

“PRUEBA DE HABILIDADES PRÁCTICAS”,
DIPLOMADO DE PROFUNDIZACIÓN CCNA

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA UNAD
ESCUELA DE CIENCIAS BÁSICAS TECNOLOGÍA E INGENIERÍA
PROGRAMA DE INGENIERÍA DE SISTEMAS
2019

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Contenido

TABLA DE ILUSTRACIONES.....	5
RESUMEN	7
ABSTRACT.....	8
INTRODUCCION	9
OBJETIVOS	10
OBJETIVO GENERAL.....	10
OBJETIVOS ESPECIFICOS.....	10
JUSTIFICACION	11
Desarrollo	12
Escenario 1	12
Realizar un diagnóstico de vecinos uando el comando cdp.....	20
Realizar una prueba de conectividad en cada tramo de la ruta usando Ping.....	21
Cada router debe estar habilitado para establecer conexiones Telnet con los demás routers y tener acceso a cualquier dispositivo en la red.....	23
Comprobar y Completar la siguiente tabla de condiciones de prueba para confirmar el óptimo funcionamiento de la red e.	25
Escenario 2	31
CONFIGURACIÓN DE ROUTERS.....	31
Router Bucaramanga.....	31
Router Tunja	34
Router Cundinamarca	36
CONFIGURACION SWITCH	39
Switch Bucaramanga	39
Switch Tunja	41
Swtich Cundinamarca.....	43
AUTENTICACIÓN AAA.....	44
Router Bucaramanga.....	44
Router Tunja	45
Router Cundinamarca	46
Máximo de intentos para acceder al ROUTER.....	47
Router Bucaramanga.....	47

Router Tunja	48
Router Cundinamarca	48
CIFRADO DE CONTRASEÑAS.....	49
Router Bucaramanga.....	49
Router Tunja	50
Router Cundinamarca	50
Establezca un servidor TFTP y almacene todos los archivos necesarios de los Routers.....	51
El DHCP deberá proporcionar solo direcciones a los hosts de Bucaramanga y Cundinamarca.	52
ROUTER TUNJA	52
ROUTER Bucaramanga	54
ROUTER Cundinamarca	55
El web server deberá tener NAT estático y el resto de los equipos de la topología emplearan NAT de sobrecarga (PAT).	56
Listas de control de acceso:.....	63
Los hosts de VLAN 20 en Cundinamarca no acceden a internet, solo a la red interna de Tunja.	63
Los hosts de VLAN 10 en Cundinamarca si acceden a internet y no a la red interna de Tunja. ...	63
Los hosts de VLAN 30 en Tunja solo acceden a servidores web y ftp de internet.	64
Los hosts de VLAN 20 en Tunja solo acceden a la VLAN 20 de Cundinamarca y VLAN 10 de Bucaramanga.	65
Los hosts de VLAN 30 de Bucaramanga acceden a internet y a cualquier equipo de VLAN 10. ..	66
Los hosts de VLAN 10 en Bucaramanga acceden a la red de Cundinamarca (VLAN 20) y Tunja (VLAN 20), no internet.	68
Los hosts de una VLAN no pueden acceder a los de otra VLAN en una ciudad.....	70
Solo los hosts de las VLAN administrativas y de la VLAN de servidores tienen acceso a los routers e internet.....	73
Conclusiones.....	76
Bibliografía	77

TABLA DE ILUSTRACIONES

Figure 1.....	12
Figure 2.....	20
Figure 3.....	20
Figure 4.....	21
Figure 5.....	21
Figure 6.....	22
Figure 7.....	22
Figure 8.....	23
Figure 9.....	25
Figure 10.....	26
Figure 11.....	27
Figure 12.....	27
Figure 13.....	31
Figure 14.....	34
Figure 15.....	36
Figure 16.....	39
Figure 17.....	41
Figure 18.....	42
Figure 19.....	44
Figure 20.....	45
Figure 21.....	46
Figure 22.....	47
Figure 23.....	48
Figure 24.....	48
Figure 25.....	49
Figure 26.....	51
Figure 27.....	52
Figure 28.....	54
Figure 29.....	55
Figure 30.....	56
Figure 31.....	58
Figure 32.....	59
Figure 33.....	60
Figure 34.....	62
Figure 35.....	63
Figure 36.....	64
Figure 37.....	65
Figure 38.....	66
Figure 39.....	66
Figure 40.....	67
Figure 41.....	68

Figure 42.....	69
Figure 43.....	69
Figure 44.....	70
Figure 45.....	71
Figure 46.....	72
Figure 47.....	73
Figure 48.....	75

RESUMEN

Realizar los presentes ejercicios conllevan a la utilización de herramientas tecnológicas adquiridas y aprendidas en el Diplomado CCNA1 y CCNA 2, en estos módulos, aprendimos que hay diferentes plataformas y softwares necesarios para configurar, conectar y diseñar redes. La evaluación denominada “Prueba de habilidades prácticas”, forma parte de las actividades evaluativas del Diplomado de Cisco, la cual busca identificar el grado de desarrollo de competencias y habilidades que fueron adquiridas a lo largo del diplomado y a través de la cual se pondrá a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

ABSTRACT

Performing these exercises leads to the use of technological tools acquired and learned in the CCNA1 and CCNA 2 Diploma, in these modules, we learned that there are different platforms and softwares necessary to configure, connect and design networks. The evaluation called "Practical skills test" is part of the evaluation activities of the Cisco Diploma, which seeks to identify the degree of development of skills and abilities that were acquired throughout the diploma and through which it will be tested the levels of understanding and solution of problems related to various aspects of Networking.

INTRODUCCION

Esta “Prueba de habilidades prácticas”, es el paso final en las actividades del Diplomado de Profundización CCNA, lo que identifica el alcance de competencia y habilidades obtenidas por el estudiante en el desarrollo del diplomado de profundización. El desarrollo de la actividad pretende dar solución a ciertos parámetros establecidos para lograr comunicar tres hosts de Colombia, se implementa una serie de comandos y condiciones de operación que permiten la comunicación en internet de Bucaramanga, Tunja y Cundinamarca, poniendo en práctica los conceptos de VLANs, los servidores DHCP, topologías de red, información de OSPF entre otros.

OBJETIVOS

OBJETIVO GENERAL

Analizar los casos de estudio CCNA1 Y CCNA2 asignados implementando soluciones integradas LAN-WAN mediante la utilización de la herramienta de simulación Packet Tracer.

OBJETIVOS ESPECIFICOS

- Diseñar las topologías de los casos de estudio CCNA1 Y CCNA2 utilizando PKT.
- Conectar dispositivos y desarrollar un esquema de direccionamiento y prueba.
- Considerar la asignación de los parámetros básicos y la detección de vecinos directamente conectados.
- Determinar la cantidad de Host y subredes de una red.
- Identificar los protocolos de rutas estáticas, de enrutamiento dinámico y de enrutamiento IP.
- Diferenciar los protocolos de enrutamiento por vector distancia: RIP,
- IGRP, EIGRP.
- Comprender el direccionamiento de red y la máscara de direcciones.
- Determinar la cantidad de Host y Subredes de una red.

JUSTIFICACION

Con el desarrollo del siguiente trabajo, se identificarán cada uno de los dispositivos utilizados en una topología sencilla de red, enfatizando sus características principales y los pasos a seguir para la configuración de los mismos. Es importante conocer y entender la importancia de cada uno de ellos dentro de la red de comunicación; esto se hará posible con ayuda del programa de simulación de redes "Packet Tracer", que servirá de guía para el desarrollo algunos ejercicios que aquí se plantean.

Desarrollo

Escenario 1

Una empresa posee sucursales distribuidas en las ciudades de Bogotá, Medellín y Cali en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

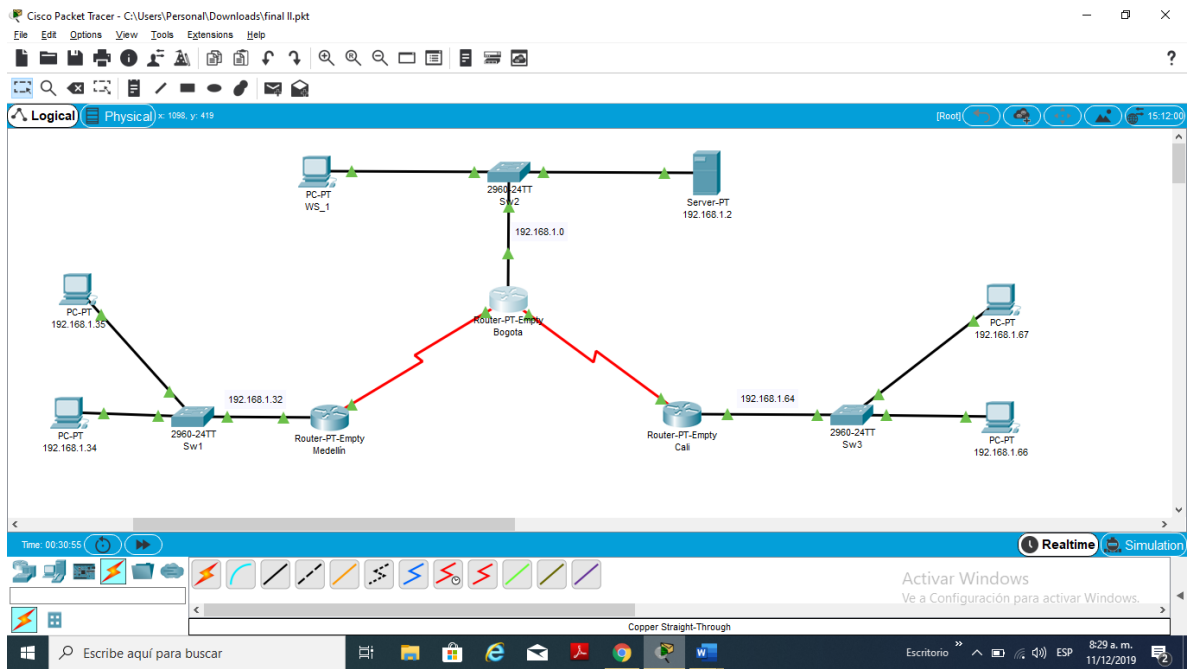


Figure 1

DISPOSITIVO	INTERFAZ	DIRECCION IP	MASCARA DE SUBRED	Protocolo de enrutamiento	Sistema Autónomo	Afirmaciones de red
ROUTER MEDELLIN	SE1/0	192.168.1.99	255.255.255.224	Eigrp	200	192.168.1.0
PCA	FA0/2	192.168.1.35	255.255.255.224			
PCB	FA0/3	192.168.1.34	255.255.255.224			
SWITCHE	FA0/0	192.168.1.33	255.255.255.224			
ROUTER BOGOTA	SE0/0	192.168.1.98	255.255.255.224	Eigrp	200	192.168.1.0
	SE1/0	192.168.1.130	255.255.255.224			
SWITCHE	FA2/0	192.168.1.1	255.255.255.224			
PC WS_1	FA0/1	192.168.1.3	255.255.255.224			
SERVER	FA0/2	192.168.1.2	255.255.255.224			
ROUTER CALI	SE1/0	192.168.1.131	255.255.255.224	Eigrp	200	192.168.1.0
SWITCHE	FA0/0	192.168.1.65	255.255.255.224			
PCC	FA0/2	192.168.1.67	255.255.255.224			
PCD	FA0/1	192.168.1.66	255.255.255.224			

```

Router>EN
Router>ENable
Router#conf term
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname BOGOTA
BOGOTA(config)#interface fa2/0
BOGOTA(config-if)#ip address 192.168.1.1 255.255.255.224
BOGOTA(config-if)#no sh

BOGOTA(config-if)#
%LINK-5-CHANGED: Interface FastEthernet2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to up

```

```
Router>en
Router>enable
Router#conf ter
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname CALI
CALI(config)#interface fa0/0
CALI(config-if)#ip address 192.168.1.65 255.255.255.224
CALI(config-if)#no sh

CALI(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
Router>en
Router>enable
Router#
Router#conf term
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN
Router(config)#hostname MEDELLIN
MEDELLIN(config)#interface fa0/0
MEDELLIN(config-if)#ip address 192.168.1.33 255.255.255.224
MEDELLIN(config-if)#no sh

MEDELLIN(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
BOGOTA#ena
BOGOTA#enable
BOGOTA#conf termi
BOGOTA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#interface se0/0
BOGOTA(config-if)#ip address 192.168.1.98 255.255.255.224
BOGOTA(config-if)#sh
```

```
BOGOTA(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to administratively down

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

```
BOGOTA(config-if)#no sh
```

```
BOGOTA(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to up
```

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

```
BOGOTA#en
BOGOTA#enable
BOGOTA#conf term
BOGOTA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#conf term
BOGOTA(config)#interface se1/0
BOGOTA(config-if)#clock rate 64000
This command applies only to DCE interfaces
BOGOTA(config-if)#interface se1/0
BOGOTA(config-if)#clock rate 64000
BOGOTA(config-if)#
BOGOTA(config-if)#no sh
BOGOTA(config-if)#
BOGOTA(config-if)#
BOGOTA(config-if)#exit
BOGOTA(config)#end
BOGOTA#
    %SYS-5-CONFIG_I: Configured from console by console
```

```
MEDELLIN>en
MEDELLIN>enable
MEDELLIN#conf term
MEDELLIN#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN(config)#interface se
%LINK-3-UPDOWN: Interface Serial1/0, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down

%LINK-5-CHANGED: Interface Serial1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed interface se1/0
MEDELLIN(config-if)#ip address 192.168.1.99 255.255.255.224
MEDELLIN(config-if)#no sh
MEDELLIN(config-if)#sh

MEDELLIN(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down

MEDELLIN(config-if)#no sh

MEDELLIN(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to up

    %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

MEDELLIN(config)#interface se1/0
MEDELLIN(config-if)#clock rate 64000
MEDELLIN(config-if)#no sh
MEDELLIN(config-if)#
MEDELLIN(config-if)#
MEDELLIN(config-if)#
MEDELLIN(config-if)#end
MEDELLIN#
    %SYS-5-CONFIG_1: Configured from console by console

MEDELLIN(config)#interface se1/0
MEDELLIN(config-if)#clock rate 64000
```



```
MEDELLIN(config-if)#no sh
MEDELLIN(config-if)#
MEDELLIN(config-if)#
MEDELLIN(config-if)#
MEDELLIN(config-if)#end
MEDELLIN#
%SYS-5-CONFIG_I: Configured from console by console
```

```
MEDELLIN#conf term
MEDELLIN#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN(config)#router eigrp 200
MEDELLIN(config-router)#net
MEDELLIN(config-router)#network 192.168.1.99
MEDELLIN(config-router)#network 192.168.1.99 0.0.0.31
MEDELLIN(config-router)#no auto
MEDELLIN(config-router)#no auto-summary
MEDELLIN(config-router)#end
```

```
BOGOTA#con term
BOGOTA#conf term
BOGOTA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#interface se1/0
BOGOTA(config-if)#ip address 192.168.1.130 255.255.255.224
BOGOTA(config-if)#sh
```

```
BOGOTA(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to administratively down
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down
```

```
BOGOTA(config-if)#no sh
```

```
BOGOTA(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
```

```
BOGOTA>en
BOGOTA>enable
BOGOTA#conf ter
BOGOTA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#router eigrp 200
BOGOTA(config-router)#net
BOGOTA(config-router)#network 192.168.1.131
BOGOTA(config-router)#network 192.168.1.131 0.0.0.31
BOGOTA(config-router)#net
BOGOTA(config-router)#network 192.168.1.99
BOGOTA(config-router)#network 192.168.1.99 0.0.0.31
BOGOTA(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.99 (Serial1/0) is up: new
adjacency

BOGOTA(config-router)#no aut
BOGOTA(config-router)#no auto-summary
BOGOTA(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.99 (Serial1/0) resync:
summary configured

    BOGOTA(config-router)#
```

```
CALI>en
CALI>enable
CALI#conf term
CALI#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
CALI(config)#interface se1/0
CALI(config-if)#ip address 192.168.1.131 255.255.255.224
CALI(config-if)#sh

CALI(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to down

CALI(config-if)#no sh

CALI(config-if)#
%LINK-5-CHANGED: Interface Serial1/0, changed state to up
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

```
CALI>ena
CALI>enable
CALI#conf term
CALI#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
CALI(config)#router eigrp 200
CALI(config-router)#net
CALI(config-router)#network 192.168.1.65 0.0.0.31
CALI(config-router)#net
CALI(config-router)#network 192.168.1.64 0.0.0.31
CALI(config-router)#no aut
CALI(config-router)#no auto-summary
CALI(config-router)#end
CALI#
  %SYS-5-CONFIG_I: Configured from console by console
```

```
BOGOTA>
BOGOTA>en
BOGOTA>enable
BOGOTA#conf ter
BOGOTA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#interface se0/0
BOGOTA(config-if)#clock rate 64000
This command applies only to DCE interfaces
BOGOTA(config-if)#exit
BOGOTA(config)#router eigrp 200
BOGOTA(config-router)#net
BOGOTA(config-router)#network 192.168.1.98 0.0.0.31
BOGOTA(config-router)#network 192.168.1.32 0.0.0.31
BOGOTA(config-router)#
  %DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.32 (Serial0/0) is up: new
  adjacency
```

Realizar un diagnóstico de vecinos usando el comando cdp.

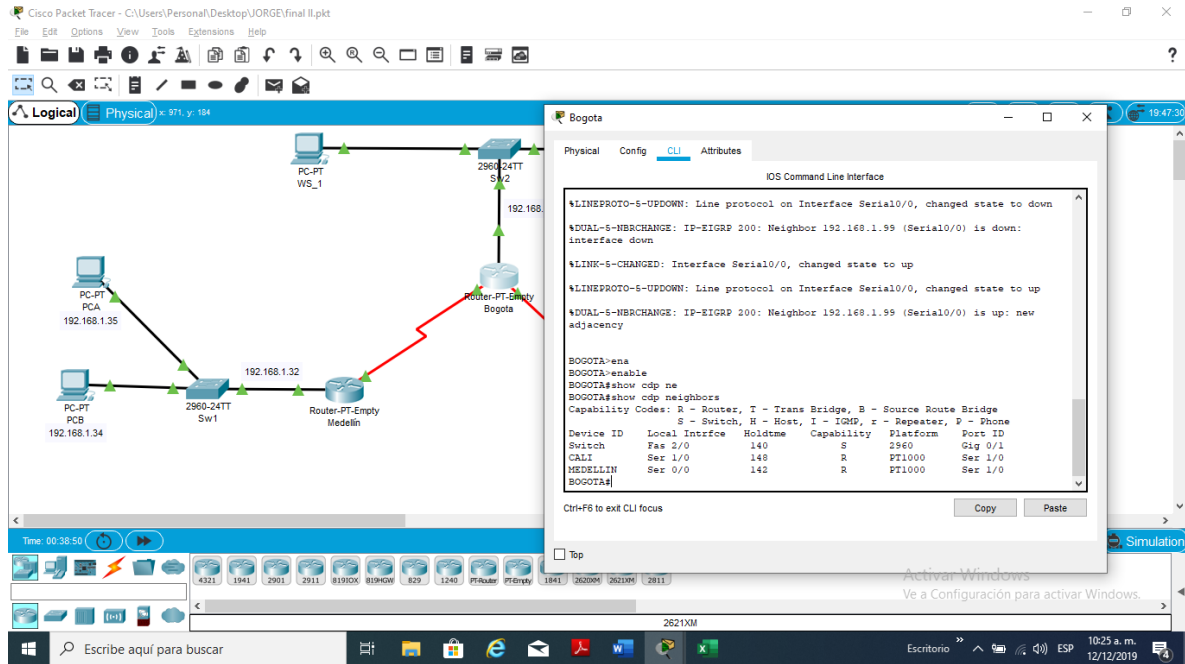


Figure 2

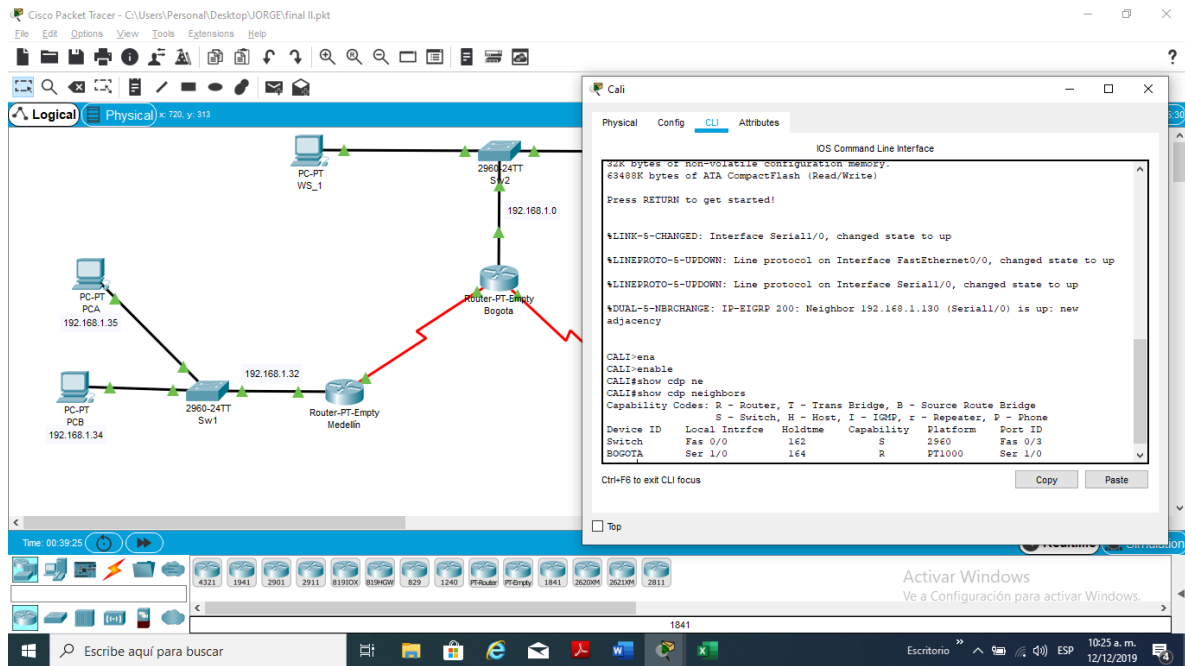


Figure 3

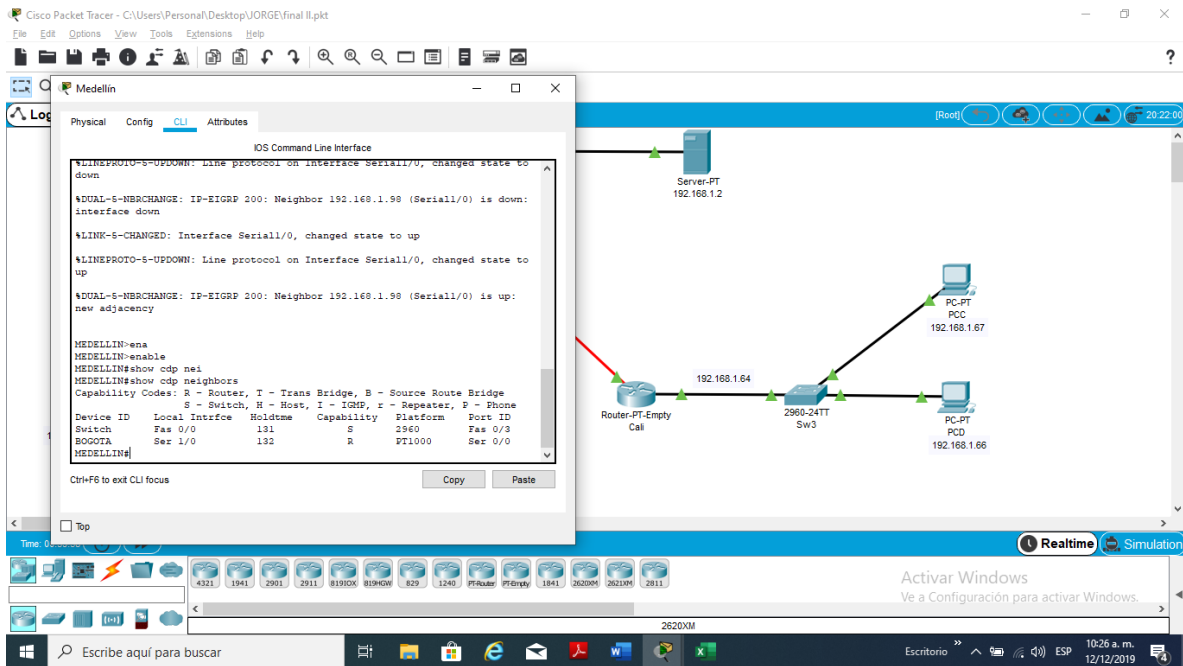


Figure 4

Realizar una prueba de conectividad en cada tramo de la ruta usando Ping.

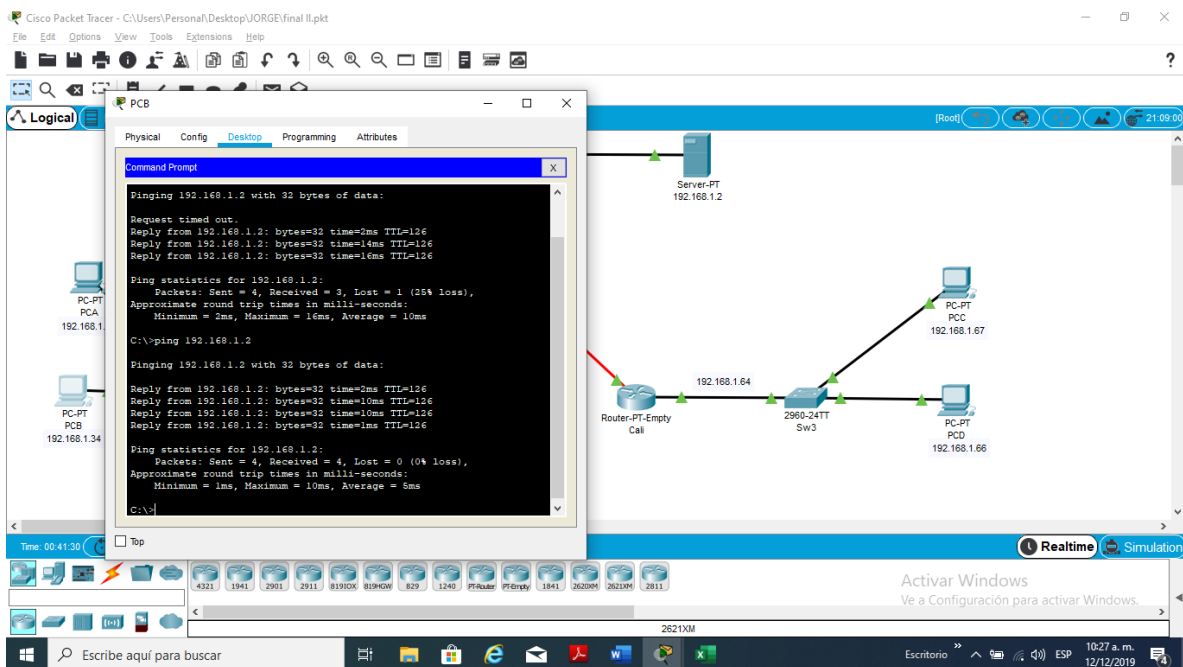


Figure 5

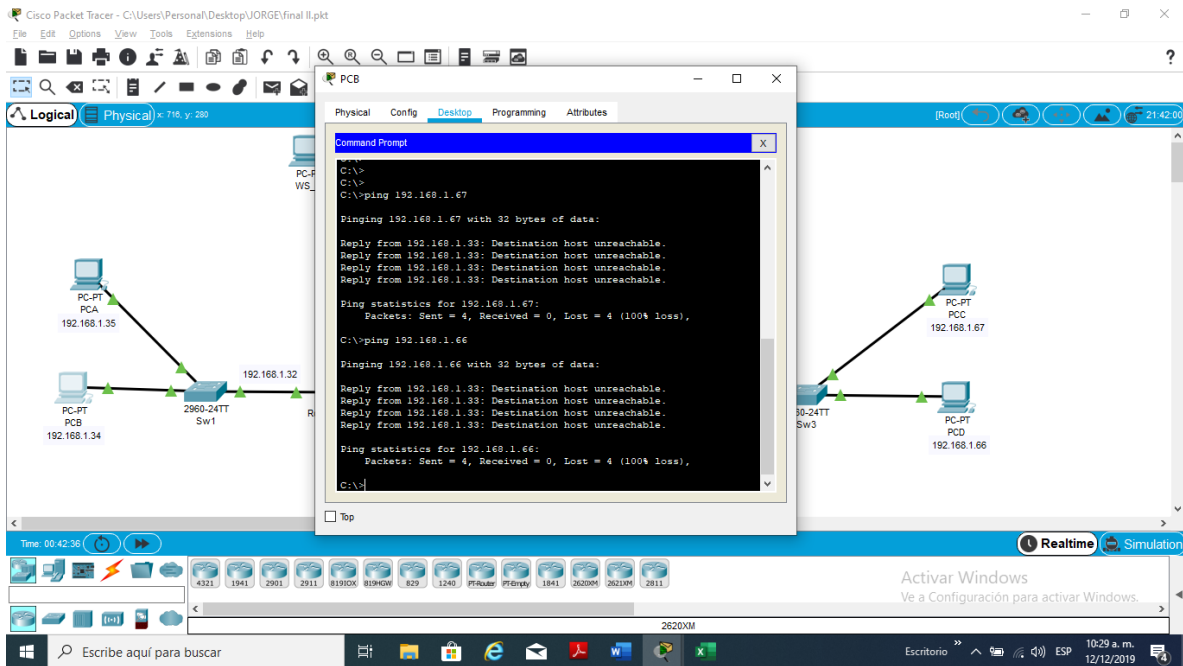


Figure 6

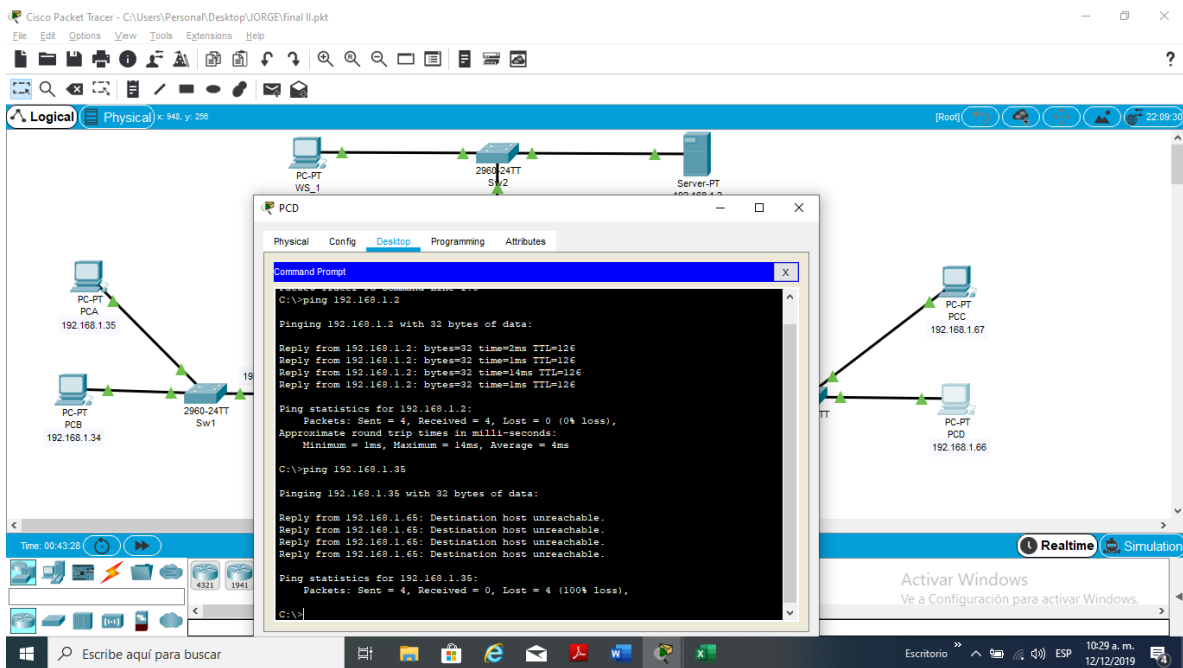


Figure 7

Realizar un diagnóstico para comprobar que cada uno de los puntos de la red se puedan ver y tengan conectividad entre sí. Realizar esta prueba desde un host de la red LAN del router CALI, primero a la red de MEDELLIN y luego al servidor.

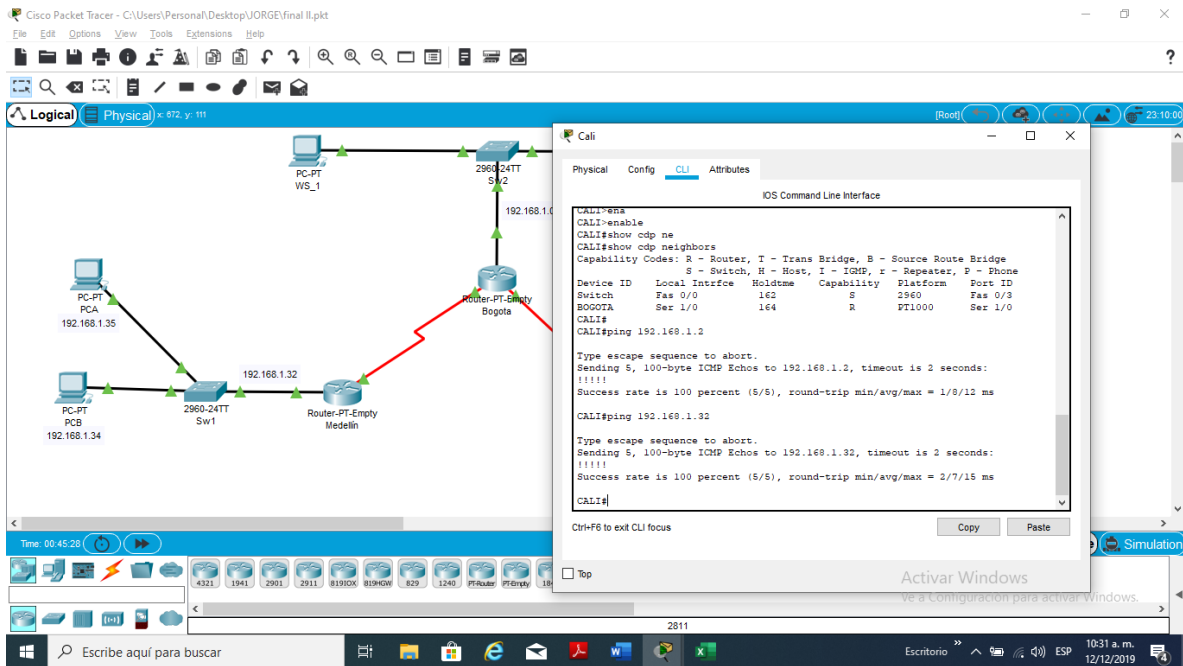


Figure 8

Cada router debe estar habilitado para establecer conexiones Telnet con los demás routers y tener acceso a cualquier dispositivo en la red.

```

BOGOTA#en
BOGOTA#enable
BOGOTA#conf ter
BOGOTA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#line vty 0 4
BOGOTA(config-line)#pass
BOGOTA(config-line)#password cisco
BOGOTA(config-line)#login
BOGOTA(config-line)#exit
BOGOTA(config)#enable secret prueba
BOGOTA(config)#
BOGOTA(config)#end
BOGOTA#
%SYS-5-CONFIG_I: Configured from console by console

```

```

CALI#en
CALI#enable

```

```
CALI#conf ter
CALI#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
CALI(config)#line vty 0 4
CALI(config-line)#pass
CALI(config-line)#password cisco
CALI(config-line)#login
CALI(config-line)#exit
CALI(config)#enable secret prueba
CALI(config)#end
CALI#
%SYS-5-CONFIG_I: Configured from console by console
```

```
MEDELLIN#en
MEDELLIN#enable
MEDELLIN#conf ter
MEDELLIN#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN(config)#
MEDELLIN(config)#
MEDELLIN(config)#
MEDELLIN(config)#line vty 0 4
MEDELLIN(config-line)#pass
MEDELLIN(config-line)#password cisco
MEDELLIN(config-line)#login
MEDELLIN(config-line)#exit
MEDELLIN(config)#enable secret cisco
The enable secret you have chosen is the same as your enable password.
This is not recommended. Re-enter the enable secret.
MEDELLIN(config)#enable secret prueba
MEDELLIN(config)#
MEDELLIN(config)#end
MEDELLIN#
%SYS-5-CONFIG_I: Configured from console by console
```

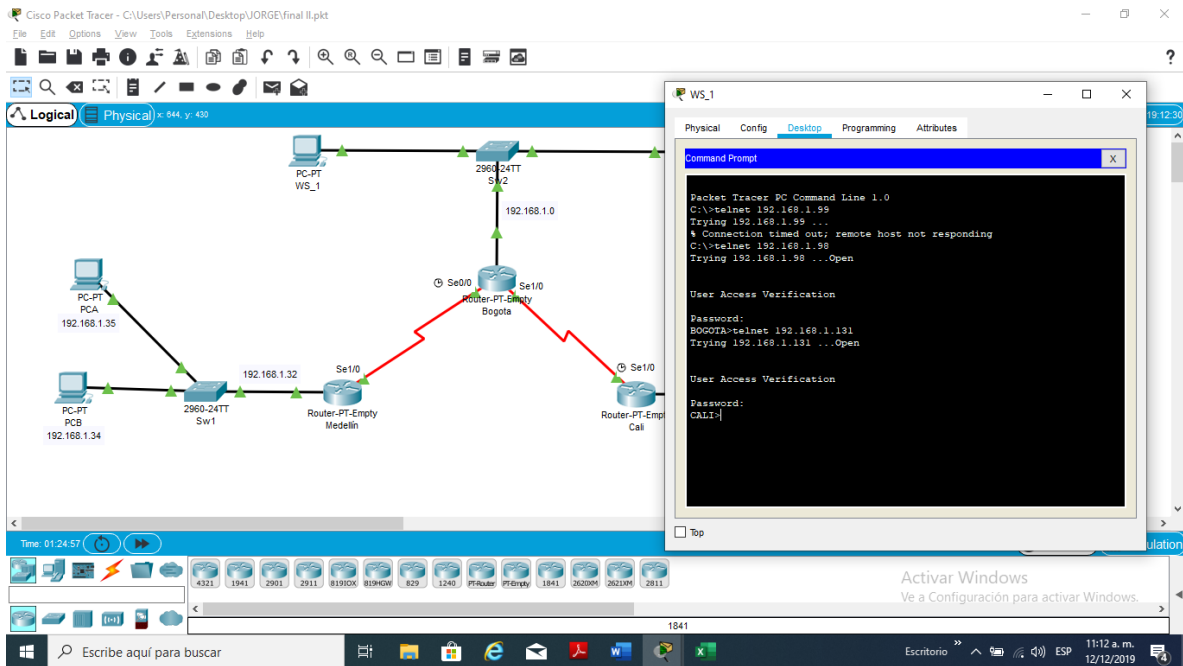



Figure 9

Comprobar y Completar la siguiente tabla de condiciones de prueba para confirmar el óptimo funcionamiento de la red e.

	ORIGEN	DESTINO	RESULTADO
TELNET	Router MEDELLIN	Router CALI	exitoso
	WS_1	Router BOGOTA	exitoso
	Servidor	Router CALI	exitoso
	Servidor	Router MEDELLIN	exitoso
TELNET	LAN del Router MEDELLIN	Router CALI	no exitoso
	LAN del Router CALI	Router CALI	no exitoso
	LAN del Router MEDELLIN	Router MEDELLIN	no exitoso
	LAN del Router CALI	Router MEDELLIN	no exitoso
PING	LAN del Router CALI	WS_1	Destination host unreachable.
	LAN del Router MEDELLIN	WS_1	Destination host unreachable.

	LAN del Router MEDELLIN	LAN del Router CALI	Destination host unreachable.
PING	LAN del Router CALI	Servidor	exitoso
	LAN del Router MEDELLIN	Servidor	exitoso
	Servidor	LAN del Router MEDELLIN	exitoso
	Servidor	LAN del Router CALI	exitoso
	Router CALI	LAN del Router MEDELLIN	exitoso
	Router MEDELLIN	LAN del Router CALI	exitoso

El equipo WS1 y el servidor se encuentran en la subred de administración.

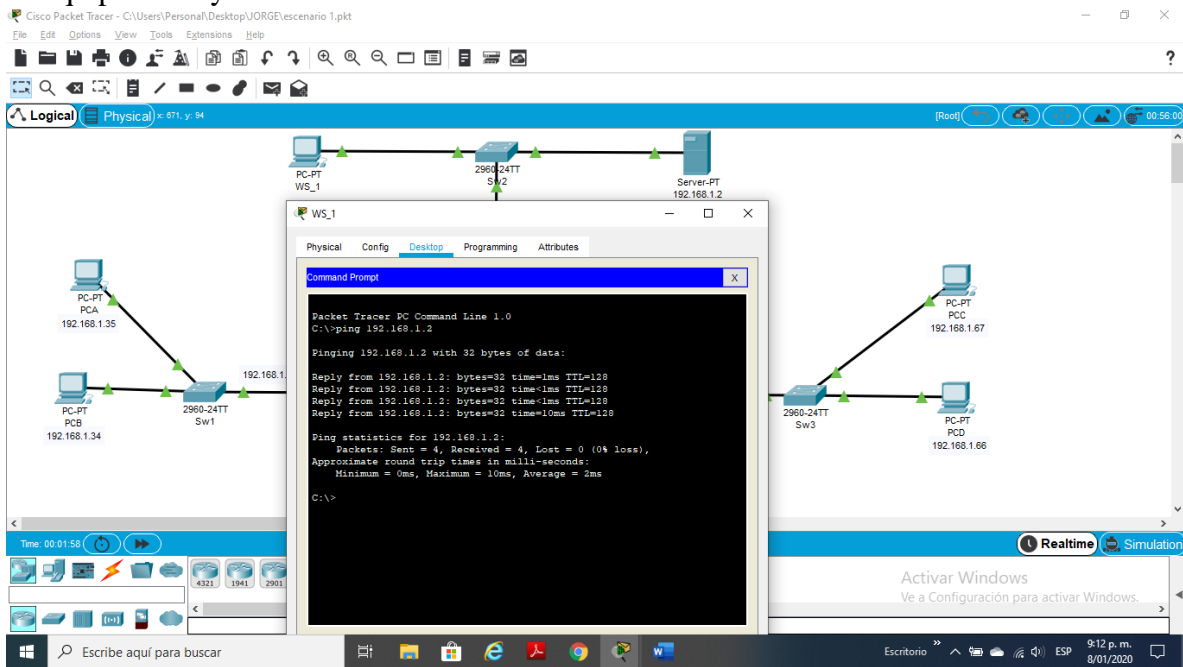


Figure 10

el servidor de la subred de administración tiene acceso a cualquier otro dispositivo en cualquier parte de la red

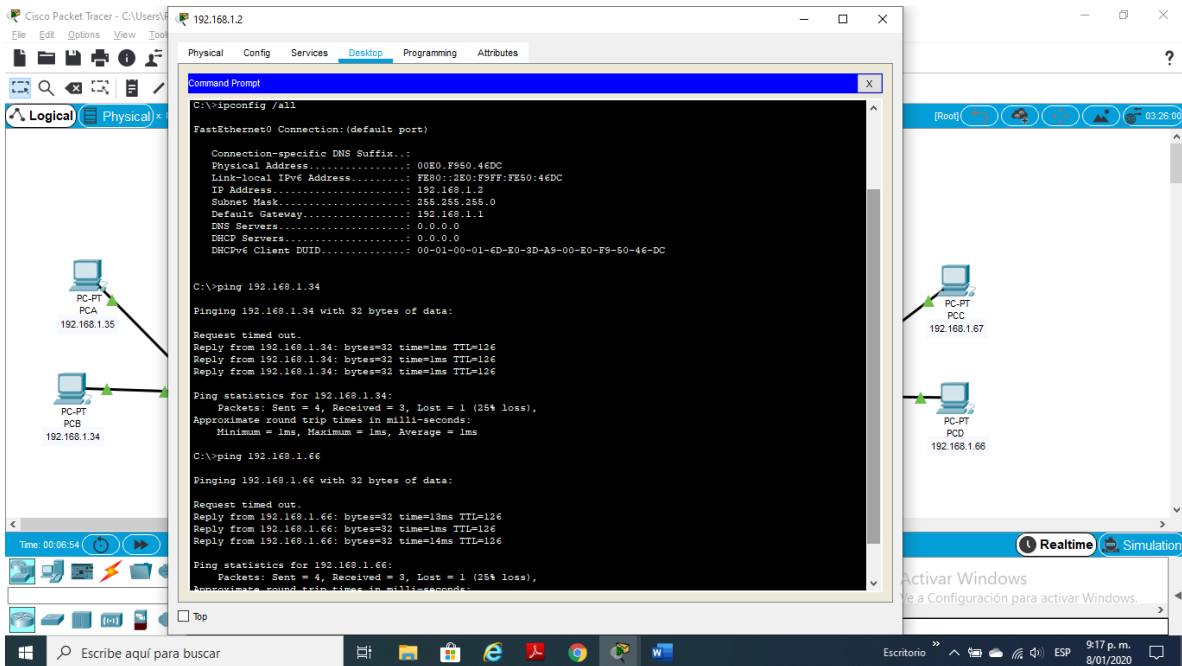


Figure 11

Los routers tienen conexión entre si

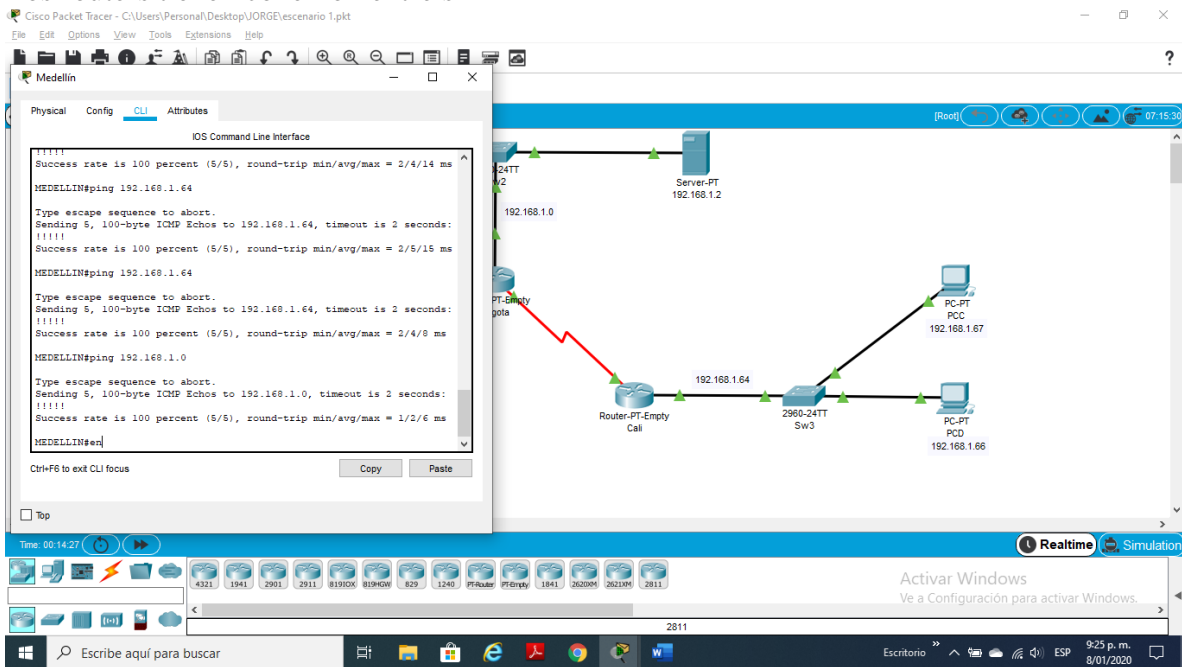


Figure 12

```
MEDELLIN>ena
MEDELLIN>enable
Password:
Password:
MEDELLIN#telnet 192.168.1.131
Trying 192.168.1.131 ...Open
```

User Access Verification

```
Password:
CALI>
```

```
Packet Tracer PC Command Line 1.0
C:\>telnet 192.168.1.99
Trying 192.168.1.99 ...
% Connection timed out; remote host not responding
C:\>telnet 192.168.1.98
Trying 192.168.1.98 ...Open
```

User Access Verification

```
Password:
BOGOTA>telnet 192.168.1.131
Trying 192.168.1.131 ...Open
```

User Access Verification

```
Password:
CALI>
```

```
Packet Tracer SERVER Command Line 1.0
C:\>telnet 192.168.1.131
Trying 192.168.1.131 ...Open
```

User Access Verification

```
Password:
```

```
CALI>!  
CALI>
```

```
[Connection to 192.168.1.131 closed by foreign host]  
C:\>  
C:\>telnet 192.168.1.99  
Trying 192.168.1.99 ...Open
```

User Access Verification

```
Password:  
MEDELLIN>
```

Pinging 192.168.1.2 with 32 bytes of data:

```
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126  
Reply from 192.168.1.2: bytes=32 time=12ms TTL=126  
Reply from 192.168.1.2: bytes=32 time=4ms TTL=126  
Reply from 192.168.1.2: bytes=32 time=10ms TTL=126
```

```
Ping statistics for 192.168.1.2:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 1ms, Maximum = 12ms, Average = 6ms
```

Pinging 192.168.1.2 with 32 bytes of data:

```
Reply from 192.168.1.2: bytes=32 time=16ms TTL=126  
Reply from 192.168.1.2: bytes=32 time=4ms TTL=126  
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126  
Reply from 192.168.1.2: bytes=32 time=10ms TTL=126
```

```
Ping statistics for 192.168.1.2:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 2ms, Maximum = 16ms, Average = 8ms
```

```
C:\>ping 192.168.1.34
```

Pinging 192.168.1.34 with 32 bytes of data:

Reply from 192.168.1.34: bytes=32 time=2ms TTL=126
Reply from 192.168.1.34: bytes=32 time=2ms TTL=126
Reply from 192.168.1.34: bytes=32 time=12ms TTL=126
Reply from 192.168.1.34: bytes=32 time=19ms TTL=126

Ping statistics for 192.168.1.34:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 19ms, Average = 8ms

C:\>ping 192.168.1.66

Pinging 192.168.1.66 with 32 bytes of data:

Reply from 192.168.1.66: bytes=32 time=2ms TTL=126
Reply from 192.168.1.66: bytes=32 time=18ms TTL=126
Reply from 192.168.1.66: bytes=32 time=6ms TTL=126
Reply from 192.168.1.66: bytes=32 time=6ms TTL=126

Ping statistics for 192.168.1.66:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 18ms, Average = 8ms

CALI>ping 192.168.1.34

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.34, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/8/14 ms

MEDELLIN>ping 192.168.1.66

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.66, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/8/15 ms

Escenario 2

Una empresa tiene la conexión a internet en una red Ethernet, lo cual deben adaptarlo para facilitar que sus routers y las redes que incluyen puedan, por esa vía, conectarse a internet, pero empleando las direcciones de la red LAN original.

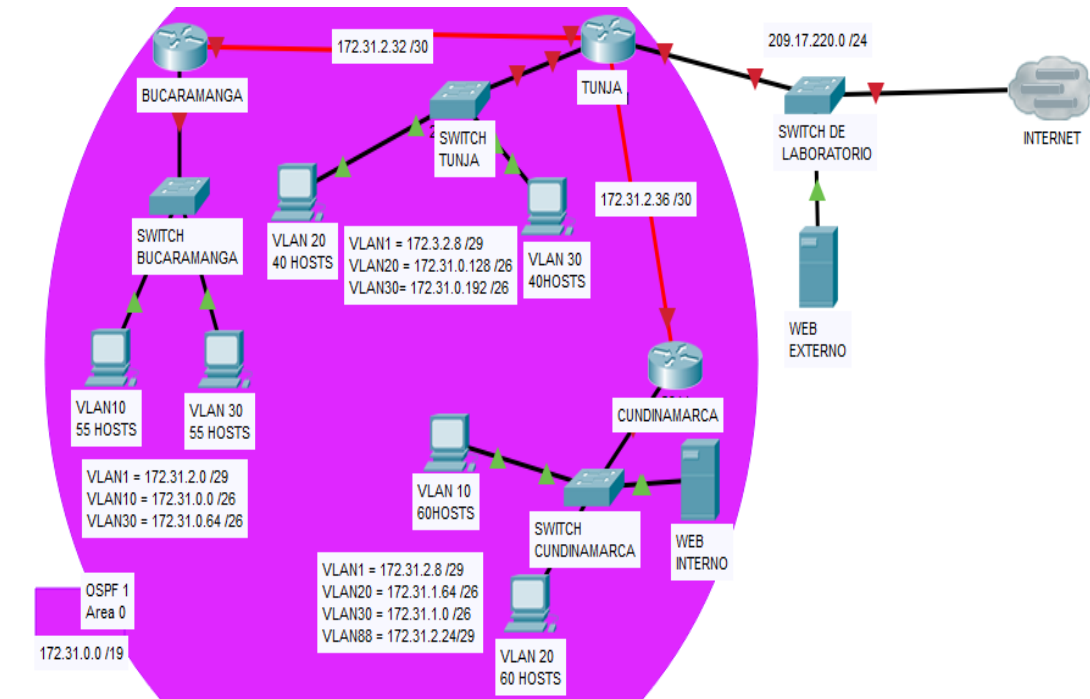


Figure 13

CONFIGURACIÓN DE ROUTERS

Router Bucaramanga

```
Router>enable
Router#
Router#conf term
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname RBUCARAMANGA
RBUCARAMANGA(config)#NO IP
```

```
RBUCARAMANGA(config)#NO IP domain
RBUCARAMANGA(config)#NO IP domain-lookup
RBUCARAMANGA(config)#banner
RBUCARAMANGA(config)#banner motd
RBUCARAMANGA(config)#banner motd "SIN AUTORIZACION"
RBUCARAMANGA(config)#enable secre
RBUCARAMANGA(config)#enable secret consola
RBUCARAMANGA(config)#line cons
RBUCARAMANGA(config)#line console 0
RBUCARAMANGA(config-line)#passw
RBUCARAMANGA(config-line)#password cisco
RBUCARAMANGA(config-line)#login
RBUCARAMANGA(config-line)#logging syn
RBUCARAMANGA(config-line)#logging synchronous
RBUCARAMANGA(config-line)#line vty 0 15
RBUCARAMANGA(config-line)#passw
RBUCARAMANGA(config-line)#password cisco
RBUCARAMANGA(config-line)#login
RBUCARAMANGA(config-line)#logg
RBUCARAMANGA(config-line)#logging syn
RBUCARAMANGA(config-line)#logging synchronous
RBUCARAMANGA(config-line)#int f0/0.1
RBUCARAMANGA(config-subif)#encaps
RBUCARAMANGA(config-subif)#encapsulation dot1q 1
RBUCARAMANGA(config-subif)#ip add
RBUCARAMANGA(config-subif)#ip address 172.31.2.1 255.255.255.248
RBUCARAMANGA(config-subif)#int f0/10
%Invalid interface type and number
RBUCARAMANGA(config)#int f0/0.10
RBUCARAMANGA(config-subif)#encapsu
RBUCARAMANGA(config-subif)#encapsulation dot1q 10
RBUCARAMANGA(config-subif)#ip address
RBUCARAMANGA(config-subif)#ip address 172.31.0.1 255.255.255.192
RBUCARAMANGA(config-subif)#int f0/0.30
RBUCARAMANGA(config-subif)#encap
RBUCARAMANGA(config-subif)#encapsulation dot1q 30
RBUCARAMANGA(config-subif)#ip address
RBUCARAMANGA(config-subif)#ip address 172.31.0.65 255.255.255.192
RBUCARAMANGA(config-subif)#int f0/0
RBUCARAMANGA(config-if)#no shut
RBUCARAMANGA(config-if)#no shutdown

RBUCARAMANGA(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up
```


%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/0.10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.10, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/0.30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.30, changed state to up

```
RBUCARAMANGA(config-if)#int s0/0/0
RBUCARAMANGA(config-if)#ip address 172.31.2.34 255.255.255.252
RBUCARAMANGA(config-if)#no sh
RBUCARAMANGA(config-if)#no shutdown
```

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
RBUCARAMANGA(config-if)#
RBUCARAMANGA(config-if)#router ospf 1
RBUCARAMANGA(config-router)#network 172.31.0.0 0.0.0.63 area 0
RBUCARAMANGA(config-router)#network 172.31.0.64 0.0.0.63 area 0
RBUCARAMANGA(config-router)#network 172.31.2.0 0.0.0.7 area 0
RBUCARAMANGA(config-router)#network 172.31.2.32 0.0.0.3 area 0
RBUCARAMANGA(config-router)#end
RBUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console
```

```
RBUCARAMANGA#
```

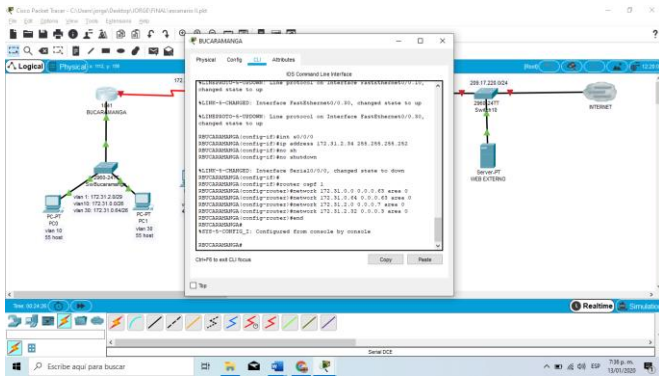


Figure 14

Router Tunja

```

Router>en
Router>enable
Router#conf ter
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname RTUNJA
RTUNJA(config)#no ip domain-lookup
RTUNJA(config)#banner motd "SIN AUTORIZACION"
RTUNJA(config)#enable secret cisco
RTUNJA(config)#LINE CONS
RTUNJA(config)#LINE CONSOLE
% Incomplete command.
RTUNJA(config)#LINE CONSOLE 0
RTUNJA(config-line)#passw
RTUNJA(config-line)#password cisco
RTUNJA(config-line)#login
RTUNJA(config-line)#login
RTUNJA(config-line)#logging sync
RTUNJA(config-line)#logging synchronous
RTUNJA(config-line)#line vty 0 15
RTUNJA(config-line)#passw
RTUNJA(config-line)#password cisco
RTUNJA(config-line)#login
RTUNJA(config-line)#logging syn
RTUNJA(config-line)#logging synchronous
RTUNJA(config-line)#int f0/0.1
RTUNJA(config-subif)#encapsulation dot1q 1
RTUNJA(config-subif)#ip address 172.3.2.9 255.255.255.248
RTUNJA(config-subif)#int f0/0.20

```

```
RTUNJA(config-subif)#encapsulation dot1q 20
RTUNJA(config-subif)#ip address 172.31.0.129 255.255.255.192
RTUNJA(config-subif)#int f0/0.30
RTUNJA(config-subif)#encapsulation dot1q 30
RTUNJA(config-subif)#ip address 172.31.0.193 255.255.255.192
RTUNJA(config-subif)#int f0/0
RTUNJA(config-if)#no sh
RTUNJA(config-if)#no shutdown
```

```
RTUNJA(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state
to up
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0.20, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.20, changed state
to up
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0.30, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.30, changed state
to up
```

```
RTUNJA(config-if)#int s0/0/0
RTUNJA(config-if)#ip address 172.31.2.33 255.255.255.252
RTUNJA(config-if)#no sh
RTUNJA(config-if)#no shutdown
```

```
RTUNJA(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
RTUNJA(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
```

```
RTUNJA(config-if)#int s0/0/1
RTUNJA(config-if)#ip address 172.31.2.37 255.255.255.252
RTUNJA(config-if)#no sh
RTUNJA(config-if)#no shutdown
```

```
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
```

```
RTUNJA(config-if)#int f0/1
RTUNJA(config-if)#ip address 209.165.220.1 255.255.255.0
RTUNJA(config-if)#no sh
RTUNJA(config-if)#no shutdown
```

```
RTUNJA(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

```
RTUNJA(config-if)#router ospf 1
RTUNJA(config-router)#network 172.3.2.8 0.0.0.7 area 0
RTUNJA(config-router)#network 172.31.0.128 0.0.0.63 area 0
RTUNJA(config-router)#network 172.31.0.192 0.0.0.63 area 0
RTUNJA(config-router)#network 172.31.2.32 0.0.0.3 area 0
RTUNJA(config-router)#
00:39:18: %OSPF-5-ADJCHG: Process 1, Nbr 172.31.2.34 on Serial0/0/0 from LOADING to FULL, Loading Done
```

```
RTUNJA(config-router)#network 172.31.2.36 0.0.0.3 area 0
RTUNJA(config-router)#end
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console
```

```
RTUNJA#
```

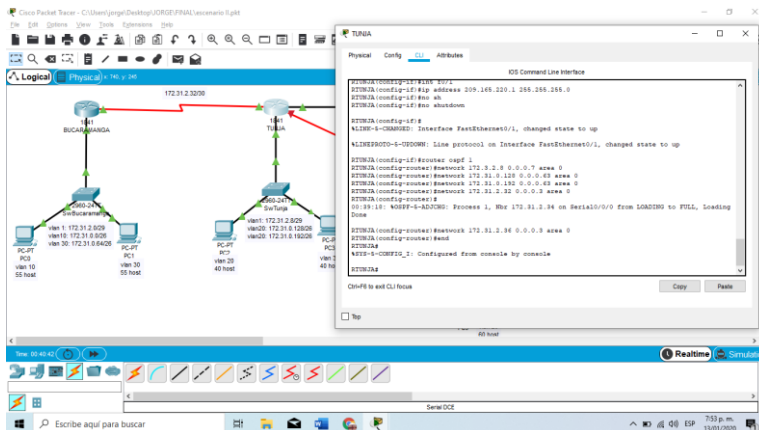


Figure 15

Router Cundinamarca

```
Router>en
```

```
Router>enable
Router#conf term
Router#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname RCUNDINAMARCA
RCUNDINAMARCA(config)#no ip domain lookup
RCUNDINAMARCA(config)#no ip domain-lookup
RCUNDINAMARCA(config)#banne
RCUNDINAMARCA(config)#banner motd "SIN AUTORIZACION"
RCUNDINAMARCA(config)#EN
RCUNDINAMARCA(config)#ENenable
RCUNDINAMARCA(config)#ENenable secre
RCUNDINAMARCA(config)#ENenable secret cisco
^
% Invalid input detected at '^' marker.
RCUNDINAMARCA(config)#enable secret cisco
RCUNDINAMARCA(config)#line console 0
RCUNDINAMARCA(config-line)#passw
RCUNDINAMARCA(config-line)#password cisco
RCUNDINAMARCA(config-line)#login
RCUNDINAMARCA(config-line)#login
RCUNDINAMARCA(config-line)#logging syn
RCUNDINAMARCA(config-line)#logging synchronous
RCUNDINAMARCA(config-line)#line vty 0 15
RCUNDINAMARCA(config-line)#passw
RCUNDINAMARCA(config-line)#password cisco
RCUNDINAMARCA(config-line)#login
RCUNDINAMARCA(config-line)#login
RCUNDINAMARCA(config-line)#logging syn
RCUNDINAMARCA(config-line)#logging synchronous
RCUNDINAMARCA(config-line)#int f0/0.1
RCUNDINAMARCA(config-subif)#encapsulation dot1q 1
RCUNDINAMARCA(config-subif)#ip address 172.31.2.9 255.255.255.248
RCUNDINAMARCA(config-subif)#int f0/0.20
RCUNDINAMARCA(config-subif)#encapsulation dot1q 20
RCUNDINAMARCA(config-subif)#ip address 172.31.1.65 255.255.255.192
RCUNDINAMARCA(config-subif)#int f0/0.30
RCUNDINAMARCA(config-subif)#encapsulation dot1q 30
RCUNDINAMARCA(config-subif)#ip address 172.31.1.1 255.255.255.192
RCUNDINAMARCA(config-subif)#int f0/0.88
RCUNDINAMARCA(config-subif)#encapsulation dot1q 88
RCUNDINAMARCA(config-subif)#ip address 172.31.2.25 255.255.255.248
RCUNDINAMARCA(config-subif)#int f0/0
RCUNDINAMARCA(config-if)#no sh
RCUNDINAMARCA(config-if)#no shutdown

RCUNDINAMARCA(config-if)#
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up

%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state
to up

%LINK-5-CHANGED: Interface FastEthernet0/0.20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.20, changed state
to up

%LINK-5-CHANGED: Interface FastEthernet0/0.30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.30, changed state
to up

%LINK-5-CHANGED: Interface FastEthernet0/0.88, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.88, changed state
to up

RCUNDINAMARCA(config-if)#int s0/0/0
RCUNDINAMARCA(config-if)#ip address 172.31.2.38 255.255.255.252
RCUNDINAMARCA(config-if)#no sh
RCUNDINAMARCA(config-if)#no shutdown

RCUNDINAMARCA(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

RCUNDINAMARCA(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

RCUNDINAMARCA(config-if)#router ospf 1
RCUNDINAMARCA(config-router)#network 172.31.1.0 0.0.0.63 area 0
RCUNDINAMARCA(config-router)#network 172.31.1.64 0.0.0.63 area 0
RCUNDINAMARCA(config-router)#network 172.31.2.8 0.0.0.7 area 0
RCUNDINAMARCA(config-router)#network 172.31.2.24 0.0.0.7 area 0
RCUNDINAMARCA(config-router)#network 172.31.2.36 0.0.0.3 area 0
RCUNDINAMARCA(config-router)#end
00:49:29: %OSPF-5-ADJCHG: Process 1, Nbr 209.165.220.1 on Serial0/0/1 from
LOADING to FULL, Loading Done

RCUNDINAMARCA(config-router)#end
```

```
RCUNDINAMARCA#
%SYS-5-CONFIG_I: Configured from console by console
```

```
RCUNDINAMARCA#
```

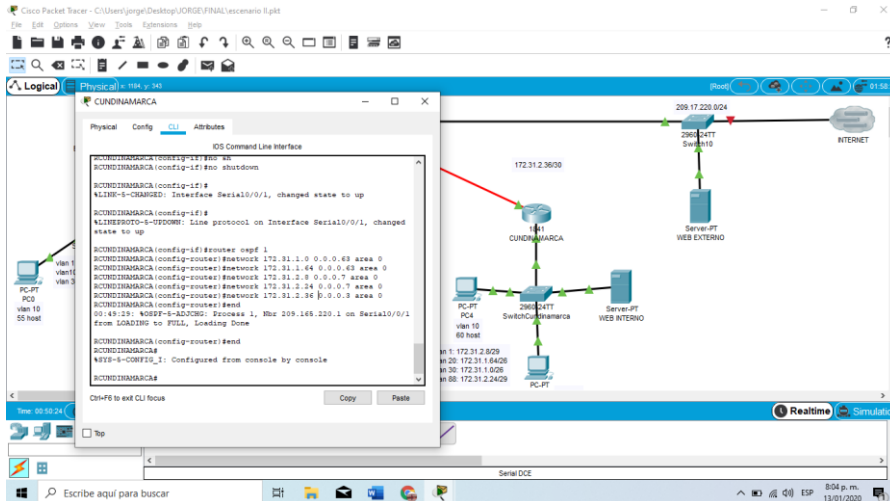


Figure 16

CONFIGURACION SWITCH

Switch Bucaramanga

```
Switch>ena
Switch>enable
Switch#conf term
Switch#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#SWBUCARAMANGA
^
% Invalid input detected at '^' marker.
Switch(config)#hostname SWBUCARAMANGA
SWBUCARAMANGA(config)#vlan 1
SWBUCARAMANGA(config-vlan)#vlan 10
SWBUCARAMANGA(config-vlan)#vlan 30
SWBUCARAMANGA(config-vlan)#int f0/20
SWBUCARAMANGA(config-if)#int f0/1
```

```
SWBUCARAMANGA(config-if)#switchport mode access
SWBUCARAMANGA(config-if)#switchport access vlan 10
SWBUCARAMANGA(config-if)#int f0/2
SWBUCARAMANGA(config-if)#switchport mode access
SWBUCARAMANGA(config-if)#switchport access vlan 30
SWBUCARAMANGA(config-if)#int f0/3
SWBUCARAMANGA(config-if)#switchport mode trunk
```

```
SWBUCARAMANGA(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to
down
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to
up
```

```
SWBUCARAMANGA(config-if)#int vlan 1
SWBUCARAMANGA(config-if)#ip address 172.31.2.3 255.255.255.248
SWBUCARAMANGA(config-if)#no sh
SWBUCARAMANGA(config-if)#no shutdown
```

```
SWBUCARAMANGA(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
```

```
SWBUCARAMANGA(config-if)#ip default-gateway 172.31.2.1
SWBUCARAMANGA(config)#exit
SWBUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console
```

```
SWBUCARAMANGA#
```

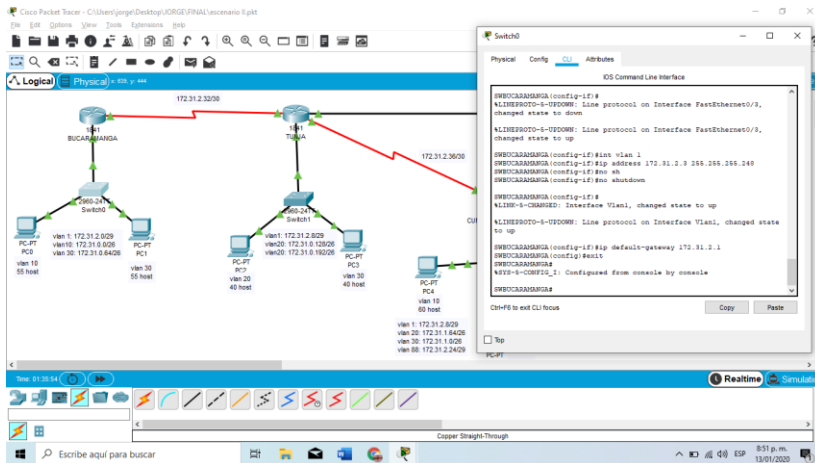



Figure 17

Switch Tunja

Switch>

Switch>enab

Switch>enable

Switch#conf term

Switch#conf terminal

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

Switch(config)#hostname SWTUNJA

SWTUNJA(config)#vlan 1

SWTUNJA(config-vlan)#vlan 20

SWTUNJA(config-vlan)#vlan 30

SWTUNJA(config-vlan)#int f0/2

SWTUNJA(config-if)#switchport mode access

SWTUNJA(config-if)#switchport access vlan 20

SWTUNJA(config-if)#int f0/3

SWTUNJA(config-if)#switchport mode access

SWTUNJA(config-if)#switchport access vlan 30

SWTUNJA(config-if)#int f0/1

SWTUNJA(config-if)#switchport mode trunk

SWTUNJA(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

```
SWTUNJA(config-if)#vlan 1
SWTUNJA(config-vlan)#ip address 172.3.2.11 255.255.255.248
```

```
^
% Invalid input detected at '^' marker.
SWTUNJA(config-vlan)#vlan 1
SWTUNJA(config-vlan)#switchport mode trunk
```

```
^
% Invalid input detected at '^' marker.
SWTUNJA(config-vlan)#int f0/1
SWTUNJA(config-if)#switchport mode trunk
SWTUNJA(config-if)#
SWTUNJA(config-if)#int vlan 1
SWTUNJA(config-if)#ip address 172.3.2.11 255.255.255.248
SWTUNJA(config-if)#no sh
SWTUNJA(config-if)#no shutdown
```

```
SWTUNJA(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

```
SWTUNJA(config-if)#ip default-gateway 172.3.2.9
SWTUNJA(config)#exit
SWTUNJA#
%SYS-5-CONFIG_I: Configured from console by console
```

SWTUNJA#

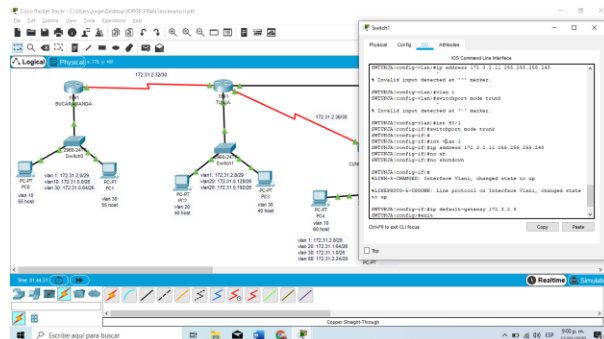


Figure 18

Switich Cundinamarca

```
Switch>EN
Switch>ENable
Switch#conf term
Switch#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SWCUNDINAMARCA
SWCUNDINAMARCA(config)#vlan 1
SWCUNDINAMARCA(config-vlan)#vlan 20
SWCUNDINAMARCA(config-vlan)#vlan 30
SWCUNDINAMARCA(config-vlan)#vlan 88
SWCUNDINAMARCA(config-vlan)#exit
SWCUNDINAMARCA(config)#int f0/2
SWCUNDINAMARCA(config-if)#switchport mode access
SWCUNDINAMARCA(config-if)#switchport access vlan 20
SWCUNDINAMARCA(config-if)#int f0/3
SWCUNDINAMARCA(config-if)#switchport mode access
SWCUNDINAMARCA(config-if)#switchport access vlan 30
SWCUNDINAMARCA(config-if)#int f0/4
SWCUNDINAMARCA(config-if)#switchport mode access
SWCUNDINAMARCA(config-if)#switchport access vlan 88
SWCUNDINAMARCA(config-if)#int f0/1
SWCUNDINAMARCA(config-if)#switchport mode trunk

SWCUNDINAMARCA(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to
down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to
up

SWCUNDINAMARCA(config-if)#int vlan 1
SWCUNDINAMARCA(config-if)#ip address 172.31.2.11 255.255.255.248
SWCUNDINAMARCA(config-if)#no sh
SWCUNDINAMARCA(config-if)#no shutdown

SWCUNDINAMARCA(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

SWCUNDINAMARCA(config-if)#ip default-gateway 172.31.2.9
SWCUNDINAMARCA(config)#exit
SWCUNDINAMARCA#
%SYS-5-CONFIG_I: Configured from console by console
```

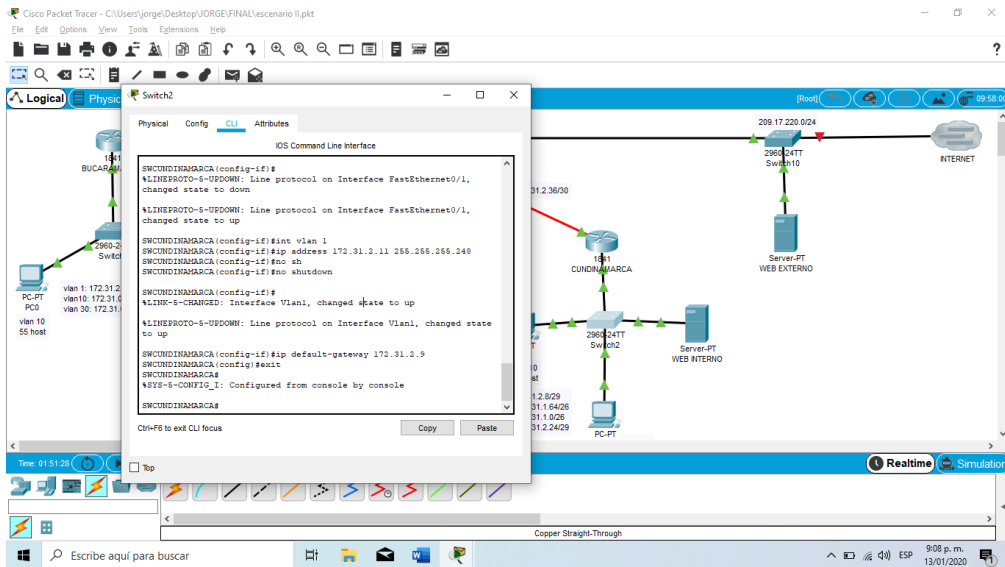


Figure 19

AUTENTICACIÓN AAA

Router Bucaramanga

SIN AUTORIZACION

User Access Verification

Password:

```
RBUCARAMANGA>
RBUCARAMANGA>
RBUCARAMANGA>en
RBUCARAMANGA>enable
```

Password:

```
RBUCARAMANGA#conf term
RBUCARAMANGA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RBUCARAMANGA(config)#
RBUCARAMANGA(config)#username admin secret cisco
RBUCARAMANGA(config)#aaa new-model
RBUCARAMANGA(config)#aaa authentication login AUTH local
RBUCARAMANGA(config)#line console 0
RBUCARAMANGA(config-line)#login authentication AUTH
```

```
RBUCARAMANGA(config-line)#line vty 0 15
RBUCARAMANGA(config-line)#login authentication AUTH
RBUCARAMANGA(config-line)#
```

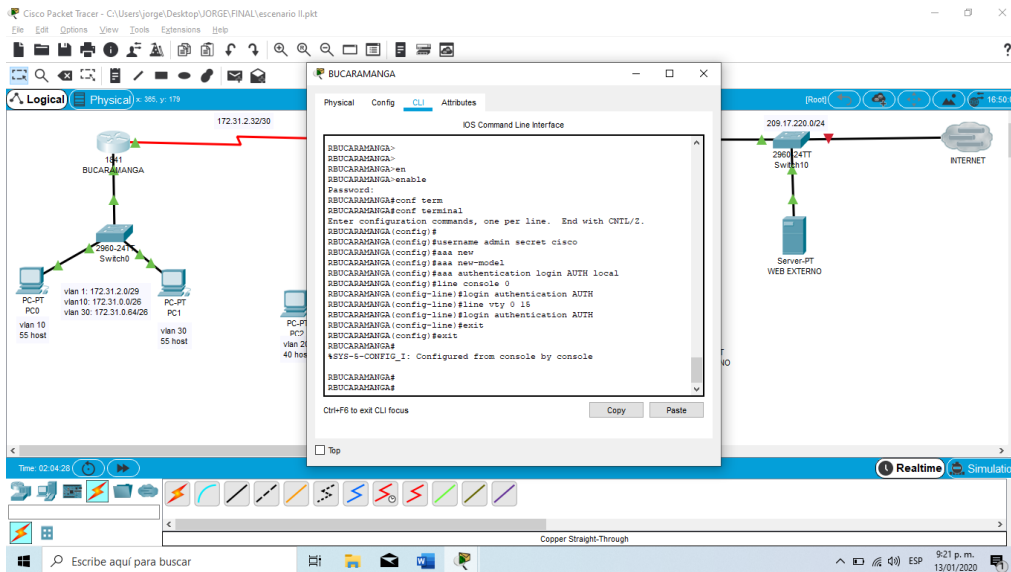


Figure 20

Router Tunja

SIN AUTORIZACION

User Access Verification

Password:

```
RTUNJA>enab
```

```
RTUNJA>enable
```

Password:

Password:

```
RTUNJA#conf term
```

```
RTUNJA#conf terminal
```

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

```
RTUNJA(config)#line console 0
```

```
RTUNJA(config-line)#username admin secret cisco
```

```
RTUNJA(config)#aaa new
```

```
RTUNJA(config)#aaa new-model
```

```

RTUNJA(config)#aaa authentication login AUTH local
RTUNJA(config)#line console 0
RTUNJA(config-line)#login authentication AUTH
RTUNJA(config-line)#line vty 0 15
RTUNJA(config-line)#login authentication AUTH
RTUNJA(config-line)#end
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console

```

RTUNJA#

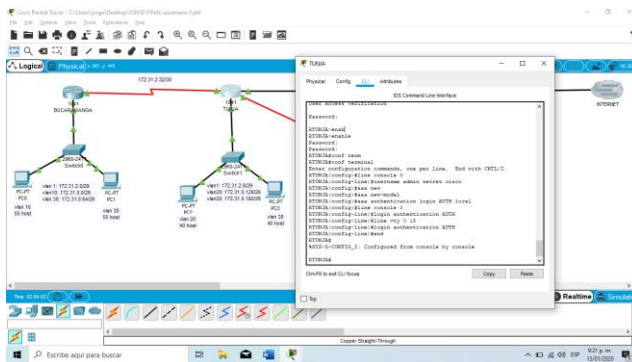


Figure 21

Router Cundinamarca

SIN AUTORIZACION

User Access Verification

Password:

```

RCUNDINAMARCA>enab
RCUNDINAMARCA>enable

```

Password:

```

RCUNDINAMARCA#conf term
RCUNDINAMARCA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RCUNDINAMARCA(config)#line console 0
RCUNDINAMARCA(config-line)#username admin secret cisco
RCUNDINAMARCA(config)#aaa new
RCUNDINAMARCA(config)#aaa new-model
RCUNDINAMARCA(config)#aaa aut
RCUNDINAMARCA(config)#aaa authentication login AUTH local
RCUNDINAMARCA(config)#line console 0

```

```

RCUNDINAMARCA(config-line)#login authentication AUTH
RCUNDINAMARCA(config-line)#line vty 0 15
RCUNDINAMARCA(config-line)#login authentication AUTH
RCUNDINAMARCA(config-line)#end
RCUNDINAMARCA#
%SYS-5-CONFIG_I: Configured from console by console
}
RCUNDINAMARCA#

```

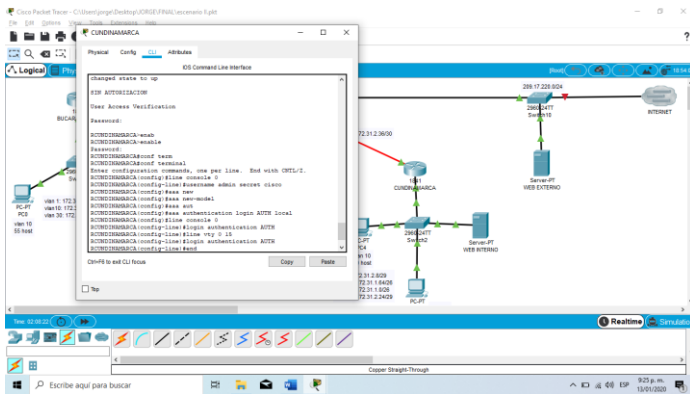


Figure 22

Máximo de intentos para acceder al ROUTER

Router Bucaramanga

```

RBUCARAMANGA#conf term
RBUCARAMANGA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RBUCARAMANGA(config)#line console 0
RBUCARAMANGA(config-line)#login block-for 5 attempts 4 within 60
RBUCARAMANGA(config)#exit
RBUCARAMANGA#

```

%SYS-5-CONFIG_I: Configured from console by console

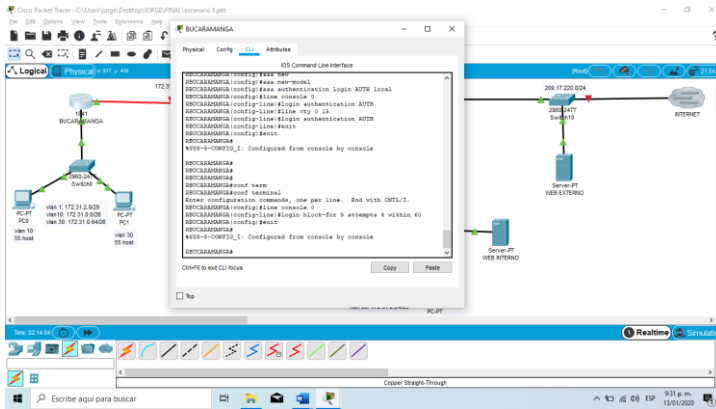


Figure 23

Router Tunja

RBUCARAMANGA#conf term

RBUCARAMANGA#conf terminal

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

RBUCARAMANGA(config)#line console 0

RBUCARAMANGA(config-line)#login block-for 5 attempts 4 within 60

RBUCARAMANGA(config)#exit

RBUCARAMANGA#

%SYS-5-CONFIG_I: Configured from console by console

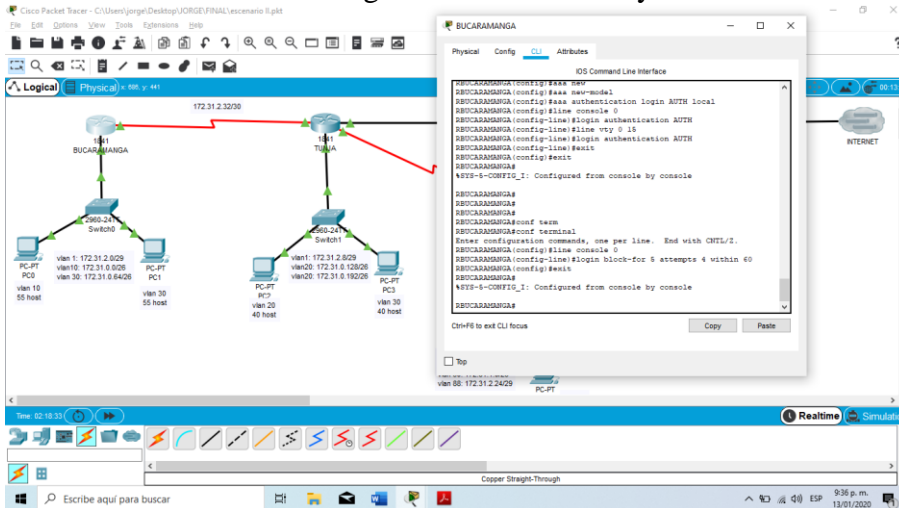


Figure 24

Router Cundinamarca

SIN AUTORIZACION

User Access Verification

Username: cisco

Password:

% Login invalid

Username: admin

Password:

RCUNDINAMARCA>ena

RCUNDINAMARCA>enable

Password:

RCUNDINAMARCA#conf term

RCUNDINAMARCA#conf terminal

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

RCUNDINAMARCA(config)#line console 0

RCUNDINAMARCA(config-line)#login block-for 5 attempts 4 within 60

RCUNDINAMARCA(config)#end

RCUNDINAMARCA#

%SYS-5-CONFIG_I: Configured from console by console

RCUNDINAMARCA#

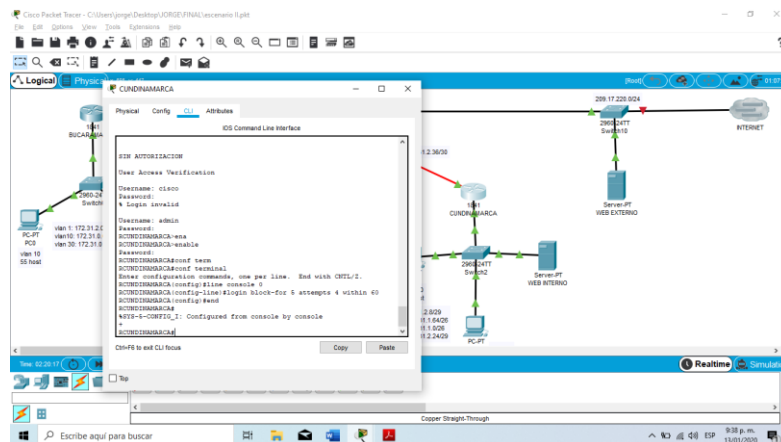


Figure 25

CIFRADO DE CONTRASEÑAS

Router Bucaramanga

RBUCARAMANGA#

%SYS-5-CONFIG_I: Configured from console by console

RBUCARAMANGA#conf term

RBUCARAMANGA#conf terminal

Enter configuration commands, one per line. End with CNTL/Z.
RBUCARAMANGA(config)#service password-encryption
RBUCARAMANGA(config)#line console 0
RBUCARAMANGA(config-line)#login block-for 5 attempts 4 within 60
RBUCARAMANGA(config)#end
RBUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console

RBUCARAMANGA#

Router Tunja

SIN AUTORIZACION

User Access Verification

Username: admin
Password:
RTUNJA>ena
RTUNJA>enable
Password:
RTUNJA#conf term
RTUNJA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RTUNJA(config)#service password-encryption
RTUNJA(config)#line console 0
RTUNJA(config-line)#login block-for 5 attempts 4 within 60
RTUNJA(config)#end
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console

RTUNJA#

Router Cundinamarca

RCUNDINAMARCA#
RCUNDINAMARCA#en
RCUNDINAMARCA#enable
RCUNDINAMARCA#conf term
RCUNDINAMARCA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RCUNDINAMARCA(config)#service password-encryption
RCUNDINAMARCA(config)#line console 0

```
RCUNDINAMARCA(config-line)#login block-for 5 attempts 4 within 60
RCUNDINAMARCA(config)#end
RCUNDINAMARCA#
%SYS-5-CONFIG_I: Configured from console by console

RCUNDINAMARCA#
```

Establezca un servidor TFTP y almacene todos los archivos necesarios de los Routers.

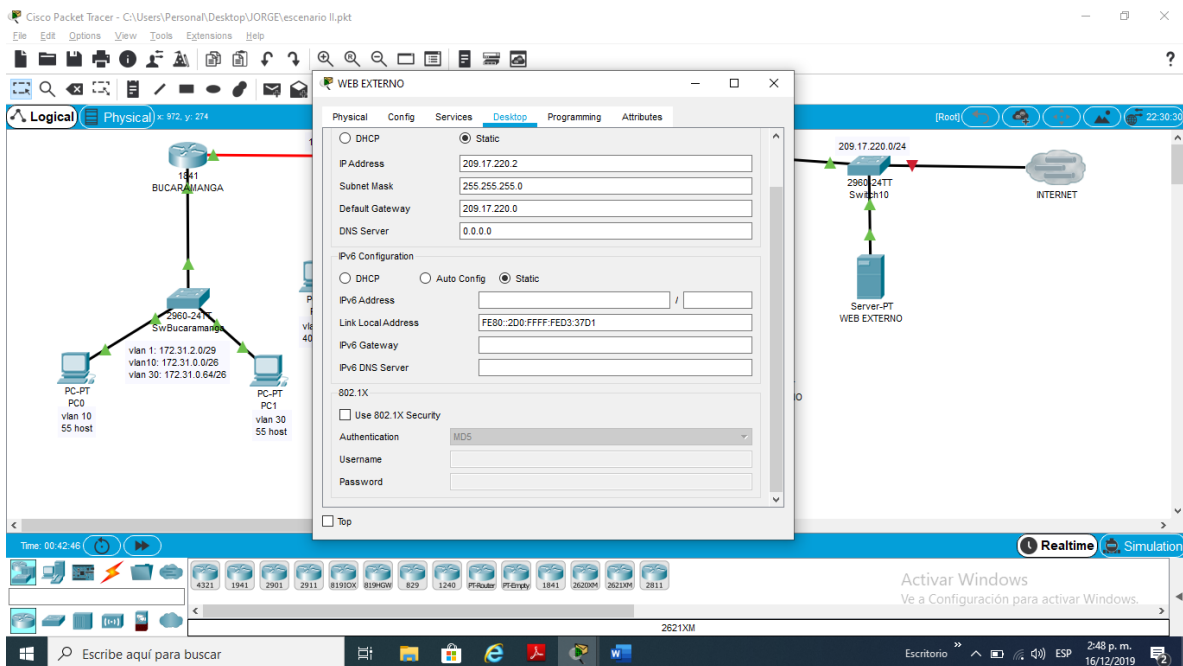


Figure 26

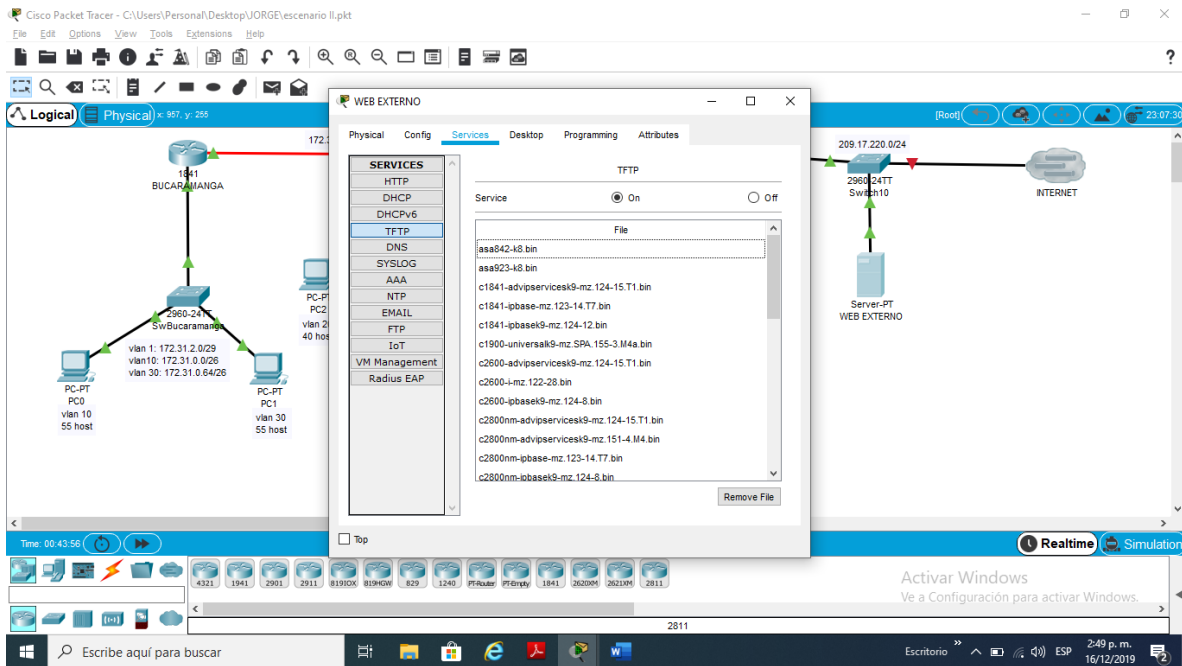


Figure 27

El DHCP deberá proporcionar solo direcciones a los hosts de Bucaramanga y Cundinamarca.

ROUTER TUNJA

Username: admin

Password:

RTUNJA>ena

RTUNJA>enable

Password:

RTUNJA#conf term

RTUNJA#conf terminal

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

RTUNJA(config)#service password-encryption

RTUNJA(config)#line console 0

RTUNJA(config-line)#login block-for 5 attempts 4 within 60

RTUNJA(config)#end

RTUNJA#

%SYS-5-CONFIG_I: Configured from console by console

RTUNJA#

RTUNJA#

RTUNJA#conf term

RTUNJA#conf terminal

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

RTUNJA(config)#ip dhcp excluded-address 172.31.0.1

RTUNJA(config)#ip dhcp excluded-address 172.31.0.65

RTUNJA(config)#ip dhcp excluded-address 172.31.1.65

RTUNJA(config)#ip dhcp excluded-address 172.31.1.1

RTUNJA(config)#ip dhcp pool V10B

RTUNJA(dhcp-config)#network 172.31.0.0 255.255.255.192

RTUNJA(dhcp-config)#default-router 172.31.0.1

RTUNJA(dhcp-config)#dns-server 172.31.2.28

RTUNJA(dhcp-config)#ip dhcp pool V30B

RTUNJA(dhcp-config)#network 172.31.0.64 255.255.255.192

RTUNJA(dhcp-config)#default-router 172.31.0.65

RTUNJA(dhcp-config)#dns-server 172.31.2.28

RTUNJA(dhcp-config)#ip dhcp pool V20C

RTUNJA(dhcp-config)#network 172.31.1.64 255.255.255.192

RTUNJA(dhcp-config)#default-router 172.31.1.65

RTUNJA(dhcp-config)#dns-server 172.31.2.28

RTUNJA(dhcp-config)#ip dhcp pool V30C

RTUNJA(dhcp-config)#network 172.31.1.0 255.255.255.192

RTUNJA(dhcp-config)#default-router 172.31.1.1

RTUNJA(dhcp-config)#dns-server 172.31.2.28

RTUNJA(dhcp-config)#

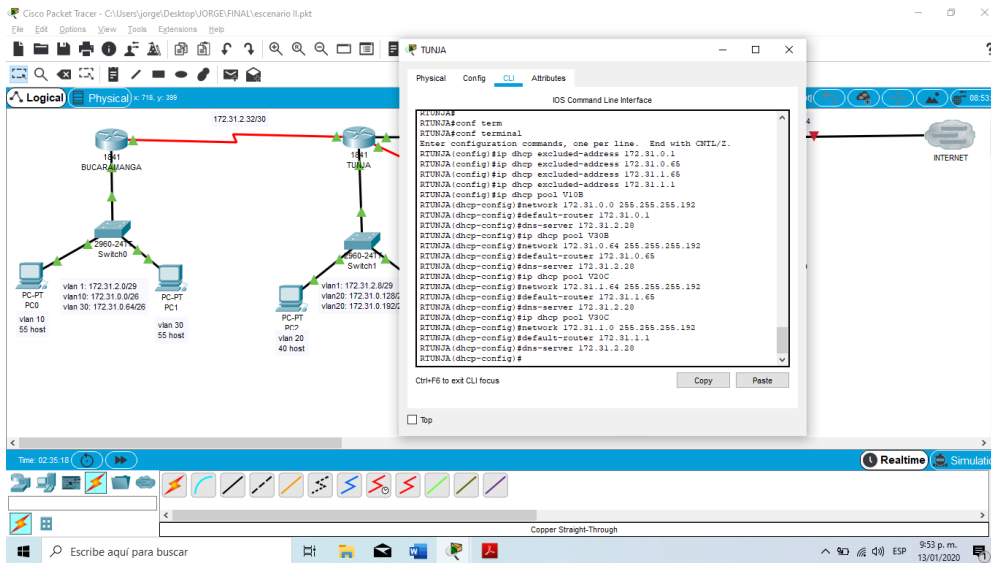


Figure 28

ROUTER Bucaramanga

```

RUCARAMANGA#conf term
RUCARAMANGA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RUCARAMANGA(config)#int f0/0.10
RUCARAMANGA(config-subif)#ip helper-address 172.31.2.33
RUCARAMANGA(config-subif)#int f0/0.30
RUCARAMANGA(config-subif)#ip helper-address 172.31.2.33
RUCARAMANGA(config-subif)#end
RUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console

RUCARAMANGA#

```

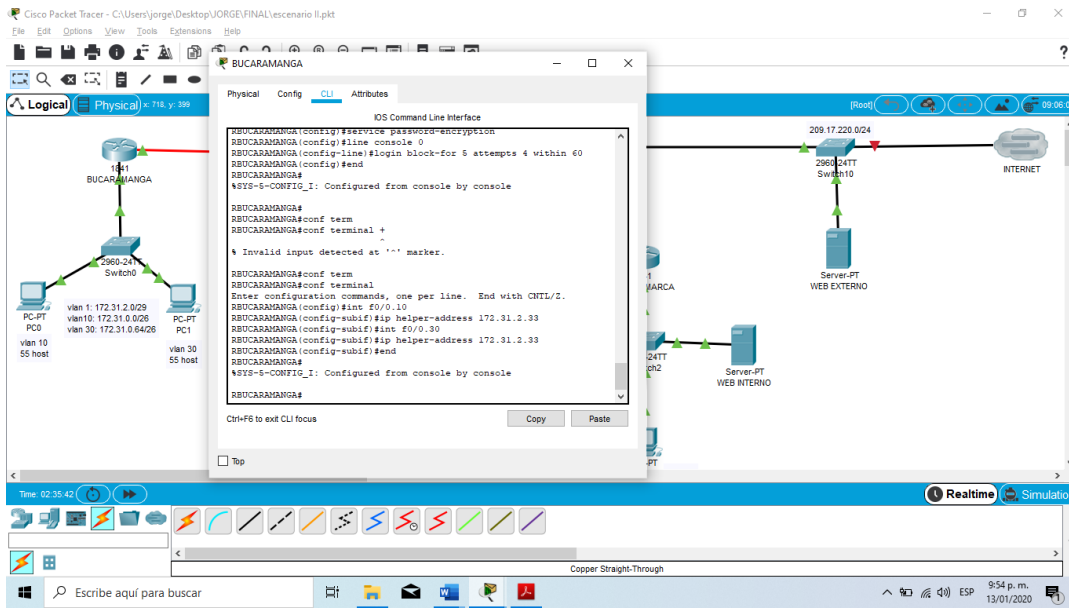


Figure 29

ROUTER Cundinamarca

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RCUNDINAMARCA>ena

RCUNDINAMARCA>enable

Password:

RCUNDINAMARCA#conf term

RCUNDINAMARCA#conf terminal

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

RCUNDINAMARCA(config)#int f0/0.20

RCUNDINAMARCA(config-subif)#ip helper-address 172.31.2.37

RCUNDINAMARCA(config-subif)#int f0/0.30

RCUNDINAMARCA(config-subif)#ip helper-address 172.31.2.37

RCUNDINAMARCA(config-subif)#end

RCUNDINAMARCA#

%SYS-5-CONFIG_I: Configured from console by console

RCUNDINAMARCA#

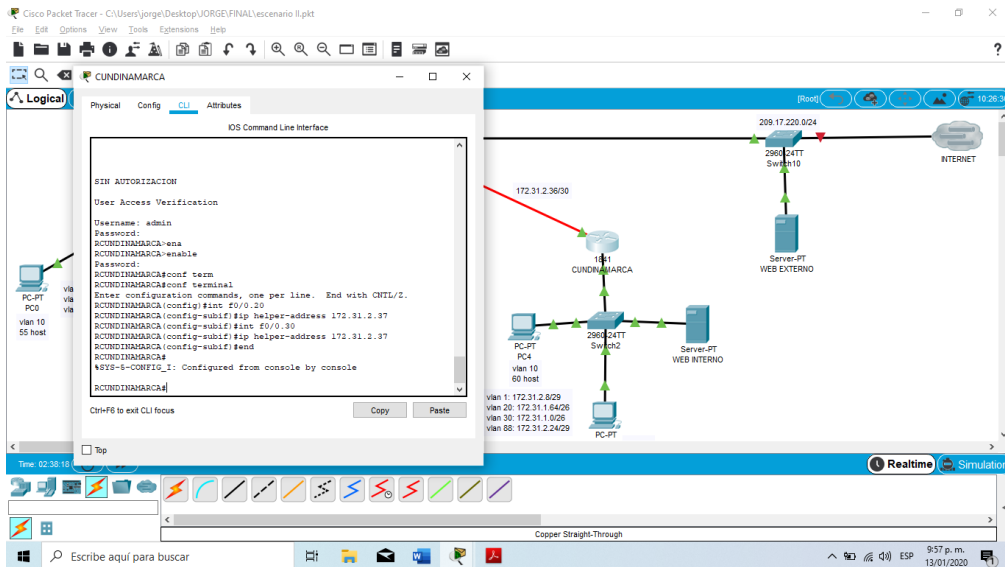


Figure 30

El web server deberá tener NAT estático y el resto de los equipos de la topología emplearán NAT de sobrecarga (PAT).

```

RTUNJA(dhcp-config)#ip nat inside source static 172.31.2.28 209.165.220.4
RTUNJA(config)#access-list 1 permit 172.0.0.0 0.255.255.255
RTUNJA(config)#ip nat inside source list 1 interface f0/1 overload
RTUNJA(config)#int f0/1
RTUNJA(config-if)#ip nat outside
RTUNJA(config-if)#int f0/0.1
RTUNJA(config-subif)#ip nat inside
RTUNJA(config-subif)#int f0/0.20
RTUNJA(config-subif)#ip nat inside
RTUNJA(config-subif)#int f0/0.30
RTUNJA(config-subif)#ip nat inside
RTUNJA(config-subif)#int s0/0/0
RTUNJA(config-if)#ip nat inside
RTUNJA(config-if)#int s0/0/1
RTUNJA(config-if)#ip nat inside
RTUNJA(config-if)#exit
RTUNJA(config)#ip route 0.0.0.0 0.0.0.0 209.165.220.3
RTUNJA(config)#router ospf 1
RTUNJA(config-router)#default-information originate
RTUNJA(config-router)#exit
RTUNJA(config)#exit
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console

```


RTUNJA#sh

RTUNJA#show ip route

Codes: C - connected, S - static, I - IGRP, 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 209.165.220.3 to network 0.0.0.0

172.3.0.0/29 is subnetted, 1 subnets

C 172.3.2.8 is directly connected, FastEthernet0/0.1

172.31.0.0/16 is variably subnetted, 11 subnets, 3 masks

O 172.31.0.0/26 [110/65] via 172.31.2.34, 00:50:03, Serial0/0/0

O 172.31.0.64/26 [110/65] via 172.31.2.34, 00:50:03, Serial0/0/0

C 172.31.0.128/26 is directly connected, FastEthernet0/0.20

C 172.31.0.192/26 is directly connected, FastEthernet0/0.30

O 172.31.1.0/26 [110/65] via 172.31.2.38, 01:14:28, Serial0/0/1

O 172.31.1.64/26 [110/65] via 172.31.2.38, 01:14:28, Serial0/0/1

O 172.31.2.0/29 [110/65] via 172.31.2.34, 00:50:03, Serial0/0/0

O 172.31.2.8/29 [110/65] via 172.31.2.38, 01:14:38, Serial0/0/1

O 172.31.2.24/29 [110/65] via 172.31.2.38, 01:14:28, Serial0/0/1

C 172.31.2.32/30 is directly connected, Serial0/0/0

C 172.31.2.36/30 is directly connected, Serial0/0/1

C 209.165.220.0/24 is directly connected, FastEthernet0/1

S* 0.0.0.0/0 [1/0] via 209.165.220.3

RTUNJA#

RTUNJA#

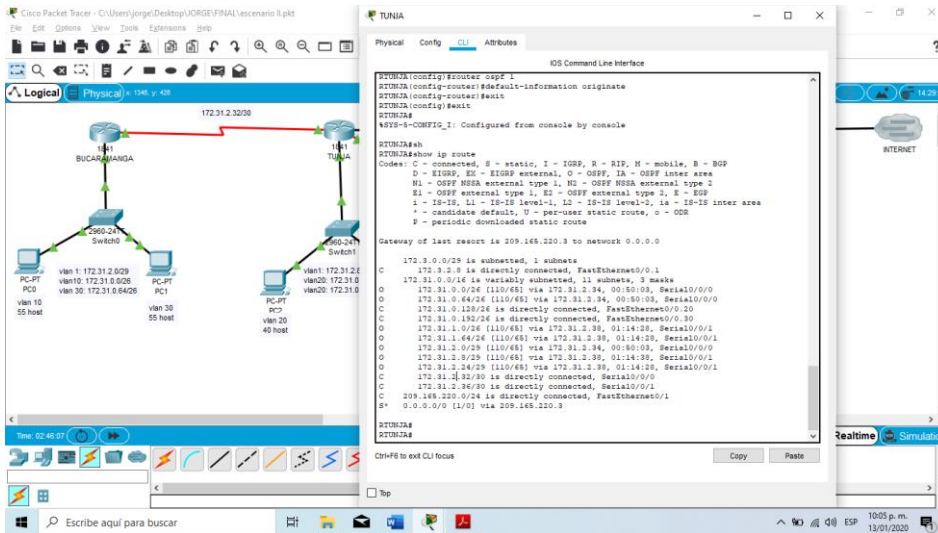


Figure 31

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RBUCARAMANGA>ena

RBUCARAMANGA>enable

Password:

Password:

RBUCARAMANGA#conf term

RBUCARAMANGA#conf terminal

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

RBUCARAMANGA(config)#exit

RBUCARAMANGA#

%SYS-5-CONFIG_I: Configured from console by console

RBUCARAMANGA#show ip route

Codes: C - connected, S - static, I - IGRP, 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 172.31.2.33 to network 0.0.0.0

172.3.0.0/29 is subnetted, 1 subnets

O 172.3.2.8 [110/65] via 172.31.2.33, 02:07:46, Serial0/0/0

172.31.0.0/16 is variably subnetted, 11 subnets, 3 masks

C 172.31.0.0/26 is directly connected, FastEthernet0/0.10

C 172.31.0.64/26 is directly connected, FastEthernet0/0.30

O 172.31.0.128/26 [110/65] via 172.31.2.33, 02:07:46, Serial0/0/0

O 172.31.0.192/26 [110/65] via 172.31.2.33, 02:07:46, Serial0/0/0

O 172.31.1.0/26 [110/129] via 172.31.2.33, 01:18:00, Serial0/0/0

O 172.31.1.64/26 [110/129] via 172.31.2.33, 01:18:00, Serial0/0/0

C 172.31.2.0/29 is directly connected, FastEthernet0/0.1

O 172.31.2.8/29 [110/129] via 172.31.2.33, 01:18:10, Serial0/0/0

O 172.31.2.24/29 [110/129] via 172.31.2.33, 01:18:00, Serial0/0/0

C 172.31.2.32/30 is directly connected, Serial0/0/0

O 172.31.2.36/30 [110/128] via 172.31.2.33, 01:58:36, Serial0/0/0

O*E2 0.0.0.0/0 [110/1] via 172.31.2.33, 00:03:55, Serial0/0/0

RBUCARAMANGA#

RBUCARAMANGA#

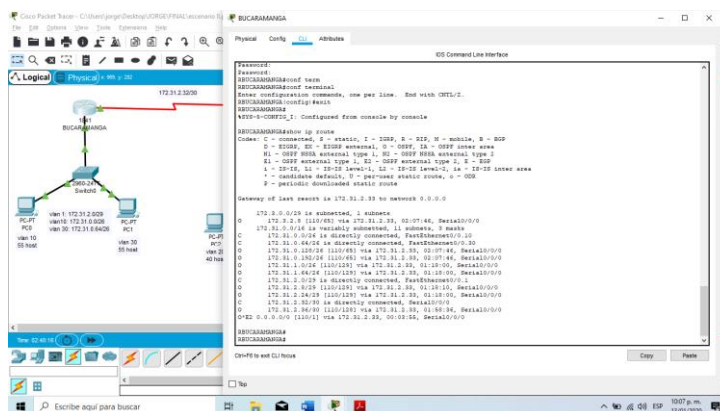


Figure 32

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RCUNDINAMARCA#show ip route

Codes: C - connected, S - static, I - IGRP, 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 172.31.2.37 to network 0.0.0.0

```

172.3.0.0/29 is subnetted, 1 subnets
O 172.3.2.8 [110/65] via 172.31.2.37, 00:00:37, Serial0/0/0
172.31.0.0/16 is variably subnetted, 8 subnets, 3 masks
O 172.31.0.128/26 [110/65] via 172.31.2.37, 00:00:37, Serial0/0/0
O 172.31.0.192/26 [110/65] via 172.31.2.37, 00:00:37, Serial0/0/0
C 172.31.1.0/26 is directly connected, FastEthernet0/0.30
C 172.31.1.64/26 is directly connected, FastEthernet0/0.20
C 172.31.2.8/29 is directly connected, FastEthernet0/0.1
C 172.31.2.24/29 is directly connected, FastEthernet0/0.88
O 172.31.2.32/30 [110/128] via 172.31.2.37, 00:00:37, Serial0/0/0
C 172.31.2.36/30 is directly connected, Serial0/0/0
O*E2 0.0.0.0/0 [110/1] via 172.31.2.37, 00:00:37, Serial0/0/0

```

```

RCUNDINAMARCA#
RCUNDINAMARCA#
RCUNDINAMARCA#
RCUNDINAMARCA#
RCUNDINAMARCA#

```

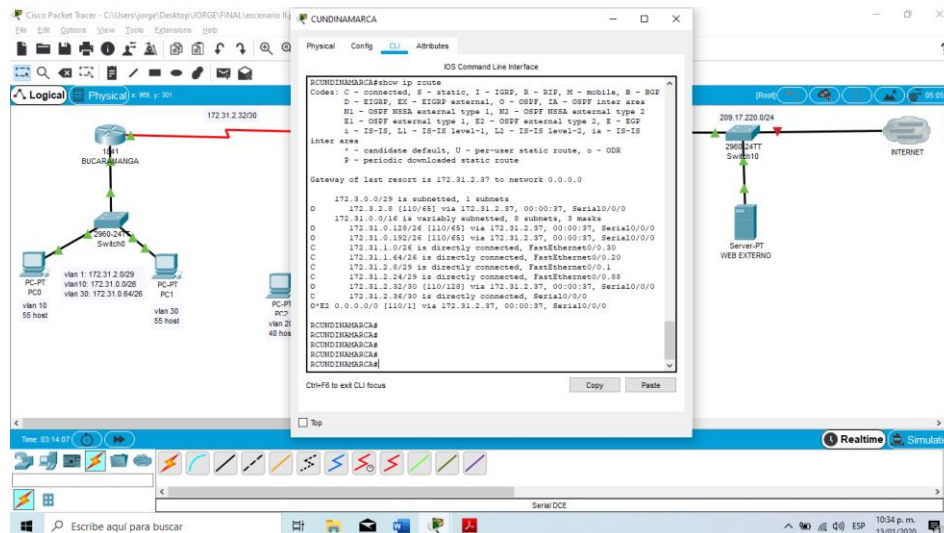


Figure 33

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RBUCARAMANGA>conf term

RBUCARAMANGA>conf term

^

% Invalid input detected at '^' marker.

RBUCARAMANGA>enab

RBUCARAMANGA>enable

Password:

RBUCARAMANGA#conf term

RBUCARAMANGA#conf terminal

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

RBUCARAMANGA(config)#int s0/0/0

RBUCARAMANGA(config-if)#ip ospf authentication message-digest

RBUCARAMANGA(config-if)#ip ospf message-digest-key 1 md5 cisco

RBUCARAMANGA(config-if)#end

RBUCARAMANGA#

%SYS-5-CONFIG_I: Configured from console by console

RBUCARAMANGA#

RCUNDINAMARCA#conf term

RCUNDINAMARCA#conf terminal

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

RCUNDINAMARCA(config)#int s0/0/0

RCUNDINAMARCA(config-if)#ip ospf authentication message-digest

RCUNDINAMARCA(config-if)#ip ospf message-digest-key 1 md5 cisco

RCUNDINAMARCA(config-if)#end

RCUNDINAMARCA#

%SYS-5-CONFIG_I: Configured from console by console

RCUNDINAMARCA#

User Access Verification

Username: admin

```

Password:
RTUNJA>en
RTUNJA>enable
Password:
RTUNJA#conf term
RTUNJA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RTUNJA(config)#int s0/0/0
RTUNJA(config-if)#ip ospf authentication message-digest
RTUNJA(config-if)#ip ospf message-digest-key 1 md5 cisco
RTUNJA(config-if)#
03:17:44: %OSPF-5-ADJCHG: Process 1, Nbr 172.31.2.34 on Serial0/0/0 from LOADING
to FULL, Loading Done

RTUNJA(config-if)#int s0/0/1
RTUNJA(config-if)#ip ospf authentication message-digest
RTUNJA(config-if)#ip ospf message-digest-key 1 md5 cisco
RTUNJA(config-if)#
03:18:09: %OSPF-5-ADJCHG: Process 1, Nbr 172.31.2.38 on Serial0/0/1 from LOADING
to FULL, Loading Done

RTUNJA(config-if)#end
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console

RTUNJA#

```

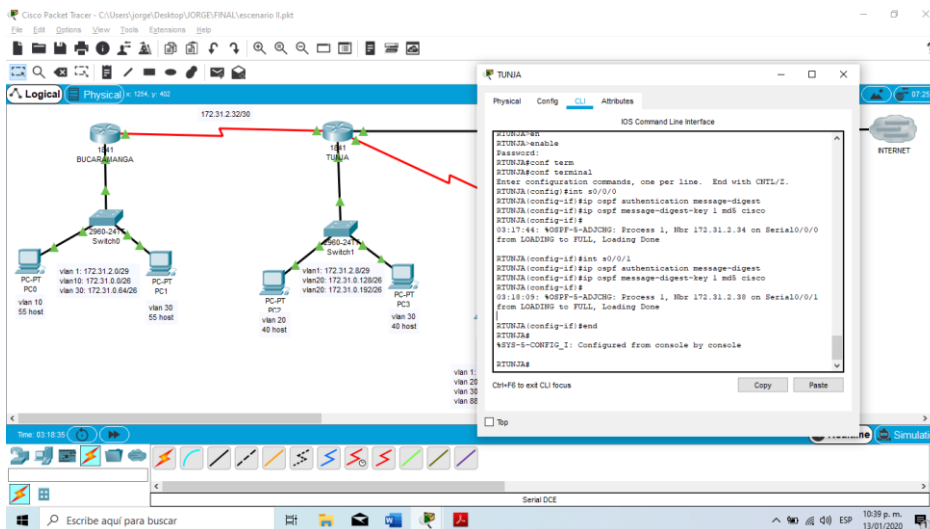


Figure 34

Listas de control de acceso:

Los hosts de VLAN 20 en Cundinamarca no acceden a internet, solo a la red interna de Tunja.

```
RCUNDINAMARCA#
```

```
RCUNDINAMARCA#conf term
```

```
RCUNDINAMARCA#conf terminal
```

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

```
RCUNDINAMARCA(config)#int
```

```
% Incomplete command.
```

```
RCUNDINAMARCA(config)#access-list 111 deny ip 172.31.1.64 0.0.0.63 209.165.220.0  
0.0.0.255
```

```
RCUNDINAMARCA(config)#access-list 111 permit ip any any
```

```
RCUNDINAMARCA(config)#int f0/0.20
```

```
RCUNDINAMARCA(config-subif)#ip access-group 111 in
```

```
RCUNDINAMARCA(config-subif)#end
```

```
RCUNDINAMARCA#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
RCUNDINAMARCA#
```

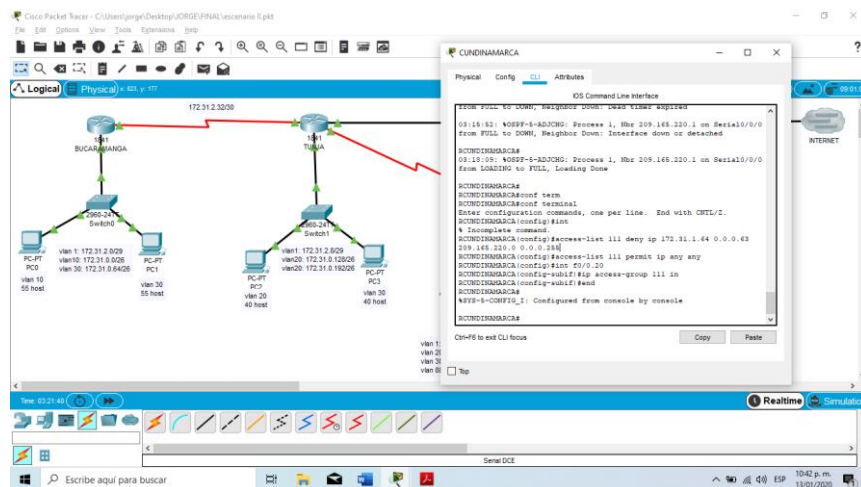


Figure 35

Los hosts de VLAN 10 en Cundinamarca si acceden a internet y no a la red interna de Tunja.

```
RCUNDINAMARCA#
```

```
RCUNDINAMARCA#conf term
```

```

RCUNDINAMARCA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RCUNDINAMARCA(config)#access-list 112 deny ip any any
RCUNDINAMARCA(config)#int f0/0.30
RCUNDINAMARCA(config-subif)#access-list 112 permit ip 172.31.1.0 0.0.0.63
209.165.220.0 0.0.0.255
RCUNDINAMARCA(config)#access-list 112 deny ip any any
RCUNDINAMARCA(config)#int f0/0.30
RCUNDINAMARCA(config-subif)#ip access-group 112 in
RCUNDINAMARCA(config-subif)#end
RCUNDINAMARCA#
%SYS-5-CONFIG_I: Configured from console by console

```

RCUNDINAMARCA#

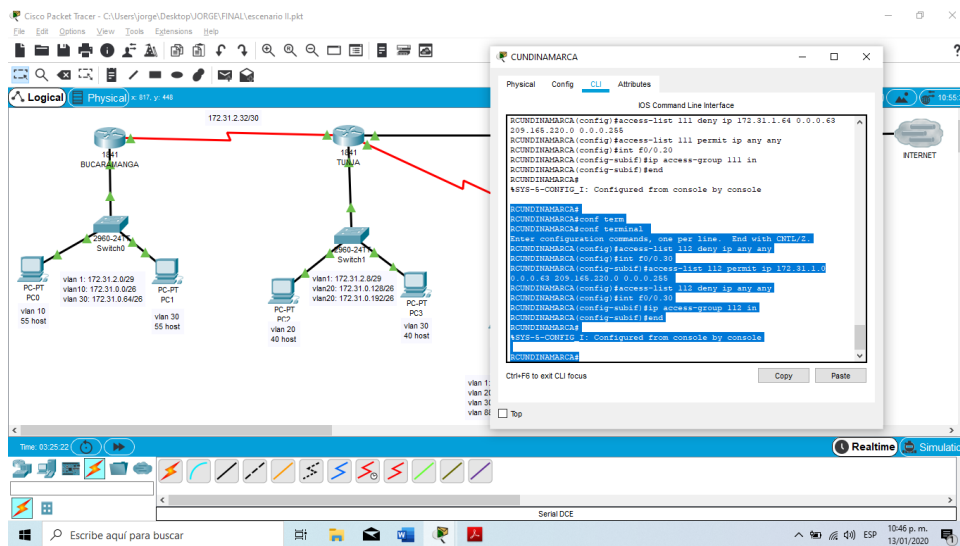


Figure 36

Los hosts de VLAN 30 en Tunja solo acceden a servidores web y ftp de internet.

```

RTUNJA#
RTUNJA#conf term
RTUNJA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RTUNJA(config)#access-list 111 permit tcp 172.31.0.192 0.0.0.63 209.165.220.0 0.0.0.255
eq 80
RTUNJA(config)#access-list 111 permit tcp 172.31.0.192 0.0.0.63 209.165.220.0 0.0.0.255
eq 21
RTUNJA(config)#access-list 111 permit tcp 172.31.0.192 0.0.0.63 209.165.220.0 0.0.0.255
eq 20

```



```

RTUNJA(config)#int f0/0.30
RTUNJA(config-subif)#ip access-group 111 in
RTUNJA(config-subif)#end
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console

```

RTUNJA#

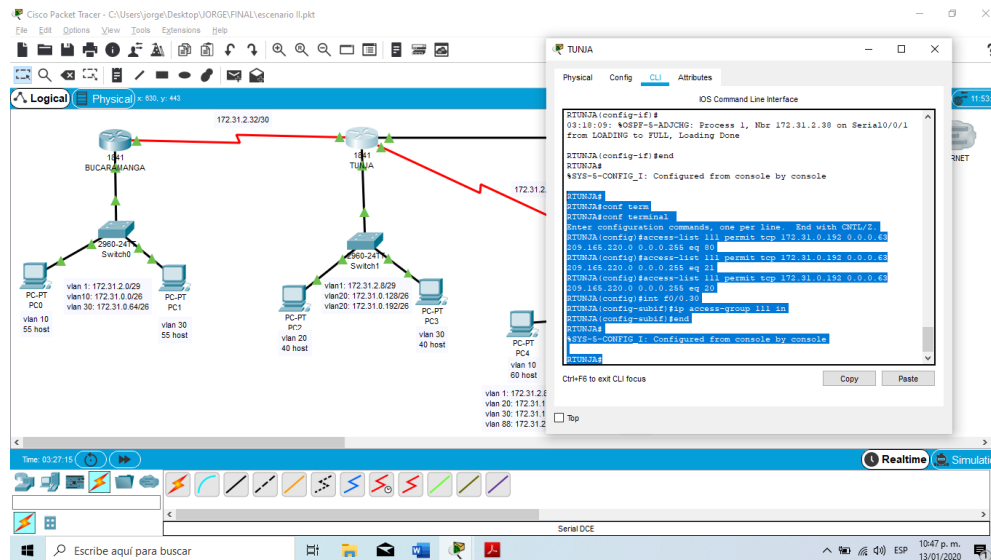


Figure 37

Los hosts de VLAN 20 en Tunja solo acceden a la VLAN 20 de Cundinamarca y VLAN 10 de Bucaramanga.

```

RTUNJA#conf term
RTUNJA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RTUNJA(config)#access-list 112 permit ip 172.31.0.128 0.0.0.63 172.31.1.64 0.0.0.63
RTUNJA(config)#access-list 112 permit ip 172.31.0.128 0.0.0.63 172.31.0.0 0.0.0.63
RTUNJA(config)#int f0/0.20
RTUNJA(config-subif)#access-list 112 permit ip 172.31.0.128 0.0.0.63 172.31.1.64
0.0.0.63
RTUNJA(config)#access-list 112 permit ip 172.31.0.128 0.0.0.63 172.31.0.0 0.0.0.63
RTUNJA(config)#int f0/0.20
RTUNJA(config-subif)#ip access-group 111 in
RTUNJA(config-subif)#end

```

RTUNJA#

%SYS-5-CONFIG_I: Configured from console by console

RTUNJA#

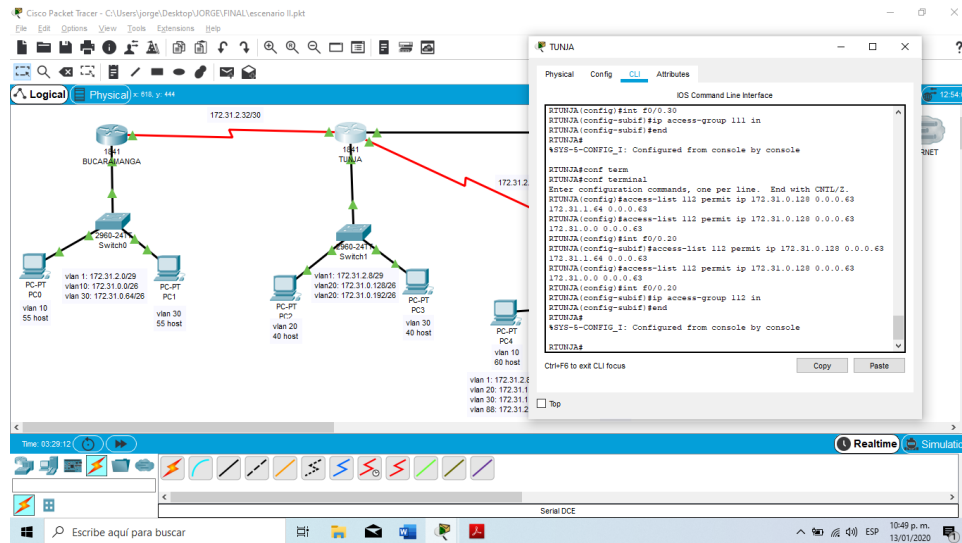


Figure 38

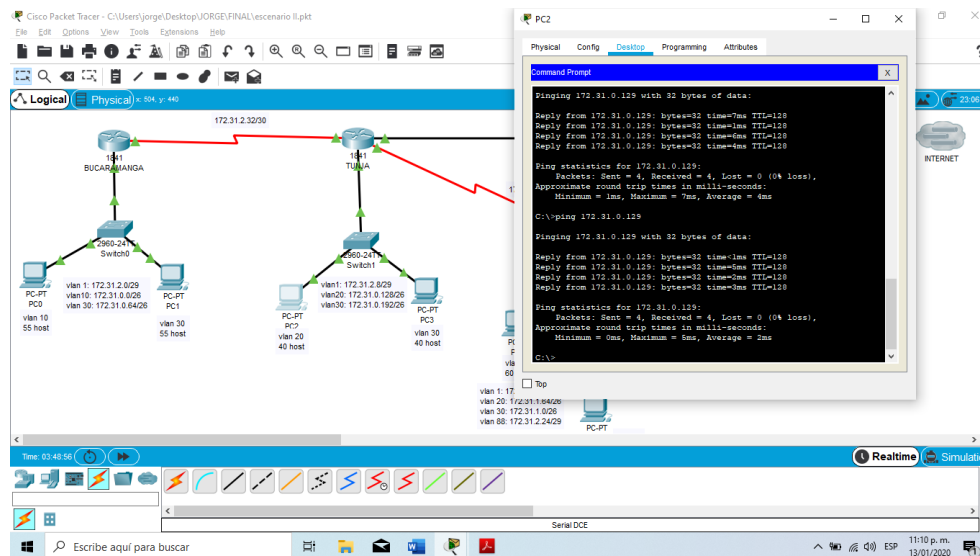


Figure 39

Los hosts de VLAN 30 de Bucaramanga acceden a internet y a cualquier equipo de VLAN 10.

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

```
RBUCARAMANGA>ena
```

```
RBUCARAMANGA>enable
```

Password:

```
RBUCARAMANGA#conf term
```

```
RBUCARAMANGA#conf terminal
```

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

```
RBUCARAMANGA(config)#access-list 111 permit ip 172.31.0.64 0.0.0.63
```

% Incomplete command.

```
RBUCARAMANGA(config)#access-list 111 permit ip 172.31.0.64 0.0.0.63 209.165.220.0 0.0.0.255
```

```
RBUCARAMANGA(config)#int f0/0.30
```

```
RBUCARAMANGA(config-subif)#ip access-group 111 in
```

```
RBUCARAMANGA(config-subif)#end
```

```
RBUCARAMANGA#
```

%SYS-5-CONFIG_I: Configured from console by console

```
RBUCARAMANGA#
```

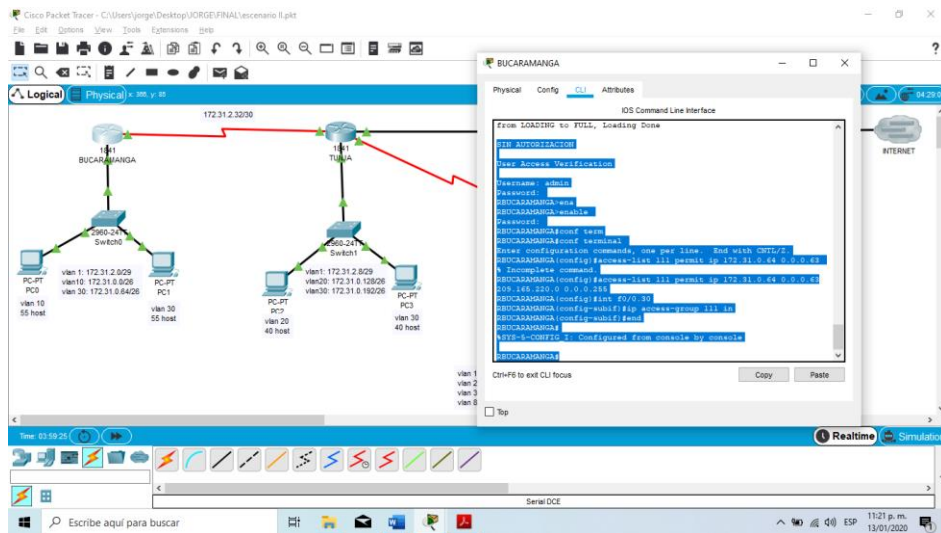


Figure 40

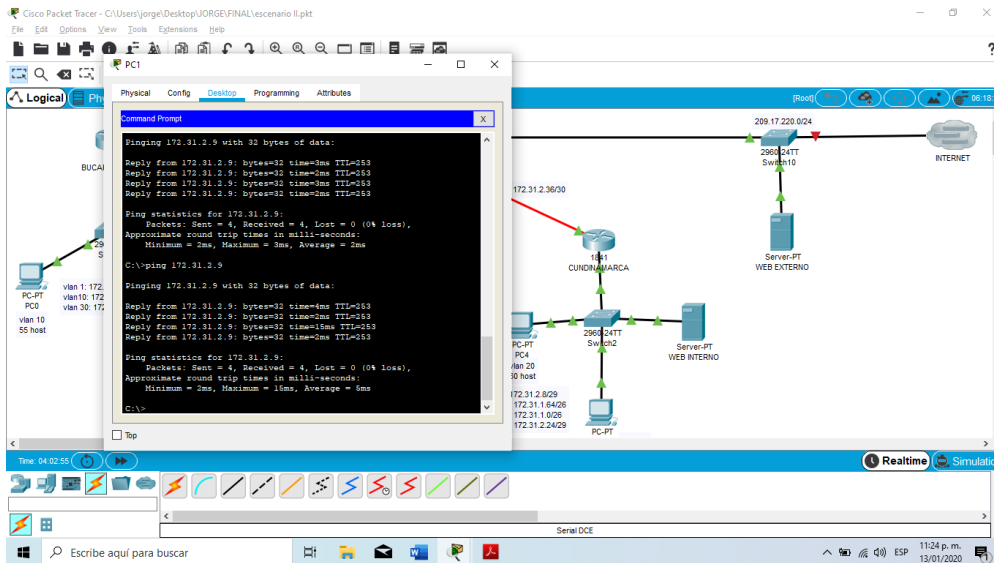


Figure 41

Los hosts de VLAN 10 en Bucaramanga acceden a la red de Cundinamarca (VLAN 20) y Tunja (VLAN 20), no internet.

```

RBUCARAMANGA#
RBUCARAMANGA#conf term
RBUCARAMANGA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RBUCARAMANGA(config)#access-list 112 permit ip 172.31.0.0 0.0.0.63 172.31.1.64
0.0.0.63
RBUCARAMANGA(config)#access-list 112 permit ip 172.31.0.0 0.0.0.63 172.31.0.128
0.0.0.63
RBUCARAMANGA(config)#int f0/0.10
RBUCARAMANGA(config-subif)#ip access-group 112 in
RBUCARAMANGA(config-subif)#end
RBUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console

```

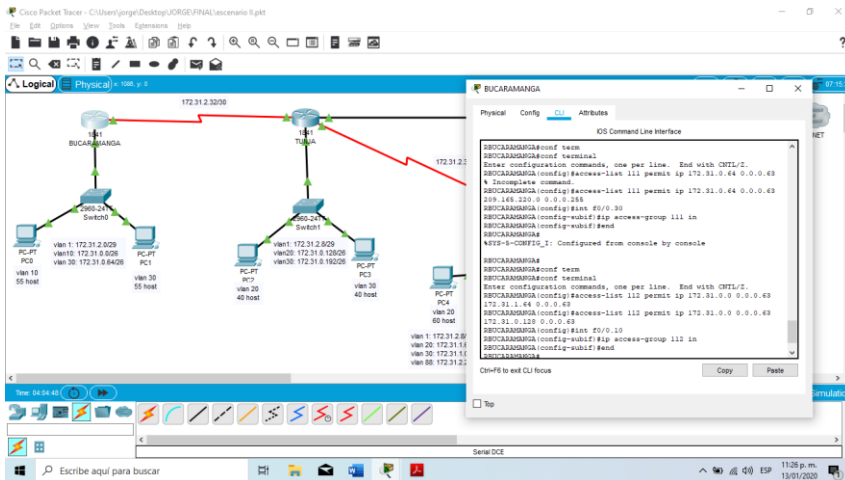


Figure 42

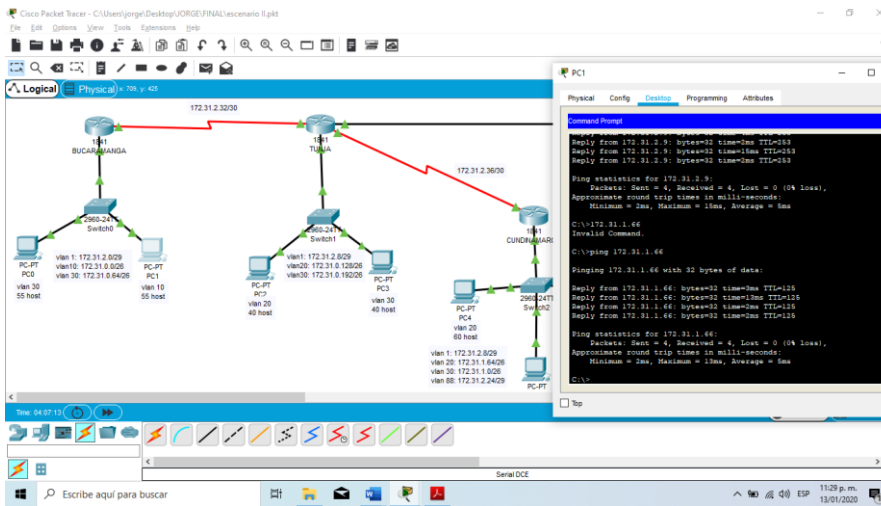


Figure 43

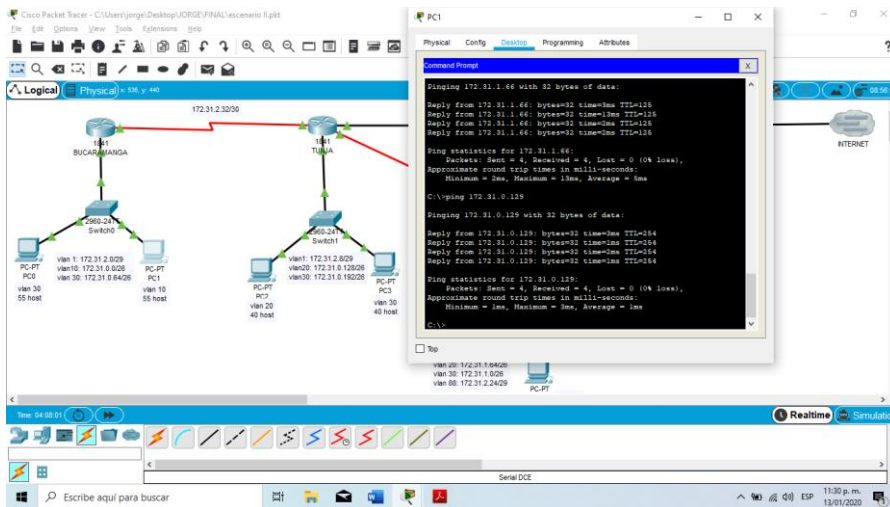


Figure 44

Los hosts de una VLAN no pueden acceder a los de otra VLAN en una ciudad.

```

RBUCARAMANGA#conf term
RBUCARAMANGA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RBUCARAMANGA(config)#access-list 113 deny ip 172.31.2.0 0.0.0.7 172.31.0.0
0.0.0.63
RBUCARAMANGA(config)#access-list 113 deny ip 172.31.0.64 0.0.0.63 172.31.0.0
0.0.0.63
RBUCARAMANGA(config)#access-list 113 permit ip any any
RBUCARAMANGA(config)#int f0/0.10
RBUCARAMANGA(config-subif)#ip access-group 113 out
RBUCARAMANGA(config-subif)#end
RBUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console

RBUCARAMANGA#

```

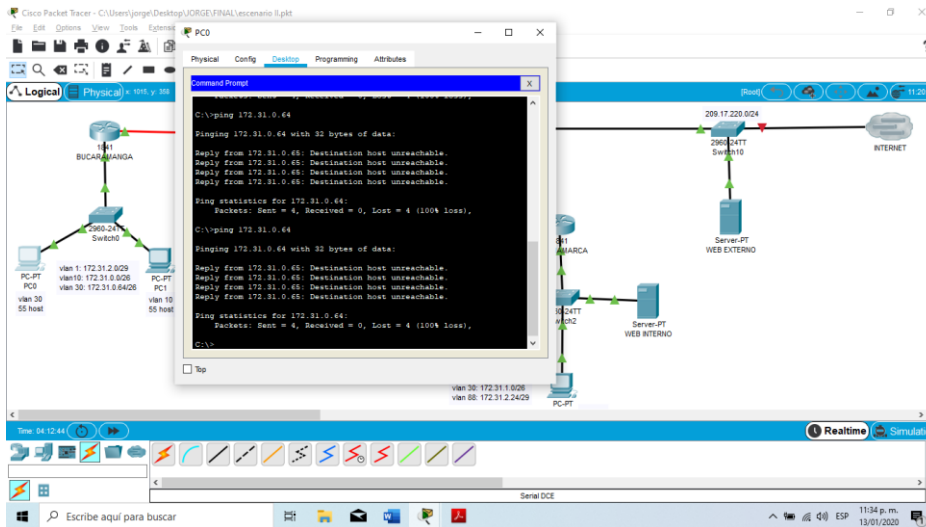


Figure 45

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RTUNJA>ena

RTUNJA>enable

Password:

RTUNJA#conf term

RTUNJA#conf terminal

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

RTUNJA(config)#access-list 113 deny ip 172.3.2.8 0.0.0.7 172.31.0.128 0.0.0.63

RTUNJA(config)#access-list 113 deny ip 172.3.0.192 0.0.0.63 172.31.0.128 0.0.0.63

RTUNJA(config)#access-list 113 permit ip any any

RTUNJA(config)#int f0/0.20

RTUNJA(config-subif)#ip access-group 113 out

RTUNJA(config-subif)#end

RTUNJA#

%SYS-5-CONFIG_I: Configured from console by console

RTUNJA#

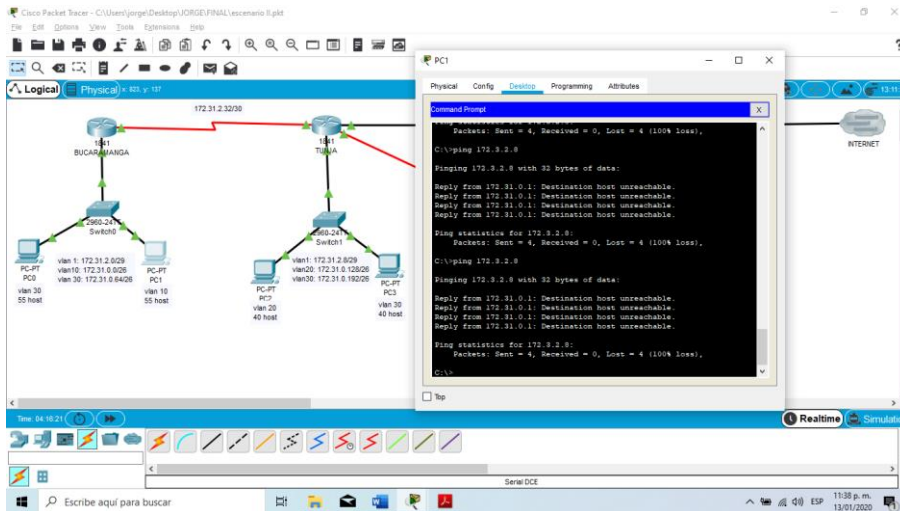


Figure 46

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RCUNDINAMARCA>ena

RCUNDINAMARCA>enable

Password:

RCUNDINAMARCA#conf term

RCUNDINAMARCA#conf terminal

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

RCUNDINAMARCA(config)#access-list 113 deny ip 172.31.2.8 0.0.0.7 172.31.1.64
0.0.0.63

RCUNDINAMARCA(config)#access-list 113 deny ip 172.31.1.0 0.0.0.63 172.31.1.64
0.0.0.63

RCUNDINAMARCA(config)#access-list 113 deny ip 172.31.2.24 0.0.0.7 172.31.1.64
0.0.0.63

RCUNDINAMARCA(config)#access-list 113 permit ip any any

RCUNDINAMARCA(config)#int f0/0.20

RCUNDINAMARCA(config-subif)#ip access-group 113 out

RCUNDINAMARCA(config-subif)#end

RCUNDINAMARCA#

%SYS-5-CONFIG_I: Configured from console by console

RCUNDINAMARCA#

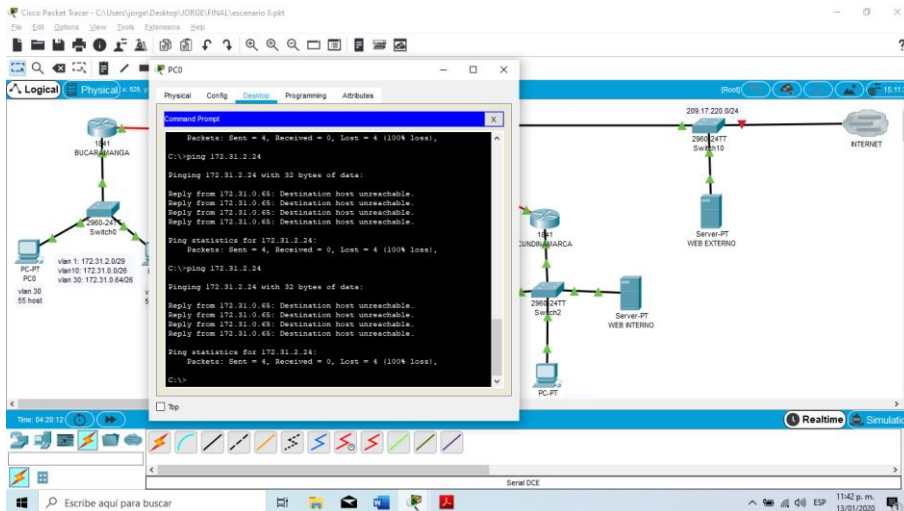


Figure 47

Solo los hosts de las VLAN administrativas y de la VLAN de servidores tienen acceso a los routers e internet.

SIN AUTORIZACION

User Access Verification

Username: admin

Password:

RBUCARAMANGA>ena

RBUCARAMANGA>enable

Password:

RBUCARAMANGA#conf term

RBUCARAMANGA#conf terminal

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

RBUCARAMANGA(config)#access-list 3 permit 172.31.2.0 0.0.0.7

RBUCARAMANGA(config)#access-list 3 permit 172.3.2.8 0.0.0.7

RBUCARAMANGA(config)#access-list 3 permit 172.31.2.8 0.0.0.7

RBUCARAMANGA(config)#line vty 0 15

RBUCARAMANGA(config-line)#access-class 3 in

RBUCARAMANGA(config-line)#end

RBUCARAMANGA#

%SYS-5-CONFIG_I: Configured from console by console

RBUCARAMANGA#

```
RTUNJA#
RTUNJA#conf term
RTUNJA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RTUNJA(config)#access-list 3 permit 172.31.2.0 0.0.0.7
RTUNJA(config)#access-list 3 permit 172.3.2.8 0.0.0.7
RTUNJA(config)#access-list 3 permit 172.31.2.8 0.0.0.7
RTUNJA(config)#line vty 0 15
RTUNJA(config-line)#access-class 3 in
RTUNJA(config-line)#end
RTUNJA#
%SYS-5-CONFIG_I: Configured from console by console
```

```
RTUNJA#
```

```
RCUNDINAMARCA#conf term
RCUNDINAMARCA#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
RCUNDINAMARCA(config)#access-list 3 permit 172.31.2.0 0.0.0.7
RCUNDINAMARCA(config)#access-list 3 permit 172.3.2.8 0.0.0.7
RCUNDINAMARCA(config)#access-list 3 permit 172.31.2.8 0.0.0.7
RCUNDINAMARCA(config)#line vty 0 15
RCUNDINAMARCA(config-line)#access-class 3 in
RCUNDINAMARCA(config-line)#end
RCUNDINAMARCA#
%SYS-5-CONFIG_I: Configured from console by console
```

```
RCUNDINAMARCA#
```

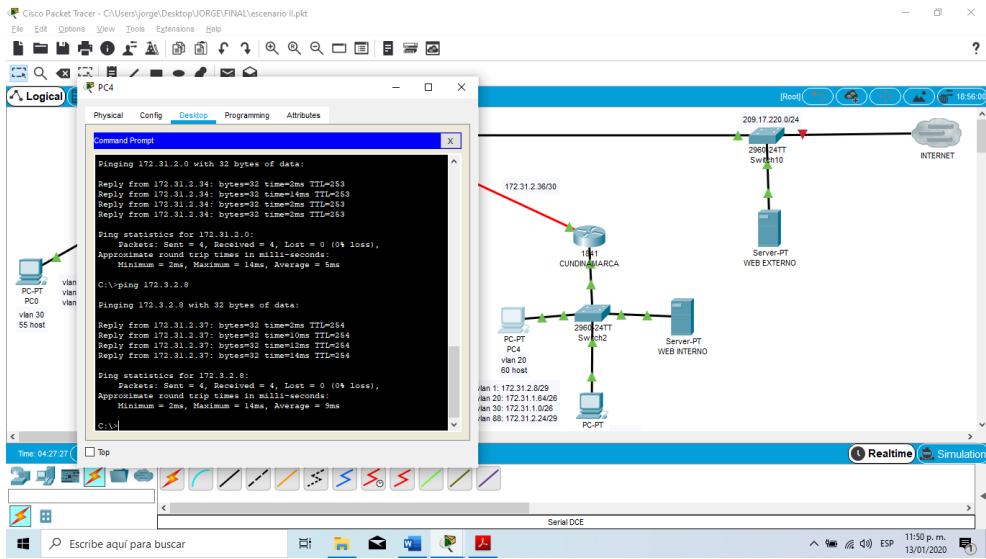


Figure 48

Conclusiones

- El diplomado me brindo conocimientos importantes en mi carrera venidera como ingeniero de Sistemas, aportando grandes expectativas a nivel laboral y personal para continuar capacitándome y dar apoyo en todo lo que se pueda a mi empresa.
- Se obtuvieron los logros que se querían obtener, el aprendizaje que se quería adquirir y termino gratamente satisfecho por la labor realizada.
- Se adquirieron los conocimientos esenciales para el manejo de redes, y el manejo del simulador Cisco PacketTracer, el cual es de vital importancia para la ejecución de los ejercicios.

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