

REDES II

Proyecto G3

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REDES II

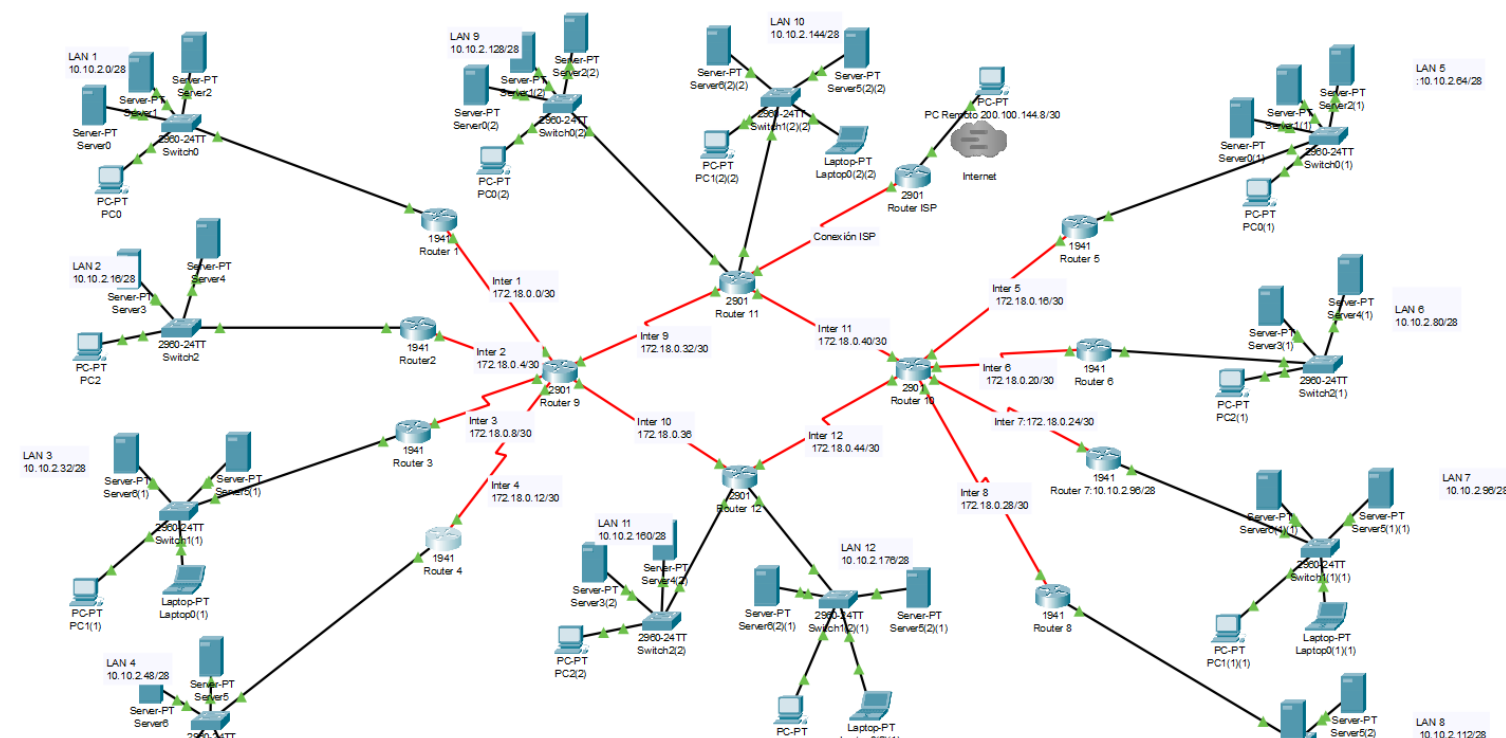
Server 1(1):	24
Server 2(1):	24
Server 3(1):	24
Server 4(1):	25
Server 6(1) (1):	25
Server 5(1) (1):	25
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REDES II

INTRODUCCION

En el ámbito de las redes informáticas, la correcta configuración de direcciones IP, routers y servidores es esencial para garantizar una comunicación eficiente y segura entre los dispositivos. Este proyecto tiene como objetivo diseñar y configurar las redes para que optimicen el flujo de datos y asegure la conectividad continua dentro de una organización.

El diagrama de red presentado en este documento ilustra una configuración detallada de los componentes clave, incluyendo servidores, switches y pcs. Cada uno de estos elementos desempeña un papel crucial en la infraestructura de la red, y su correcta configuración es vital para el funcionamiento óptimo del sistema.



ANTECEDENTES

En el marco del curso de Redes II, el presente proyecto tiene como propósito la implementación práctica de conceptos avanzados en el diseño y configuración de redes. El objetivo principal es diseñar una red de área local (LAN) que conecte múltiples subredes y asegure una comunicación eficiente y segura. Durante el 1er INTERCICLO de Redes II, se han tratado temas fundamentales como el enrutamiento estático y dinámico, la segmentación de redes y la seguridad en la configuración de dispositivos de red. Este proyecto en particular se centra en aplicar estos conocimientos teóricos en un entorno simulado mediante el uso de Cisco Packet Tracer.

A través de este proyecto, se busca que los estudiantes adquieran experiencia práctica en la configuración de dispositivos de red, la implementación de protocolos de enrutamiento y la resolución de problemas de conectividad. Además, el proyecto sigue los lineamientos establecidos en el documento "Lineamiento de Proyectos Redes II - 1er Interciclo junio 2024", que asigna un conjunto específico de redes.

En conclusión, la simulación de redes con Cisco Packet Tracer proporciona un entorno seguro donde los integrantes de este grupo pueden experimentar, cometer errores y aprender de ellos sin repercusiones en redes reales. Esto refuerza la capacidad para planificar, implementar y gestionar redes complejas de manera eficiente y segura.

REQUERIMIENTOS

1. Recursos Técnicos:

- **Software:** Utilización de Cisco Packet Tracer para la simulación y configuración de la red, permitiendo la creación de escenarios de red complejos y la prueba de configuraciones antes de su implementación en un entorno real.
- **Hardware Simulado:** Emulación de routers, switches, servidores y estaciones de trabajo virtuales, proporcionando un entorno de aprendizaje integral y práctico.

2. Redes y Direccionamiento:

- **Asignación de IP:** Implementación de las siguientes subredes, para una segmentación eficiente de la red.
- Cada dispositivo en la red debe estar claramente etiquetado con un identificador único (por ejemplo, “Router1”, “Server 0”).

3. Configuraciones Específicas:

- **Routers:** Configuración de las interfaces con las direcciones IP correspondientes, asegurando la correcta implementación de rutas estáticas y dinámicas mediante el protocolo RIP (Routing Information Protocol).
- **Switches:** Realización de configuraciones básicas para garantizar la conectividad entre dispositivos, incluyendo la configuración de VLANs si es necesario.
- **Servidores y PC:** Asignación de direcciones IP y configuración de servicios esenciales y servidores web, asegurando que todos los dispositivos puedan comunicarse y hacer ping eficazmente.

4. Pruebas y Verificación:

- Pruebas: Ejecución de pruebas de ping entre dispositivos para verificar la comunicación entre las subredes, asegurando que no haya interrupciones en la conectividad.
- Verificación: Utilización de comandos de diagnóstico como `show ip route` para confirmar que las rutas están correctamente configuradas y operativas, permitiendo la detección y resolución de posibles problemas de enrutamiento.

DESARROLLO

I. Cuadro de configuración de routers/servidores: Puerto/Red/Máscara.

	Puerto	Red	Máscara
ROUTER 1	G0/0	10.10.2.1	255.255.255.240
SERVER 0	Fa0/2	10.10.2.1	255.255.255.240
SERVER 1	Fa0/3	10.10.2.1	255.255.255.240
SERVER 2	Fa0/4	10.10.2.1	255.255.255.240

	Puerto	Red	Máscara
ROUTER 2	G0/0	10.10.2.17	255.255.255.240
SERVER 3	Fa0/2	10.10.2.17	255.255.255.240
SERVER 4	Fa0/3	10.10.2.17	255.255.255.240

	Puerto	Red	Máscara
ROUTER 3	G0/0	10.10.2.33	255.255.255.240
SERVER 5(1)	Fa0	10.10.2.33	255.255.255.240
SERVER 6(1)	Fa0	10.10.2.33	255.255.255.240

	Puerto	Red	Máscara
ROUTER 4	G0/0	10.10.2.49	255.255.255.252
SERVER 5	Fa0	10.10.2.49	255.255.255.240
SERVER 6	Fa0	10.10.2.49	255.255.255.240

	Puerto	Red	Máscara
ROUTER 5	G0/0	10.10.2.65	255.255.255.240
SERVER 0(1)	Fa0	10.10.2.65	255.255.255.240
SERVER 1(1)	Fa0	10.10.2.65	255.255.255.240
SERVER 2(1)	Fa0	10.10.2.65	255.255.255.240

	Puerto	Red	Máscara
ROUTER 6	G0/0	10.10.2.81	255.255.255.240
SERVER 3(1)	Fa0	10.10.2.81	255.255.255.240
SERVER 4(1)	Fa0	10.10.2.81	255.255.255.240

REDES II

	Puerto	Red	Máscara
ROUTER 7	G0/0	10.10.2.97	255.255.255.240
SERVER 6(1)(1)	Fa0	10.10.2.97	255.255.255.240
SERVER 5(1)(1)	Fa0	10.10.2.97	255.255.255.240

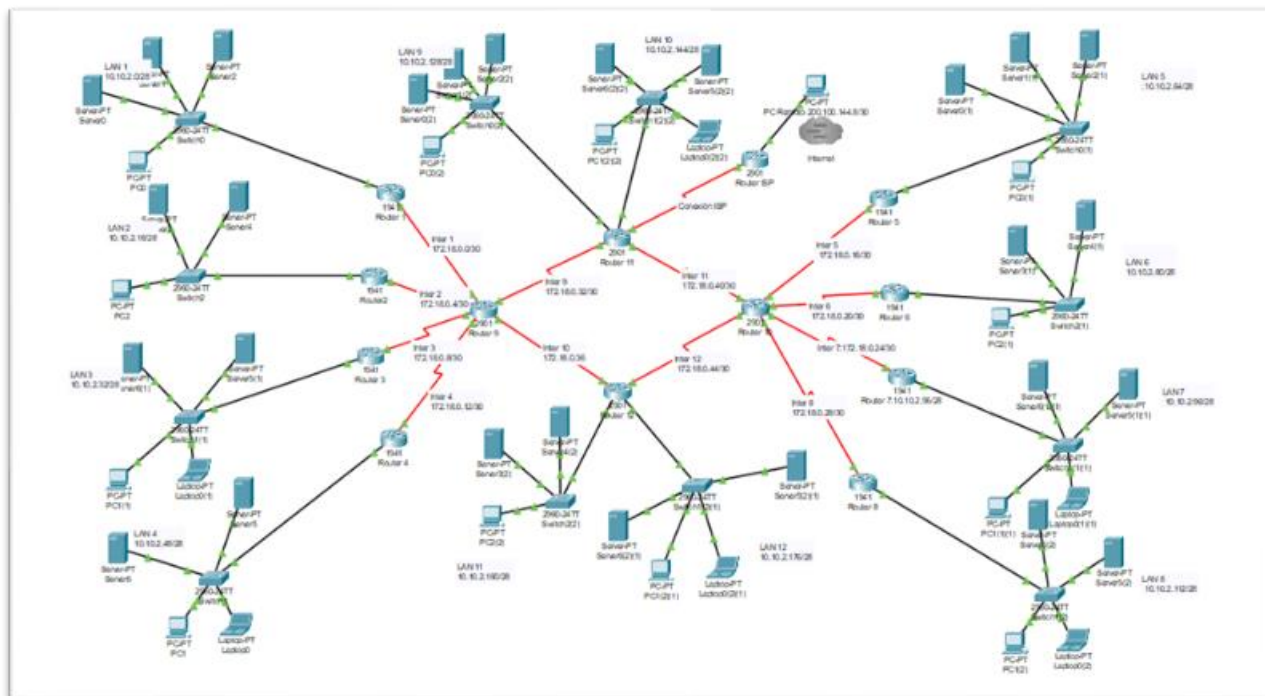
	Puerto	Red	Máscara
ROUTER 8	G0/0	10.10.2.113	255.255.255.240
SERVER 6(2)	Fa0	10.10.2.113	255.255.255.240
SERVER 5(2)	Fa0	10.10.2.113	255.255.255.240

	Puerto	Red	Máscara
ROUTER 12	G0/1	10.10.2.145	255.255.255.240
SERVER 6(2) (2)	Fa0	10.10.2.145	255.255.255.240
SERVER 5(2) (2)	Fa0	10.10.2.145	255.255.255.240

	Puerto	Red	Máscara
ROUTER 12	G0/0	10.10.2.129	255.255.255.240
SERVER 0(2)	Fa0	10.10.2.129	255.255.255.240
SERVER 1 (2)	Fa0	10.10.2.129	255.255.255.240
SERVER 2(2)	Fa0	10.10.2.129	255.255.255.240

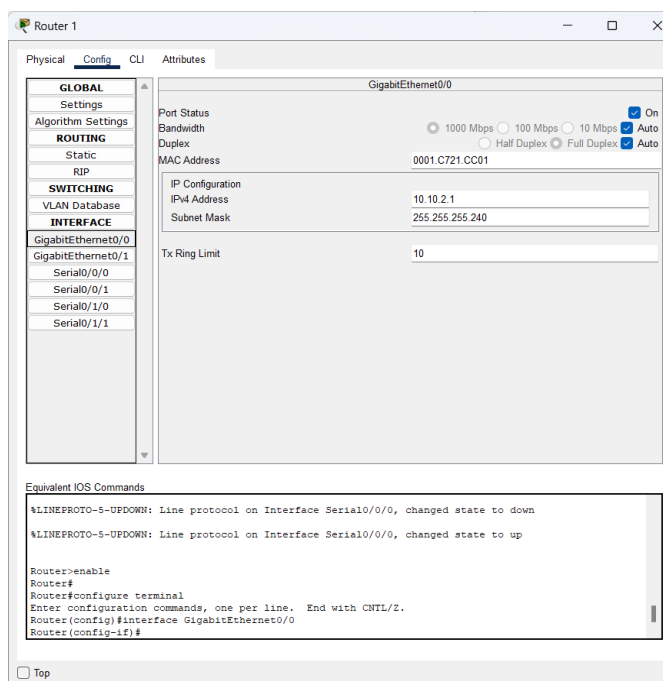
REDES II

II. Capturas de Pantalla de la red general



III. Capturas de Pantalla de la configuración de cada router

Router 1:



REDES II

Router 2:

Router2

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0006 2A48 4E01

IP Configuration

IPv4 Address 10.10.2.17

Subnet Mask 255.255.255.240

Tx Ring Limit 10

Equivalent IOS Commands

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

Router 3:

Router 3

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0007 ECA0 07EE

IP Configuration

IPv4 Address 10.10.2.33

Subnet Mask 255.255.255.240

Tx Ring Limit 10

Equivalent IOS Commands

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

REDES II

Router 4:

Router 4

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0001.64E5.5701

IP Configuration

IPv4 Address 10.10.2.49

Subnet Mask 255.255.255.240

Tx Ring Limit 10

Equivalent IOS Commands

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

Router 5:

Router 5

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☒ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0030.A330.632B

IP Configuration

IPv4 Address 10.10.2.65

Subnet Mask 255.255.255.240

Tx Ring Limit 10

Equivalent IOS Commands

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

REDES II

Router 6:

Router 6

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0060.5C28.7CDE

IP Configuration

IPv4 Address 10.10.2.81

Subnet Mask 255.255.255.240

Tx Ring Limit 10

Equivalent IOS Commands

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

☐ Top

Router 7:

Router 7:10.10.2.96/28

Physical Config CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/1/0

Serial0/1/1

GigabitEthernet0/0

Port Status ☒ On

Bandwidth ☐ 1000 Mbps ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 00E0.F70E.0401

IP Configuration

IPv4 Address 10.10.2.97

Subnet Mask 255.255.255.240

Tx Ring Limit 10

Equivalent IOS Commands

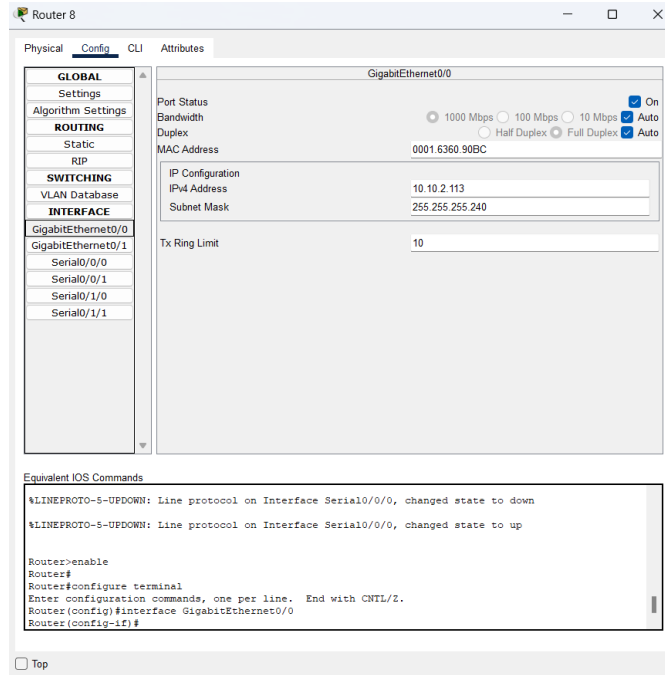
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
```

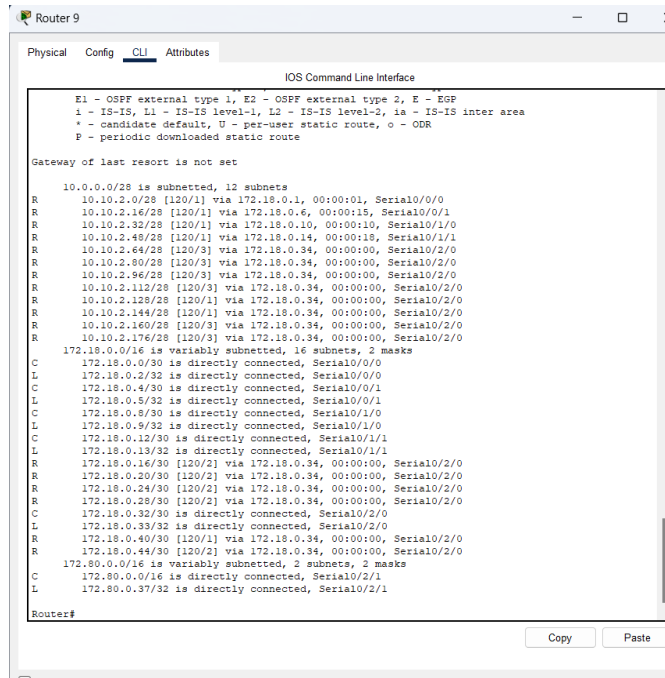
☐ Top

REDES II

Router 8:

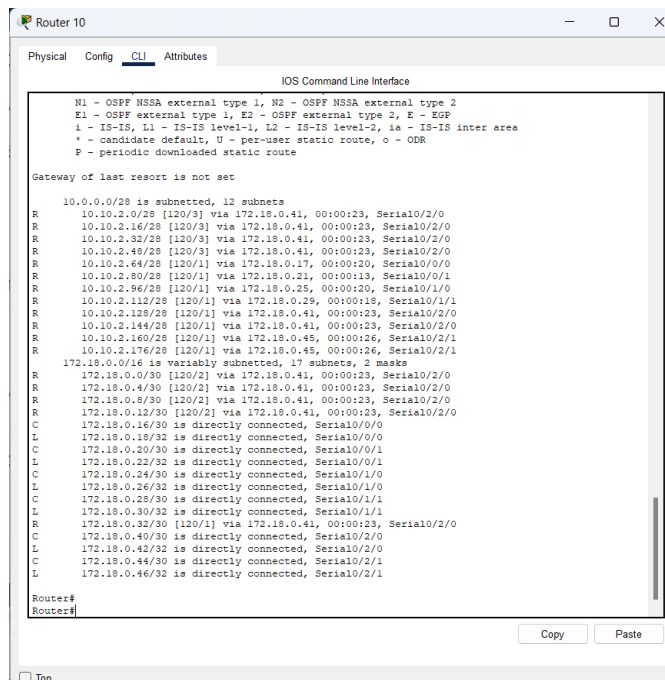


Router 9:



REDES II

Router 10:



```

Router 10
Physical Config CLI Attributes
IOS Command Line Interface

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

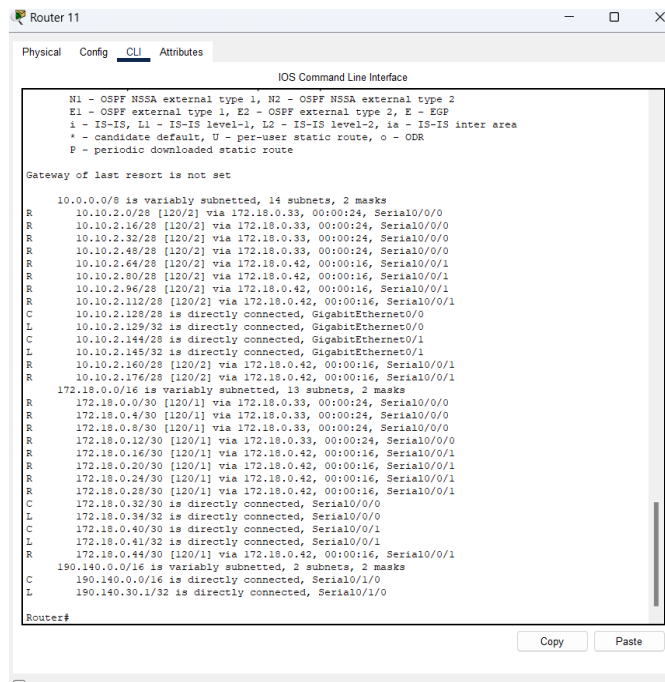
Gateway of last resort is not set

10.0.0.0/28 is subnetted, 12 subnets
R 10.10.2.0/28 [120/3] via 172.18.0.41, 00:00:23, Serial0/2/0
R 10.10.2.16/28 [120/3] via 172.18.0.41, 00:00:23, Serial0/2/0
R 10.10.2.32/28 [120/3] via 172.18.0.41, 00:00:23, Serial0/2/0
R 10.10.2.48/28 [120/3] via 172.18.0.41, 00:00:23, Serial0/2/0
R 10.10.2.64/28 [120/1] via 172.18.0.17, 00:00:20, Serial0/0/0
R 10.10.2.80/28 [120/1] via 172.18.0.21, 00:00:13, Serial0/0/1
R 10.10.2.96/28 [120/1] via 172.18.0.25, 00:00:20, Serial0/1/0
R 10.10.2.112/28 [120/1] via 172.18.0.29, 00:00:18, Serial0/1/1
R 10.10.2.128/28 [120/1] via 172.18.0.41, 00:00:23, Serial0/2/0
R 10.10.2.144/28 [120/1] via 172.18.0.41, 00:00:23, Serial0/2/0
R 10.10.2.160/28 [120/1] via 172.18.0.45, 00:00:26, Serial0/2/1
R 10.10.2.176/28 [120/1] via 172.18.0.45, 00:00:26, Serial0/2/1
172.18.0.0/16 is variably subnetted, 17 subnets, 2 masks
R 172.18.0.0/30 [120/2] via 172.18.0.41, 00:00:23, Serial0/2/0
R 172.18.0.4/30 [120/2] via 172.18.0.41, 00:00:23, Serial0/2/0
R 172.18.0.8/30 [120/2] via 172.18.0.41, 00:00:23, Serial0/2/0
R 172.18.0.12/30 [120/2] via 172.18.0.41, 00:00:23, Serial0/2/0
C 172.18.0.16/30 is directly connected, Serial0/0/0
L 172.18.0.18/32 is directly connected, Serial0/0/0
C 172.18.0.20/30 is directly connected, Serial0/0/1
L 172.18.0.22/32 is directly connected, Serial0/0/1
C 172.18.0.24/30 is directly connected, Serial0/1/0
L 172.18.0.26/32 is directly connected, Serial0/1/0
C 172.18.0.28/30 is directly connected, Serial0/1/1
L 172.18.0.30/32 is directly connected, Serial0/1/1
R 172.18.0.32/30 [120/1] via 172.18.0.41, 00:00:23, Serial0/2/0
C 172.18.0.40/30 is directly connected, Serial0/2/0
L 172.18.0.42/32 is directly connected, Serial0/2/0
C 172.18.0.44/30 is directly connected, Serial0/2/1
L 172.18.0.46/32 is directly connected, Serial0/2/1

Router#
Router#
Copy Paste

```

Router 11:



```

Router 11
Physical Config CLI Attributes
IOS Command Line Interface

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

10.0.0.0/8 is variably subnetted, 14 subnets, 2 masks
R 10.10.2.0/28 [120/2] via 172.18.0.33, 00:00:24, Serial0/0/0
R 10.10.2.16/28 [120/2] via 172.18.0.33, 00:00:24, Serial0/0/0
R 10.10.2.32/28 [120/2] via 172.18.0.33, 00:00:24, Serial0/0/0
R 10.10.2.48/28 [120/2] via 172.18.0.33, 00:00:24, Serial0/0/0
R 10.10.2.64/28 [120/2] via 172.18.0.42, 00:00:16, Serial0/0/1
R 10.10.2.80/28 [120/2] via 172.18.0.42, 00:00:16, Serial0/0/1
R 10.10.2.96/28 [120/2] via 172.18.0.42, 00:00:16, Serial0/0/1
R 10.10.2.112/28 [120/2] via 172.18.0.42, 00:00:16, Serial0/0/1
C 10.10.2.128/28 is directly connected, GigabitEthernet0/0
L 10.10.2.129/32 is directly connected, GigabitEthernet0/0
C 10.10.2.144/28 is directly connected, GigabitEthernet0/1
L 10.10.2.145/32 is directly connected, GigabitEthernet0/1
R 10.10.2.160/28 [120/2] via 172.18.0.42, 00:00:16, Serial0/0/1
R 10.10.2.176/28 [120/2] via 172.18.0.42, 00:00:16, Serial0/0/1
172.18.0.0/16 is variably subnetted, 13 subnets, 2 masks
R 172.18.0.0/30 [120/1] via 172.18.0.33, 00:00:24, Serial0/0/0
R 172.18.0.4/30 [120/1] via 172.18.0.33, 00:00:24, Serial0/0/0
R 172.18.0.8/30 [120/1] via 172.18.0.33, 00:00:24, Serial0/0/0
R 172.18.0.12/30 [120/1] via 172.18.0.33, 00:00:24, Serial0/0/0
R 172.18.0.16/30 [120/1] via 172.18.0.42, 00:00:16, Serial0/0/1
R 172.18.0.20/30 [120/1] via 172.18.0.42, 00:00:16, Serial0/0/1
R 172.18.0.24/30 [120/1] via 172.18.0.42, 00:00:16, Serial0/0/1
R 172.18.0.28/30 [120/1] via 172.18.0.42, 00:00:16, Serial0/0/1
C 172.18.0.32/30 is directly connected, Serial0/0/0
L 172.18.0.34/32 is directly connected, Serial0/0/0
C 172.18.0.40/30 is directly connected, Serial0/0/1
L 172.18.0.41/32 is directly connected, Serial0/0/1
R 172.18.0.44/30 [120/1] via 172.18.0.42, 00:00:16, Serial0/0/1
190.140.0.0/16 is variably subnetted, 2 subnets, 2 masks
C 190.140.0.0/16 is directly connected, Serial0/1/0
L 190.140.30.1/32 is directly connected, Serial0/1/0

Router#
Router#
Copy Paste

```

REDES II

Router 12:

```

Router#show ip r
Router#show ip r
Router#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

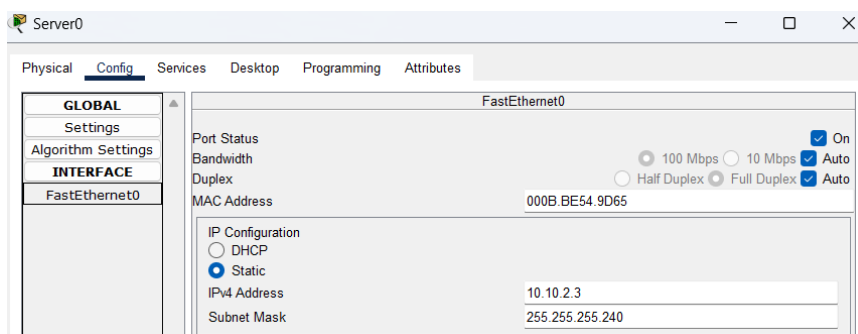
    10.0.0.0/8 is variably subnetted, 14 subnets, 2 masks
R    10.10.2.0/28 [120/4] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.16/28 [120/4] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.32/28 [120/4] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.48/28 [120/4] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.64/28 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.80/28 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.96/28 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.112/28 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.128/28 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.144/28 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    10.10.2.160/28 is directly connected, GigabitEthernet0/0
L    10.10.2.161/32 is directly connected, GigabitEthernet0/0
C    10.10.2.176/28 is directly connected, GigabitEthernet0/1
L    10.10.2.177/32 is directly connected, GigabitEthernet0/1
    172.18.0.0/16 is variably subnetted, 12 subnets, 3 masks
C    172.18.0.0/16 is directly connected, Serial0/0/1
R    172.18.0.0/30 [120/3] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.4/30 [120/3] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.8/30 [120/3] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.12/30 [120/3] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.16/30 [120/1] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.20/30 [120/1] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.24/30 [120/1] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.28/30 [120/1] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.32/30 [120/2] via 172.18.0.46, 00:00:20, Serial0/0/1
R    172.18.0.40/30 [120/1] via 172.18.0.46, 00:00:20, Serial0/0/1
L    172.18.0.45/32 is directly connected, Serial0/0/1
    172.80.0.0/16 is variably subnetted, 2 subnets, 2 masks

```

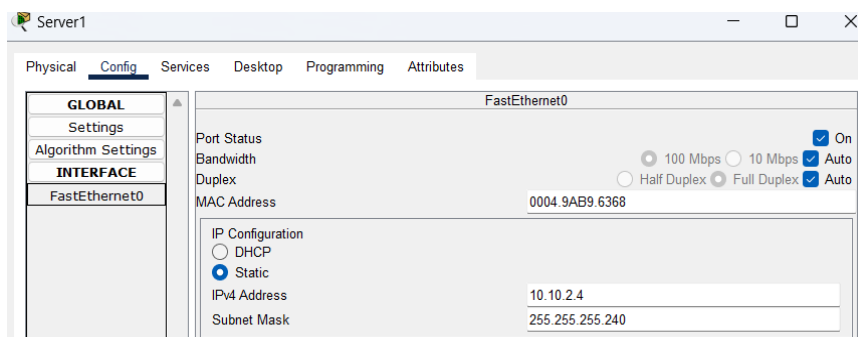
REDES II

IV. Capturas de Pantalla de la configuración de cada Servidor

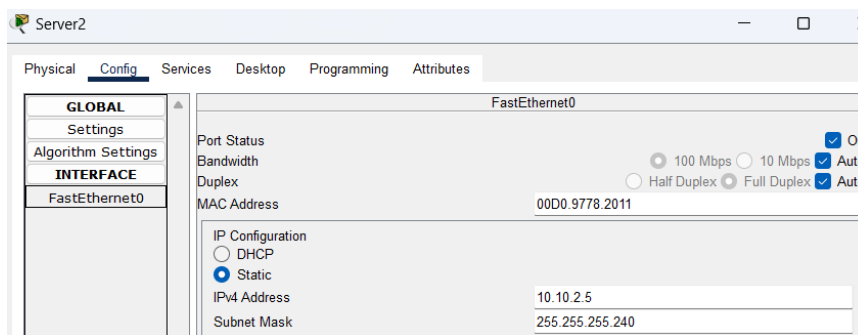
Server 0:



Server 1:

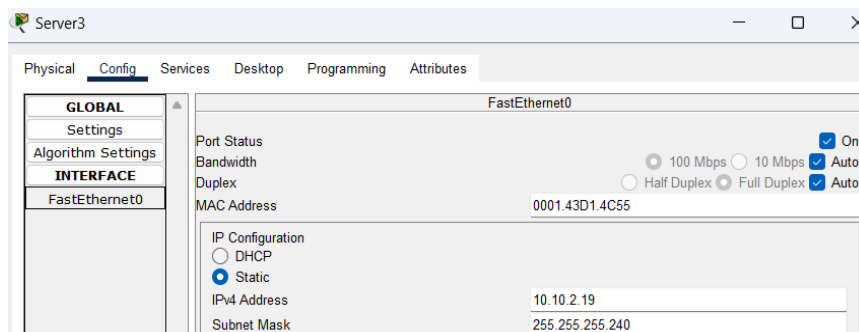


Server 2:

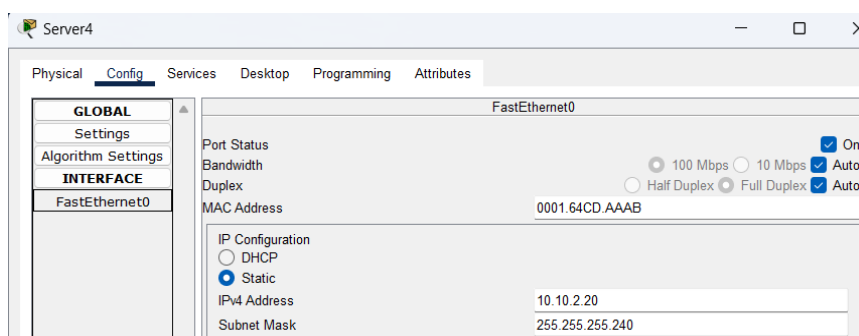


REDES II

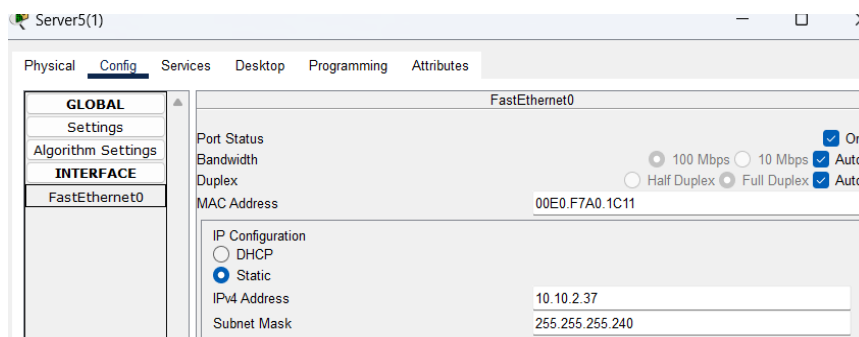
Server 3:



Server 4:

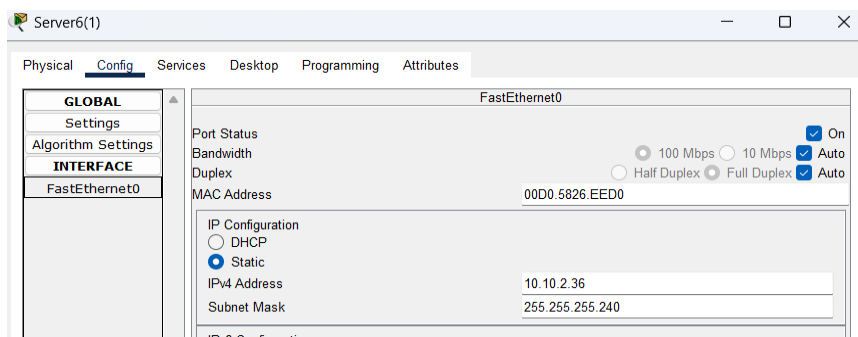


Server 5(1):

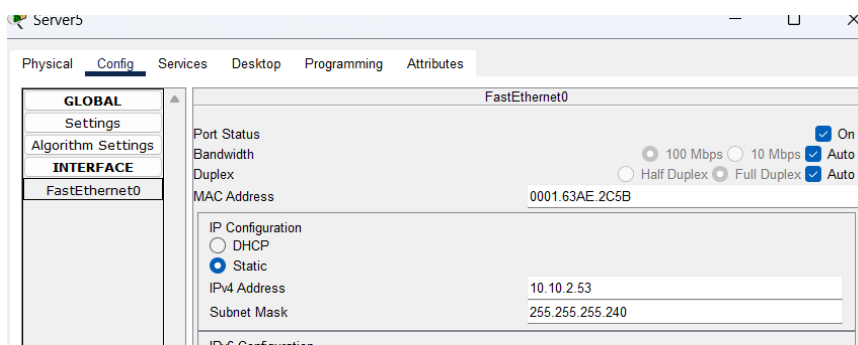


REDES II

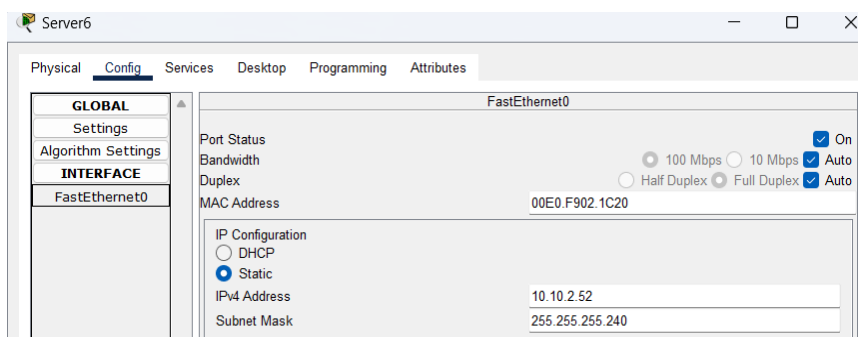
Server 6(1):



Server 5:

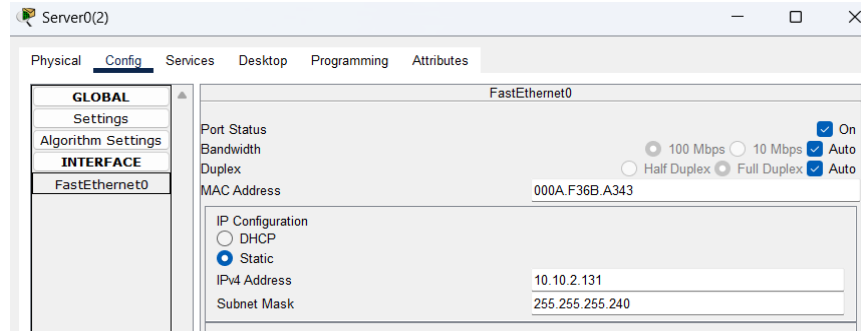


Server 6:

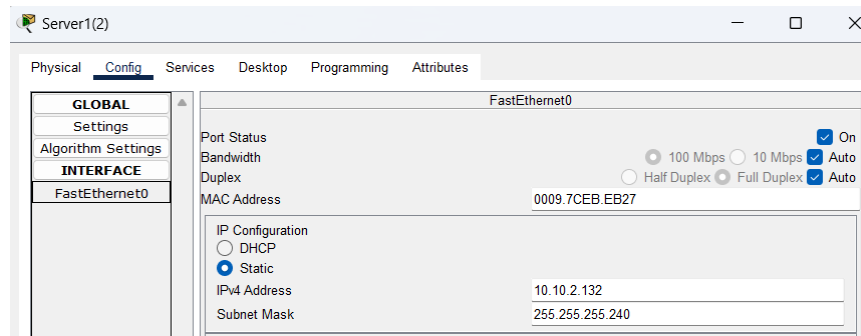


REDES II

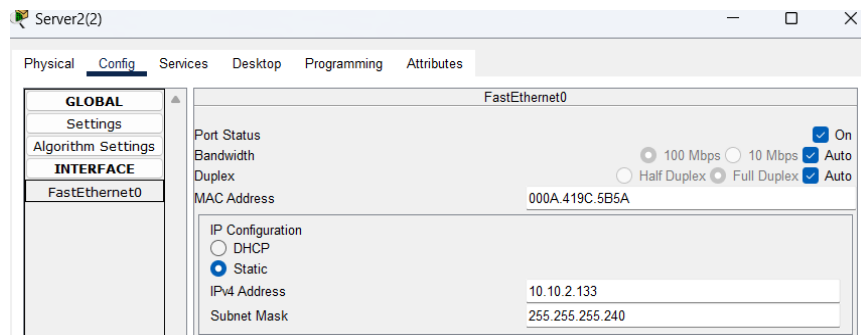
Server 0(2):



Server 1(2):

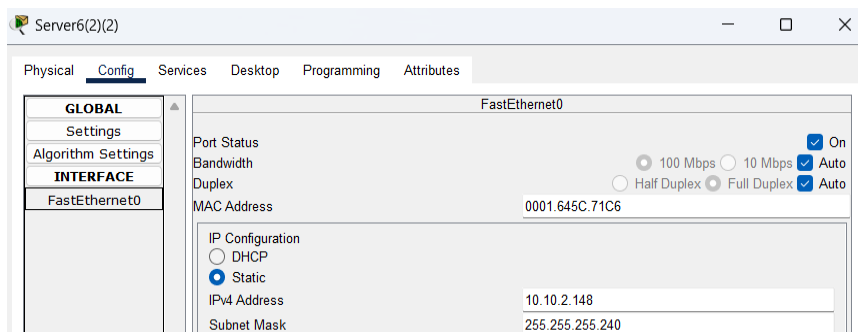


Server 2(2):

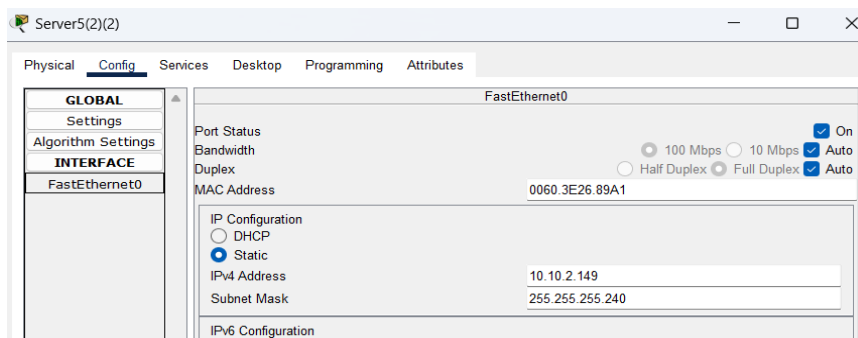


REDES II

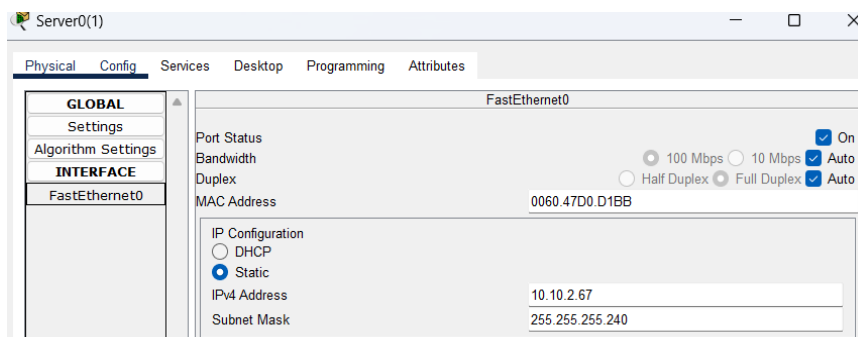
Server 6 (2)(2):



Server 5 (2)(2):



Server 0(1):



REDES II

Server 1(1):

The screenshot shows the configuration window for Server1(1). The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, showing 'FastEthernet0'. The main area displays the configuration for 'FastEthernet0'. The 'Port Status' is 'On'. The 'Bandwidth' is set to 'Auto'. The 'Duplex' is set to 'Full Duplex'. The 'MAC Address' is '0060.3E57.7472'. The 'IP Configuration' is set to 'Static'. The 'IPv4 Address' is '10.10.2.68' and the 'Subnet Mask' is '255.255.255.240'.

Property	Value
Port Status	On
Bandwidth	Auto
Duplex	Full Duplex
MAC Address	0060.3E57.7472
IP Configuration	Static
IPv4 Address	10.10.2.68
Subnet Mask	255.255.255.240

Server 2(1):

The screenshot shows the configuration window for Server2(1). The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, showing 'FastEthernet0'. The main area displays the configuration for 'FastEthernet0'. The 'Port Status' is 'On'. The 'Bandwidth' is set to 'Auto'. The 'Duplex' is set to 'Full Duplex'. The 'MAC Address' is '00D0.D386.74A9'. The 'IP Configuration' is set to 'Static'. The 'IPv4 Address' is '10.10.2.69' and the 'Subnet Mask' is '255.255.255.240'.

Property	Value
Port Status	On
Bandwidth	Auto
Duplex	Full Duplex
MAC Address	00D0.D386.74A9
IP Configuration	Static
IPv4 Address	10.10.2.69
Subnet Mask	255.255.255.240

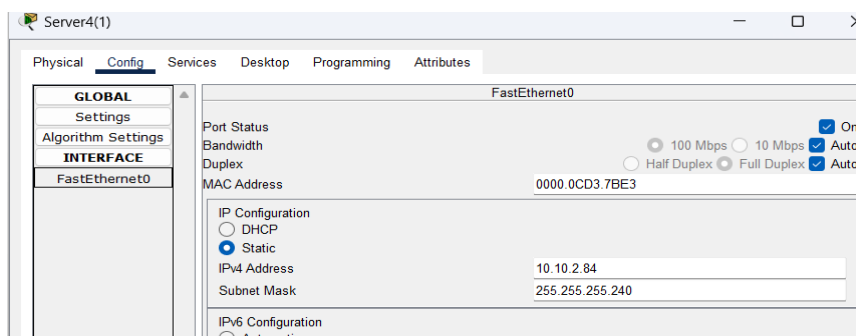
Server 3(1):

The screenshot shows the configuration window for Server3(1). The 'Config' tab is selected. On the left, the 'INTERFACE' section is expanded, showing 'FastEthernet0'. The main area displays the configuration for 'FastEthernet0'. The 'Port Status' is 'On'. The 'Bandwidth' is set to 'Auto'. The 'Duplex' is set to 'Full Duplex'. The 'MAC Address' is '0001.4273.0DA6'. The 'IP Configuration' is set to 'Static'. The 'IPv4 Address' is '10.10.2.83' and the 'Subnet Mask' is '255.255.255.240'.

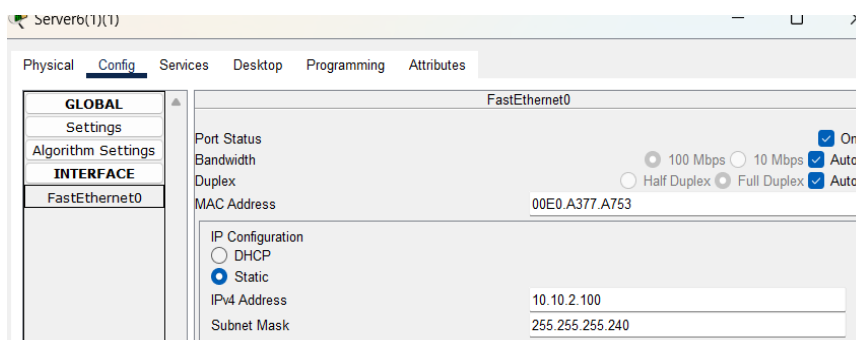
Property	Value
Port Status	On
Bandwidth	Auto
Duplex	Full Duplex
MAC Address	0001.4273.0DA6
IP Configuration	Static
IPv4 Address	10.10.2.83
Subnet Mask	255.255.255.240

REDES II

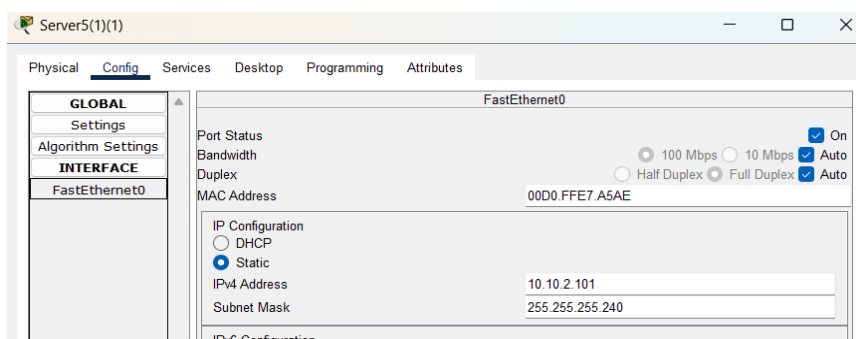
Server 4(1):



Server 6(1) (1):

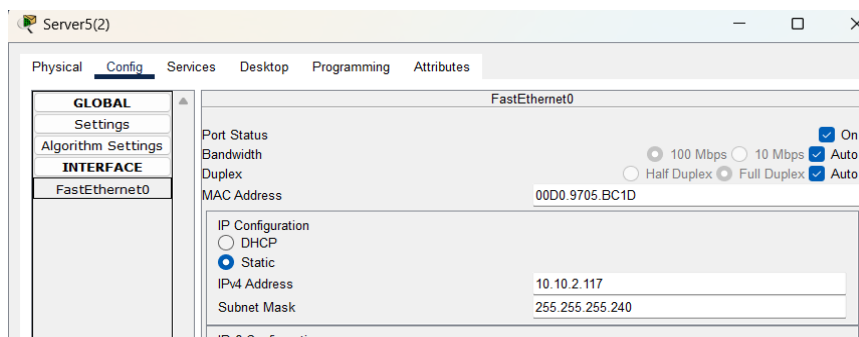


Server 5(1) (1):

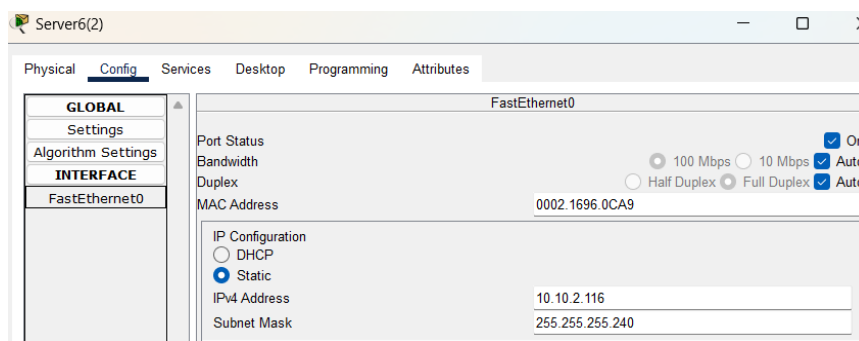


REDES II

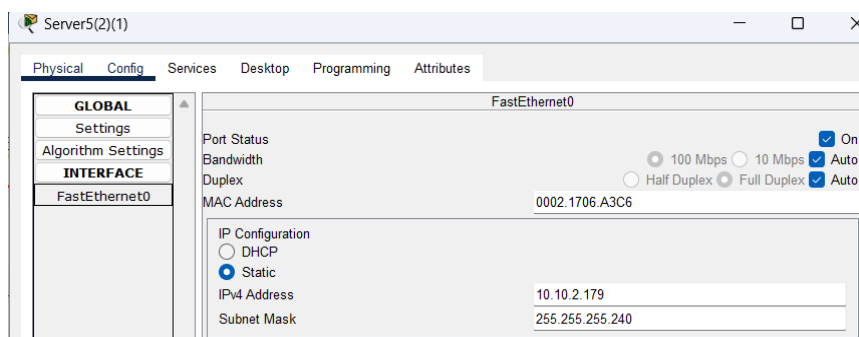
Server 5(2):



Server 6(2):

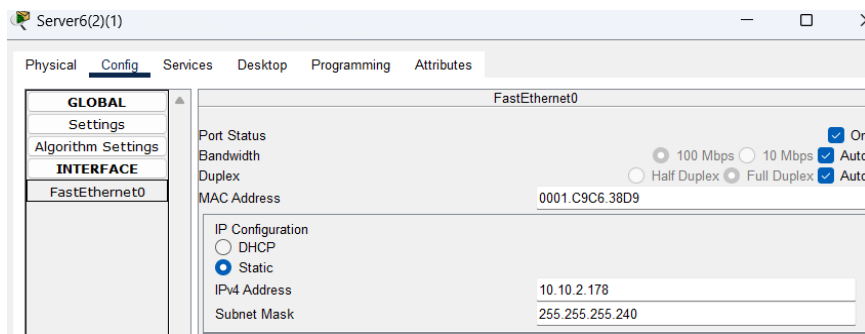


Server 5(2)(1):

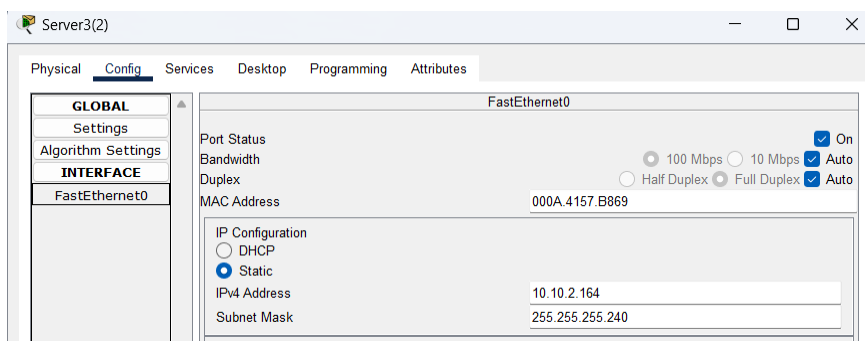


REDES II

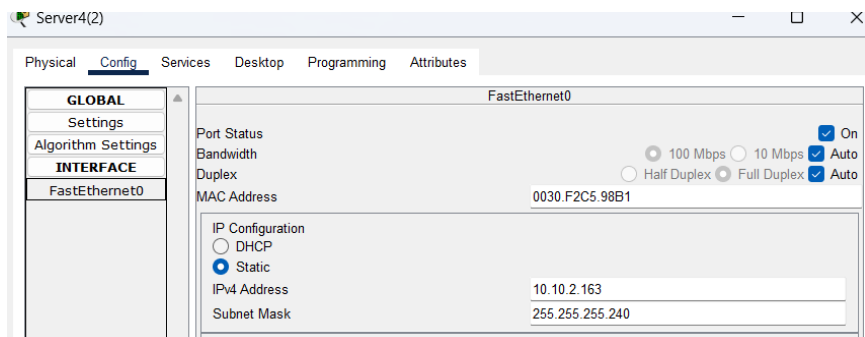
Server 6(2)(1):



Server 3(2):



Server 4(2):



V. Capturas de Pantalla de funcionamiento (show y ping) de RIP.

Prueba de, Ping desde pc0:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.10.2.18

Pinging 10.10.2.18 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.18: bytes=32 time=4ms TTL=125
Reply from 10.10.2.18: bytes=32 time=13ms TTL=125
Reply from 10.10.2.18: bytes=32 time=2ms TTL=125

Ping statistics for 10.10.2.18:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 13ms, Average = 6ms

C:\>ping 10.10.2.35

Pinging 10.10.2.35 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.35: bytes=32 time=2ms TTL=125
Reply from 10.10.2.35: bytes=32 time=19ms TTL=125
Reply from 10.10.2.35: bytes=32 time=3ms TTL=125

Ping statistics for 10.10.2.35:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 19ms, Average = 8ms

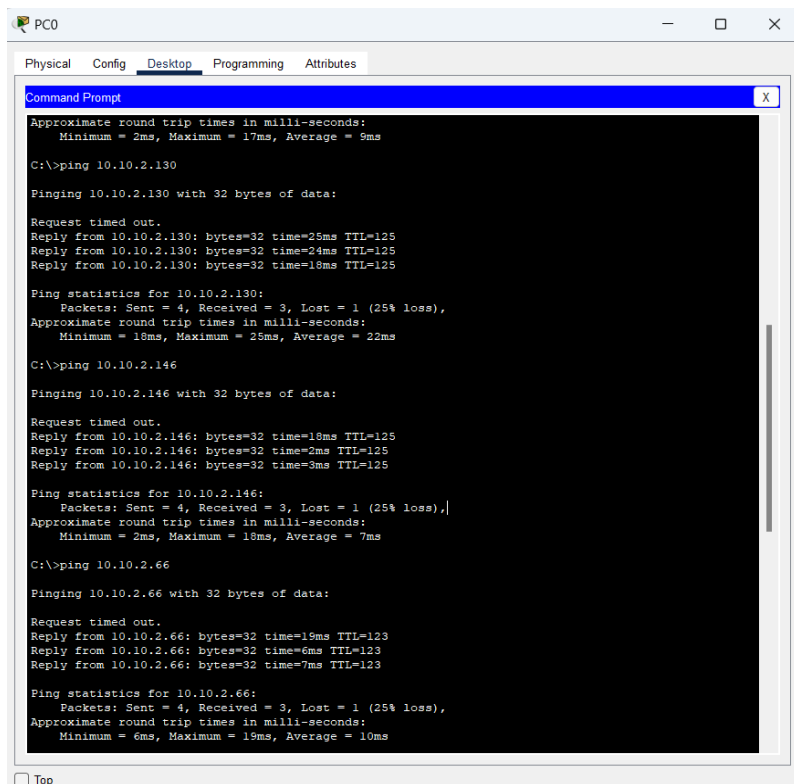
C:\>ping 10.10.2.51

Pinging 10.10.2.51 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.51: bytes=32 time=2ms TTL=125
Reply from 10.10.2.51: bytes=32 time=8ms TTL=125
Reply from 10.10.2.51: bytes=32 time=17ms TTL=125

Ping statistics for 10.10.2.51:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 17ms, Average = 9ms
```

REDES II



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```

Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 17ms, Average = 5ms

C:\>ping 10.10.2.130

Pinging 10.10.2.130 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.130: bytes=32 time=25ms TTL=125
Reply from 10.10.2.130: bytes=32 time=24ms TTL=125
Reply from 10.10.2.130: bytes=32 time=18ms TTL=125

Ping statistics for 10.10.2.130:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 18ms, Maximum = 25ms, Average = 22ms

C:\>ping 10.10.2.146

Pinging 10.10.2.146 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.146: bytes=32 time=18ms TTL=125
Reply from 10.10.2.146: bytes=32 time=2ms TTL=125
Reply from 10.10.2.146: bytes=32 time=3ms TTL=125

Ping statistics for 10.10.2.146:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 18ms, Average = 7ms

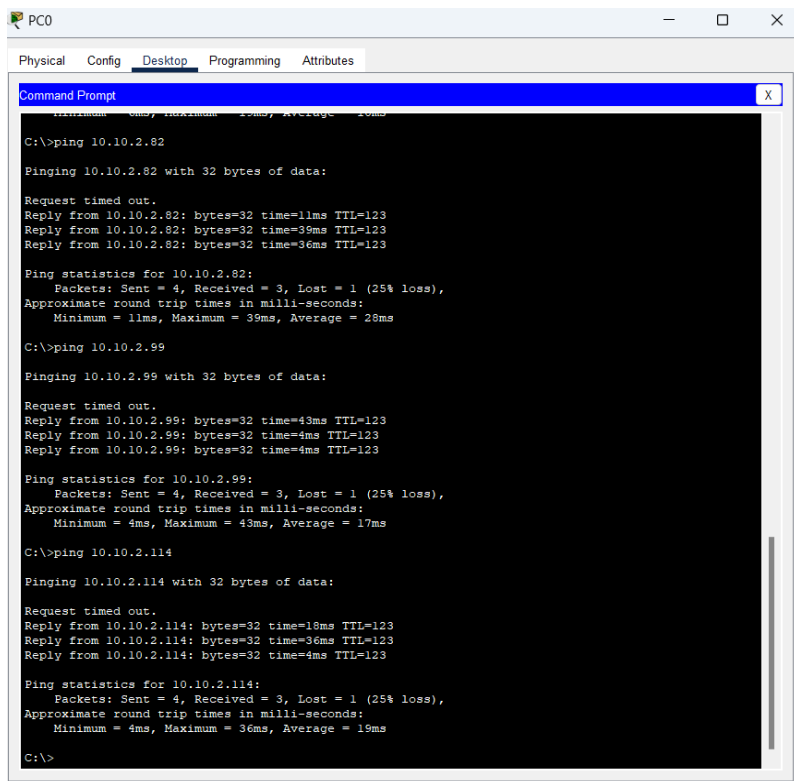
C:\>ping 10.10.2.66

Pinging 10.10.2.66 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.66: bytes=32 time=19ms TTL=123
Reply from 10.10.2.66: bytes=32 time=6ms TTL=123
Reply from 10.10.2.66: bytes=32 time=7ms TTL=123

Ping statistics for 10.10.2.66:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 6ms, Maximum = 19ms, Average = 10ms
  
```

☐ Top



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```

Approximate round trip times in milli-seconds:
    Minimum = 5ms, Maximum = 15ms, Average = 10ms

C:\>ping 10.10.2.82

Pinging 10.10.2.82 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.82: bytes=32 time=11ms TTL=123
Reply from 10.10.2.82: bytes=32 time=36ms TTL=123
Reply from 10.10.2.82: bytes=32 time=36ms TTL=123

Ping statistics for 10.10.2.82:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 11ms, Maximum = 39ms, Average = 28ms

C:\>ping 10.10.2.99

Pinging 10.10.2.99 with 32 bytes of data:

Request timed out.
Reply from 10.10.2.99: bytes=32 time=43ms TTL=123
Reply from 10.10.2.99: bytes=32 time=4ms TTL=123
Reply from 10.10.2.99: bytes=32 time=4ms TTL=123

Ping statistics for 10.10.2.99:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 43ms, Average = 17ms

C:\>ping 10.10.2.114

Pinging 10.10.2.114 with 32 bytes of data:

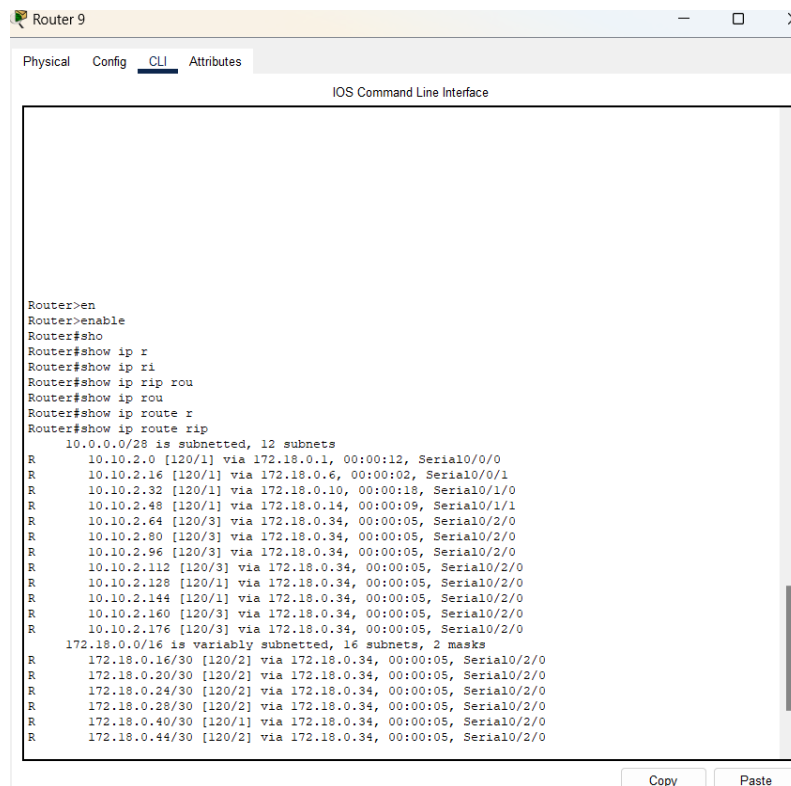
Request timed out.
Reply from 10.10.2.114: bytes=32 time=18ms TTL=123
Reply from 10.10.2.114: bytes=32 time=36ms TTL=123
Reply from 10.10.2.114: bytes=32 time=4ms TTL=123

Ping statistics for 10.10.2.114:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 36ms, Average = 19ms

C:\>
  
```

REDES II

Show para ver RIP:



Router 9

Physical Config **CLI** Attributes

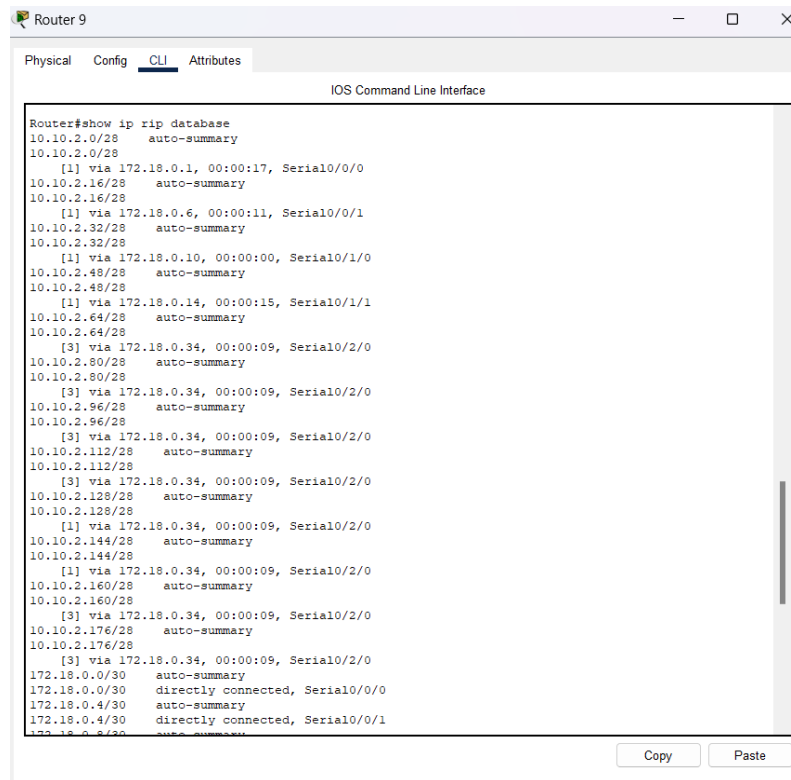
IOS Command Line Interface

```

Router>en
Router>enable
Router#sho
Router#show ip r
Router#show ip ri
Router#show ip rip rou
Router#show ip rou
Router#show ip route r
Router#show ip route rip
10.0.0.0/28 is subnetted, 12 subnets
R    10.10.2.0 [120/1] via 172.18.0.1, 00:00:12, Serial0/0/0
R    10.10.2.16 [120/1] via 172.18.0.6, 00:00:02, Serial0/0/1
R    10.10.2.32 [120/1] via 172.18.0.10, 00:00:18, Serial0/1/0
R    10.10.2.48 [120/1] via 172.18.0.14, 00:00:09, Serial0/1/1
R    10.10.2.64 [120/3] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.80 [120/3] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.96 [120/3] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.112 [120/3] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.128 [120/1] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.144 [120/1] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.160 [120/3] via 172.18.0.34, 00:00:05, Serial0/2/0
R    10.10.2.176 [120/3] via 172.18.0.34, 00:00:05, Serial0/2/0
172.18.0.0/16 is variably subnetted, 16 subnets, 2 masks
R    172.18.0.16/30 [120/2] via 172.18.0.34, 00:00:05, Serial0/2/0
R    172.18.0.20/30 [120/2] via 172.18.0.34, 00:00:05, Serial0/2/0
R    172.18.0.24/30 [120/2] via 172.18.0.34, 00:00:05, Serial0/2/0
R    172.18.0.28/30 [120/2] via 172.18.0.34, 00:00:05, Serial0/2/0
R    172.18.0.40/30 [120/1] via 172.18.0.34, 00:00:05, Serial0/2/0
R    172.18.0.44/30 [120/2] via 172.18.0.34, 00:00:05, Serial0/2/0

```

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Router 9

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Router#show ip rip database
10.10.2.0/28      auto-summary
10.10.2.0/28
[1] via 172.18.0.1, 00:00:17, Serial0/0/0
10.10.2.16/28    auto-summary
10.10.2.16/28
[1] via 172.18.0.6, 00:00:11, Serial0/0/1
10.10.2.32/28    auto-summary
10.10.2.32/28
[1] via 172.18.0.10, 00:00:00, Serial0/1/0
10.10.2.48/28    auto-summary
10.10.2.48/28
[1] via 172.18.0.14, 00:00:15, Serial0/1/1
10.10.2.64/28    auto-summary
10.10.2.64/28
[3] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.80/28    auto-summary
10.10.2.80/28
[3] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.96/28    auto-summary
10.10.2.96/28
[3] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.112/28   auto-summary
10.10.2.112/28
[3] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.128/28   auto-summary
10.10.2.128/28
[1] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.144/28   auto-summary
10.10.2.144/28
[1] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.160/28   auto-summary
10.10.2.160/28
[3] via 172.18.0.34, 00:00:09, Serial0/2/0
10.10.2.176/28   auto-summary
10.10.2.176/28
[3] via 172.18.0.34, 00:00:09, Serial0/2/0
172.18.0.0/30     auto-summary
172.18.0.0/30     directly connected, Serial0/0/0
172.18.0.4/30     auto-summary
172.18.0.4/30     directly connected, Serial0/0/1

```

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ANALISIS DE RESULTADOS

Durante el desarrollo del proyecto, se logró diseñar y configurar una red de área local (LAN) robusta y eficiente utilizando Cisco Packet Tracer. La verificación detallada de las tablas de enrutamiento en los routers indicó que todas las rutas están configuradas y presentes según lo planeado, garantizando una comunicación eficiente entre todas las subredes implicadas. Los comandos de diagnóstico, como `Router# show ip route rip`, corroboraron que tanto las rutas estáticas como las rutas aprendidas a través del protocolo RIP están correctamente instaladas y en funcionamiento. A través de rigurosas pruebas de conectividad, se validó que todos los dispositivos dentro de la red pueden comunicarse de manera efectiva, confirmando la precisión de las configuraciones de las interfaces y las subredes.

CONCLUSIONES

En conclusión, el desarrollo y configuración de la red de área local (LAN) utilizando Cisco Packet Tracer resultó en una infraestructura de red robusta y eficiente. Las pruebas de conectividad confirmaron una comunicación estable y sin pérdidas de paquetes entre todos los dispositivos, lo que evidencia la precisión de las configuraciones iniciales. La verificación de las tablas de enrutamiento y los diagnósticos realizados aseguraron que tanto las rutas estáticas como las aprendidas a través del protocolo RIP están correctamente instaladas y operativas. Gracias a estas configuraciones, el tráfico de datos navega de manera óptima por la red, garantizando una operación fluida y eficiente. Las medidas adicionales implementadas para el monitoreo y mantenimiento de la red refuerzan la estabilidad y el rendimiento continuo de la infraestructura, asegurando su eficacia a largo plazo.