

Instituto Tecnológico de Salina Cruz

Fundamentos de Redes

Semestre Enero – Julio 2015

Reporte de Práctica

Práctica nº 3

Unidad 4

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Objetivo:

Se plantea el enfoque en los conceptos protocolos de enrutamiento vector distancia, RIP, VLSM, CIDR y RIPver.2, se inicia con la configuración básica de RIP, direccionamiento con clase y sin clase, VLSM y actividad de resumen de rutas, terminando con configuración de ripV2.

Instrucciones:

A partir de la topología mostrada realizar la tabla de enrutamiento y en base a ello realizar la configuración básica y configuración del protocolo RIPv2.

Materiales:

Programa de simulacion Packet Tracer

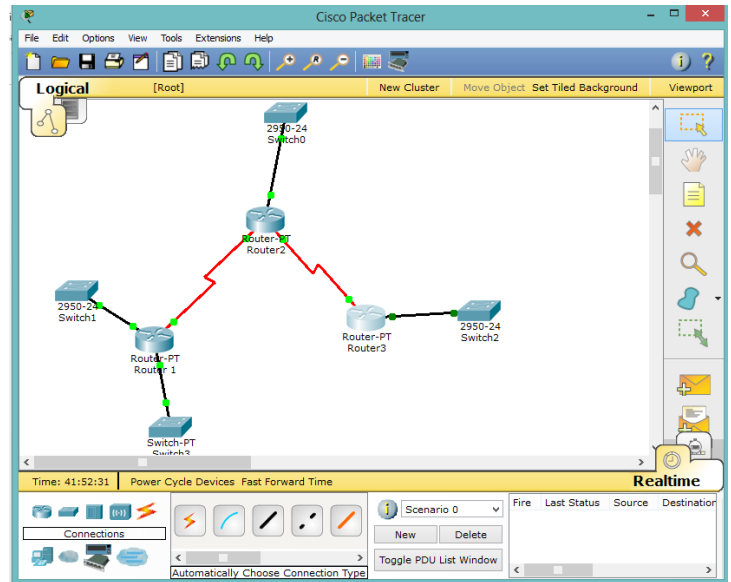
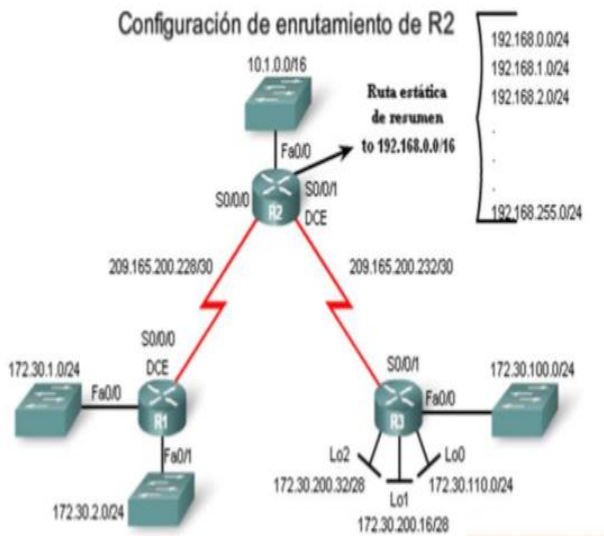


Tabla de enrutamiento.

Dispositivo	Interfaz	Dirección IP	Mascara de subred	Gateway
SONY(R1)	Fa0/0	172.30.1.1	255.255.0.0	No aplicable
	Fa1/0	172.31.1.1	255.255.0.0	
	S2/0	209.165.200.228	255.255.255.0	
LG (R2)	Fa0/0	10.1.0.1	255.0.0.0	No aplicable
	S2/0	209.1	255.255.255.0	
	S3/0	65.200.2323	255.255.255.0	
MOTOROLA (R3)	Fa0/0	172.30.100.1	255.255.0.0	No aplicable
	S2/0	209.165.200.232	255.255.255.0	

CONFIGURACIÓN INICIAL

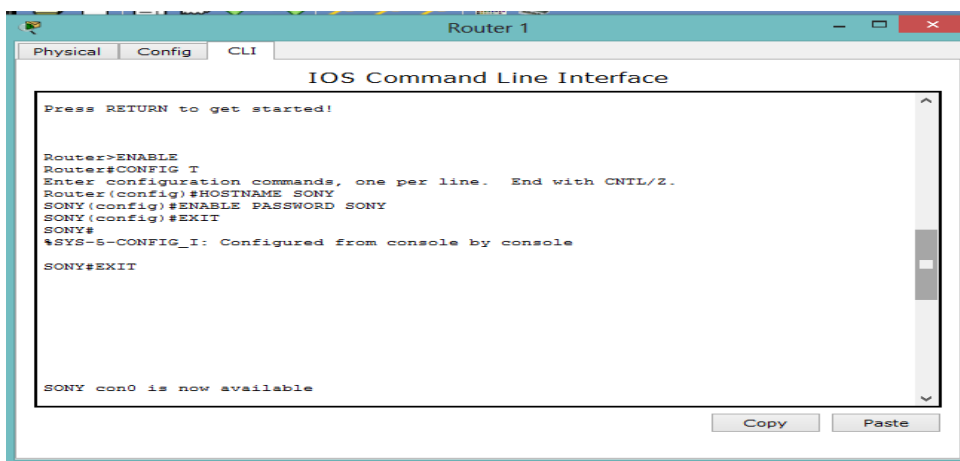
En este paso es en donde se lleva a cabo el levantamiento de puertos hará poder interconectar los diferentes dispositivos.

R1 (SONY).

Cambio de nombre.

Posteriormente se le asigna una contraseña.

De ahí se le asigna un banner.



The screenshot shows the CLI of Router 1. The window title is "Router 1". The tabs are "Physical", "Config", and "CLI". The main area is titled "IOS Command Line Interface". The text in the terminal is as follows:

```
Press RETURN to get started!  
  
Router>ENABLE  
Router#CONFIG T  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#HOSTNAME SONY  
SONY(config)#ENABLE PASSWORD SONY  
SONY(config)#EXIT  
SONY#  
*SYS-5-CONFIG_I: Configured from console by console  
SONY#EXIT  
  
SONY con0 is now available
```

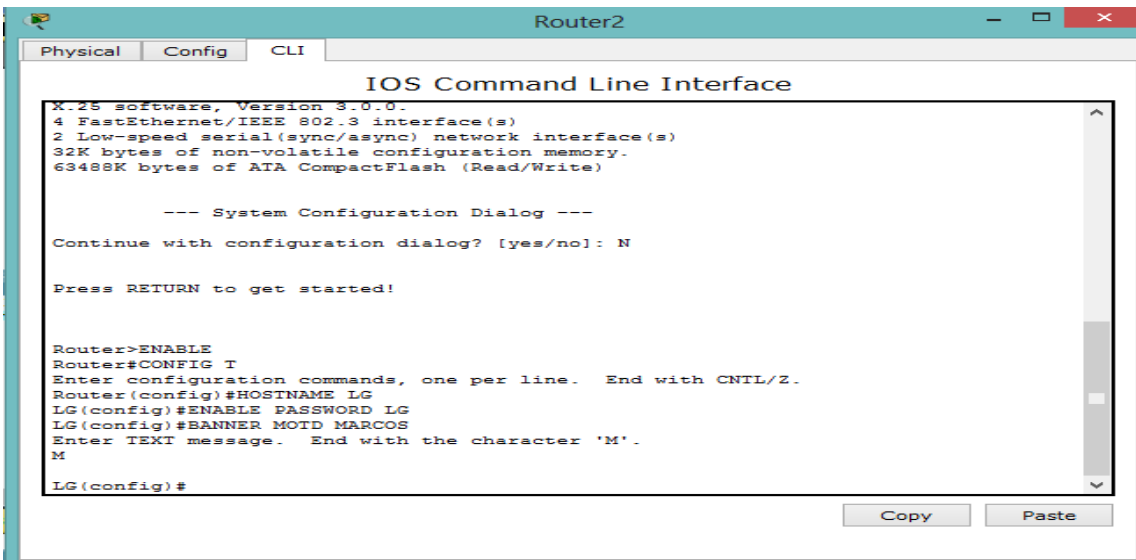
At the bottom right, there are "Copy" and "Paste" buttons.

R2 (LG).

Cambio de nombre.

Posteriormente se le asigna una contraseña.

De ahí se le asigna un banner.



The screenshot shows the CLI of Router 2. The window title is "Router2". The tabs are "Physical", "Config", and "CLI". The main area is titled "IOS Command Line Interface". The text in the terminal is as follows:

```
X.25 software, Version 3.0.0.  
4 FastEthernet/IEEE 802.3 interface(s)  
2 Low-speed serial(sync/async) network interface(s)  
32K bytes of non-volatile configuration memory.  
63488K bytes of ATA CompactFlash (Read/Write)  
  
--- System Configuration Dialog ---  
Continue with configuration dialog? [yes/no]: N  
  
Press RETURN to get started!  
  
Router>ENABLE  
Router#CONFIG T  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#HOSTNAME LG  
LG(config)#ENABLE PASSWORD LG  
LG(config)#BANNER MOTD MARCOS  
Enter TEXT message. End with the character 'M'.  
M  
LG(config)#
```

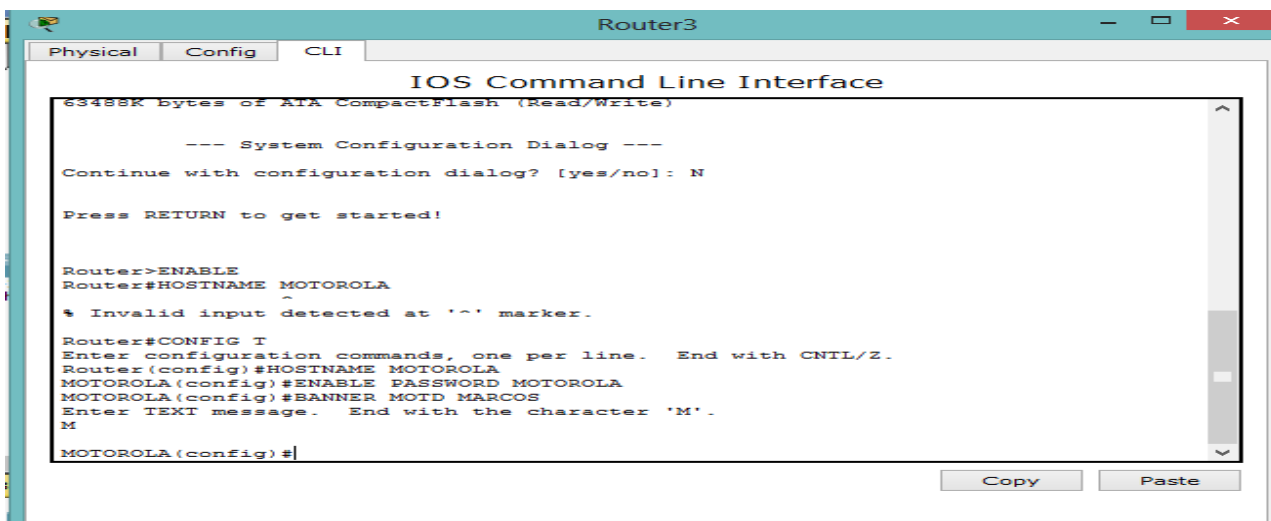
At the bottom right, there are "Copy" and "Paste" buttons.

R3 (MOTOROLA).

Cambio de nombre.

Posteriormente se le asigna una contraseña.

De ahí se le asigna un banner.



```
Router3
Physical Config CLI
IOS Command Line Interface
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: N

Press RETURN to get started!

Router>ENABLE
Router#HOSTNAME MOTOROLA
% Invalid input detected at '^' marker.

Router#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#HOSTNAME MOTOROLA
MOTOROLA(config)#ENABLE PASSWORD MOTOROLA
MOTOROLA(config)#BANNER MOTD MARCOS
Enter TEXT message. End with the character 'M'.
M
MOTOROLA(config)#
```

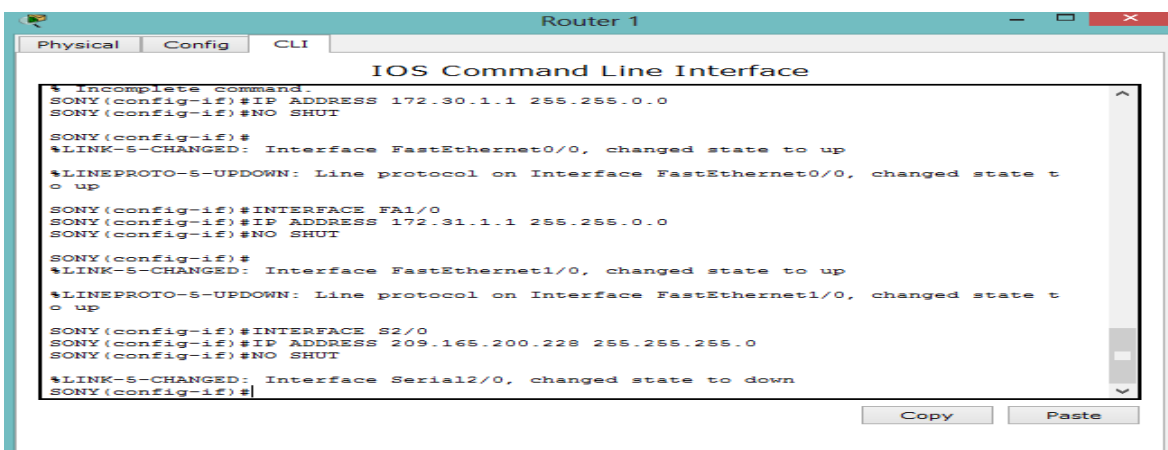
Posteriormente luego de realizar estas configuraciones, necesitamos llevar a cabo el levantamiento de puertos para que se lleve a cabo la conexión de los dispositivos.

R1 (SONY).

Puerto fa0/0

Serialfa1/0.

Serial2/0.



```
Router 1
Physical Config CLI
IOS Command Line Interface
% Incomplete command.
SONY(config-if)#IP ADDRESS 172.30.1.1 255.255.0.0
SONY(config-if)#NO SHUT

SONY(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

SONY(config-if)#INTERFACE FA1/0
SONY(config-if)#IP ADDRESS 172.31.1.1 255.255.0.0
SONY(config-if)#NO SHUT

SONY(config-if)#
%LINK-S-CHANGED: Interface FastEthernet1/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

SONY(config-if)#INTERFACE S2/0
SONY(config-if)#IP ADDRESS 209.165.200.228 255.255.255.0
SONY(config-if)#NO SHUT

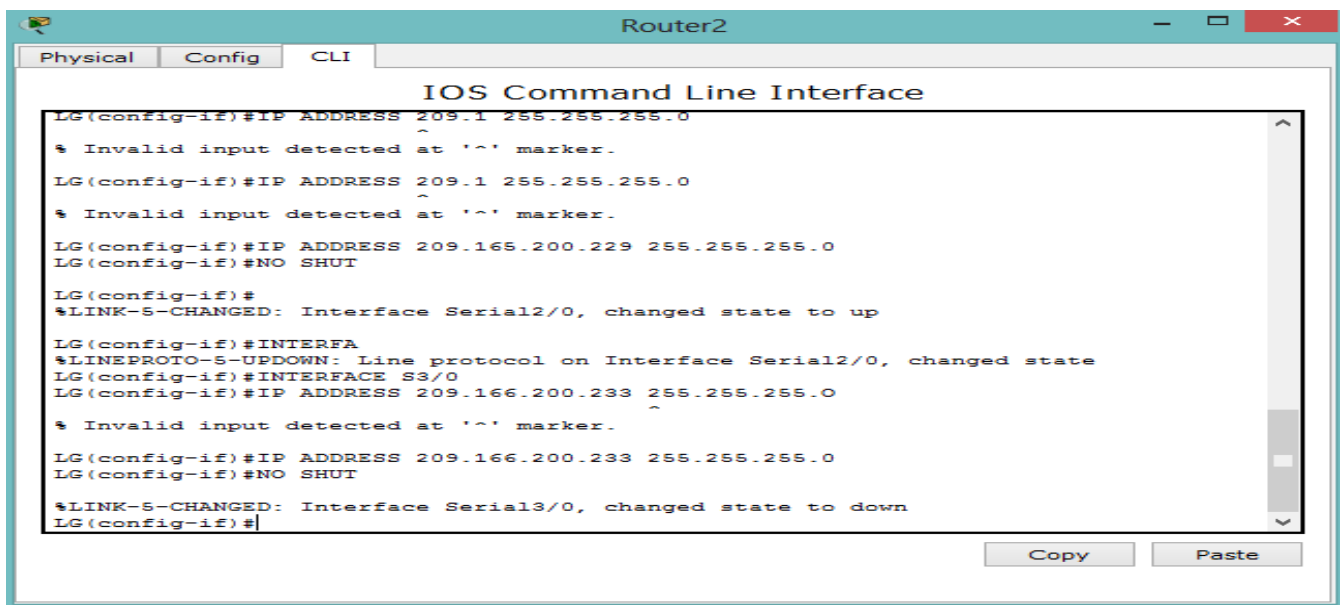
%LINK-S-CHANGED: Interface Serial2/0, changed state to down
SONY(config-if)#
```

R2 (LG).

Puerto fa0/0.

Serial2/0.

Serial3/0.

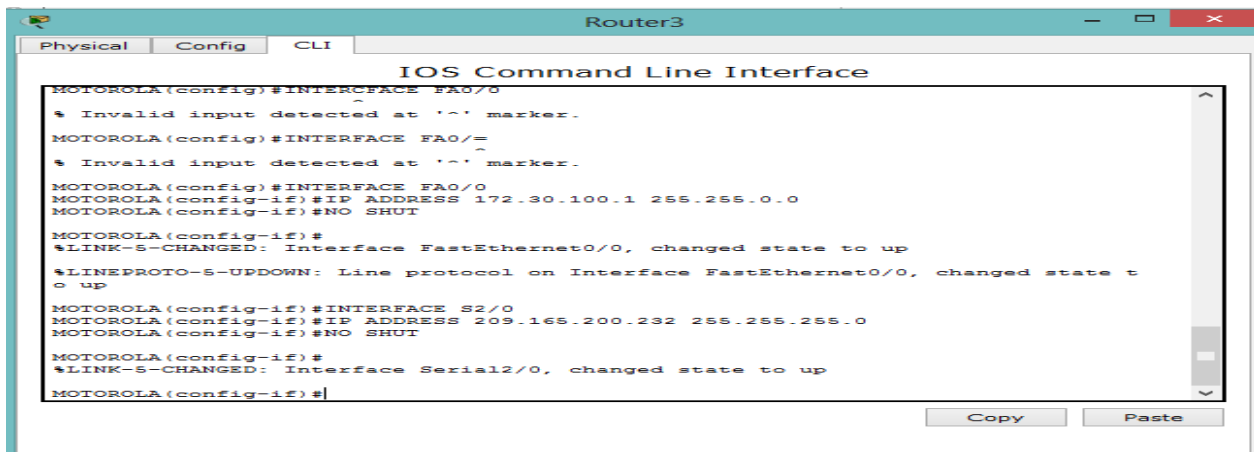


```
Router2
Physical Config CLI
IOS Command Line Interface
LG(config-if)#IP ADDRESS 209.1 255.255.255.0
^
% Invalid input detected at '^' marker.
LG(config-if)#IP ADDRESS 209.1 255.255.255.0
^
% Invalid input detected at '^' marker.
LG(config-if)#IP ADDRESS 209.165.200.229 255.255.255.0
LG(config-if)#NO SHUT
LG(config-if)#
%LINK-S-CHANGED: Interface Serial2/0, changed state to up
LG(config-if)#INTERFA
%LINEPROTO-S-UPDOWN: Line protocol on Interface Serial2/0, changed state
LG(config-if)#INTERFACE S3/0
LG(config-if)#IP ADDRESS 209.166.200.233 255.255.255.0
^
% Invalid input detected at '^' marker.
LG(config-if)#IP ADDRESS 209.166.200.233 255.255.255.0
LG(config-if)#NO SHUT
%LINK-S-CHANGED: Interface Serial3/0, changed state to down
LG(config-if)#
```

R3 (MOTOROLA).

Puerto fa0/0.

Serial2/0.



```
Router3
Physical Config CLI
IOS Command Line Interface
MOTOROLA(config)#INTERFACE FA0/0
^
% Invalid input detected at '^' marker.
MOTOROLA(config)#INTERFACE FA0/=
^
% Invalid input detected at '^' marker.
MOTOROLA(config)#INTERFACE FA0/0
MOTOROLA(config-if)#IP ADDRESS 172.30.100.1 255.255.0.0
MOTOROLA(config-if)#NO SHUT
MOTOROLA(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up
MOTOROLA(config-if)#INTERFACE S2/0
MOTOROLA(config-if)#IP ADDRESS 209.165.200.232 255.255.255.0
MOTOROLA(config-if)#NO SHUT
MOTOROLA(config-if)#
%LINK-S-CHANGED: Interface Serial2/0, changed state to up
MOTOROLA(config-if)#
```

Después de eso necesitamos saber las conexiones que tienen cada router, esto mediante el comando show ip route.

R1

R2

R3

```

IOS Command Line Interface

ARCO5

SONY#ENABLE
Password:
SONY#SHOW IP INTERFACE BRIEF
Interface      IP-Address      OK? Method Status      Protocol
FastEthernet0/0  172.30.1.1      YES manual up          up
FastEthernet1/0  172.31.1.1      YES manual up          up
Serial2/0        209.165.200.228 YES manual up          up
Serial3/0        unassigned      YES unset  administratively down down
FastEthernet4/0  unassigned      YES unset  administratively down down
FastEthernet5/0  unassigned      YES unset  administratively down down
SONY#
    
```

```

IOS Command Line Interface

IG(config-if)#EXIT
IG(config)#SHOW IP INTERFACE BRIEF
-
% Invalid input detected at '' marker.
IG(config)#EXIT
IG#
%SYS-6-CONFIG_I: Configured from console by console

IG#SHOW IP INTERFACE BRIEF
Interface      IP-Address      OK? Method Status      Protocol
FastEthernet0/0  10.1.0.1        YES manual up          up
FastEthernet1/0  unassigned      YES unset  administratively down down
Serial2/0        209.165.200.229 YES manual up          up
Serial3/0        209.166.200.233 YES manual up          up
FastEthernet4/0  unassigned      YES unset  administratively down down
FastEthernet5/0  unassigned      YES unset  administratively down down
IG#
    
```

```

IOS Command Line Interface

%LINK-5-CHANGED: Interface Serial2/0, changed state to up
MOTOROLA(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up
MOTOROLA(config-if)#EXIT
MOTOROLA(config)#EXIT
MOTOROLA#
%SYS-6-CONFIG_I: Configured from console by console

MOTOROLA#SHOW IP INTERFACE BRIEF
Interface      IP-Address      OK? Method Status      Protocol
FastEthernet0/0  172.30.100.1    YES manual up          up
FastEthernet1/0  unassigned      YES unset  administratively down down
Serial2/0        209.165.200.232 YES manual up          up
Serial3/0        unassigned      YES unset  administratively down down
FastEthernet4/0  unassigned      YES unset  administratively down down
FastEthernet5/0  unassigned      YES unset  administratively down down
MOTOROLA#
    
```

Configuración de protocolo RIPv2.

```

Router 1

Physical Config CLI

IOS Command Line Interface

FastEthernet1/0  172.31.1.1      YES manual up          up
Serial2/0        209.165.200.228 YES manual up          up
Serial3/0        unassigned      YES unset  administratively down down
FastEthernet4/0  unassigned      YES unset  administratively down down
FastEthernet5/0  unassigned      YES unset  administratively down down
SONY#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
SONY (config)#ROUTER RIP
SONY (config-router)#VERSION 2
SONY (config-router)#NETWORK 172.30.0.0
SONY (config-router)#NETWORK 172.31.0.0
SONY (config-router)#NETWORK 209.165.200.0
SONY (config-router)#END
SONY#
%SYS-5-CONFIG_I: Configured from console by console

SONY#COPY RUN STAR
Destination filename [startup-config]?
Building configuration...
[OK]
SONY#
SONY#
    
```

Verificación del protocolo configurado.

```

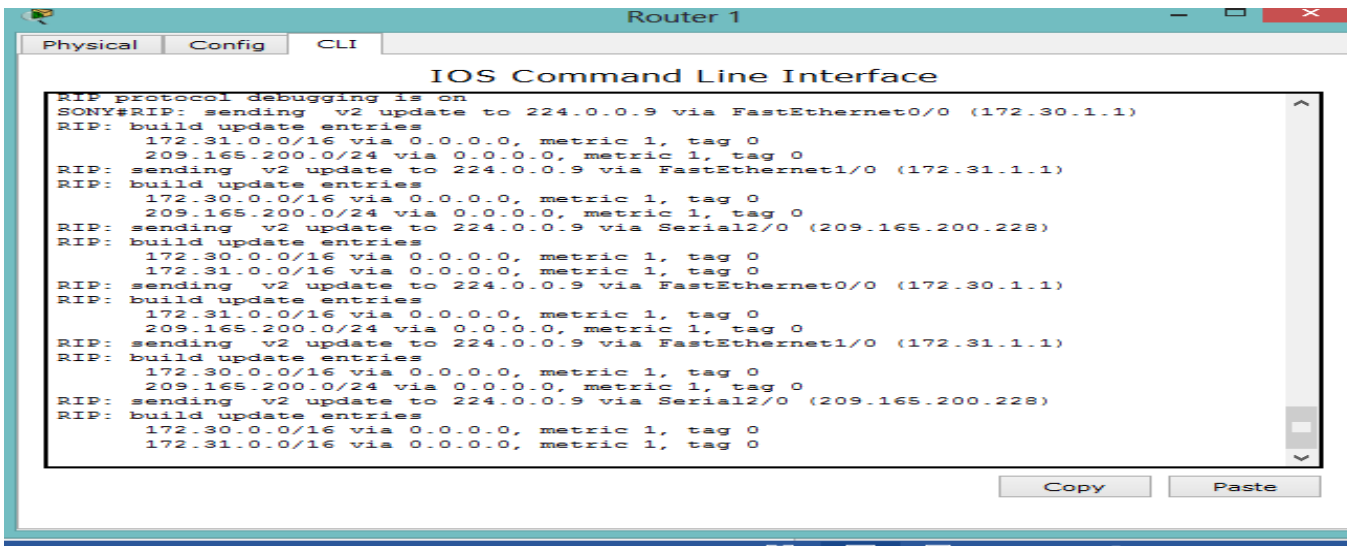
Router 1

Physical Config CLI

IOS Command Line Interface

SONY>SHOW IP PROTOCOLS
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 1 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
Interface          Send Recv Triggered RIP Key-chain
FastEthernet0/0    2        2
FastEthernet1/0    2        2
Serial2/0          2        2
Automatic network summarization is in effect
Maximum path: 4
Routing For Networks:
  172.30.0.0
  172.31.0.0
  209.165.200.0
Passive Interface(s):
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)
SONY#
    
```

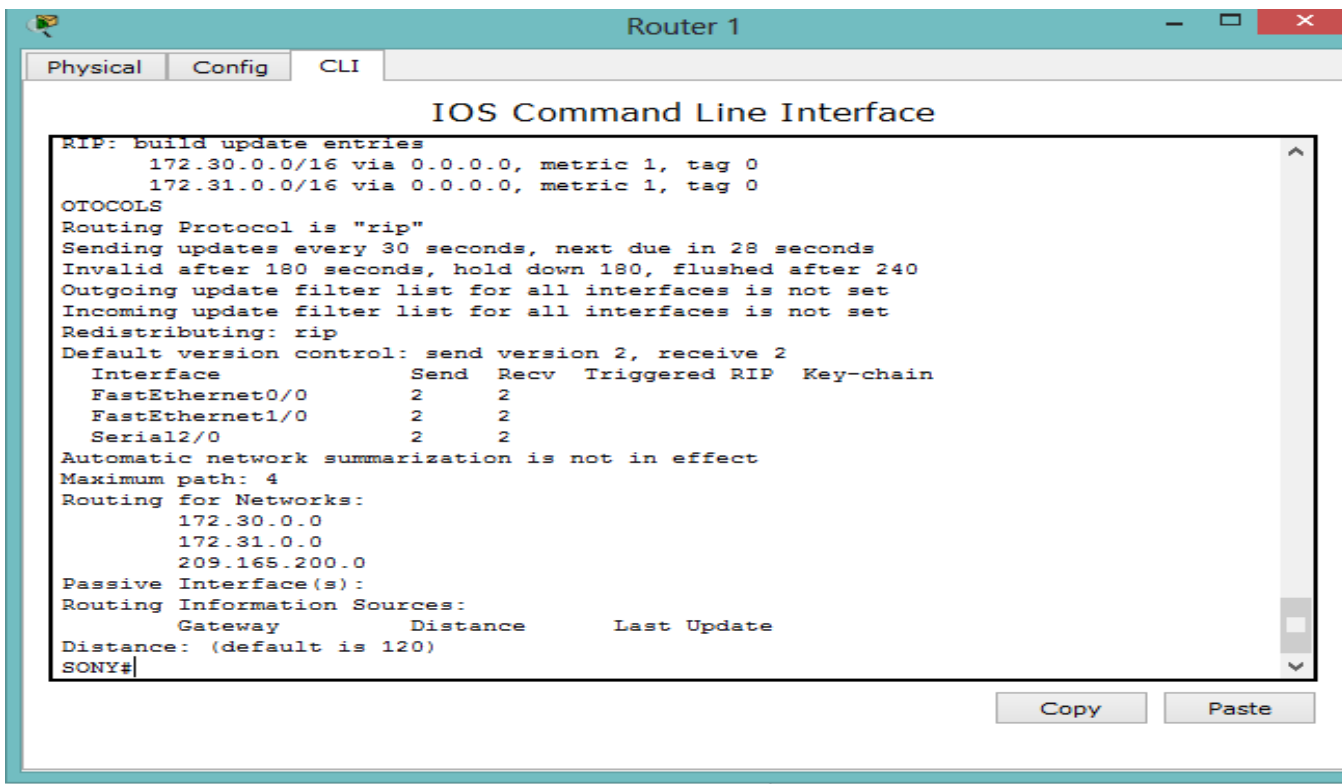
Para la verificación de la información que envía RIPv2 usaremos “debug ip rip”.



The screenshot shows the CLI of Router 1 with the command 'debug ip rip' executed. The output displays the protocol debugging status as 'on' and shows the router sending v2 updates to three interfaces: FastEthernet0/0, FastEthernet1/0, and Serial2/0. For each interface, it lists the build update entries and the v2 update being sent, including the destination IP and metric.

```
Router 1
Physical Config CLI
IOS Command Line Interface
RIP protocol debugging is on
SONY#RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (172.30.1.1)
RIP: build update entries
  172.31.0.0/16 via 0.0.0.0, metric 1, tag 0
  209.165.200.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via FastEthernet1/0 (172.31.1.1)
RIP: build update entries
  172.30.0.0/16 via 0.0.0.0, metric 1, tag 0
  209.165.200.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (209.165.200.228)
RIP: build update entries
  172.30.0.0/16 via 0.0.0.0, metric 1, tag 0
  172.31.0.0/16 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (172.30.1.1)
RIP: build update entries
  172.31.0.0/16 via 0.0.0.0, metric 1, tag 0
  209.165.200.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via FastEthernet1/0 (172.31.1.1)
RIP: build update entries
  172.30.0.0/16 via 0.0.0.0, metric 1, tag 0
  209.165.200.0/24 via 0.0.0.0, metric 1, tag 0
RIP: sending v2 update to 224.0.0.9 via Serial2/0 (209.165.200.228)
RIP: build update entries
  172.30.0.0/16 via 0.0.0.0, metric 1, tag 0
  172.31.0.0/16 via 0.0.0.0, metric 1, tag 0
```

Para realizar la inhabilitación de sumarización automática solo usaremos “no auto-summary”.



The screenshot shows the CLI of Router 1 with the command 'no auto-summary' executed. The output displays the RIPv2 configuration, including the routing protocol name, update interval, hold time, and the configuration for the three interfaces. It also shows the automatic network summarization is not in effect.

```
Router 1
Physical Config CLI
IOS Command Line Interface
RIP: build update entries
  172.30.0.0/16 via 0.0.0.0, metric 1, tag 0
  172.31.0.0/16 via 0.0.0.0, metric 1, tag 0
OTOCOLS
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 28 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
Interface          Send Recv Triggered RIP Key-chain
FastEthernet0/0    2      2
FastEthernet1/0    2      2
Serial2/0          2      2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.30.0.0
  172.31.0.0
  209.165.200.0
Passive Interface(s):
Routing Information Sources:
  Gateway          Distance      Last Update
Distance: (default is 120)
SONY#
```

Conclusión

En esta práctica utilizamos la misma tabla de ruteo de la práctica anterior solo que para este caso fue la configuración del protocolo RIP versión 2, repitiéndose los mismos comandos que se usaron para configurar el protocolo RIP versión 1 con la excepción de que se le indica la versión del protocolo con la instrucción "versión 2".