no shutdown



Servidores

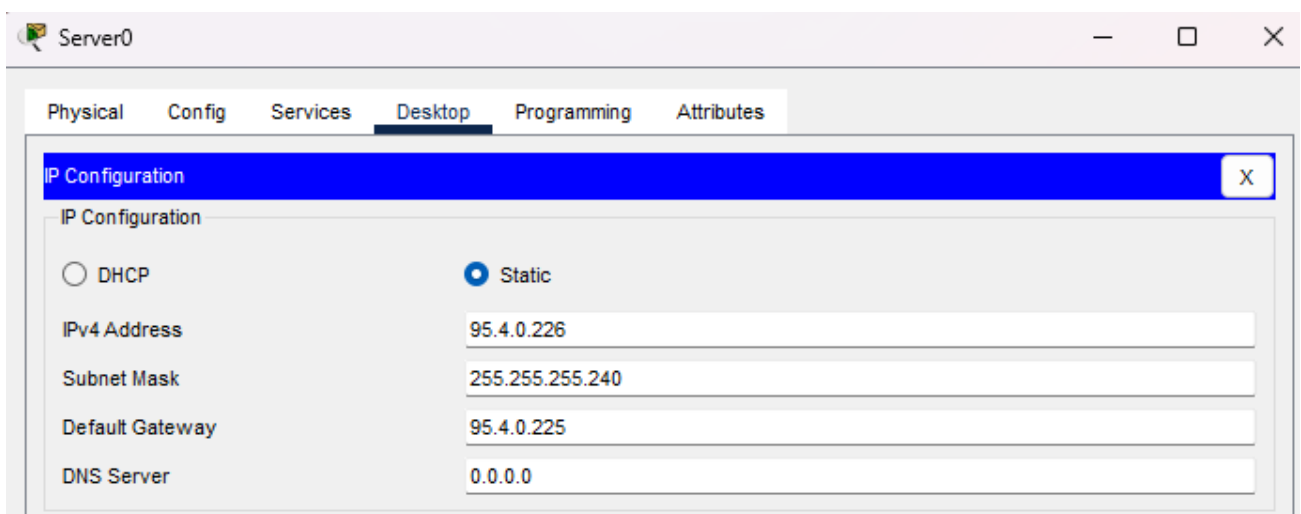
Server0

- PC: 95.4.0.226, máscara 255.255.255.240, gateway 95.4.0.225
- Router2 (Fa0/1):

interface fa0/0

ip address 95.4.0.225 255.255.255.240

no shutdown



The screenshot shows a window titled "Server0" with a tabbed interface. The "Desktop" tab is selected, and the "IP Configuration" window is open. The window has a blue header bar with the title "IP Configuration" and a close button (X). Below the header, the "IP Configuration" section is visible. It contains two radio buttons: "DHCP" (unselected) and "Static" (selected). Below the radio buttons, there are four input fields with their corresponding values:

Field	Value
IPv4 Address	95.4.0.226
Subnet Mask	255.255.255.240
Default Gateway	95.4.0.225
DNS Server	0.0.0.0

Routers

Router0

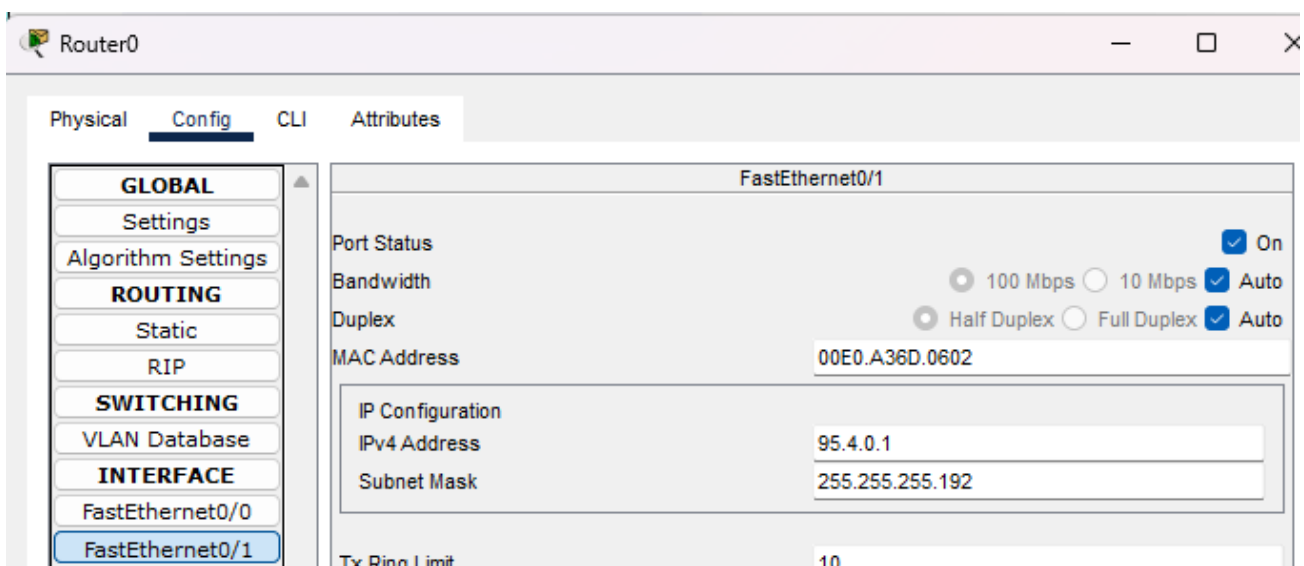
enable

configure terminal

interface FastEthernet0/1

ip address 95.4.0.1 255.255.255.192

no shutdown



```
Router(config-if)#exit
```

```
Router(config)#interface FastEthernet0/1
```

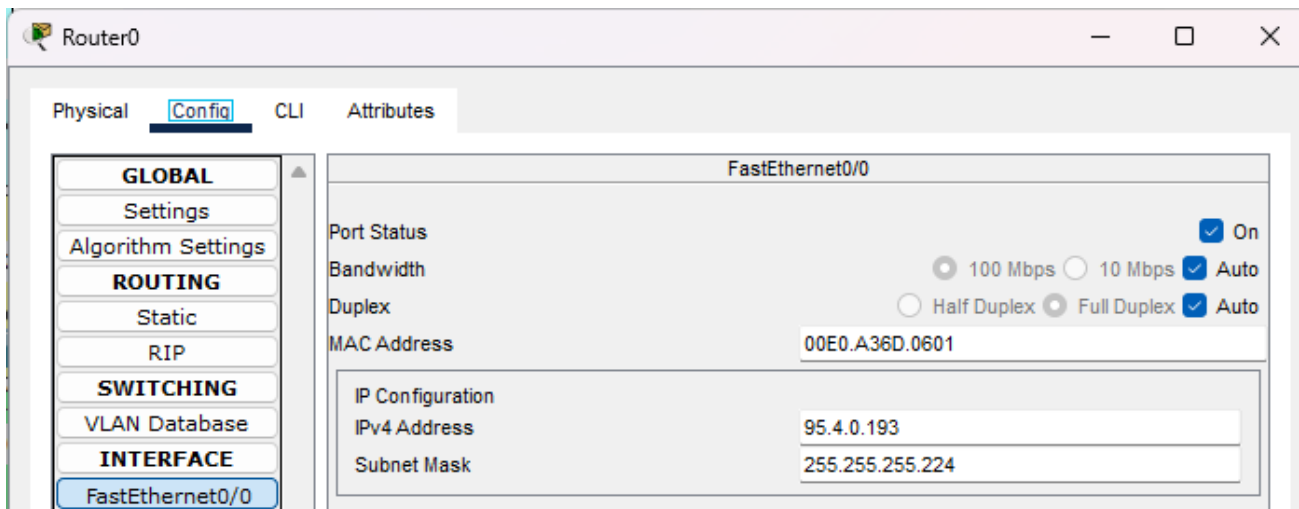
```
Router(config-if)#ip address 95.4.0.1 255.255.255.192
```

```
Router(config-if)#
```

interface FastEthernet0/0

ip address 95.4.0.193 255.255.255.224

no shutdown



```
Router#
```

```
Router#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#interface FastEthernet0/0
```

```
Router(config-if)#ip address 95.4.0.193 255.255.255.224
```

```
Router(config-if)#
```

Router1

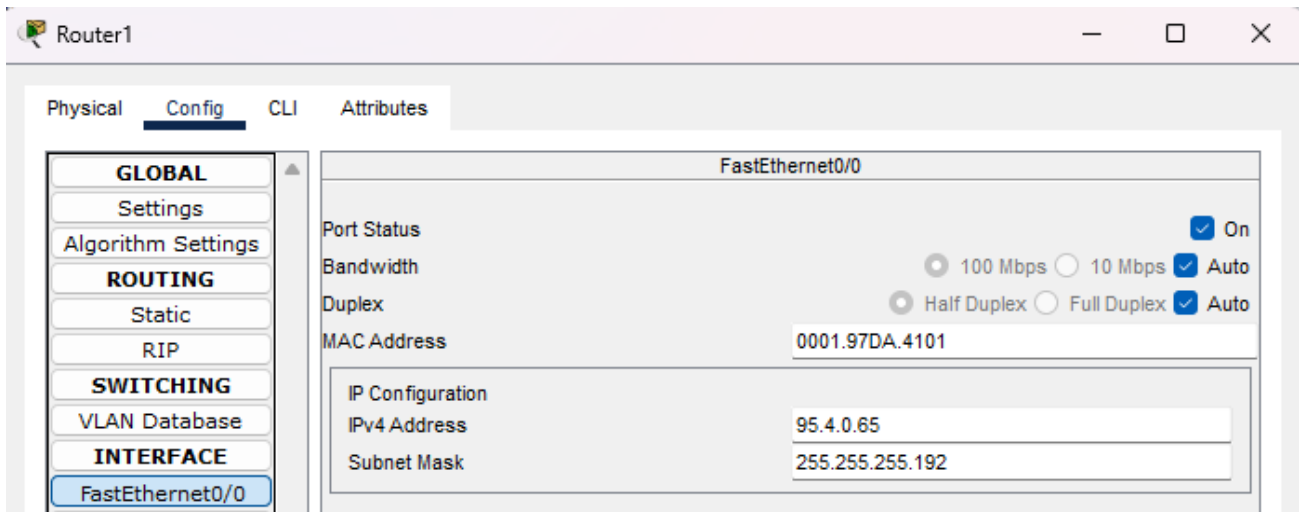
enable

configure terminal

interface FastEthernet0/0

ip address 95.4.0.65 255.255.255.192

no shutdown



```
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 95.4.0.65 255.255.255.192
Router(config-if)#
```

Router2

enable

configure terminal

interface Ethernet0/1/0

ip address 95.4.0.225 255.255.255.240

no shutdown

The screenshot shows a web-based configuration interface for a device named 'Router2'. The 'Config' tab is active, and the left sidebar shows a tree structure with categories: GLOBAL, ROUTING, SWITCHING, and INTERFACE. Under the INTERFACE category, 'Ethernet0/1/0' is selected. The main panel displays the configuration for 'Ethernet0/1/0'. It includes fields for Port Status (On), Bandwidth (10 Mbps), Duplex (Auto), MAC Address (0030.A3C0.088C), IP Configuration (IPv4 Address: 95.4.0.225, Subnet Mask: 255.255.255.240), and Tx Ring Limit (10).

Ethernet0/1/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0030.A3C0.088C
IP Configuration	
IPv4 Address	95.4.0.225
Subnet Mask	255.255.255.240
Tx Ring Limit	10

```
Router>enable
```

```
Router#
```

```
Router#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#interface Ethernet0/1/0
```

```
Router(config-if)#ip address 95.4.0.225 255.255.255.240
```

```
Router(config-if)#
```

Router3

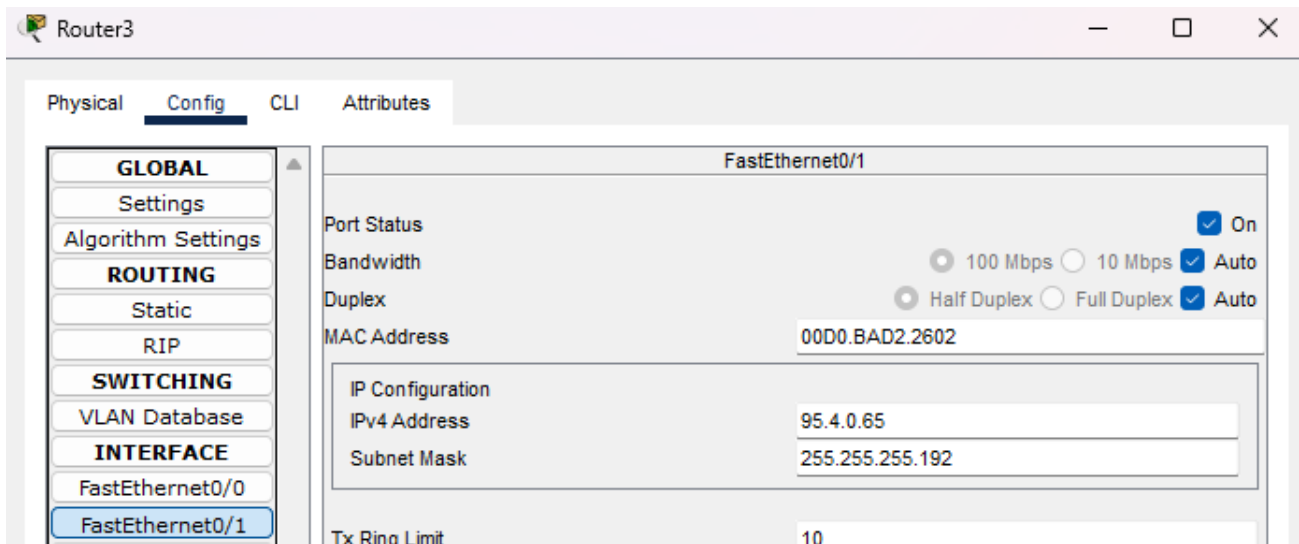
enable

configure terminal

interface FastEthernet0/1

ip address 95.4.0.65 255.255.255.192

no shutdown



```
Router>enable
```

```
Router#
```

```
Router#configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#interface FastEthernet0/1
```

```
Router(config-if)#ip address 95.4.0.65 255.255.255.192
```

```
Router(config-if)#
```

Paso 3 – Configuración de interfaces en los routers

Ahora procedemos a asignar las direcciones IP a las interfaces de cada router, paso previo esencial para establecer el encaminamiento en la red.

Sí, mi señor, se leen perfectamente las líneas de comandos. Aquí tienes todo adaptado al **formato limpio y uniforme** que venías usando:

Router0

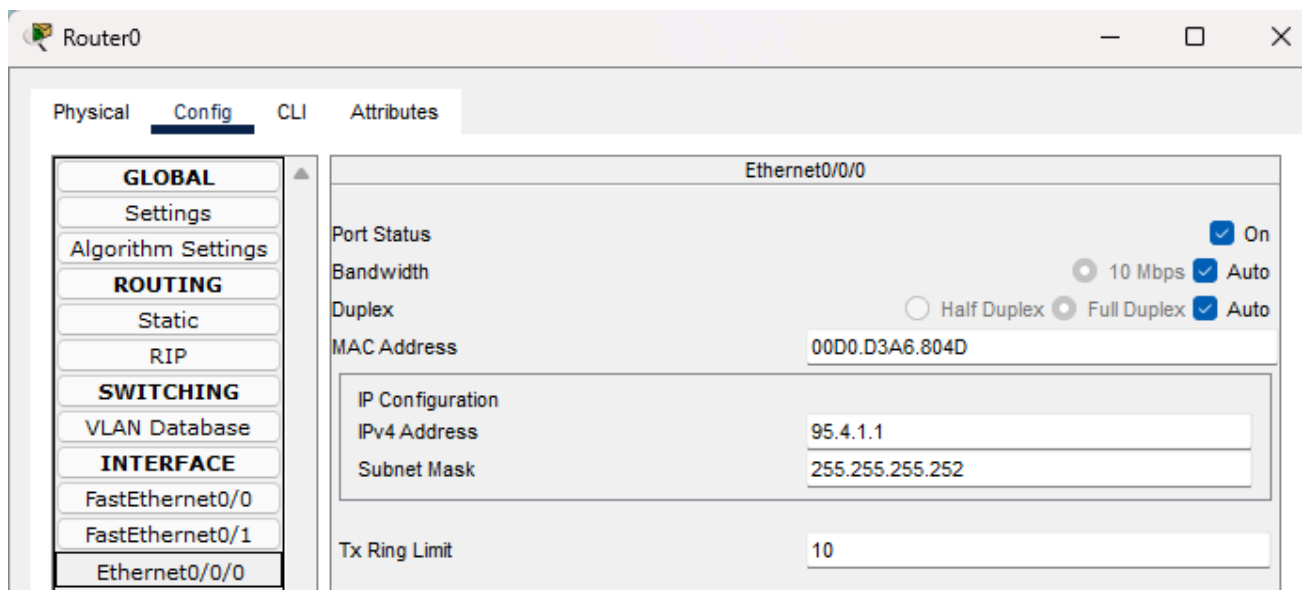
enable

configure terminal

interface Ethernet0/0/0

ip address 95.4.1.1 255.255.255.252

no shutdown



```
Router(config-if) #
Router(config-if) #exit
Router(config) #interface Ethernet0/0/0
Router(config-if) #ip address 95.4.1.1 255.255.255.252
Router(config-if) #
```

Router1

enable

configure terminal

interface FastEthernet0/1

ip address 95.4.1.5 255.255.255.252

no shutdown

The screenshot shows a web-based configuration interface for a device named 'Router1'. The 'Config' tab is active, and the left sidebar shows a tree structure with 'FastEthernet0/1' selected under the 'INTERFACE' section. The main panel displays the configuration for 'FastEthernet0/1'.

FastEthernet0/1	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	0001.97DA.4102
IP Configuration	
IPv4 Address	95.4.1.5
Subnet Mask	255.255.255.252
Tx Ring Limit	10

```
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 95.4.1.5 255.255.255.252
Router(config-if)#
```

Router2

enable

configure terminal

interface FastEthernet0/0

ip address 95.4.1.2 255.255.255.252

no shutdown

The screenshot shows the configuration window for Router2. The 'Config' tab is selected, and the 'FastEthernet0/0' interface is chosen from the left-hand menu. The interface settings are displayed on the right, including Port Status (On), Bandwidth (10 Mbps), Duplex (Full Duplex), MAC Address (000C.8562.9301), IP Configuration (IPv4 Address: 95.4.1.2, Subnet Mask: 255.255.255.252), and Tx Ring Limit (10).

FastEthernet0/0	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input type="radio"/> 100 Mbps <input checked="" type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	000C.8562.9301
IP Configuration	
IPv4 Address	95.4.1.2
Subnet Mask	255.255.255.252
Tx Ring Limit	10

```
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 95.4.1.2 255.255.255.252
Router(config-if)#
```


interface FastEthernet0/1

ip address 95.4.1.6 255.255.255.252

no shutdown

The screenshot shows a web-based configuration interface for a device named 'Router2'. The 'Config' tab is active, and the left sidebar shows a tree structure with 'INTERFACE' > 'FastEthernet0/1' selected. The main panel displays the configuration for 'FastEthernet0/1'.

FastEthernet0/1	
Port Status	<input checked="" type="checkbox"/> On
Bandwidth	<input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
Duplex	<input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
MAC Address	000C.8562.9302
IP Configuration	
IPv4 Address	95.4.1.6
Subnet Mask	255.255.255.252
Trunking Limit	10

```
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 95.4.1.6 255.255.255.252
Router(config-if)#
```

interface Serial0/0/0

ip address 95.4.1.9 255.255.255.252

no shutdown

The screenshot shows the configuration window for Router2. The 'Config' tab is selected. On the left, a sidebar lists configuration categories: GLOBAL, ROUTING, SWITCHING, and INTERFACE. Under the INTERFACE category, 'Serial0/0/0' is selected. The main area displays the configuration for Serial0/0/0. The 'Port Status' is 'On'. 'Duplex' is set to 'Full Duplex'. 'Clock Rate' is set to '2000000'. The 'IP Configuration' section shows 'IPv4 Address' as '95.4.1.9' and 'Subnet Mask' as '255.255.255.252'. The 'Tx Ring Limit' is set to '10'.

Serial0/0/0	
Port Status	<input checked="" type="checkbox"/> On
Duplex	<input type="radio"/> Full Duplex
Clock Rate	2000000
IP Configuration	
IPv4 Address	95.4.1.9
Subnet Mask	255.255.255.252
Tx Ring Limit	10

```
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 95.4.1.9 255.255.255.252
Router(config-if)#
```

Router3

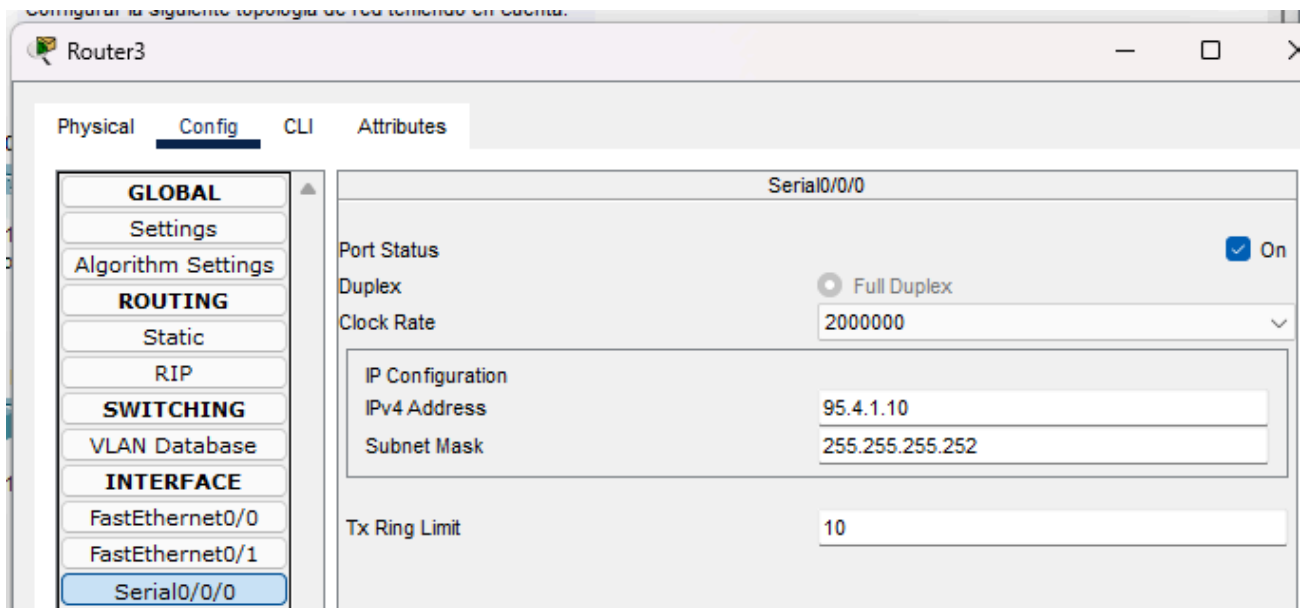
enable

configure terminal

interface Serial0/0/0

ip address 95.4.1.10 255.255.255.252

no shutdown

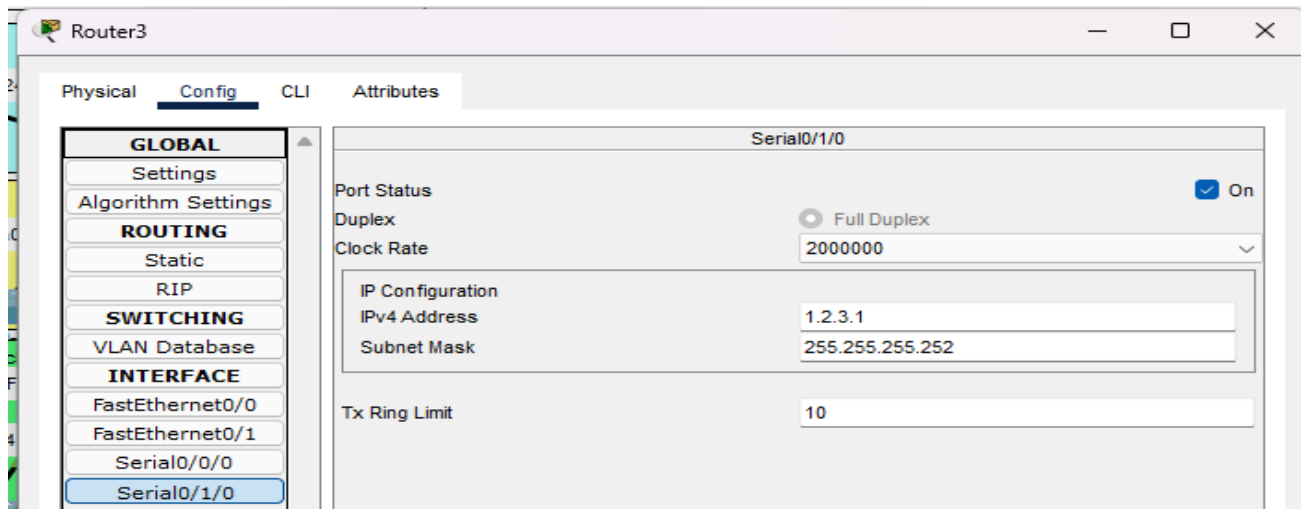


```
Router3 (config-if) #  
Router3 (config-if) #exit  
Router3 (config) #interface Serial0/0/0  
Router3 (config-if) #ip address 95.4.1.10 255.255.255.252  
Router3 (config-if) #
```

interface Serial0/1/0

ip address 1.2.3.1 255.255.255.252

no shutdown



```
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 1.2.3.1 255.255.255.252
Router(config-if)#
```

Router ISP

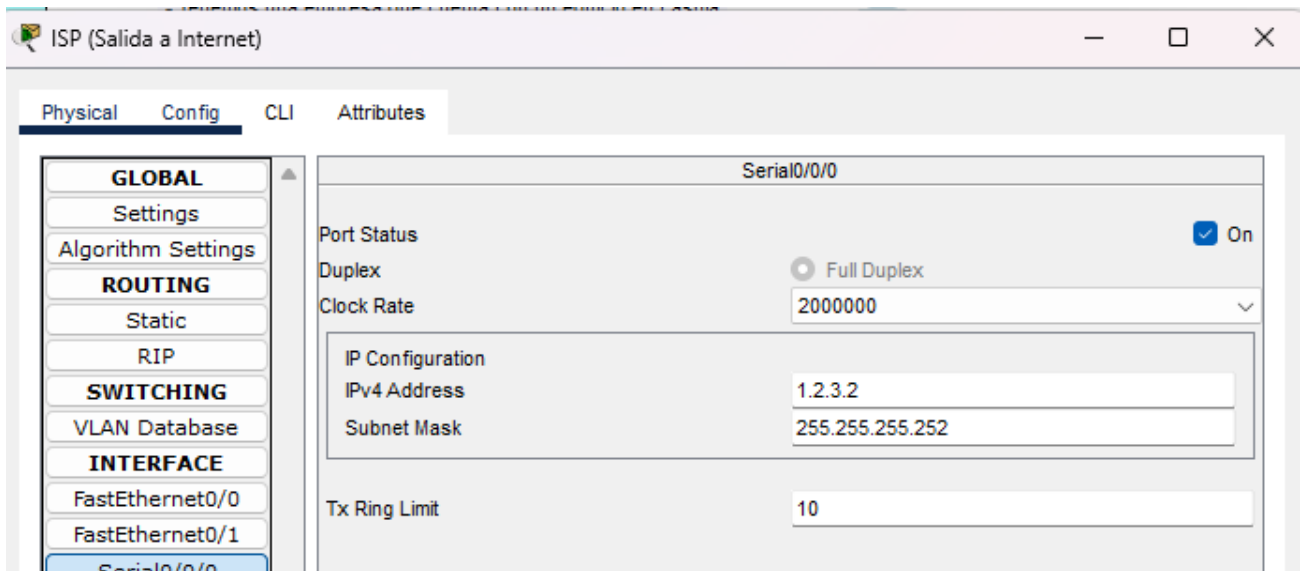
enable

configure terminal

interface Serial0/0/0

ip address 1.2.3.2 255.255.255.252

no shutdown



```
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#interface Serial0/0/0  
Router(config-if)#ip address 1.2.3.2 255.255.255.252  
Router(config-if) #
```

Paso 4 – Configuración de las rutas

Una vez configuradas las direcciones IP en las interfaces de los routers, el siguiente paso consiste en establecer las rutas estáticas necesarias para garantizar la conectividad entre todas las redes. A continuación, se detallan las rutas configuradas en cada router:

Router0

enable

configure terminal

```
ip route 95.4.0.64 255.255.255.192 95.4.1.2
```

```
ip route 95.4.0.224 255.255.255.240 95.4.1.2
```

```
ip route 95.4.1.8 255.255.255.252 95.4.1.2
```

```
ip route 0.0.0.0 0.0.0.0 95.4.1.2
```

The screenshot shows the configuration interface for Router0. The 'Config' tab is selected, and the 'Static Routes' section is active. The left sidebar contains a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), SWITCHING (VLAN Database), and INTERFACE (FastEthernet0/0, FastEthernet0/1, Ethernet0/0/0). The main area displays the 'Static Routes' configuration. It includes input fields for 'Network', 'Mask', and 'Next Hop', followed by an 'Add' button. Below this, a table lists the configured static routes:

Network Address
95.4.0.64/26 via 95.4.1.2
95.4.0.224/28 via 95.4.1.2
95.4.1.8/30 via 95.4.1.2
0.0.0.0/0 via 95.4.1.2

At the bottom right of the table area is a 'Remove' button.

```
Router#enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ip route 95.4.0.64 255.255.255.192 95.4.1.2
Router(config)#ip route 95.4.0.224 255.255.255.240 95.4.1.2
Router(config)#ip route 95.4.1.8 255.255.255.252 95.4.1.2
Router(config)#ip route 0.0.0.0 0.0.0.0 95.4.1.2
Router(config)#
```

Router1

enable

configure terminal

ip route 95.4.0.0 255.255.255.192 95.4.1.6

ip route 95.4.0.192 255.255.255.224 95.4.1.6

ip route 95.4.1.8 255.255.255.252 95.4.1.6

ip route 0.0.0.0 0.0.0.0 95.4.1.6

The screenshot shows the configuration interface for Router1. The 'Config' tab is selected, and the 'Static Routes' section is active. The left sidebar shows a tree view with 'GLOBAL' expanded, containing 'Settings', 'Algorithm Settings', 'ROUTING' (expanded), 'Static' (selected), 'RIP', 'SWITCHING', 'VLAN Database', 'INTERFACE', 'FastEthernet0/0', and 'FastEthernet0/1'. The main area displays the 'Static Routes' configuration. It has input fields for 'Network', 'Mask', and 'Next Hop', followed by an 'Add' button. Below this, a table lists the configured static routes:

Network Address
95.4.0.0/26 via 95.4.1.6
95.4.0.192/27 via 95.4.1.6
95.4.1.8/30 via 95.4.1.6
0.0.0.0/0 via 95.4.1.6

At the bottom right of the table area is a 'Remove' button.

```
Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 95.4.0.0 255.255.255.192 95.4.1.6
Router(config)#ip route 95.4.0.192 255.255.255.224 95.4.1.6
Router(config)#ip route 95.4.1.8 255.255.255.252 95.4.1.6
Router(config)#ip route 0.0.0.0 0.0.0.0 95.4.1.6
Router(config)#
```


Router2

enable

configure terminal

ip route 95.4.0.0 255.255.255.192 95.4.1.1

ip route 95.4.0.192 255.255.255.224 95.4.1.1

ip route 95.4.0.64 255.255.255.192 95.4.1.5

ip route 95.4.1.8 255.255.255.252 95.4.1.10

ip route 0.0.0.0 0.0.0.0 95.4.1.10

The screenshot shows the Router2 configuration interface. The 'Config' tab is selected, and the 'Static Routes' section is active. On the left, a sidebar menu shows 'GLOBAL' (Settings, Algorithm Settings), 'ROUTING' (Static, RIP), 'SWITCHING' (VLAN Database), and 'INTERFACE' (FastEthernet0/0, FastEthernet0/1, Serial0/0/0, Ethernet0/1/0). The 'Static Routes' section has input fields for 'Network', 'Mask', and 'Next Hop', followed by an 'Add' button. Below this is a table of configured static routes:

Network Address
95.4.0.0/26 via 95.4.1.1
95.4.0.192/27 via 95.4.1.1
95.4.0.64/26 via 95.4.1.5
95.4.1.8/30 via 95.4.1.10
0.0.0.0/0 via 95.4.1.10

At the bottom right of the table area is a 'Remove' button.

```
Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 95.4.0.0 255.255.255.192 95.4.1.1
Router(config)#ip route 95.4.0.192 255.255.255.224 95.4.1.1
Router(config)#ip route 95.4.0.64 255.255.255.192 95.4.1.5
Router(config)#ip route 95.4.1.8 255.255.255.252 95.4.1.10
Router(config)#ip route 0.0.0.0 0.0.0.0 95.4.1.10
Router(config)#
Router(config)#
```

Router3

enable

configure terminal

ip route 95.4.0.0 255.255.0.0 1.2.3.2









The screenshot shows the Router3 configuration window with the 'Config' tab selected. The left sidebar contains a tree view with categories: GLOBAL (Settings, Algorithm Settings), ROUTING (Static, RIP), SWITCHING (VLAN Database), and INTERFACE (FastEthernet0/0, FastEthernet0/1, Serial0/0/0, Serial0/1/0). The 'Static Routes' page is active, displaying input fields for 'Network', 'Mask', and 'Next Hop', an 'Add' button, and a table of existing static routes.

Network Address
0.0.0.0/0 via 1.2.3.1
95.4.0.0/16 via 1.2.3.2











```
Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 95.4.0.0 255.255.0.0 1.2.3.2
Router(config)#
```

Paso 4 – Ping de comprobación

Una vez configuradas todas las interfaces y rutas, es necesario realizar pruebas de conectividad mediante comandos **ping**. Si las respuestas son exitosas, se confirma que la comunicación entre los dispositivos está funcionando correctamente.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC2	PC1	ICMP		0.000	N	0	(edit)	
	Successful	PC2	PC0	ICMP		0.000	N	1	(edit)	
	Successful	PC3	PC0	ICMP		0.000	N	2	(edit)	
	Successful	PC1	Server0	ICMP		0.000	N	3	(edit)	

También se procederá a verificar si los dispositivos tienen acceso a Internet, como parte de la comprobación de conectividad externa.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC2	ISP (Salida...	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC3	ISP (Salida...	ICMP		0.000	N	1	(edit)	(delete)
	Successful	PC1	ISP (Salida...	ICMP		0.000	N	2	(edit)	(delete)
	Successful	PC0	ISP (Salida...	ICMP		0.000	N	3	(edit)	(delete)
	Successful	Server0	ISP (Salida...	ICMP		0.000	N	4	(edit)	(delete)

2. Webgrafías:

- Jonay, los compañeros, 3 vídeos de internet en 360p, y dios

3. Conclusión:

- No quiero saber nada más de redes hasta que vuelva a entrar el año que viene al ciclo.