

Laboratorio No. 5

Plataforma base y capa de enlace

MARCO TEÓRICO

Virtual Local Area Network

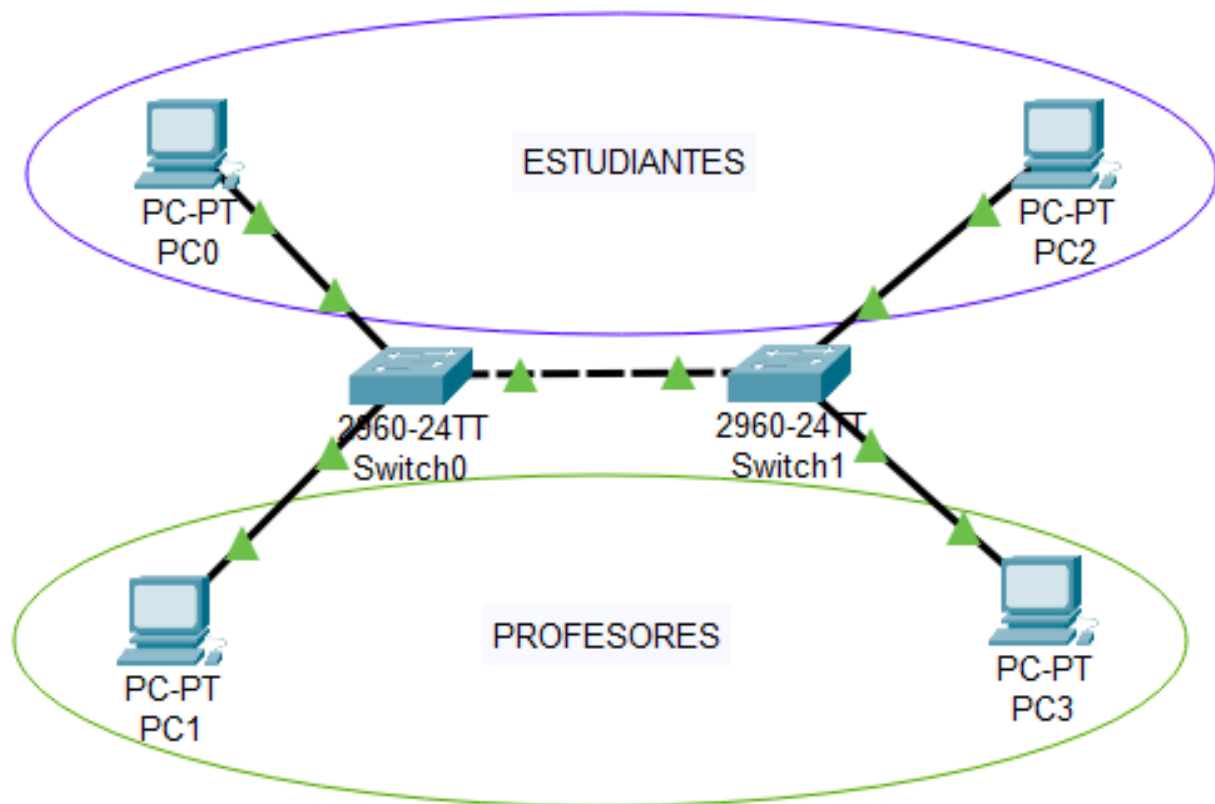
Una red de área local virtual (Virtual Local Area Network o VLAN) es un segmento lógico más pequeño dentro de una gran red física cableada. Las diferentes estaciones se combinan en una solución de red independiente de su ubicación: siempre que estén conectadas entre sí en la misma LAN, es posible combinarlas mediante una VLAN. No supone ningún problema que la LAN abarque varios switches. Lo único importante es que el switch también sea compatible con la VLAN. La única manera de crear VLAN es utilizando switches gestionables (Managed Switches).

Cada VLAN individual recibe su propio dominio de difusión o dominio de broadcast. Si un participante envía una difusión dentro de la VLAN, todos los demás participantes de ese segmento (y solo esos participantes) reciben el mensaje. La difusión no se transmite más allá de los límites de la red virtual. La comunicación entre diferentes VLAN se produce a veces utilizando los mismos cables.

Una VLAN puede configurarse de varias maneras. Dependiendo del tipo de VLAN, encontraremos una tecnología diferente. En la práctica, se utilizan dos tipos de VLAN: las VLAN basadas en puertos y VLAN etiquetadas (en inglés, tagged VLAN). En muchos casos, los administradores de red realizan sus instalaciones y asignaciones utilizando un híbrido de estos dos tipos.

- VLAN basada en puertos: Grosso modo, se enruta a cada participante de la red en un switch a través de un puerto; hay una toma en la que se enchufa el cable de red que corresponde al ordenador pertinente (no obstante, los puertos también se utilizan para conectar los switches entre sí). Si quisieras crear dos VLAN a partir de esta red física, habría que asignar los puertos correspondientes a la red virtual deseada.
- VLAN etiquetada o Tagged VLAN: En las VLAN etiquetadas la asignación a las VLAN es más dinámica. En lugar de tener que establecerse en el switch, una etiqueta (tag) en el marco del datagrama se encarga de la asignación. Por esta razón, esta técnica también se denomina, en analogía a las redes basadas en puertos, como basada en marcos. En la etiqueta se encuentra la información sobre la VLAN en la que se encuentra actualmente. De esta manera, un switch puede reconocer en qué segmento se produce la comunicación y reenviar el mensaje en consecuencia.

1. CONFIGURACIÓN VLAN



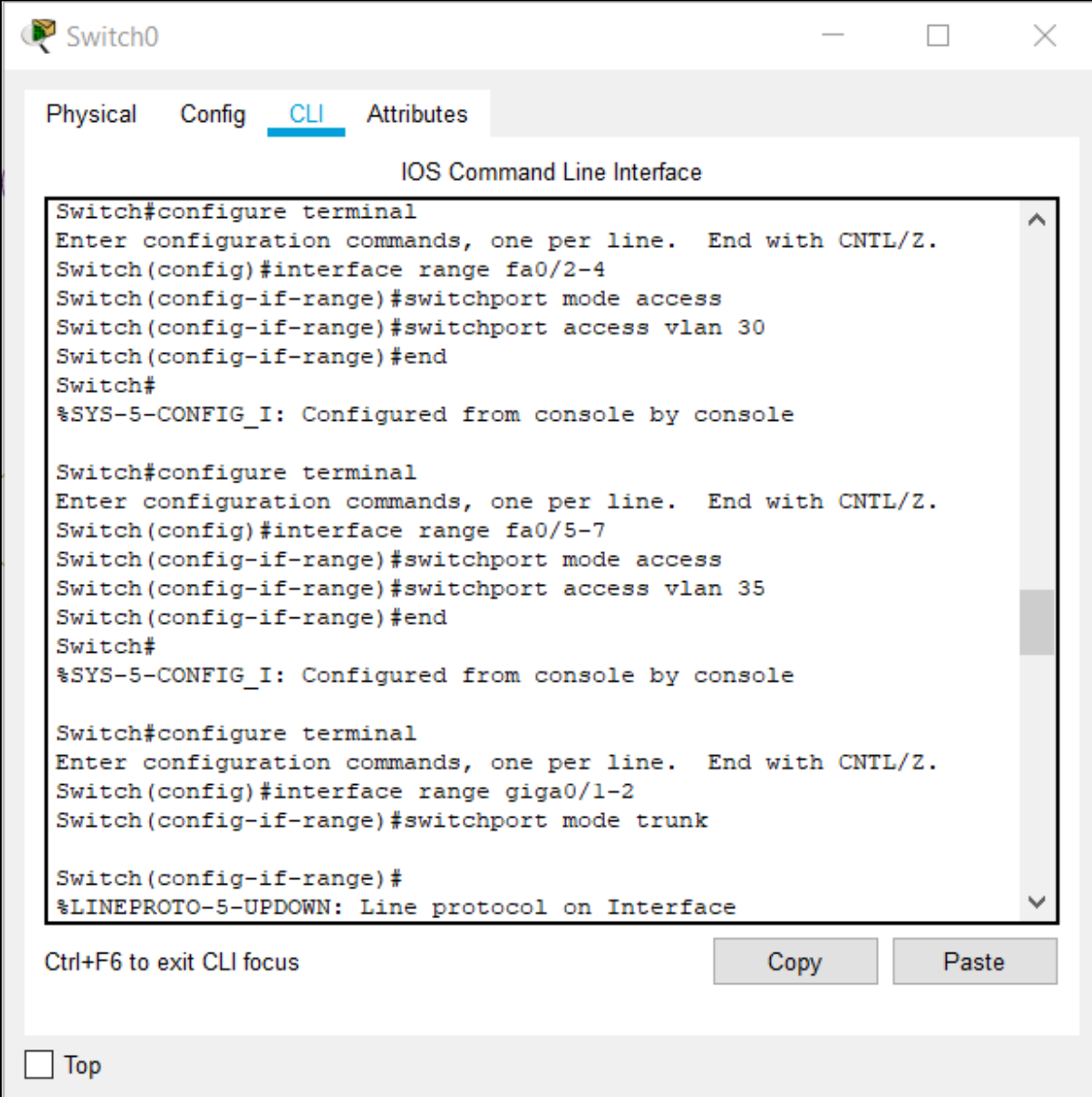
- Configuración Switch 0

```
Switch>enable
Switch#configure terminal
```

```
Switch(config)#vlan 30
Switch(config-vlan)#namr Estudiantes
      ^
% Invalid input detected at '^' marker.

Switch(config-vlan)#name Estudiantes
Switch(config-vlan)#end
Switch#
```

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 35
Switch(config-vlan)#name Profesores
Switch(config-vlan)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```



The screenshot shows a window titled "Switch0" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The interface shows three sequential configuration sessions. Each session starts with "Switch#configure terminal", followed by prompts to enter configuration commands. The first session configures interfaces fa0/2-4 as access ports in VLAN 30. The second session configures interfaces fa0/5-7 as access ports in VLAN 35. The third session configures interfaces giga0/1-2 as trunk ports. Each session ends with "Switch#" and a system message "%SYS-5-CONFIG_I: Configured from console by console". At the bottom, there is a "Ctrl+F6 to exit CLI focus" message and "Copy" and "Paste" buttons. A "Top" button is also visible at the bottom left.

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface range fa0/2-4
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface range fa0/5-7
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 35
Switch(config-if-range)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface range giga0/1-2
Switch(config-if-range)#switchport mode trunk

Switch(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

```
Switch(config-if-range)#switchport nonegotiate
Switch(config-if-range)#exit
Switch(config)#do write memory
Building configuration...
[OK]
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

- Configuración Switch 1

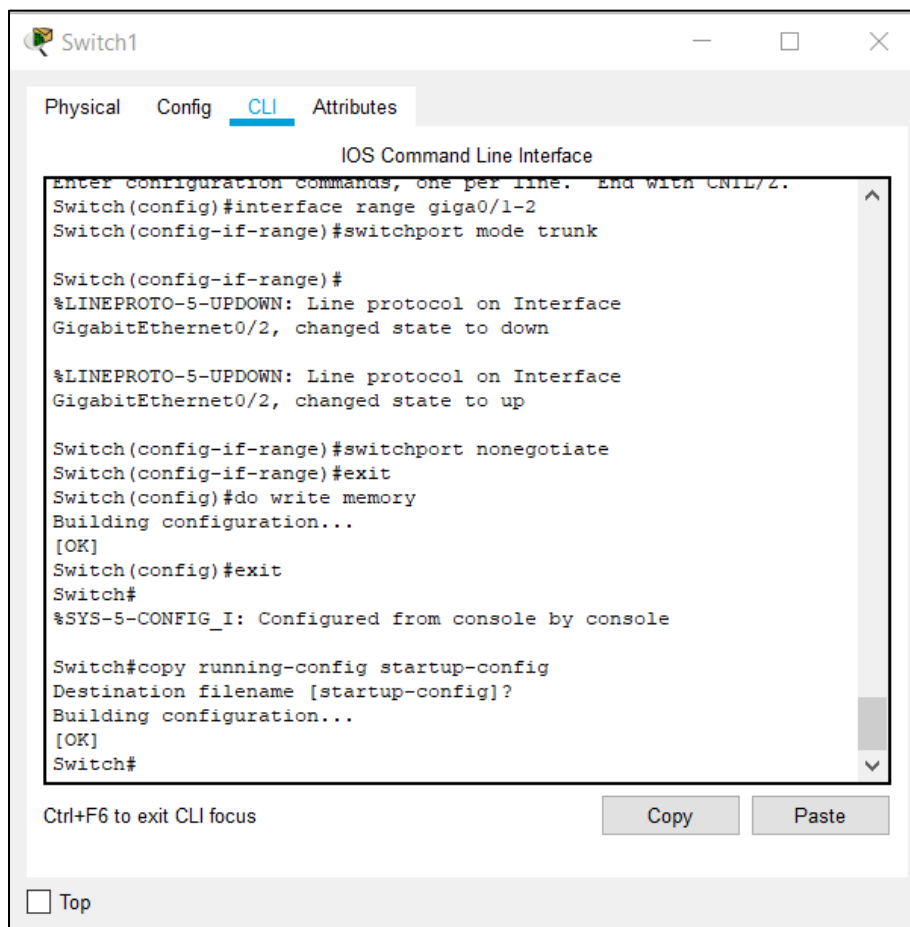
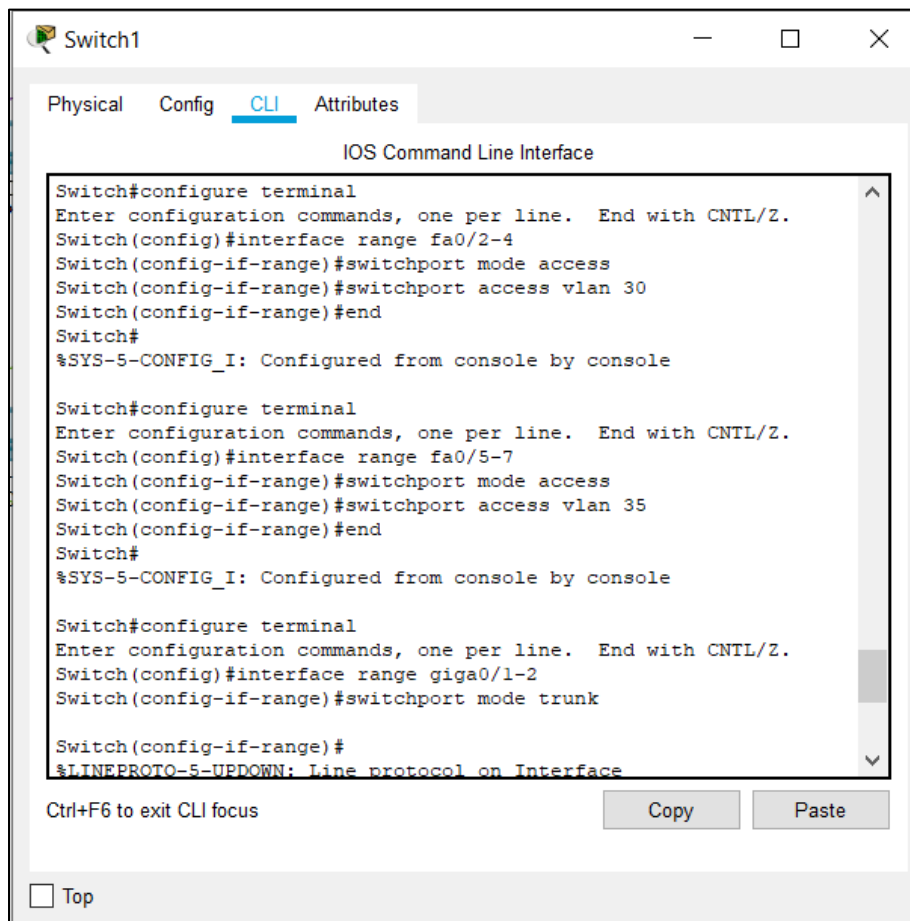
```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 35
Switch(config-vlan)#name Profesores
Switch(config-vlan)#end
```

```
Switch#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gig0/1, Gig0/2
35 Profesores	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

```
Switch#
```

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 30
Switch(config-vlan)#name Estudiantes
Switch(config-vlan)#end
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

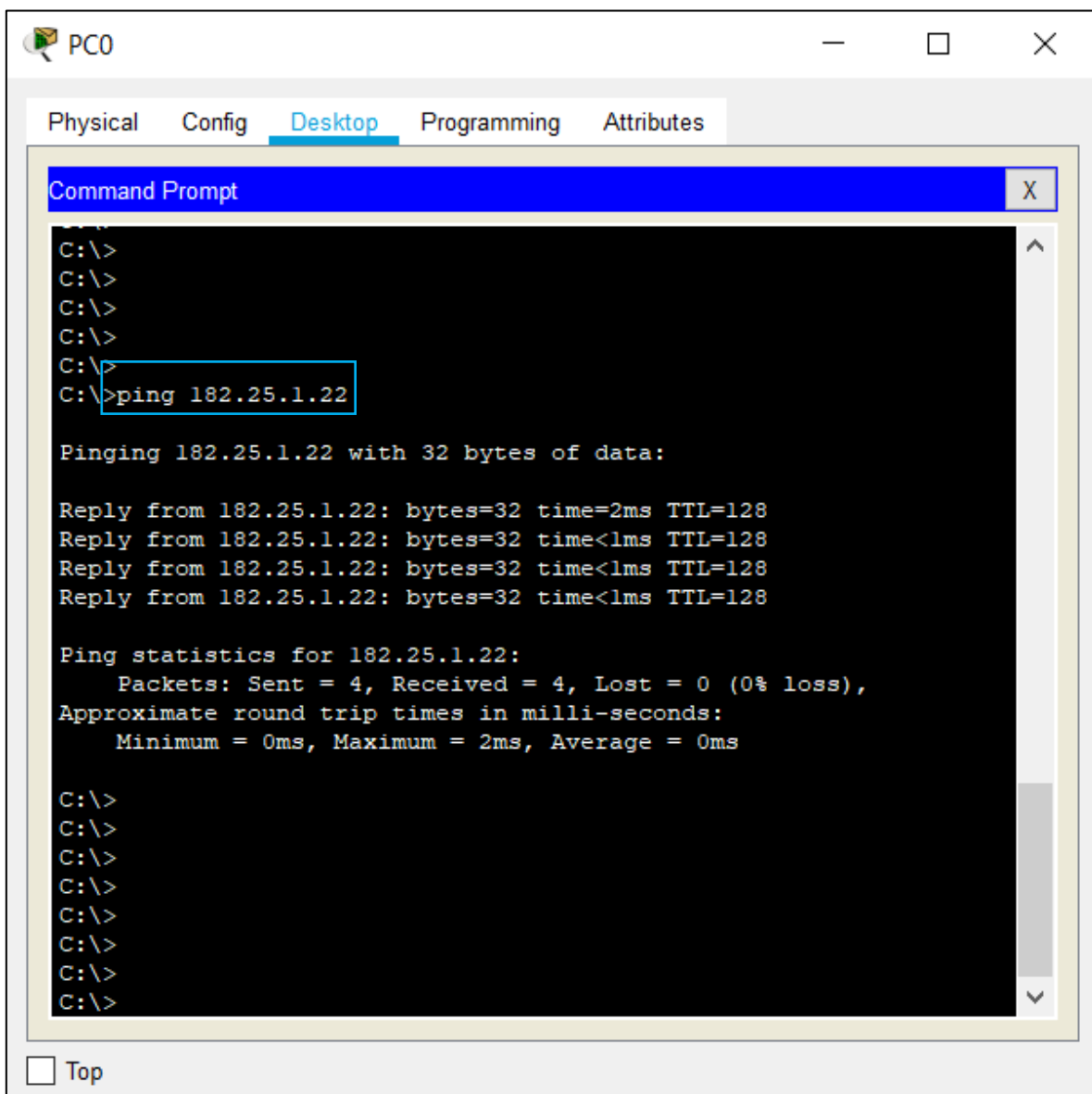


- ¿Qué son enlaces troncales?

Un enlace troncal es un enlace punto a punto, entre dos dispositivos de red, que transporta más de una VLAN. Un enlace troncal de VLAN le permite extender las VLAN a través de toda una red. Cisco admite IEEE 802.1Q para la coordinación de enlaces troncales en interfaces Fast Ethernet y Gigabit Ethernet. Más adelante en esta sección, aprenderá acerca de 802.1Q.

Un enlace troncal de VLAN no pertenece a una VLAN específica, sino que es un conducto para las VLAN entre switches y routers.

- Conectividad
 - VLAN 30 - ESTUDIANTES
 - PC0 (IP 182.25.1.20)
 - PC2 (IP 182.25.1.22)



The screenshot shows a window titled "PC0" with a tabbed interface. The "Desktop" tab is active, displaying a "Command Prompt" window. The Command Prompt shows a series of "C:\>" prompts, followed by the command "ping 182.25.1.22" which is highlighted with a red box. The output of the command is as follows:

```
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ping 182.25.1.22

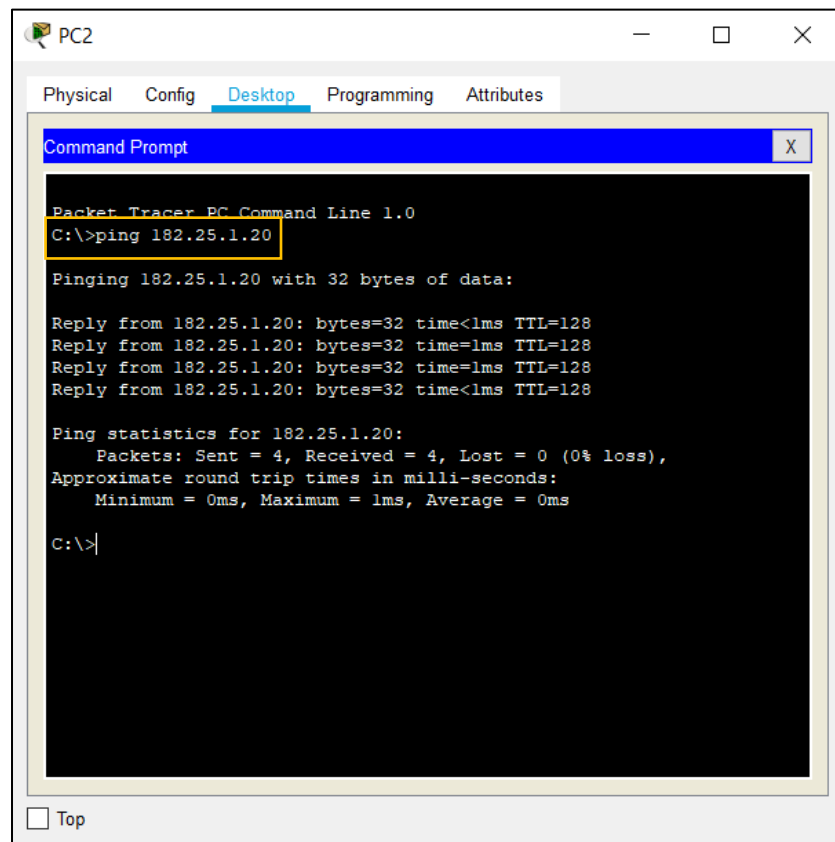
Pinging 182.25.1.22 with 32 bytes of data:

Reply from 182.25.1.22: bytes=32 time=2ms TTL=128
Reply from 182.25.1.22: bytes=32 time<1ms TTL=128
Reply from 182.25.1.22: bytes=32 time<1ms TTL=128
Reply from 182.25.1.22: bytes=32 time<1ms TTL=128

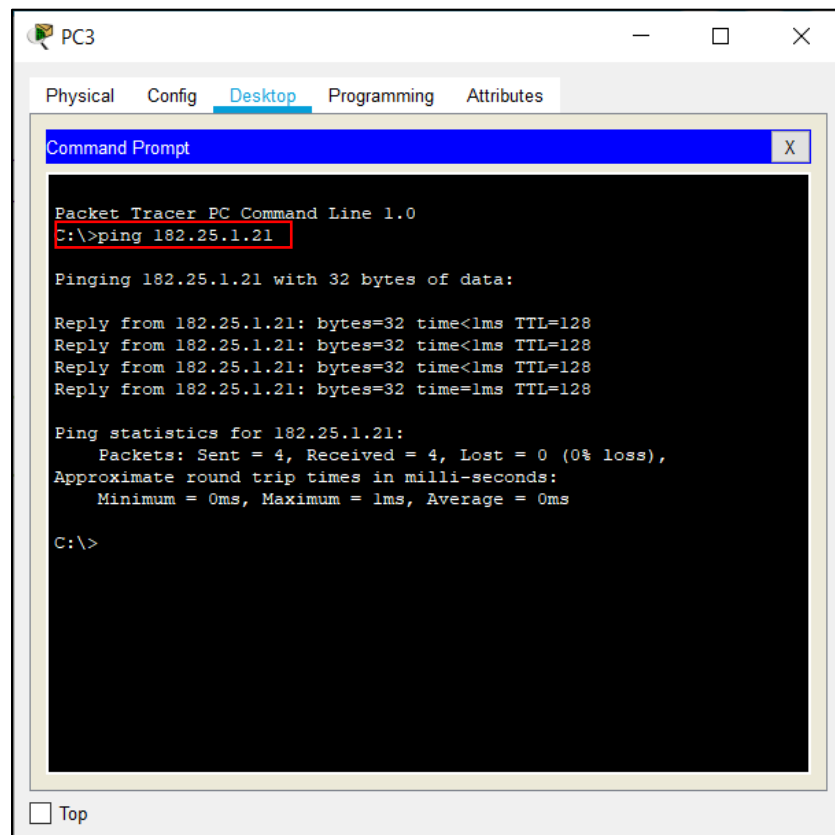
Ping statistics for 182.25.1.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

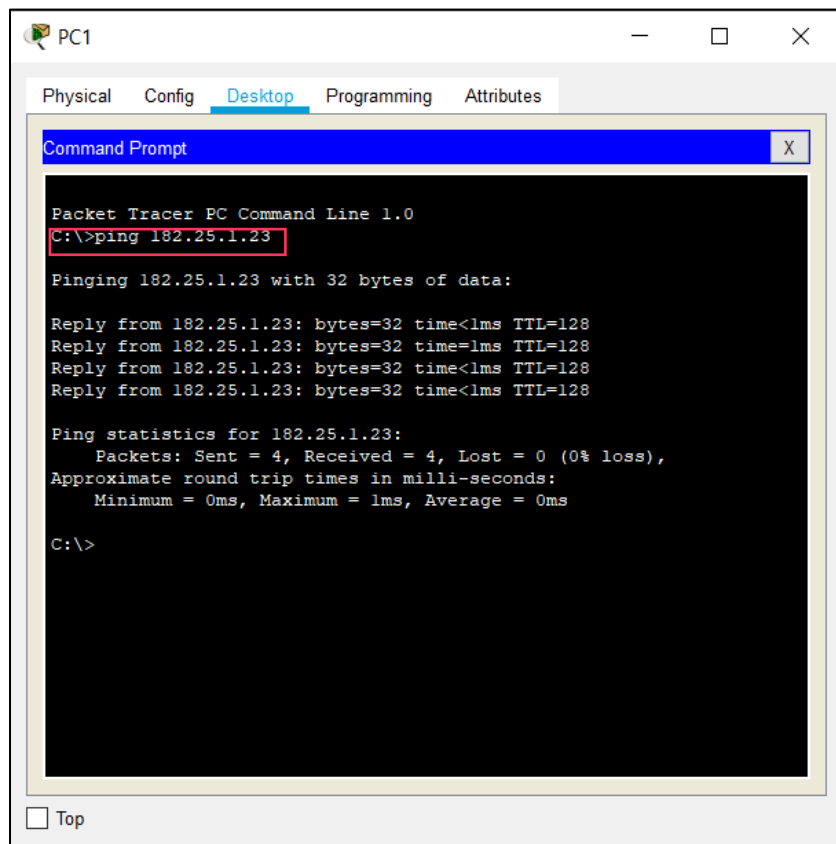
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
```

At the bottom of the window, there is a "Top" button with a small square icon to its left.

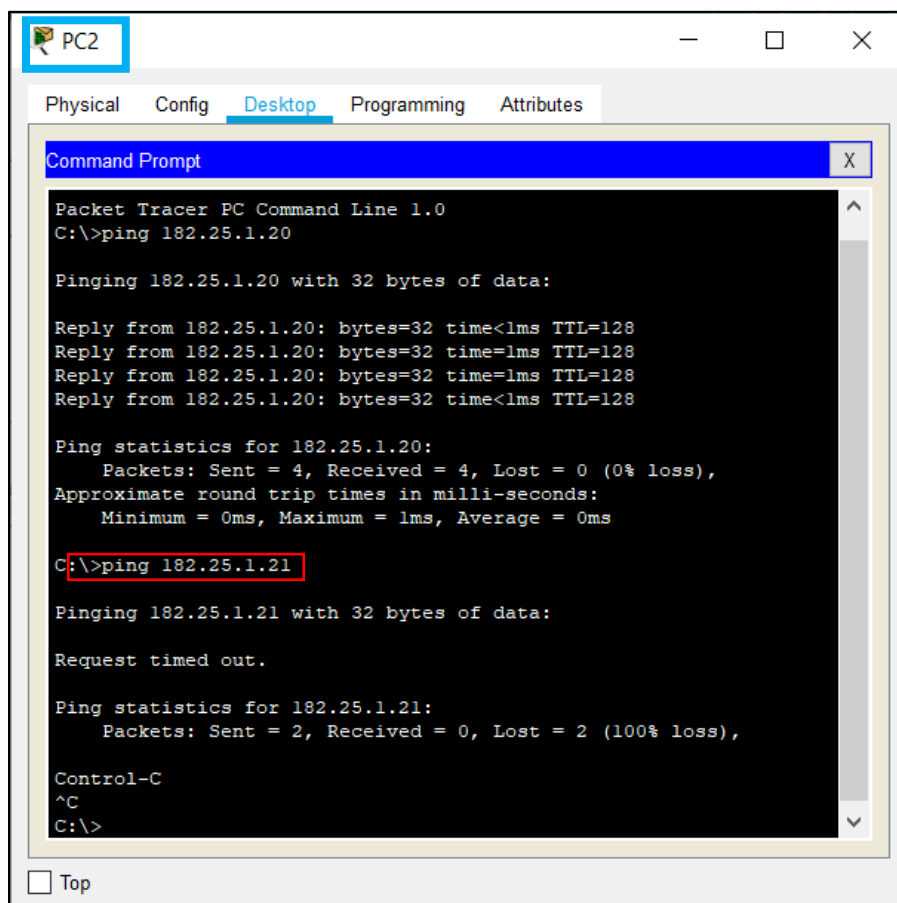


- VLAN 30 - ESTUDIANTES
PC1 (IP 182.25.1.21)
PC3 (IP 182.25.1.23)





Conexiones entre VLAN.



2. REVISIÓN DE FRAMES CON VLANs

Cisco Packet Tracer - C:\Users\S7301\Documents\Universidad\RECO\LABORATORIOS\LAB05\PACKET TRACER\LAB05_01_Gabriela.pkt

File Edit Options View Tools Extensions Help

PDU Information at Device: PC0

OSI Model [Inbound PDU Details](#)

PDU Formats

EthernetII

Bytes	0	4	8	12	16	20	24
PREAMBLE: 101010...10				SFD		DEST ADDR: 0030.F2A3.4B8C	
SRC ADDR: 0001.9767.B72D				TYPE: 0x0800		DATA (VARIABLE LENGTH)	
FCS: 0x00000000							

IP

Bits	0	4	8	12	16	20	24
VER: 4				IHL: 5		DSCP: 0x00	
ID: 0x0008				FLAGS: 0x0		FRAG OFFSET: 0x000	
TTL: 128				PRO: 0x01		CHKSUM	
SRC IP: 182.25.1.22							
DST IP: 182.25.1.20							
DATA (VARIABLE LENGTH)							

ICMP

Bits	0	4	8	12	16	20	24
TYPE: 0x00				CODE: 0x00		CHECKSUM	
ID: 0x0003				SEQ NUMBER: 8			

Variable Size PDU

Bytes	0	4	8	12	16	20	24
DATA (VARIABLE LENGTH)							

PC0

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Pinging 182.25.1.22 with 32 bytes of data:  
Reply from 182.25.1.22: bytes=32 time=12ms TTL=128  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
  
Ping statistics for 182.25.1.22:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 6ms, Maximum = 12ms, Average = 7ms  
  
C:\>ping 182.25.1.22  
  
Pinging 182.25.1.22 with 32 bytes of data:  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
Reply from 182.25.1.22: bytes=32 time=6ms TTL=128  
  
Ping statistics for 182.25.1.22:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 6ms, Maximum = 6ms, Average = 6ms  
  
C:\>
```

Scenario 0 Fire Last Status Source Destination Type

New Delete

Toggle PDU List Window

ISR4331

PDU Information at Device: PC0

OSI Model [Inbound PDU Details](#)

PDU Formats

EthernetII

Bytes	0	4	8	12	16	20	24
PREAMBLE: 101010...10				SFD		DEST ADDR: 0030.F2A3.4B8C	
SRC ADDR: 0001.9767.B72D				TYPE: 0x0800		DATA (VARIABLE LENGTH)	
FCS: 0x00000000							

IP

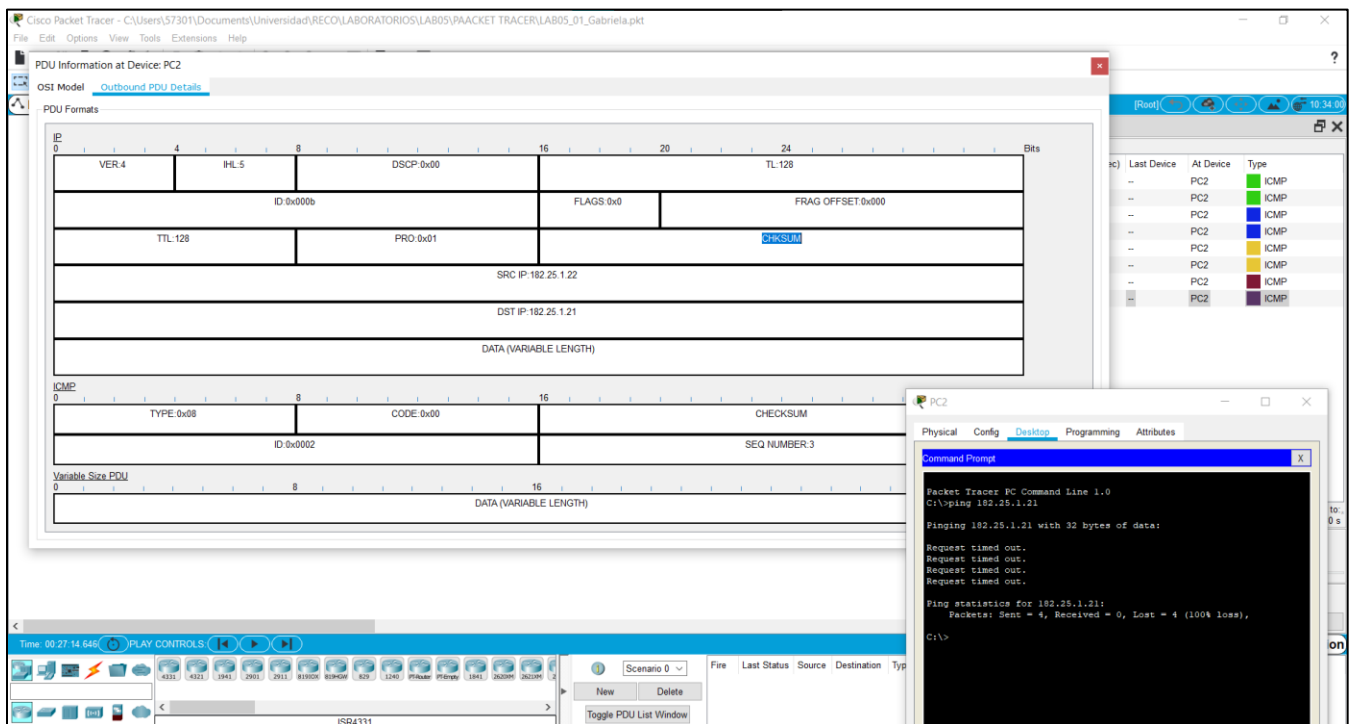
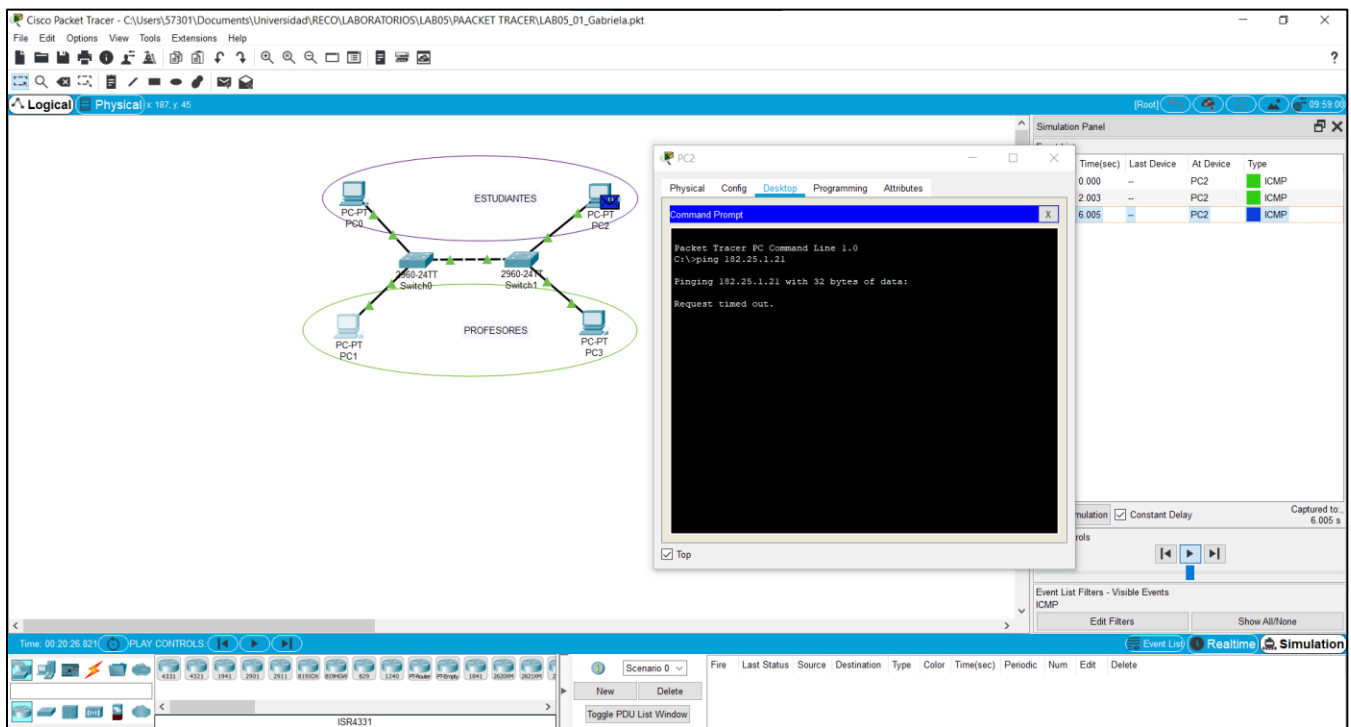
Bits	0	4	8	12	16	20	24
VER: 4				IHL: 5		DSCP: 0x00	
ID: 0x0008				FLAGS: 0x0		FRAG OFFSET: 0x000	
TTL: 128				PRO: 0x01		CHKSUM	
SRC IP: 182.25.1.22							
DST IP: 182.25.1.20							
DATA (VARIABLE LENGTH)							

ICMP

Bits	0	4	8	12	16	20	24
TYPE: 0x00				CODE: 0x00		CHECKSUM	
ID: 0x0003				SEQ NUMBER: 8			

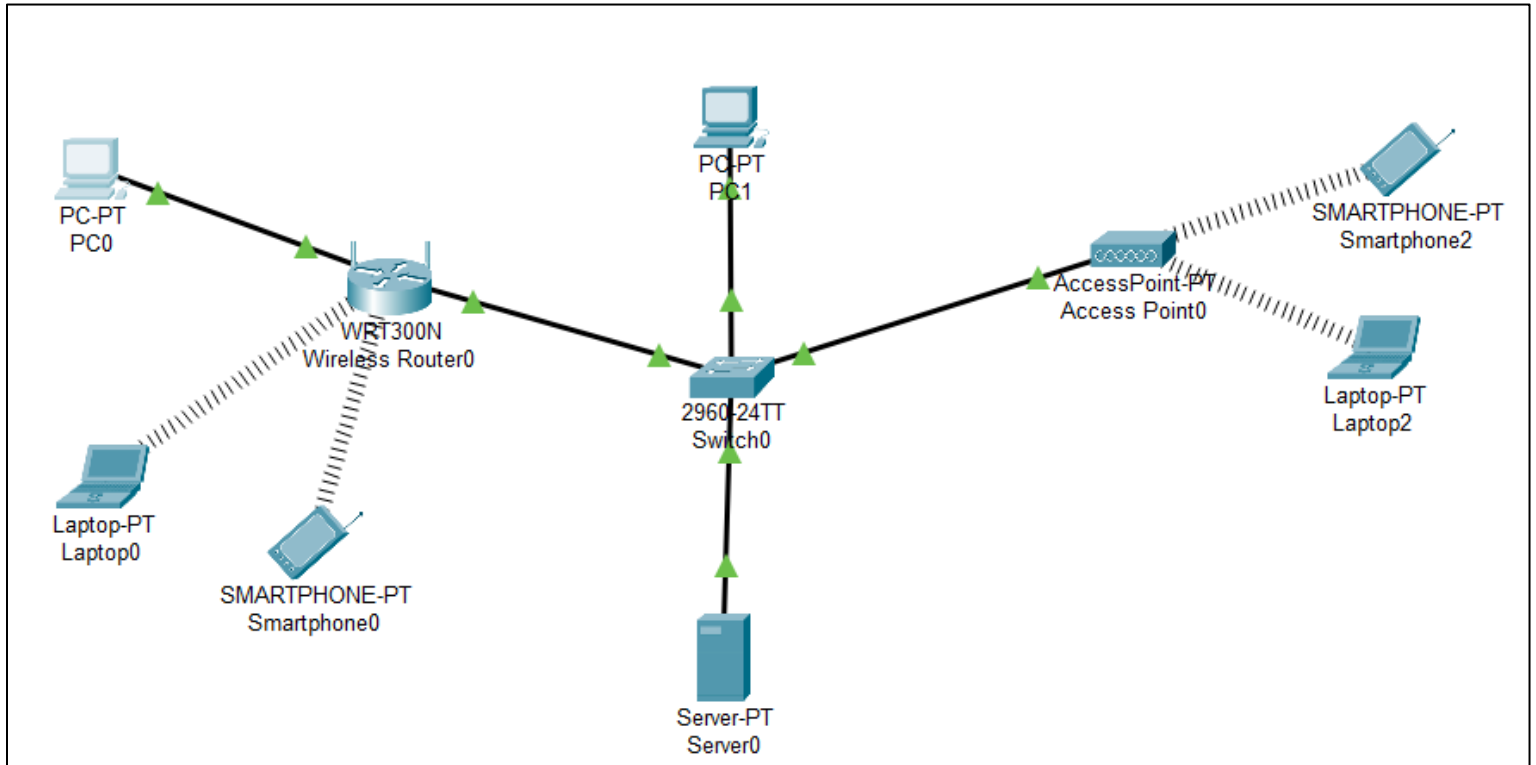
Variable Size PDU

Bytes	0	4	8	12	16	20	24
DATA (VARIABLE LENGTH)							

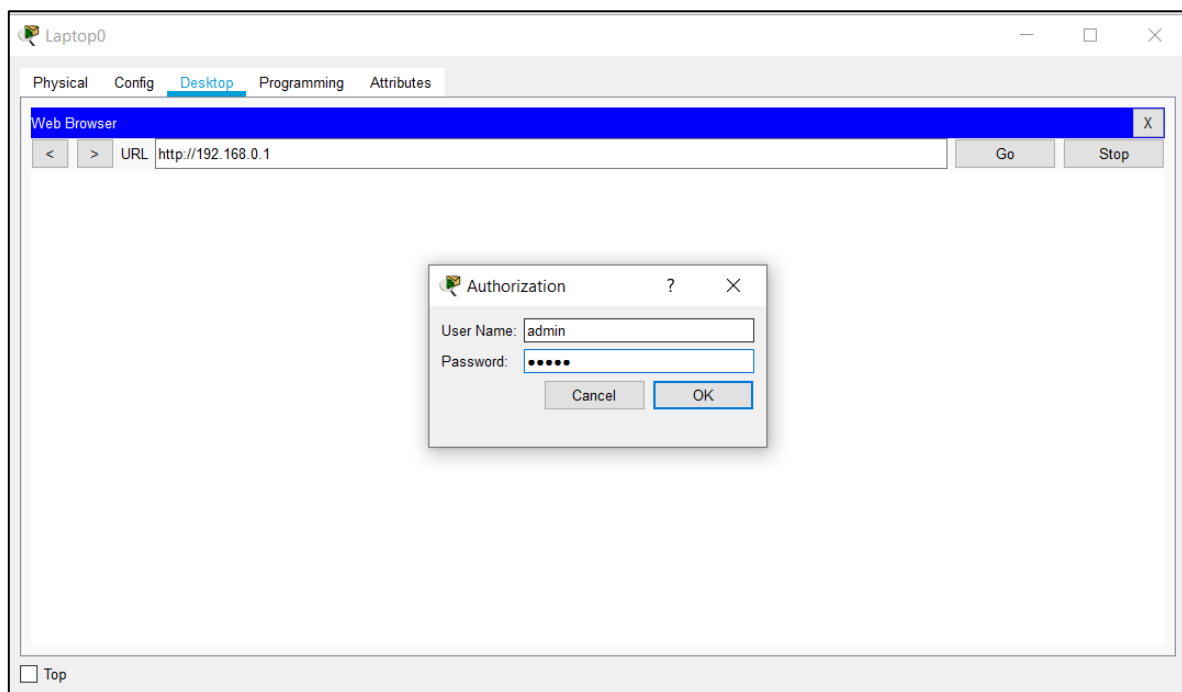


Al hacer ping entre los equipos de una misma VLAN, se muestra en la imagen con borde rojo que al principio de la información del PDU, se ve en el frame de Ethernet las direcciones de destino y de llegada. En la última imagen, no se genera este frame ya que no están dentro de la misma VLAN, se confirma que no se pueden enviar mensajes entre VLANs.

3. CONFIGURACIÓN BÁSICA WIFI



CONFIGURACIÓN.



Ingreso al router vía web desde Laptop0

Laptop0

Physical Config **Desktop** Programming Attributes

Web Browser

< > URL http://192.168.0.1/

Internet Setup

Internet Connection type: Static IP

Internet IP Address: 120 . 53 . 0 . 3

Subnet Mask: 255 . 255 . 0 . 0

Default Gateway: 120 . 53 . 0 . 1

DNS 1: 0 . 0 . 0 . 0

DNS 2 (Optional): 0 . 0 . 0 . 0

DNS 3 (Optional): 0 . 0 . 0 . 0

Host Name:

Domain Name:

MTU: Size: 1500

Optional Settings (required by some internet service providers)

Network Setup

Router IP: IP Address: 192 . 168 . 0 . 1

Subnet Mask: 255.255.255.0

DHCP Server: ☒ Enabled ☐ Disabled **DHCP Reservation**

Start IP Address: 192.168.0. 50

Maximum number of Users: 20

IP Address Range: 192.168.0. 50 - 69

Client Lease Time: 0 minutes (0 means one day)

Static DNS 1: 0 . 0 . 0 . 0

Static DNS 2: 0 . 0 . 0 . 0

Static DNS 3: 0 . 0 . 0 . 0

WINS: 0 . 0 . 0 . 0

Help...

Configuración LAN y Wireless

Laptop0

Physical Config **Desktop** Programming Attributes

Web Browser

< > URL http://192.168.0.1/WL_WPATable.asp

Wireless

Setup Wireless Security Access Restrictions Applications & Gaming Administration Status

Basic Wireless Settings Wireless Security Guest Network Wireless MAC Filter Advanced Wireless Settings

Wireless Security

Security Mode: WPA2 Personal

Encryption: AES

Passphrase: Escuela_123

Key Renewal: 3600 seconds

Help...

Seguridad de la red inalámbrica

Laptop0

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 0060.5CC3.82EE

SSID Gabriela

Authentication

☐ Disabled
 ☐ WEP
 ☒ WPA2-PSK
 ☐ WPA
 ☐ WPA2
 ☐ 802.1X

Method:

WEP Key

PSK Pass Phrase Escuela_123

User ID

Password

MD5

User Name

Password

Encryption Type AES

IP Configuration

☒ DHCP
 ☐ Static

IPv4 Address 192.168.0.51

Subnet Mask 255.255.255.0

☐ Top

Conexión Wireless Laptop0

Smartphone0

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

3G/4G Cell1

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 0050.0F33.1B2E

SSID Gabriela

Authentication

☐ Disabled
 ☐ WEP
 ☒ WPA2-PSK
 ☐ WPA
 ☐ WPA2
 ☐ 802.1X

Method:

WEP Key

PSK Pass Phrase Escuela_123

User ID

Password

MD5

User Name

Password

Encryption Type AES

IP Configuration

☒ DHCP
 ☐ Static

IPv4 Address 192.168.0.50

Subnet Mask 255.255.255.0

IPv6 Configuration

☐ Automatic

☐ Top

Conexión Wireless Smartphone0

Access Point0

Physical **Config** Attributes

GLOBAL

Settings

INTERFACE

Port 0

Port 1

Port 1

Port Status ☒ On

SSID AP_Silva

2.4 GHz Channel 6

Coverage Range (meters) 140,00

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK

WEP Key

PSK Pass Phrase Sistemas_ECI

User ID

Password

Encryption Type AES

☐ Top

Configuración AP.

Smartphone2

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

3G/4G Cell1

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 0060.7017.80B3

SSID AP_Silva

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK

WEP Key

PSK Pass Phrase Sistemas_ECI

User ID

Password

Method: MD5

User Name

Password

Encryption Type AES

IP Configuration

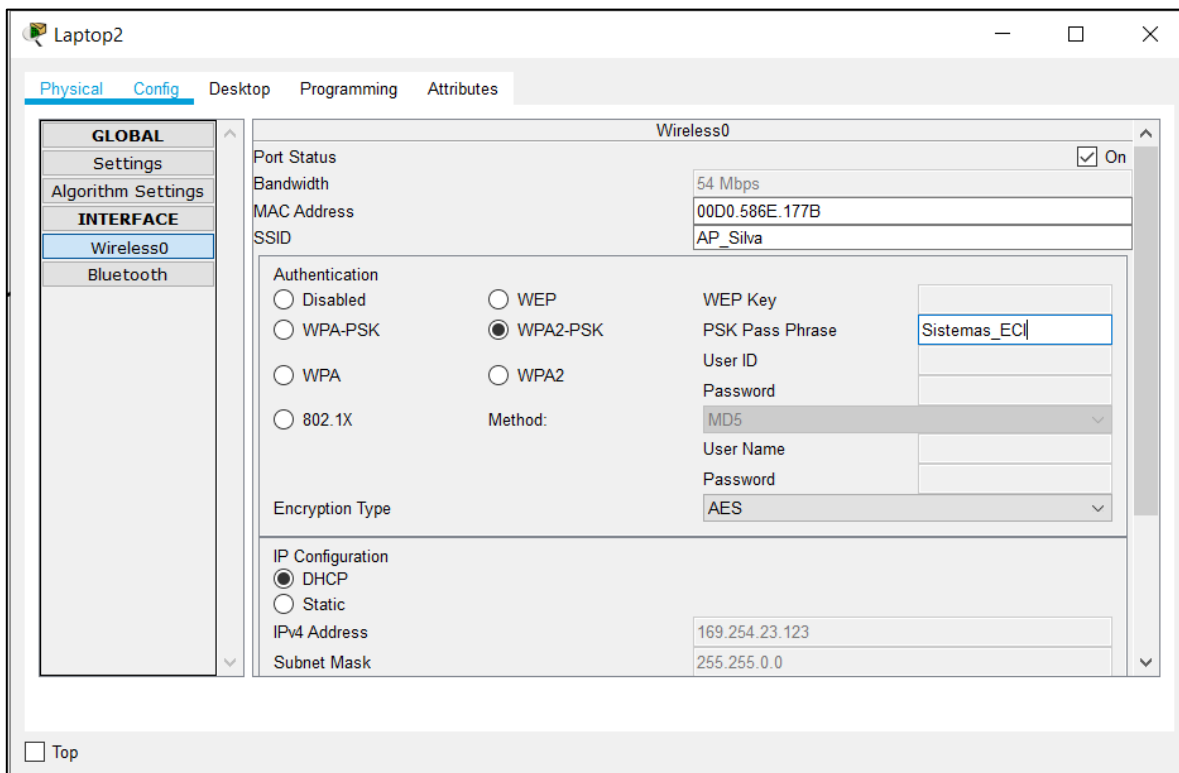
☒ DHCP ☐ Static

IPv4 Address 169.254.128.179

Subnet Mask 255.255.0.0

☐ Top

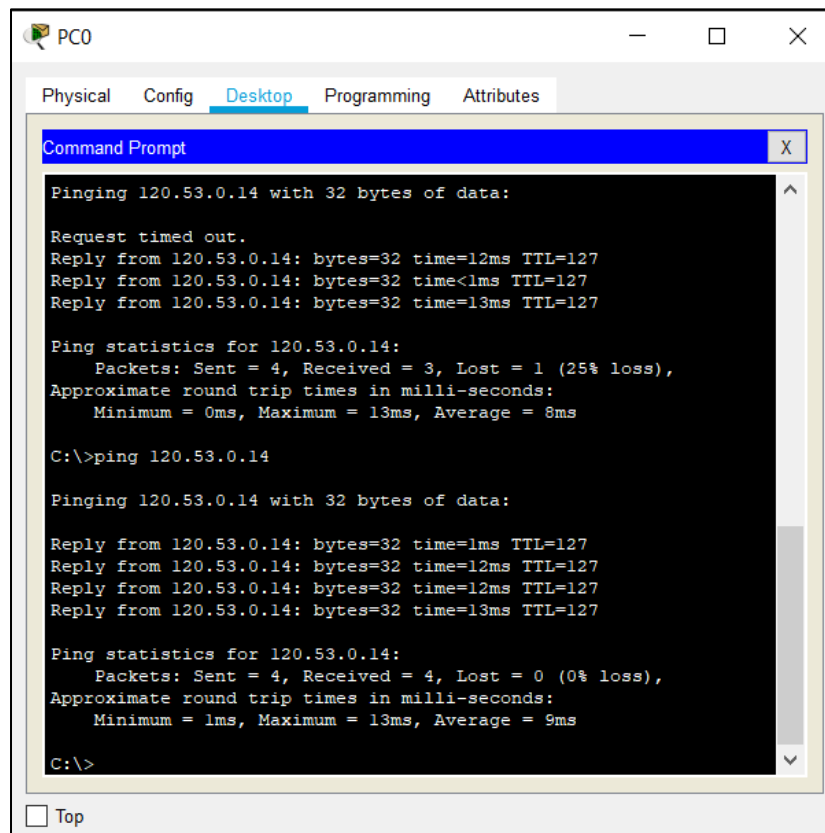
Conexión Wireless Smartphone2



Conexión Wireless Laptop2

Para verificar la conectividad entre los equipos tenemos que saber que la red del router podrá hacer ping a la otra red, pero la red de afuera no podrá hacer ping a la red del router.

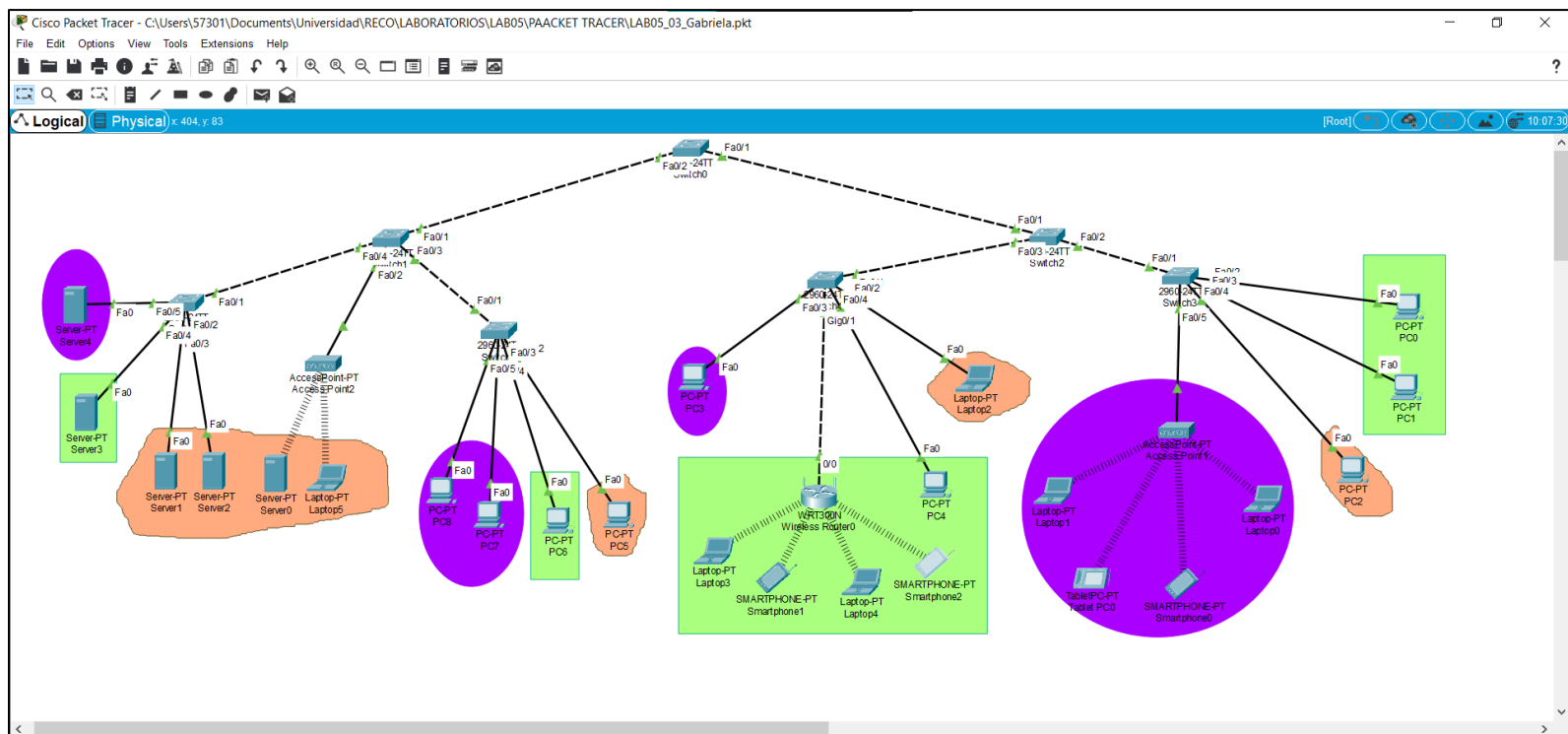
- PC0 a PC1



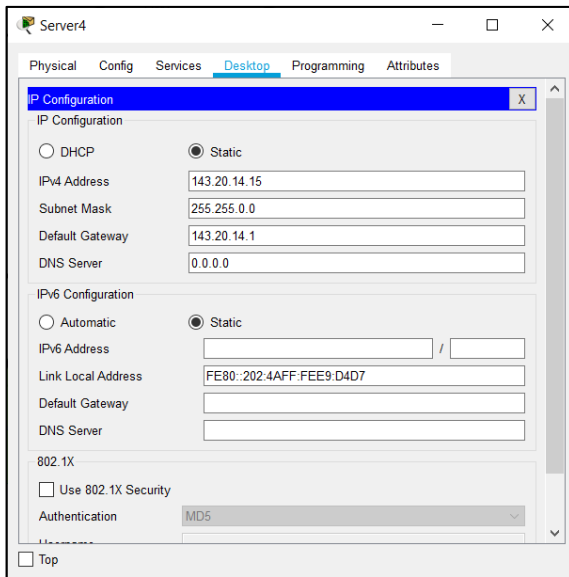
- PC1 A PC0

The screenshot shows the Cisco Packet Tracer interface. On the left, the PC0 configuration window is open, showing the IP Configuration tab. The interface is FastEthernet0, configured with DHCP. The IP Address is 192.168.0.52, Subnet Mask is 255.255.255.0, and Default Gateway is 192.168.0.1. The DNS Server is 0.0.0.0. The IPv6 Configuration tab is also visible, showing a Static configuration with IP Address FE80::2E0:A3FF:FED4:8BEA. On the right, the PC1 Command Prompt window is open, showing the output of the command 'ping 192.168.0.52'. The output indicates that the ping failed with 'Request timed out.' and 'Control-C'.

4. CONFIGURACIÓN DE LAN ALÁMBRICA E INALÁMBRICA.



- Configuración de direcciones IP para los equipos alámbricos.



Server4

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 143.20.14.15

Subnet Mask: 255.255.0.0

Default Gateway: 143.20.14.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::202:4AFF:FEE9:D4D7

Default Gateway: /

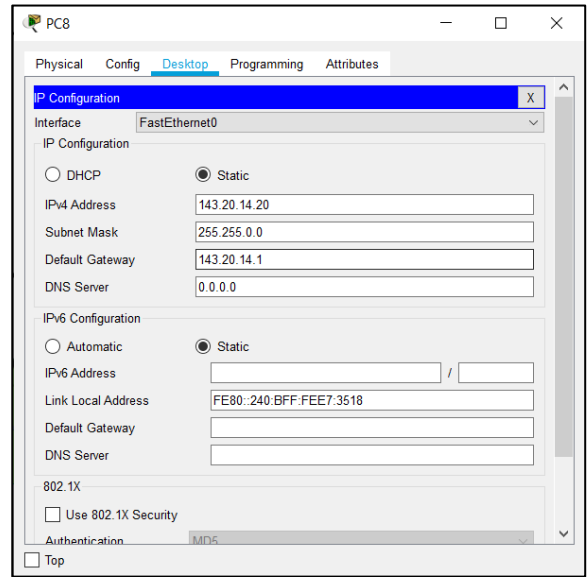
DNS Server: /

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top



PC8

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 143.20.14.20

Subnet Mask: 255.255.0.0

Default Gateway: 143.20.14.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::240:BFF:FEE7:3518

Default Gateway: /

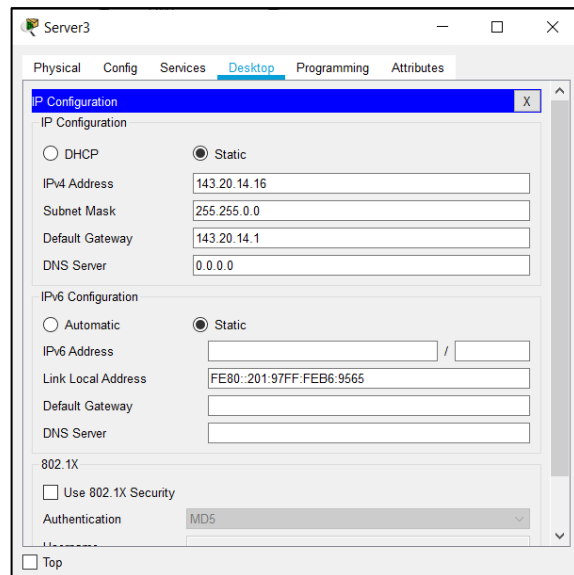
DNS Server: /

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top



Server3

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 143.20.14.16

Subnet Mask: 255.255.0.0

Default Gateway: 143.20.14.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:97FF:FE66:9565

Default Gateway: /

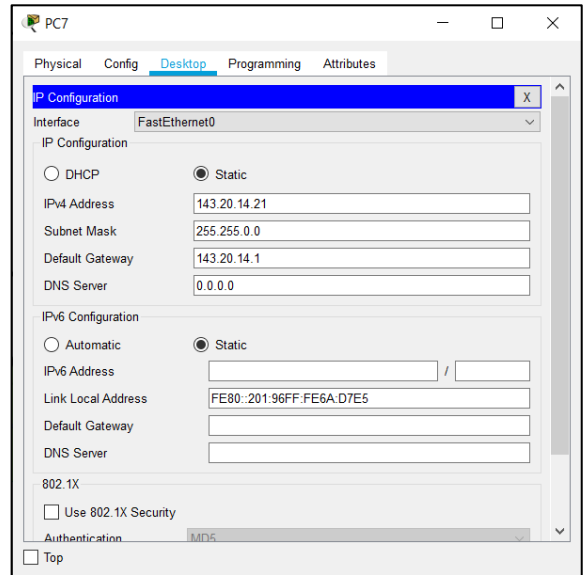
DNS Server: /

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top



PC7

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 143.20.14.21

Subnet Mask: 255.255.0.0

Default Gateway: 143.20.14.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:96FF:FE6A:D7E5

Default Gateway: /

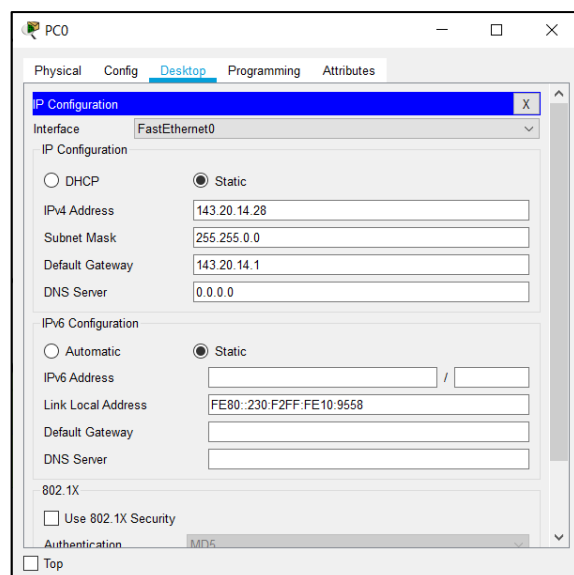
DNS Server: /

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top



PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 143.20.14.28

Subnet Mask: 255.255.0.0

Default Gateway: 143.20.14.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::230:F2FF:FE10:9558

Default Gateway: /

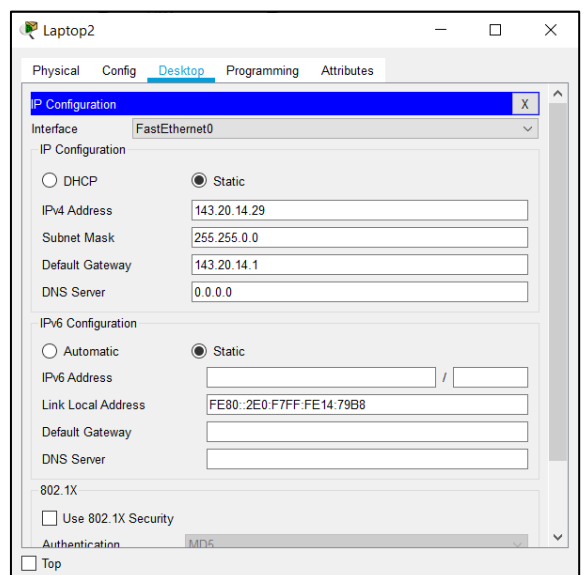
DNS Server: /

802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top



Laptop2

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 143.20.14.29

Subnet Mask: 255.255.0.0

Default Gateway: 143.20.14.1

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::2E0:F7FF:FE14:79B8

Default Gateway: /

DNS Server: /

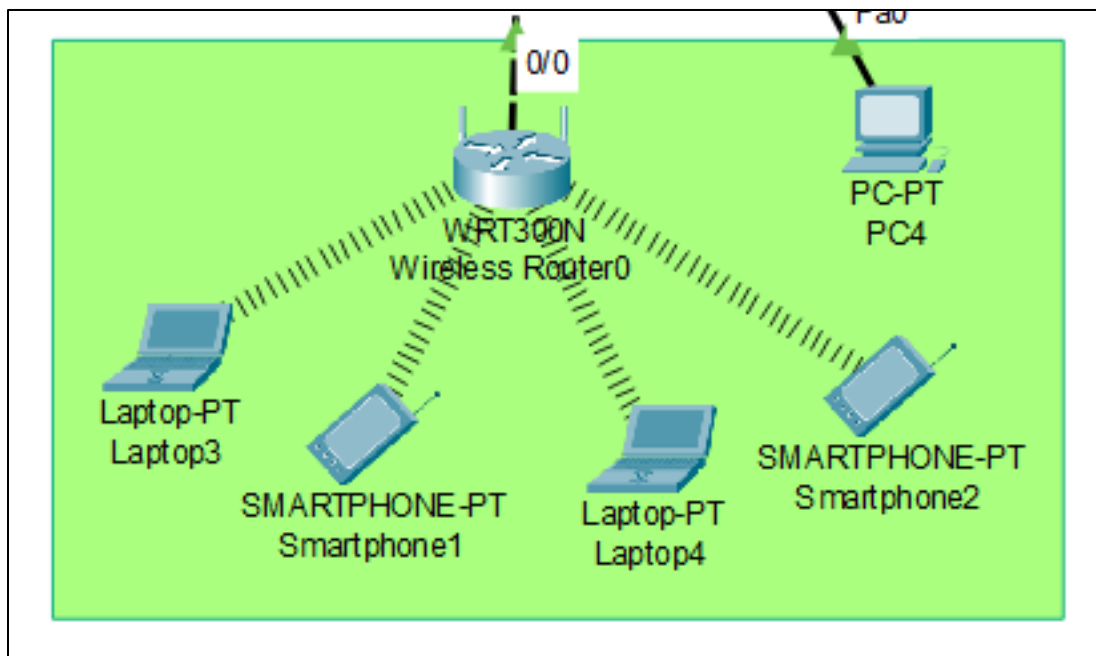
802.1X

☐ Use 802.1X Security

Authentication: MD5

☐ Top

- Red inalámbrica Verde



Basic Wireless Settings		Help...
Network Mode:	Mixed	
Network Name (SSID):	Estudiantes	
Radio Band:	Auto	
Wide Channel:	Auto	
Standard Channel:	1 - 2.412GHz	
SSID Broadcast:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	

Configuración SSID

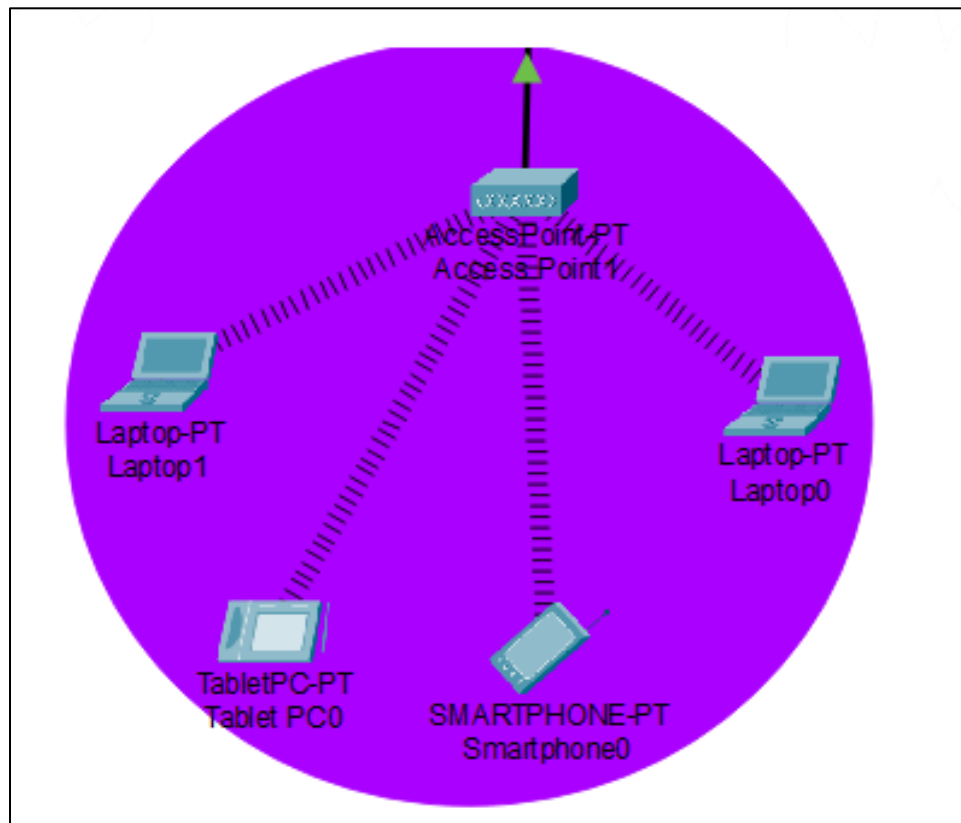
Wireless Security		Help...
Security Mode:	WPA2 Personal	
Encryption:	AES	
Passphrase:	Escuela_123	
Key Renewal:	3600 seconds	

Configuración de seguridad

Network Setup	
Router IP	IP Address: 192 . 168 . 0 . 1 Subnet Mask: 255.255.255.0
DHCP Server Settings	DHCP Server: <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled <div>DHCP Reservation</div>
	Start IP Address: 192.168.0. 50
	Maximum number of Users: 20
	IP Address Range: 192.168.0. 50 - 69
	Client Lease Time: 0 minutes (0 means one day)
	Static DNS 1: 0 . 0 . 0 . 0 Static DNS 2: 0 . 0 . 0 . 0 Static DNS 3: 0 . 0 . 0 . 0 WINS: 0 . 0 . 0 . 0

Configuración rango de direcciones IP

- Red inalámbrica morada



Access Point1

Physical **Config** Attributes

GLOBAL

Settings

INTERFACE

Port 0

Port 1

Port 1

Port Status ☒ On

SSID Profesores

2.4 GHz Channel 6

Coverage Range (meters) 140.00

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK

WEP Key

PSK Pass Phrase Teachers

User ID

Password

Encryption Type AES

☐ Top

CONFIGURACIÓN ACCESS POINT

Laptop1

Physical **Config** Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 18 Mbps

MAC Address 00E0.F95D.30D8

SSID Profesores

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK

WEP Key

PSK Pass Phrase Teachers

User ID

Password

Method: MD5

User Name

Password

Encryption Type AES

IP Configuration

☒ DHCP

☐ Static

☐ Top

Conexión AP

The screenshot shows the configuration window for a Tablet PC0. The 'Config' tab is selected, and the 'Wireless0' interface is chosen from the left sidebar. The main area displays the 'Wireless0' configuration, which is currently turned 'On'. The 'Port Status' is 18 Mbps. The 'Bandwidth' is set to 18 Mbps. The 'MAC Address' is 00E0.8FA3.B287. The 'SSID' is Profesores. The 'Authentication' section shows 'WPA2-PSK' selected. The 'Encryption Type' is set to 'AES'. The 'IP Configuration' section shows 'DHCP' selected. The 'IPv4 Address' is 192.168.0.2 and the 'Subnet Mask' is 255.255.255.240.

GLOBAL	
Settings	
Algorithm Settings	
INTERFACE	
Wireless0	
3G/4G Cell1	
Bluetooth	

Wireless0

Port Status ☒ On

Bandwidth 18 Mbps

MAC Address 00E0.8FA3.B287

SSID Profesores

Authentication

☐ Disabled
 ☐ WEP
 ☒ WPA2-PSK
 ☐ WPA
 ☐ 802.1X
 ☐ WPA2

Method: MD5

WEP Key

PSK Pass Phrase Teachers

User ID

Password

User Name

Password

Encryption Type AES

IP Configuration

☒ DHCP
 ☐ Static

IPv4 Address 192.168.0.2

Subnet Mask 255.255.255.240

Top

Smartphone0

Physical **Config** Desktop Programming Attributes

GLOBAL

- Settings
- Algorithm Settings

INTERFACE

- Wireless0**
- 3G/4G Cell1
- Bluetooth

Wireless0

Port Status ☒ On

Bandwidth 6 Mbps

MAC Address 0005.5E65.560C

SSID Profesores

Authentication

☐ Disabled
 ☐ WEP
 ☒ WPA2-PSK
 ☐ WPA
 ☐ 802.1X

Method: MD5

WEP Key

PSK Pass Phrase Teachers

User ID

Password

User Name

Password

Encryption Type AES

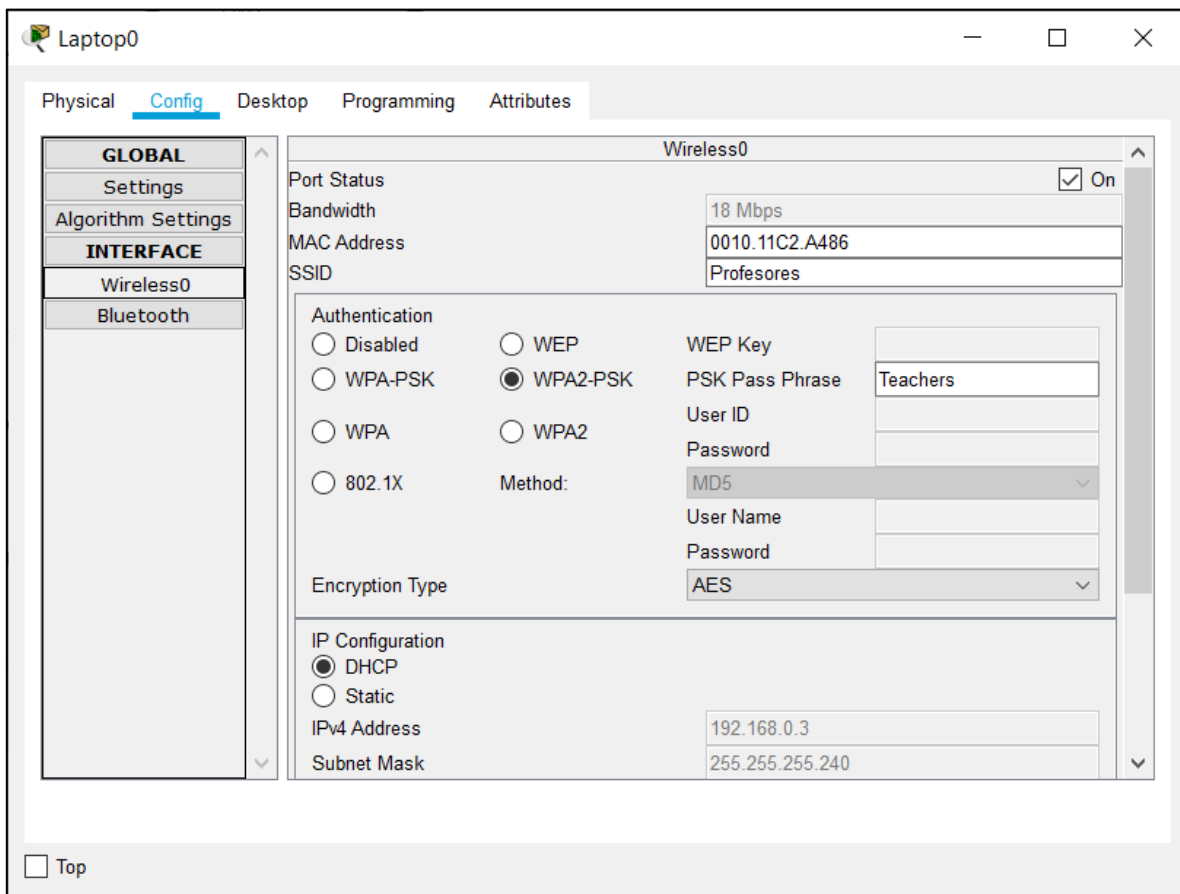
IP Configuration

☒ DHCP
 ☐ Static

IPv4 Address 192.168.0.6

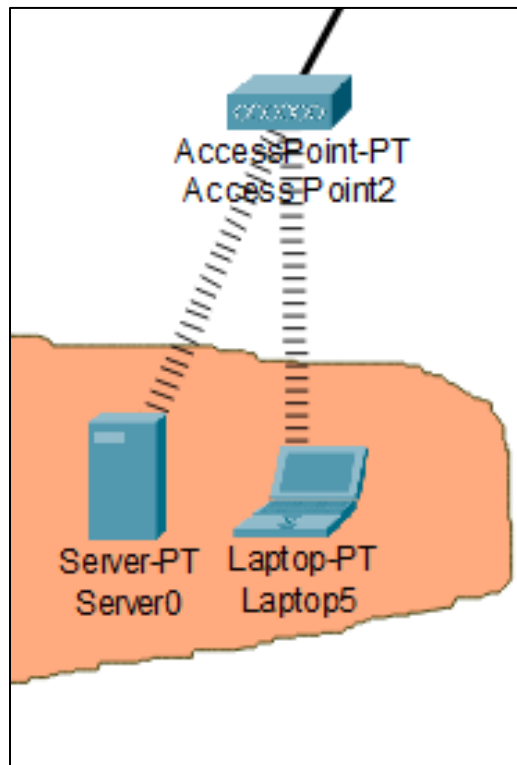
Subnet Mask 255.255.255.240

☐ Top



Conexión AP

- Red inalámbrica Naranja



Access Point2

Physical **Config** Attributes

GLOBAL

Settings

INTERFACE

Port 0

Port 1

Port 1

Port Status ☒ On

SSID Laboratorios

2.4 GHz Channel 6

Coverage Range (meters) 140,00

Authentication

☐ Disabled ☐ WEP ☒ WPA-PSK ☐ WPA2-PSK

WEP Key

PSK Pass Phrase Laboratory

User ID

Password

Encryption Type AES

☐ Top

CONFIGURACIÓN ACCESS POINT

Server0

Physical **Config** Services Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Wireless1

Wireless1

Port Status ☒ On

Bandwidth 6 Mbps

MAC Address 000A.4192.8BB4

SSID Laboratorios

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK ☐ WPA ☐ WPA2 ☐ 802.1X

WEP Key

PSK Pass Phrase Laboratory

User ID

Password

Method: MD5

User Name

Password

Encryption Type AES

IP Configuration

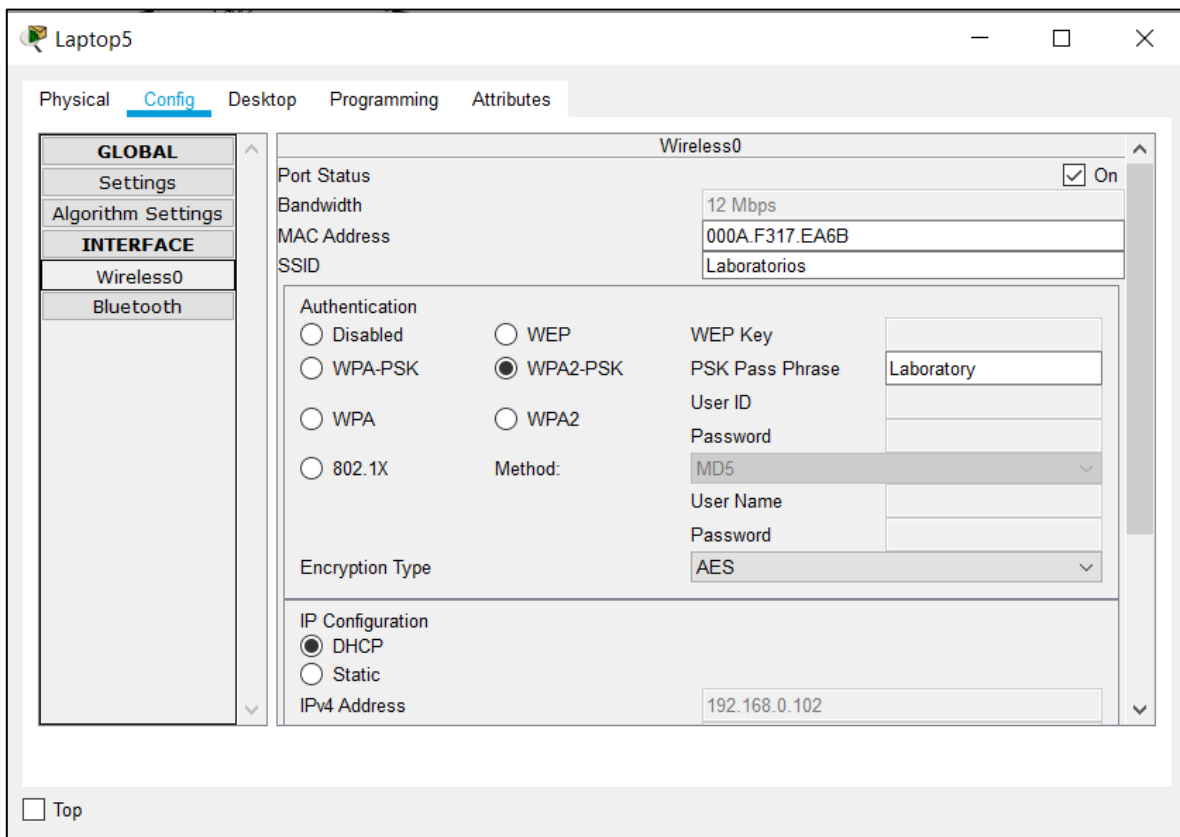
☒ DHCP ☐ Static

IPv4 Address 192.168.0.5

Subnet Mask 255.255.255.240

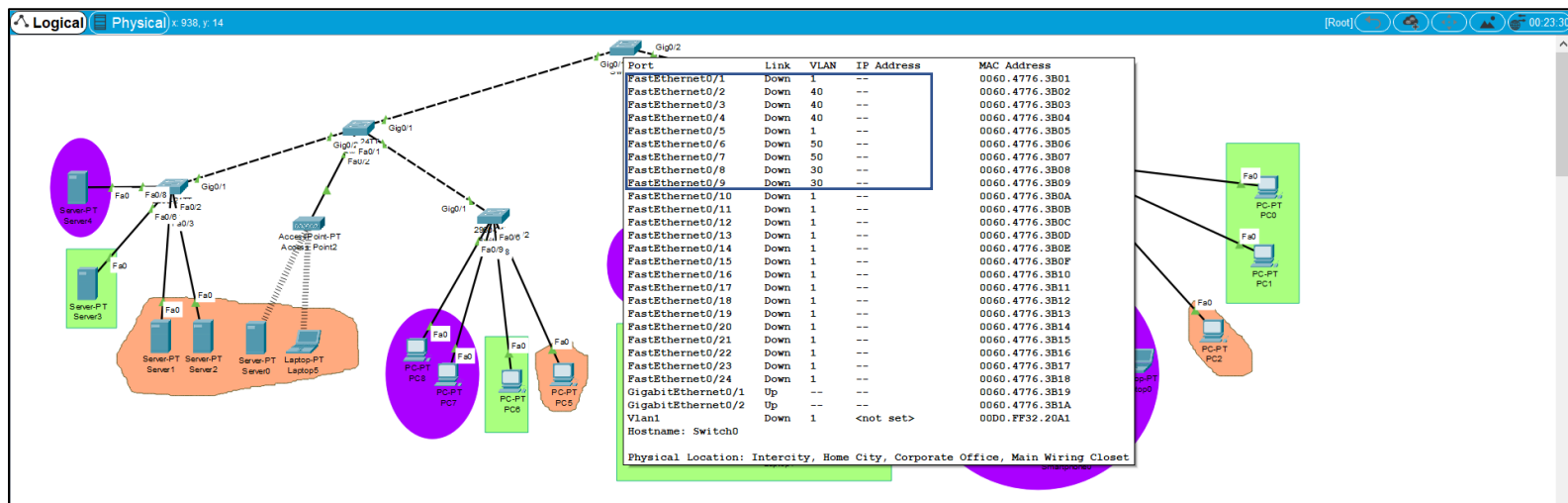
☐ Top

Conexión AP



Conexión AP

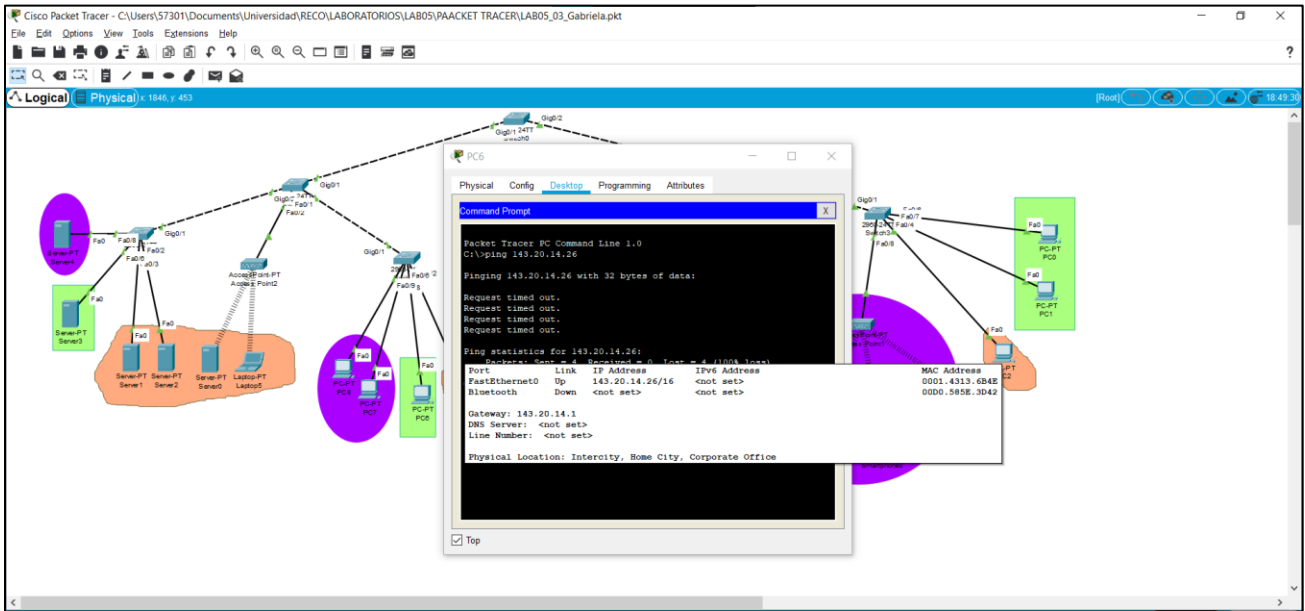
CONFIGURACIÓN VLAN



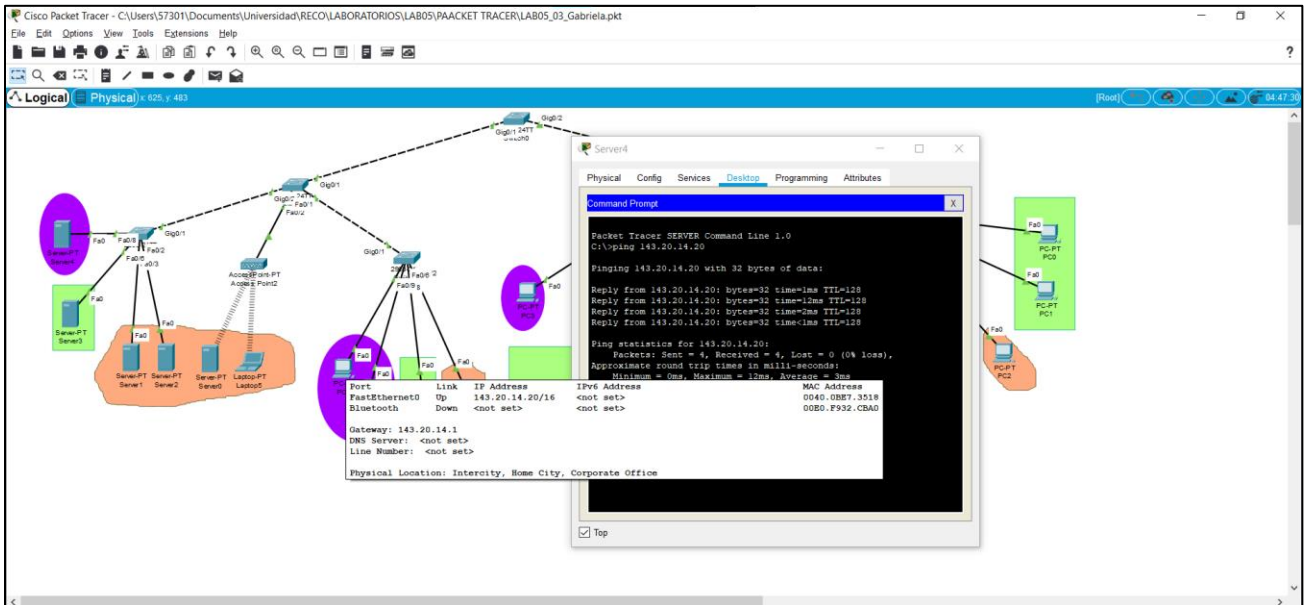
Las VLAN se identificaron con los que se ven en la imagen,

- 30, Profesores.
- 40, Laboratorios.
- 50, Estudiantes.

- REVISIÓN DE CONEXIÓN.



Diferente VLAN.



Misma VLAN.

Los ping funcionarán desde la red limitada de un Switch, si se quiere realizar un ping de afuera hacia adentro no funcionará.

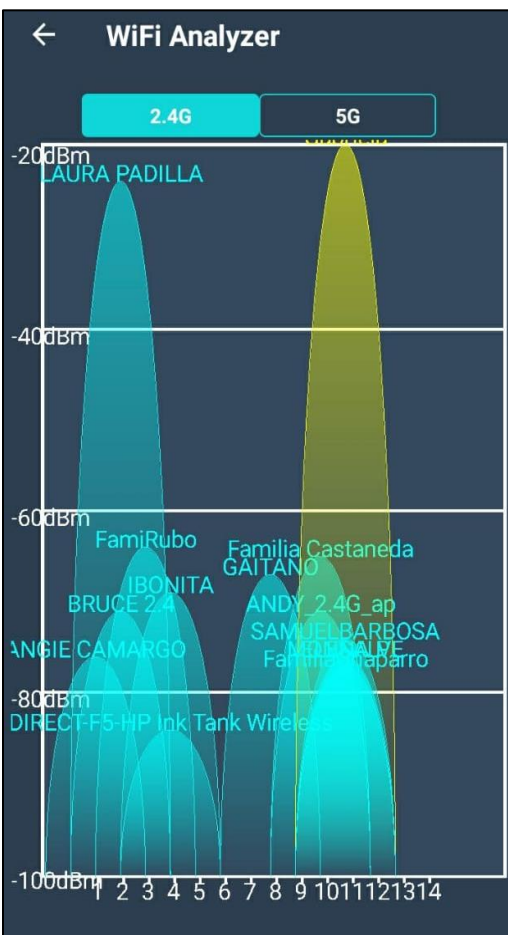
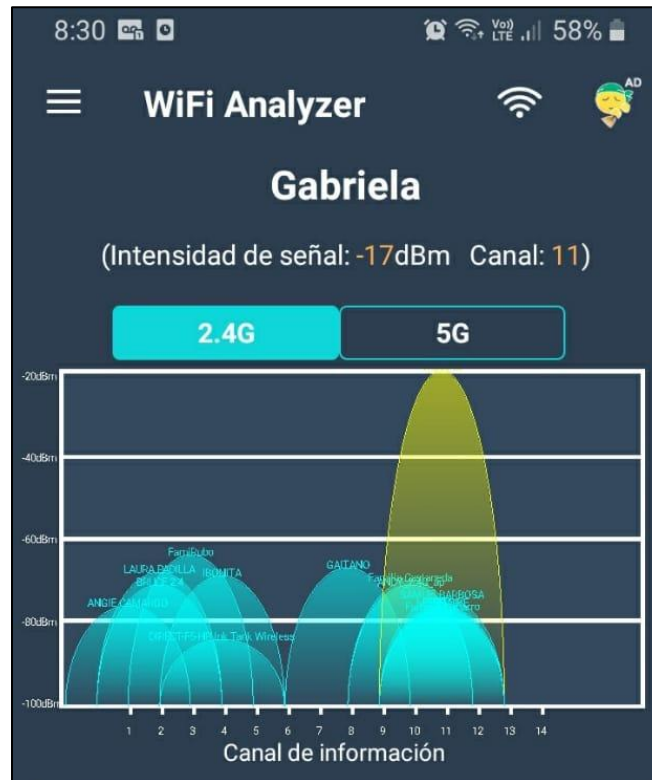
```
C:\>ping 143.20.14.17

Pinging 143.20.14.17 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 143.20.14.17:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

5. REVISIÓN DE LAS WIFI REALES.



The "Canal de información" screen displays details for the selected channel. It includes a back arrow, the title "Canal de información", and the name "Gabriela". A note states: "Pulse de largo o haga doble clic para copiar el texto siguiente." Below this, a white box contains the following information:

- MAC: b0:c2:87:28:25:1a
- Seguridad: WPA/WPA2 PSK
- Intensidad de la señal: -15 dBm
- Canal: 11
- Frecuencia: 2462 MHz

The "Intensidad de la señal" screen shows a list of detected networks. At the top, it displays the IP address 192.168.0.17, the channel 11 (2462 MHz), and the speed 72.0Mbps. Below this, a table lists the networks with their names, MAC addresses, encryption modes, and signal strengths. The signal strength is represented by a bar chart.

WiFi 18 (18)	2.4GHz : 18	5GHz : 0
Gabriela[b0:c2:87:28:25:1a]	EncryMode: WPA/-15dBm	Canal de información: 11(2462)
[b2:c2:87:28:25:1b]	EncryMode: WPA/-23dBm	Canal de información: 11(2462)
Los Tutis_2.4ETB[ac:37:28:51:df:c9]	EncryMode: WPA/-64dBm	Canal de información: 7(2442)
GAITANO[ac:37:28:4a:d7:e9]	EncryMode: WPA/-65dBm	Canal de información: 8(2447)
Los Tutis[e4:c3:2a:ab:a7:c0]	EncryMode: WPA/-67dBm	Canal de información: 6(2437)
FAMILIA_PADILLA1[a8:ad:3d:ea:3b:64]		

En la aplicación, estamos viendo el análisis de la red WIFI Gabriela, y esta opera en 2.4GHz, en esta se ve su dirección MAC e información adicional de la red.

6. INSTALACIÓN DE SOFTWARE BASE

El funcionamiento del software se le mostrará al profesor.

- Las interconexiones entre los archivos de Packet Tracer se mostrarán al profesor.

CONCLUSIONES

- Se entendió de mejor el funcionamiento de las vlan y conexiones entre ellas.
- Se comprendió como hacer configuraciones de switches y routers.

BIBLIOGRAFIA

- [VLANs: Qué son, tipos y para qué sirven \(redeszone.net\)](https://redeszone.net/)
- [Conceptos básicos de VLAN | Explicación sencilla de la virtual LAN - IONOS](#)
- [Configure VLAN in Cisco Packet Tracer : 7 Steps - Instructables](#)
- [3.2 Enlaces Troncales de las VLAN - MODULO 3 CISCO CCNA Exploration 3 \(google.com\)](#)