



# COMPUTER NETWORKS

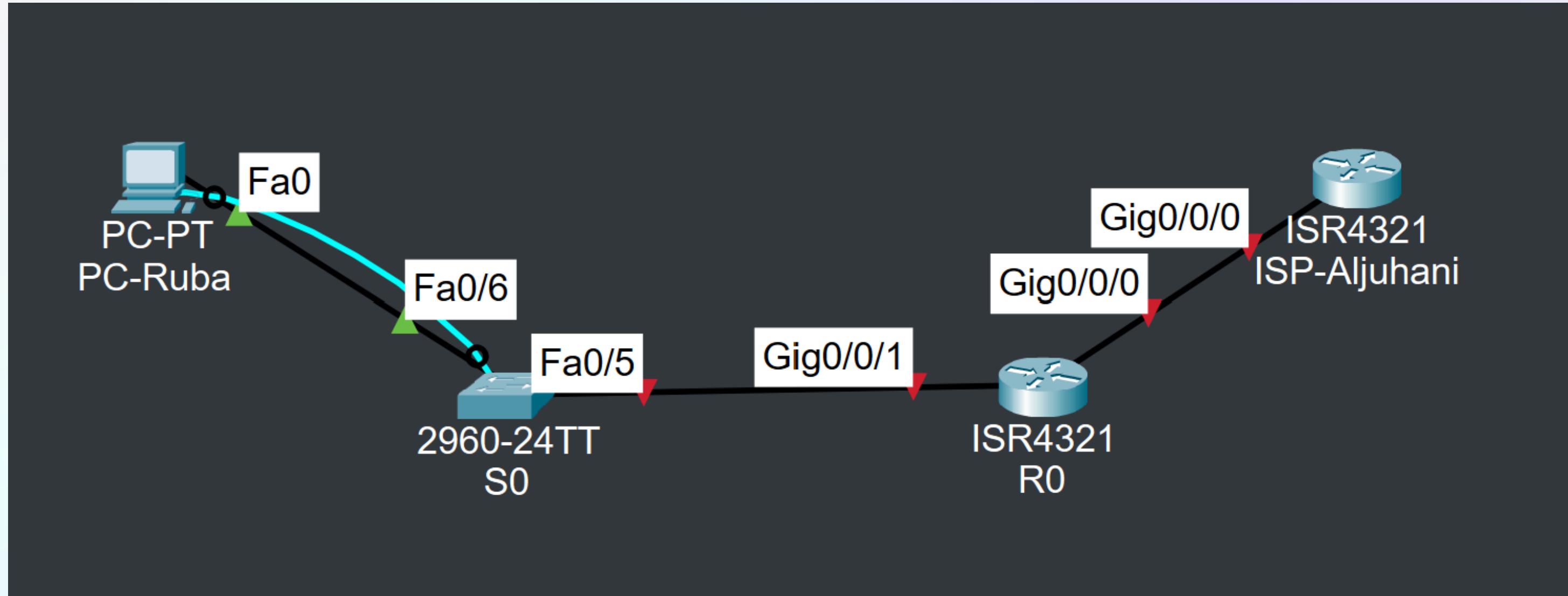


Lab 5-2: Troubleshoot Connectivity Issues

Solved by :

Ruba Aljuhani

# TOPOLOGY



# IP CONFIGURATION

PC-Ruba

Physical Config Desktop Programming Attributes

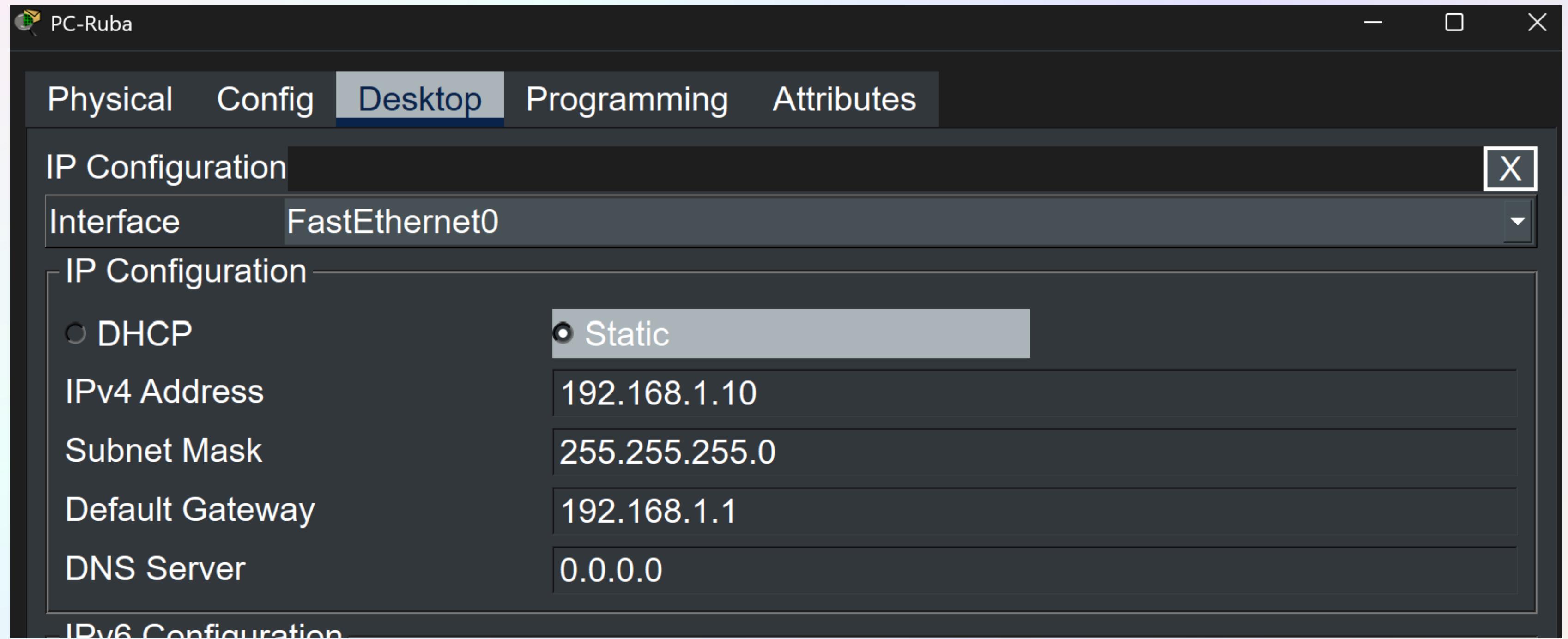
IP Configuration X

Interface FastEthernet0 ▾

IP Configuration

DHCP	Static
IPv4 Address	192.168.1.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
DNS Server	0.0.0.0

IPv6 Configuration



# PING TEST BEFORE WE START

PC-Ruba

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

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

Ping statistics for 192.168.1.1:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:>ping 10.1.1.2

Pinging 10.1.1.2 with 32 bytes of data:

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

Ping statistics for 10.1.1.2:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:>ping 209.165.200.226

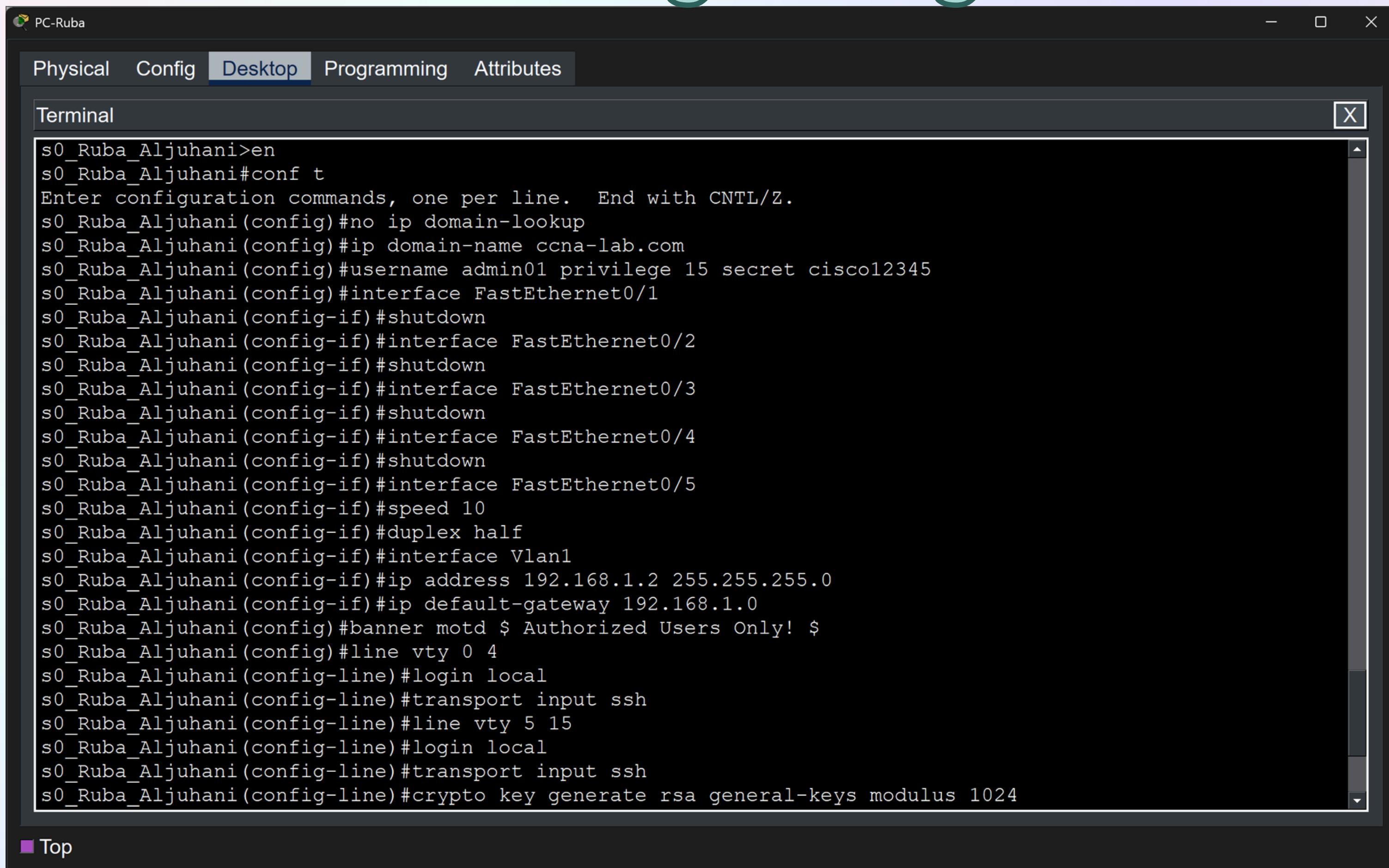
Pinging 209.165.200.226 with 32 bytes of data:

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

Ping statistics for 209.165.200.226:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

# Troubleshooting Configuration

SO



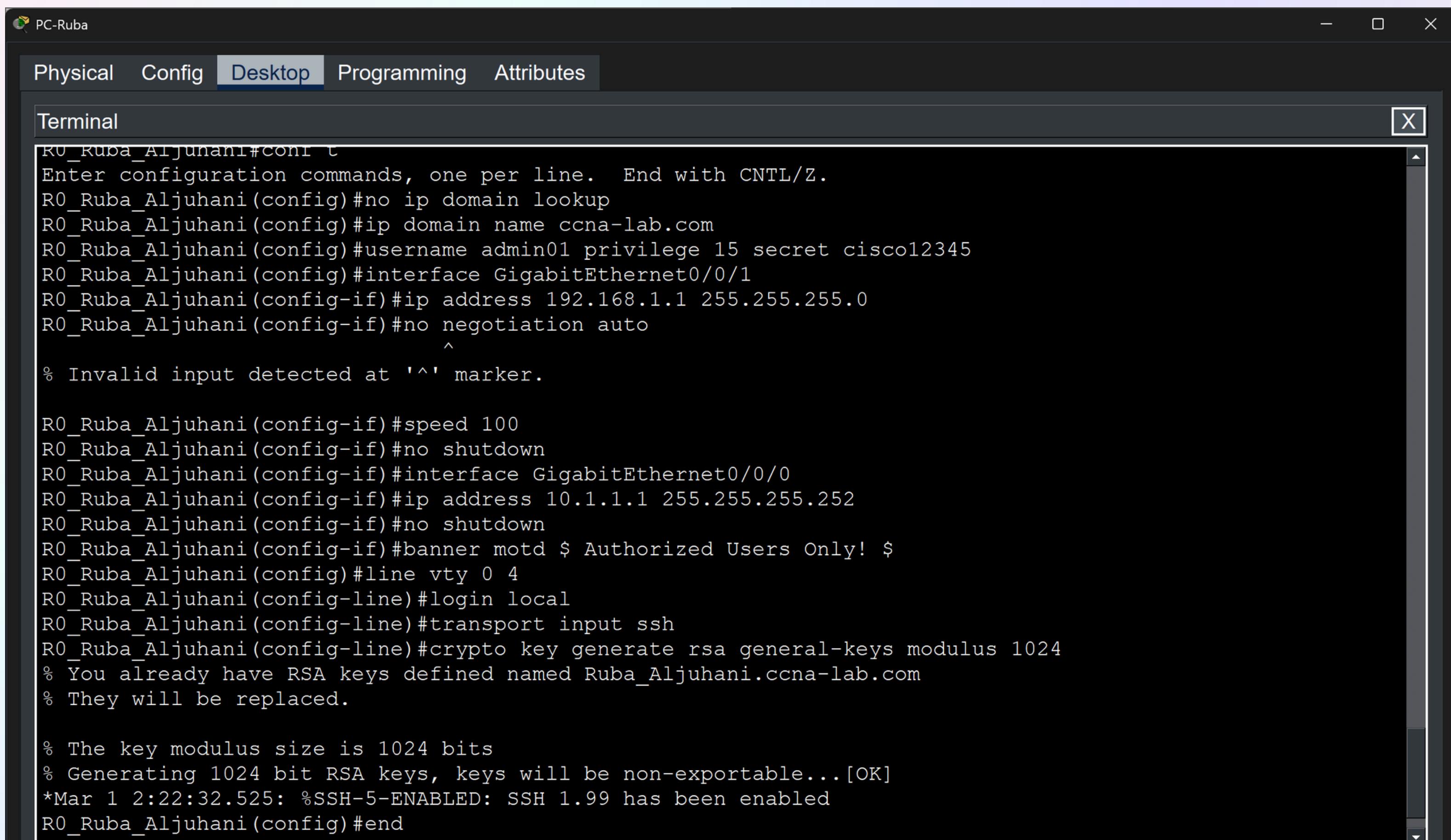
The screenshot shows a terminal window titled "Terminal" with the title bar "PC-Ruba". The window has tabs: Physical, Config, Desktop (which is selected), Programming, and Attributes. The terminal content displays a configuration script:

```
s0_Ruba_Aljuhani>en
s0_Ruba_Aljuhani#conf t
Enter configuration commands, one per line. End with CNTL/Z.
s0_Ruba_Aljuhani(config)#no ip domain-lookup
s0_Ruba_Aljuhani(config)#ip domain-name ccna-lab.com
s0_Ruba_Aljuhani(config)#username admin01 privilege 15 secret cisco12345
s0_Ruba_Aljuhani(config)#interface FastEthernet0/1
s0_Ruba_Aljuhani(config-if)#shutdown
s0_Ruba_Aljuhani(config-if)#interface FastEthernet0/2
s0_Ruba_Aljuhani(config-if)#shutdown
s0_Ruba_Aljuhani(config-if)#interface FastEthernet0/3
s0_Ruba_Aljuhani(config-if)#shutdown
s0_Ruba_Aljuhani(config-if)#interface FastEthernet0/4
s0_Ruba_Aljuhani(config-if)#shutdown
s0_Ruba_Aljuhani(config-if)#interface FastEthernet0/5
s0_Ruba_Aljuhani(config-if)#speed 10
s0_Ruba_Aljuhani(config-if)#duplex half
s0_Ruba_Aljuhani(config-if)#interface Vlan1
s0_Ruba_Aljuhani(config-if)#ip address 192.168.1.2 255.255.255.0
s0_Ruba_Aljuhani(config-if)#ip default-gateway 192.168.1.0
s0_Ruba_Aljuhani(config)#banner motd $ Authorized Users Only! $
s0_Ruba_Aljuhani(config)#line vty 0 4
s0_Ruba_Aljuhani(config-line)#login local
s0_Ruba_Aljuhani(config-line)#transport input ssh
s0_Ruba_Aljuhani(config-line)#line vty 5 15
s0_Ruba_Aljuhani(config-line)#login local
s0_Ruba_Aljuhani(config-line)#transport input ssh
s0_Ruba_Aljuhani(config-line)#crypto key generate rsa general-keys modulus 1024
```

At the bottom left of the terminal window, there is a "Top" button.

# Troubleshooting Configuration

RO



PC-Ruba

Physical Config Desktop Programming Attributes

Terminal X

```
R0_Ruba_Aljuhani#config t
Enter configuration commands, one per line. End with CNTL/Z.
R0_Ruba_Aljuhani(config)#no ip domain lookup
R0_Ruba_Aljuhani(config)#ip domain name ccna-lab.com
R0_Ruba_Aljuhani(config)#username admin01 privilege 15 secret cisco12345
R0_Ruba_Aljuhani(config)#interface GigabitEthernet0/0/1
R0_Ruba_Aljuhani(config-if)#ip address 192.168.1.1 255.255.255.0
R0_Ruba_Aljuhani(config-if)#no negotiation auto
^
% Invalid input detected at '^' marker.

R0_Ruba_Aljuhani(config-if)#speed 100
R0_Ruba_Aljuhani(config-if)#no shutdown
R0_Ruba_Aljuhani(config-if)#interface GigabitEthernet0/0/0
R0_Ruba_Aljuhani(config-if)#ip address 10.1.1.1 255.255.255.252
R0_Ruba_Aljuhani(config-if)#no shutdown
R0_Ruba_Aljuhani(config-if)#banner motd $ Authorized Users Only! $
R0_Ruba_Aljuhani(config)#line vty 0 4
R0_Ruba_Aljuhani(config-line)#login local
R0_Ruba_Aljuhani(config-line)#transport input ssh
R0_Ruba_Aljuhani(config-line)#crypto key generate rsa general-keys modulus 1024
% You already have RSA keys defined named Ruba_Aljuhani.ccna-lab.com
% They will be replaced.

% The key modulus size is 1024 bits
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]
*Mar 1 2:22:32.525: %SSH-5-ENABLED: SSH 1.99 has been enabled
R0_Ruba_Aljuhani(config)#end
```

# Troubleshooting Configuration

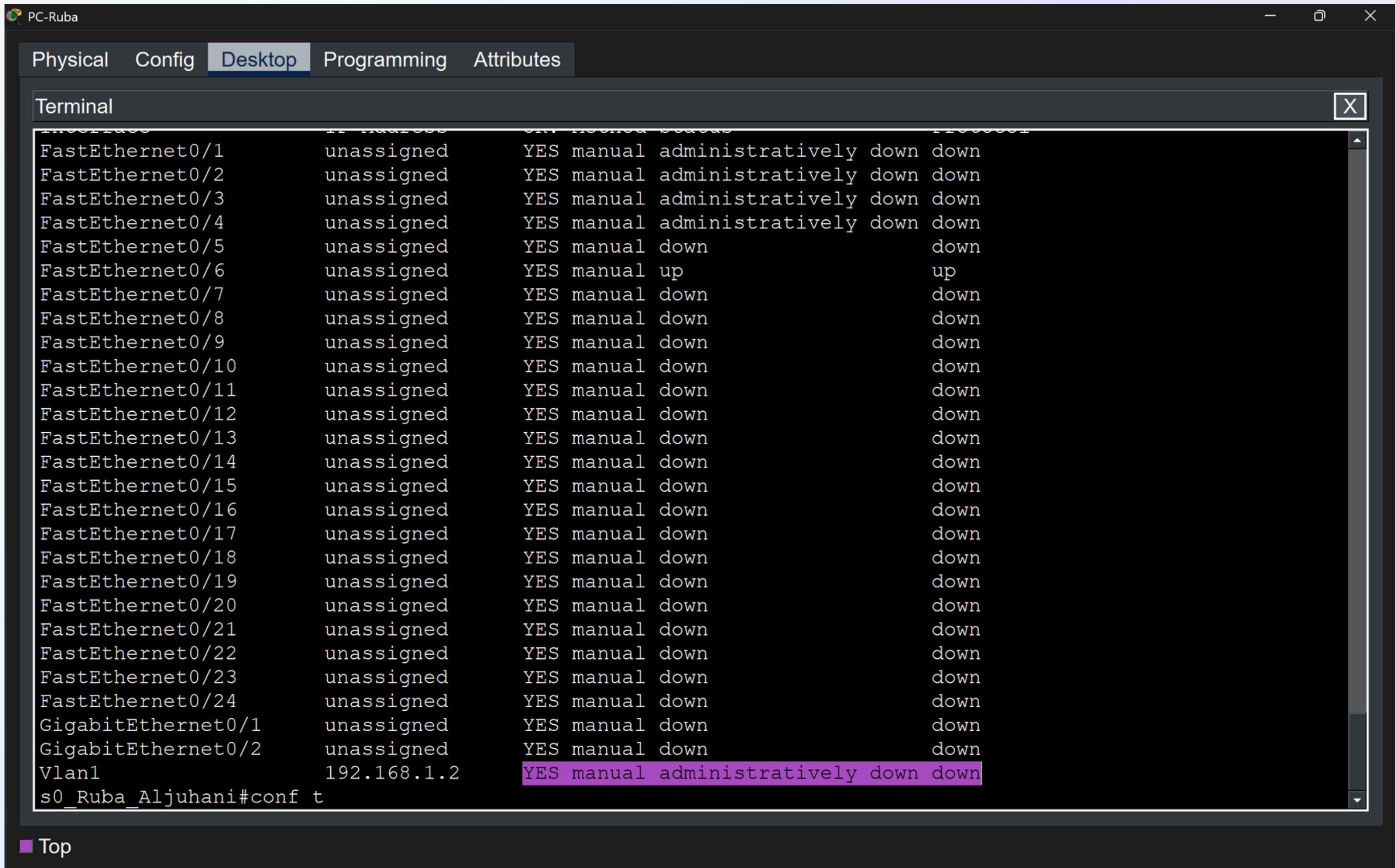
```
Ruba_Aljuhani>en
Ruba_Aljuhani#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Ruba_Aljuhani(config)#hostname ISP_Ruba_Aljuhani
ISP_Ruba_Aljuhani(config)#no ip domain lookup
ISP_Ruba_Aljuhani(config)#interface GigabitEthernet0/0/0
ISP_Ruba_Aljuhani(config-if)#ip address 10.1.1.2 255.255.255.252
ISP_Ruba_Aljuhani(config-if)#no shut
ISP_Ruba_Aljuhani(config-if)#interface Lo0
ISP_Ruba_Aljuhani(config-if)#ip address 209.165.200.226 255.255.255.255
ISP_Ruba_Aljuhani(config-if)#ip route 0.0.0.0 0.0.0.0 10.1.1.1
ISP_Ruba_Aljuhani(config)#end
ISP_Ruba_Aljuhani#
%SYS-5-CONFIG_I: Configured from console by console
```

■ Top

ISP

# Identify the Problem.

VLAN IS  
DOWN  
IN  
SWITCH



PC-Ruba

Physical Config Desktop Programming Attributes

Terminal

Interface	IP Address	MTU	Encapsulation	Cost	Status	Link Layer Status	Protocol Status
FastEthernet0/1	unassigned	1500	IEEE 802.3	YES	manual	administratively down	down
FastEthernet0/2	unassigned	1500	IEEE 802.3	YES	manual	administratively down	down
FastEthernet0/3	unassigned	1500	IEEE 802.3	YES	manual	administratively down	down
FastEthernet0/4	unassigned	1500	IEEE 802.3	YES	manual	administratively down	down
FastEthernet0/5	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/6	unassigned	1500	IEEE 802.3	YES	manual	up	up
FastEthernet0/7	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/8	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/9	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/10	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/11	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/12	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/13	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/14	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/15	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/16	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/17	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/18	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/19	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/20	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/21	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/22	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/23	unassigned	1500	IEEE 802.3	YES	manual	down	down
FastEthernet0/24	unassigned	1500	IEEE 802.3	YES	manual	down	down
GigabitEthernet0/1	unassigned	1500	IEEE 802.3	YES	manual	down	down
GigabitEthernet0/2	unassigned	1500	IEEE 802.3	YES	manual	down	down
Vlan1	192.168.1.2	1500	IEEE 802.3	YES	manual	administratively down	down

s0\_Ruba\_Aljuhani#conf t

Top

# Implement Network Changes

```
s0_Ruba_Aljuhani#conf term
Enter configuration commands, one per line. End with CNTL/Z.
s0_Ruba_Aljuhani(config)#int vlan 1
s0_Ruba_Aljuhani(config-if)#no shutdown
^
% Invalid input detected at '^' marker.

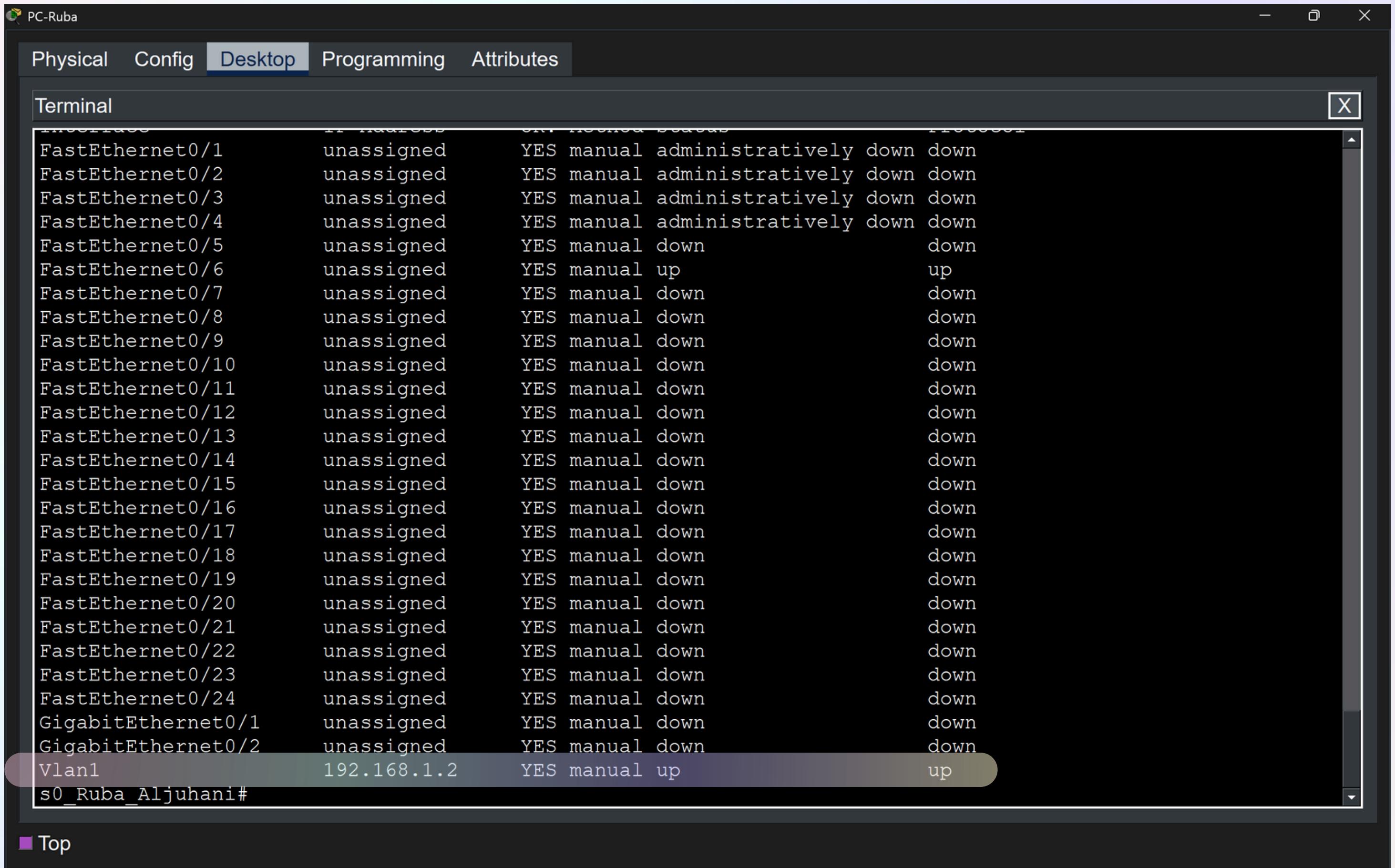
s0_Ruba_Aljuhani(config-if)#
s0_Ruba_Aljuhani(config-if)#no shutdown

s0_Ruba_Aljuhani(config-if)#
%LINK-3-UPDOWN: Interface Vlan1, changed state to down

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

s0_Ruba_Aljuhani(config-if)#end
s0_Ruba_Aljuhani#
%SYS-5-CONFIG_I: Configured from console by console
```

# Verify Full Functionality



The screenshot shows a terminal window titled "Terminal" with the title bar "PC-Ruba". The window has tabs: Physical, Config, Desktop (selected), Programming, and Attributes. The terminal displays a table of network interface status:

Interface	IP Address	MTU	Macaddr	HWaddr	Status	Protocol
FastEthernet0/1	unassigned	YES	manual	administratively	down	down
FastEthernet0/2	unassigned	YES	manual	administratively	down	down
FastEthernet0/3	unassigned	YES	manual	administratively	down	down
FastEthernet0/4	unassigned	YES	manual	administratively	down	down
FastEthernet0/5	unassigned	YES	manual	down		down
FastEthernet0/6	unassigned	YES	manual	up		up
FastEthernet0/7	unassigned	YES	manual	down		down
FastEthernet0/8	unassigned	YES	manual	down		down
FastEthernet0/9	unassigned	YES	manual	down		down
FastEthernet0/10	unassigned	YES	manual	down		down
FastEthernet0/11	unassigned	YES	manual	down		down
FastEthernet0/12	unassigned	YES	manual	down		down
FastEthernet0/13	unassigned	YES	manual	down		down
FastEthernet0/14	unassigned	YES	manual	down		down
FastEthernet0/15	unassigned	YES	manual	down		down
FastEthernet0/16	unassigned	YES	manual	down		down
FastEthernet0/17	unassigned	YES	manual	down		down
FastEthernet0/18	unassigned	YES	manual	down		down
FastEthernet0/19	unassigned	YES	manual	down		down
FastEthernet0/20	unassigned	YES	manual	down		down
FastEthernet0/21	unassigned	YES	manual	down		down
FastEthernet0/22	unassigned	YES	manual	down		down
FastEthernet0/23	unassigned	YES	manual	down		down
FastEthernet0/24	unassigned	YES	manual	down		down
GigabitEthernet0/1	unassigned	YES	manual	down		down
GigabitEthernet0/2	unassigned	YES	manual	down		down
Vlan1	192.168.1.2	YES	manual	up		up
s0_Ruba_Aljuhani#						

At the bottom of the terminal window, there is a "Top" button.

# Verify BY PING

The screenshot shows a software window titled "PC-Ruba" with a tab bar containing "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". The main area is a terminal window titled "Command Prompt".

```
Subnet Mask..... 255.255.255.0
Default Gateway..... :: 192.168.1.1

Bluetooth Connection:

Connection-specific DNS Suffix...:
Link-local IPv6 Address..... :::
IPv6 Address..... :::
IPv4 Address..... 0.0.0.0
Subnet Mask..... 0.0.0.0
Default Gateway..... 0.0.0.0

C:\> ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.1.2: bytes=32 time=4ms TTL=255
Reply from 192.168.1.2: bytes=32 time<1ms TTL=255
Reply from 192.168.1.2: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms

C:\>
```

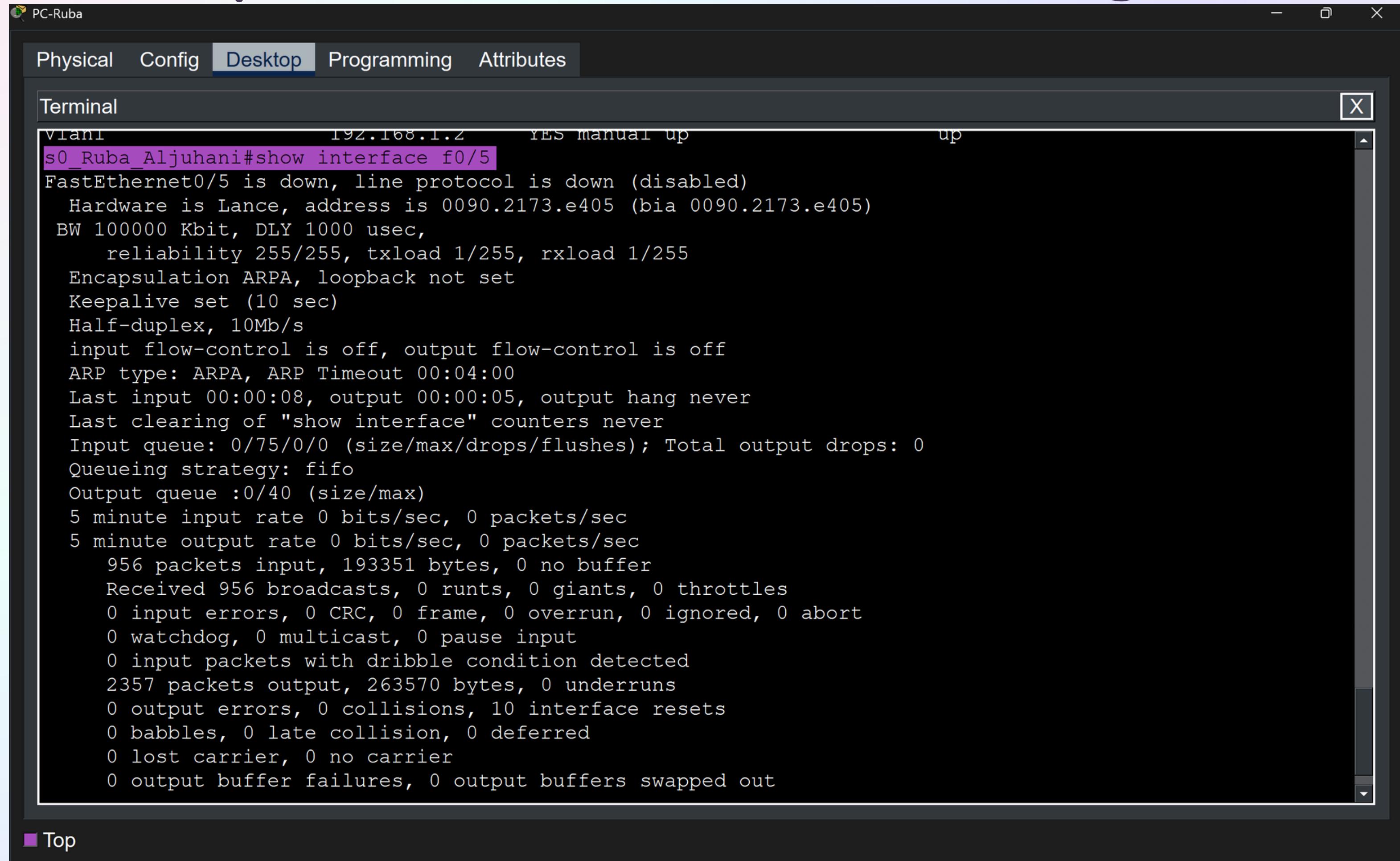
At the bottom left of the window, there is a "Top" button.

# Identify the Problem.

FE0/5  
IS  
DOWN  
IN  
SWITCH

PC-Ruba							
Physical	Config	Desktop	Programming	Attributes			
Terminal							X
FastEthernet0/1	unassigned	YES	manual	administratively	down	down	
FastEthernet0/2	unassigned	YES	manual	administratively	down	down	
FastEthernet0/3	unassigned	YES	manual	administratively	down	down	
FastEthernet0/4	unassigned	YES	manual	administratively	down	down	
FastEthernet0/5	unassigned	YES	manual	down		down	
FastEthernet0/6	unassigned	YES	manual	up		up	
FastEthernet0/7	unassigned	YES	manual	down		down	
FastEthernet0/8	unassigned	YES	manual	down		down	
FastEthernet0/9	unassigned	YES	manual	down		down	
FastEthernet0/10	unassigned	YES	manual	down		down	
FastEthernet0/11	unassigned	YES	manual	down		down	
FastEthernet0/12	unassigned	YES	manual	down		down	
FastEthernet0/13	unassigned	YES	manual	down		down	
FastEthernet0/14	unassigned	YES	manual	down		down	
FastEthernet0/15	unassigned	YES	manual	down		down	
FastEthernet0/16	unassigned	YES	manual	down		down	
FastEthernet0/17	unassigned	YES	manual	down		down	
FastEthernet0/18	unassigned	YES	manual	down		down	
FastEthernet0/19	unassigned	YES	manual	down		down	
FastEthernet0/20	unassigned	YES	manual	down		down	
FastEthernet0/21	unassigned	YES	manual	down		down	
FastEthernet0/22	unassigned	YES	manual	down		down	
FastEthernet0/23	unassigned	YES	manual	down		down	
FastEthernet0/24	unassigned	YES	manual	down		down	
GigabitEthernet0/1	unassigned	YES	manual	down		down	
GigabitEthernet0/2	unassigned	YES	manual	down		down	
Vlan1	192.168.1.2	YES	manual	up		up	
s0_Ruba_Aljuhani#							

# Implement Network Changes



The screenshot shows a network management interface titled "PC-Ruba". The top navigation bar includes tabs for "Physical", "Config", "Desktop" (which is selected), "Programming", and "Attributes". Below the navigation bar is a "Terminal" window with the title "Terminal" and a close button (X). The terminal window displays the following command output:

```
vian1                  192.168.1.2      YES manual up          up
s0_Ruba_Aljuhani#show interface f0/5
FastEthernet0/5 is down, line protocol is down (disabled)
  Hardware is Lance, address is 0090.2173.e405 (bia 0090.2173.e405)
  BW 100000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 10Mb/s
  input flow-control is off, output flow-control is off
  ARP type: ARPA, ARP Timeout 00:04:00
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    956 packets input, 193351 bytes, 0 no buffer
    Received 956 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
    2357 packets output, 263570 bytes, 0 underruns
    0 output errors, 0 collisions, 10 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```

At the bottom left of the terminal window, there is a small icon followed by the text "Top".

PC-Ruba

Physical Config Desktop Programming Attributes

Terminal X

```
login local
transport input ssh
line vty 5 15
login local
transport input ssh
!
!
!
!
end

s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#conf term
Enter configuration commands, one per line. End with CNTL/Z.
s0_Ruba_Aljuhani(config)#int f0/5
s0_Ruba_Aljuhani(config-if)#duplex auto
s0_Ruba_Aljuhani(config-if)#no speed
s0_Ruba_Aljuhani(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

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

Implement Network Changes

# Verify Full Functionality

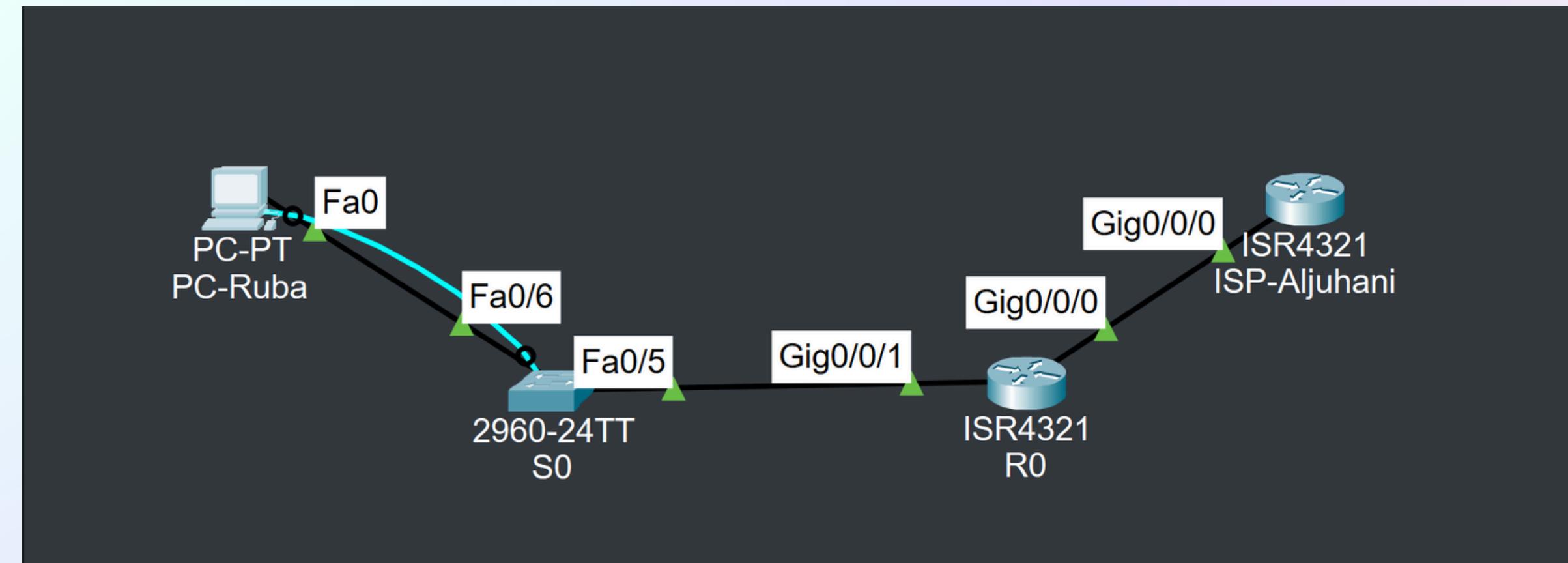
PC-Ruba

Physical Config Desktop Programming Attributes

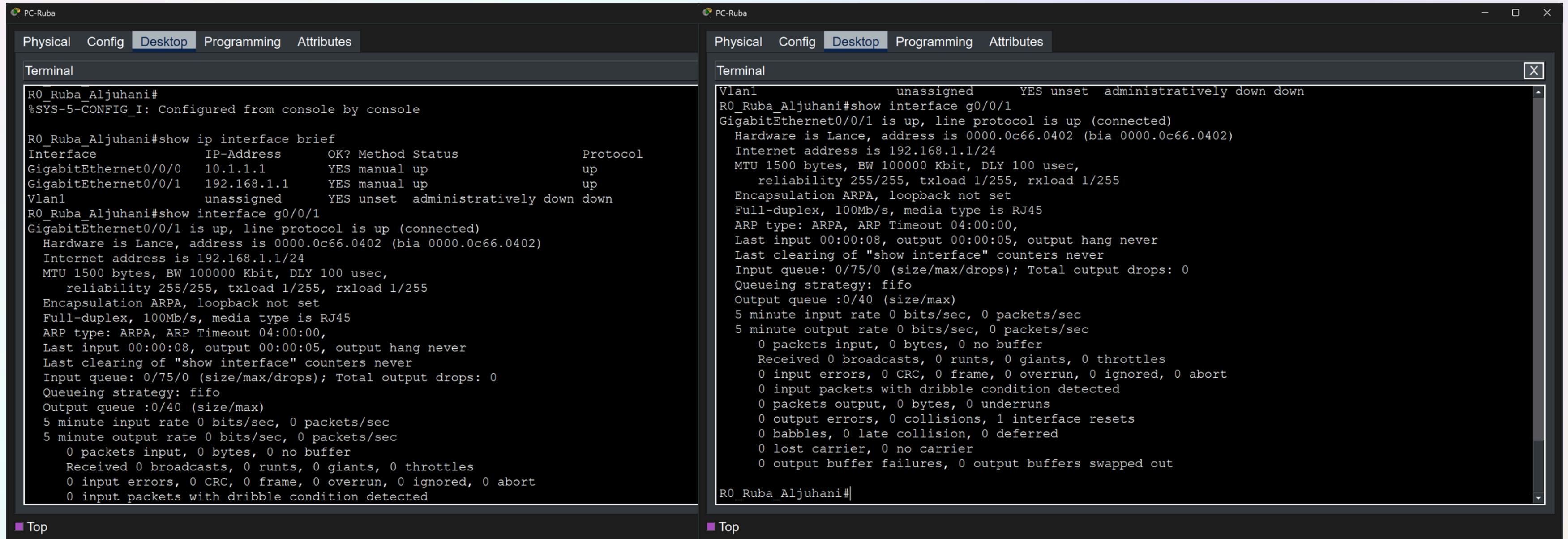
Terminal X

FastEthernet0/1	unassigned	YES	manual	administratively	down	down
FastEthernet0/2	unassigned	YES	manual	administratively	down	down
FastEthernet0/3	unassigned	YES	manual	administratively	down	down
FastEthernet0/4	unassigned	YES	manual	administratively	down	down
FastEthernet0/5	unassigned	YES	manual	up	up	
FastEthernet0/6	unassigned	YES	manual	up	up	
FastEthernet0/7	unassigned	YES	manual	down	down	
FastEthernet0/8	unassigned	YES	manual	down	down	
FastEthernet0/9	unassigned	YES	manual	down	down	

TOPOLOGY  
FIXED



# SHOW IP INTERFACE BRIEF



PC-Ruba

Physical Config Desktop Programming Attributes

Terminal

```
R0_Ruba_Aljuhani# %SYS-5-CONFIG_I: Configured from console by console

R0_Ruba_Aljuhani#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0/0 10.1.1.1        YES manual up
GigabitEthernet0/0/1 192.168.1.1    YES manual up
Vlan1              unassigned       YES unset administratively down down

R0_Ruba_Aljuhani#show interface g0/0/1
GigabitEthernet0/0/1 is up, line protocol is up (connected)
Hardware is Lance, address is 0000.0c66.0402 (bia 0000.0c66.0402)
Internet address is 192.168.1.1/24
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Full-duplex, 100Mb/s, media type is RJ45
ARP type: ARPA, ARP Timeout 04:00:00,
Last input 00:00:08, output 00:00:05, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  0 input packets with dribble condition detected
  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 collisions, 1 interface resets
  0 babbles, 0 late collision, 0 deferred
  0 lost carrier, 0 no carrier
  0 output buffer failures, 0 output buffers swapped out

R0_Ruba_Aljuhani#
```

PC-Ruba

Physical Config Desktop Programming Attributes

Terminal

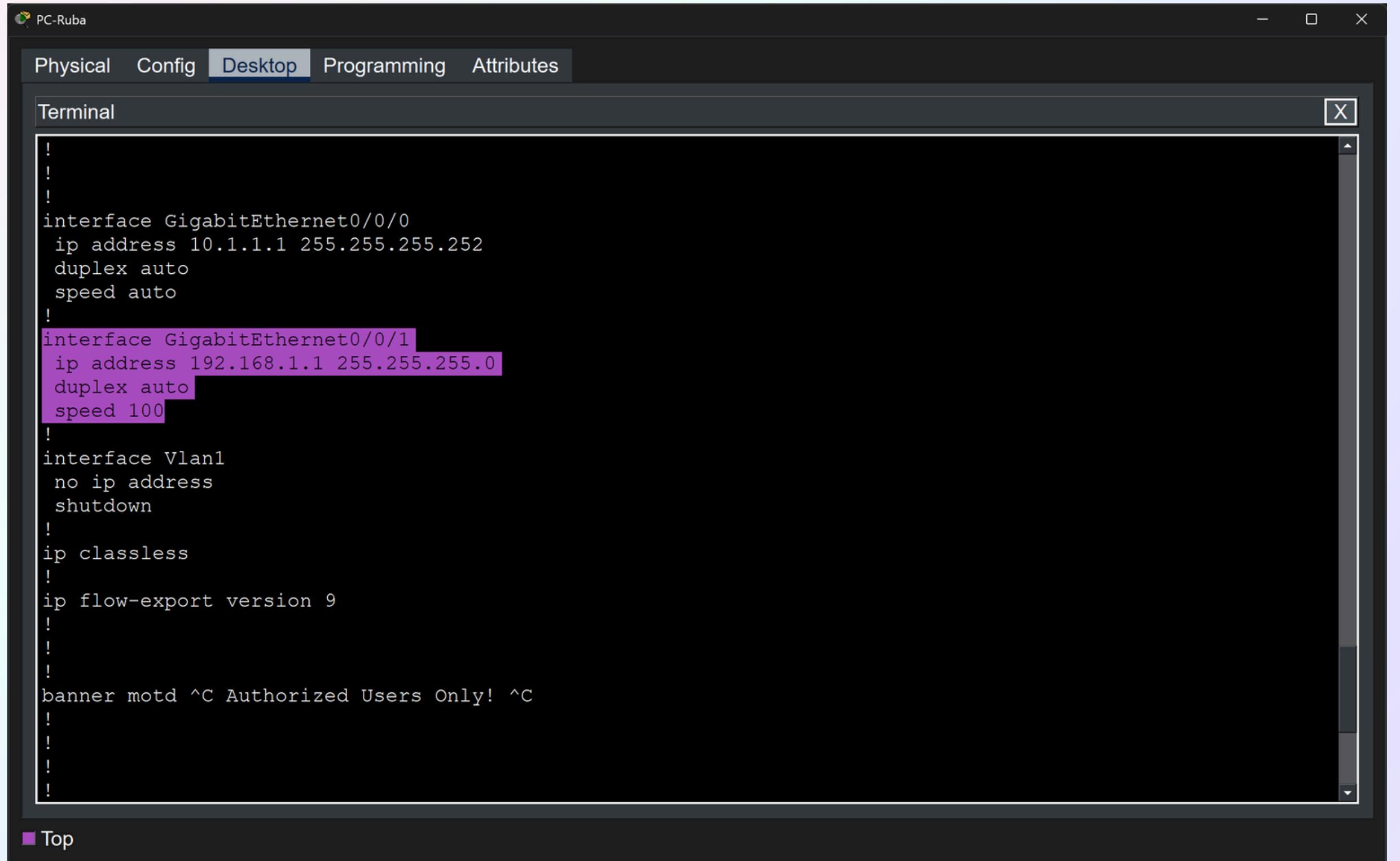
```
Vlan1              unassigned       YES unset administratively down down
R0_Ruba_Aljuhani#show interface g0/0/1
GigabitEthernet0/0/1 is up, line protocol is up (connected)
Hardware is Lance, address is 0000.0c66.0402 (bia 0000.0c66.0402)
Internet address is 192.168.1.1/24
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Full-duplex, 100Mb/s, media type is RJ45
ARP type: ARPA, ARP Timeout 04:00:00,
Last input 00:00:08, output 00:00:05, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  0 input packets with dribble condition detected
  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 collisions, 1 interface resets
  0 babbles, 0 late collision, 0 deferred
  0 lost carrier, 0 no carrier
  0 output buffer failures, 0 output buffers swapped out

R0_Ruba_Aljuhani#
```

Top

Top

# Identify the Problem.



The screenshot shows a terminal window titled "Terminal" with the title bar "PC-Ruba". The window has tabs: Physical, Config, Desktop (which is selected), Programming, and Attributes. The terminal content displays a configuration script for a network interface:

```
!
!
!
interface GigabitEthernet0/0/0
 ip address 10.1.1.1 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet0/0/1
 ip address 192.168.1.1 255.255.255.0
 duplex auto
 speed 100
!
interface Vlan1
 no ip address
 shutdown
!
ip classless
!
ip flow-export version 9
!
!
!
banner motd ^C Authorized Users Only! ^C
!
!
```

The line "speed 100" under the second interface configuration is highlighted with a purple rectangular selection.

SPEED IS 100



PC-Ruba

Physical Config Desktop Programming Attributes

Terminal

CHANGE  
IT TO  
NO SPEED

```
!
!
!
end

R0_Ruba_Aljuhani#
R0_Ruba_Aljuhani#
R0_Ruba_Aljuhani#conf term
Enter configuration commands, one per line. End with CNTL/Z.
R0_Ruba_Aljuhani(config)#g0/0/1
^
% Invalid input detected at '^' marker.

R0_Ruba_Aljuhani(config)#G0/0/1
^
% Invalid input detected at '^' marker.

R0_Ruba_Aljuhani(config)#int g0/0/1
R0_Ruba_Aljuhani(config-if)#no speed
R0_Ruba_Aljuhani(config-if)#negotiation auto
^
% Invalid input detected at '^' marker.

R0_Ruba_Aljuhani(config-if)#end
R0_Ruba_Aljuhani#
%SYS-5-CONFIG_I: Configured from console by console
```

Top

PC-Ruba

Physical Config Desktop Programming Attributes

Command Prompt X

```
Pinging 192.168.1.1 with 32 bytes of data:  
  
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255  
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255  
Reply from 192.168.1.1: bytes=32 time=1ms TTL=255  
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255  
  
Ping statistics for 192.168.1.1:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
C:\>ping 10.1.1.1  
  
Pinging 10.1.1.1 with 32 bytes of data:  
  
Reply from 10.1.1.1: bytes=32 time<1ms TTL=255  
Reply from 10.1.1.1: bytes=32 time=1ms TTL=255  
Reply from 10.1.1.1: bytes=32 time<1ms TTL=255  
Reply from 10.1.1.1: bytes=32 time<1ms TTL=255  
  
Ping statistics for 10.1.1.1:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
C:\>
```

PING

Top



PC-Ruba

Physical Config Desktop Programming Attributes

Command Prompt

X

```
C:\>ping 10.1.1.2
```

```
Pinging 10.1.1.2 with 32 bytes of data:
```

```
Request timed out.
```

```
Reply from 10.1.1.2: bytes=32 time<1ms TTL=254
```

```
Reply from 10.1.1.2: bytes=32 time=1ms TTL=254
```

```
Reply from 10.1.1.2: bytes=32 time=1ms TTL=254
```

```
Ping statistics for 10.1.1.2:
```

```
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 209.165.200.226
```

```
Pinging 209.165.200.226 with 32 bytes of data:
```

```
Reply from 192.168.1.1: Destination host unreachable.
```

```
Ping statistics for 209.165.200.226:
```

```
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>
```

# PING

■ Top



Physical Config Desktop Programming Attributes

Terminal

```
R0_Ruba_Aljuhani(config-if)#no speed
R0_Ruba_Aljuhani(config-if)#negotiation auto
^
% Invalid input detected at '^' marker.

R0_Ruba_Aljuhani(config-if)#end
R0_Ruba_Aljuhani#
%SYS-5-CONFIG_I: Configured from console by console

R0_Ruba_Aljuhani#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.1.1.0/30 is directly connected, GigabitEthernet0/0/0
L        10.1.1.1/32 is directly connected, GigabitEthernet0/0/0
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, GigabitEthernet0/0/1
L        192.168.1.1/32 is directly connected, GigabitEthernet0/0/1

R0_Ruba_Aljuhani#
```

Top

SHOW  
IP  
ROUTE



PC-Ruba

Physical Config Desktop Programming Attributes

Terminal

SHOW  
IP  
ROUTE

```
R0_Ruba_Aljuhani#conf term
Enter configuration commands, one per line. End with CNTL/Z.
R0_Ruba_Aljuhani(config)#ip route 0.0.0.0 0.0.0.0 10.1.1.2
R0_Ruba_Aljuhani(config)#end
R0_Ruba_Aljuhani#
%SYS-5-CONFIG_I: Configured from console by console

R0_Ruba_Aljuhani#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is 10.1.1.2 to network 0.0.0.0

      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.1.1.0/30 is directly connected, GigabitEthernet0/0/0
L        10.1.1.1/32 is directly connected, GigabitEthernet0/0/0
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, GigabitEthernet0/0/1
L        192.168.1.1/32 is directly connected, GigabitEthernet0/0/1
S*       0.0.0.0/0 [1/0] via 10.1.1.2

R0_Ruba_Aljuhani#
```

Top

PC-Ruba

Physical Config Desktop Programming Attributes

Command Prompt X

```
C:\>ping 209.165.200.226

Pinging 209.165.200.226 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 209.165.200.226:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 209.165.200.226

Pinging 209.165.200.226 with 32 bytes of data:

Reply from 209.165.200.226: bytes=32 time<1ms TTL=254

Ping statistics for 209.165.200.226:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PING

Top

PC-Ruba

Physical Config Desktop Programming Attributes

Terminal X

```
s0_Ruba_Aljuhani>en
s0_Ruba_Aljuhani#ping 192.168.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/1 ms

s0_Ruba_Aljuhani#ping 10.1.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

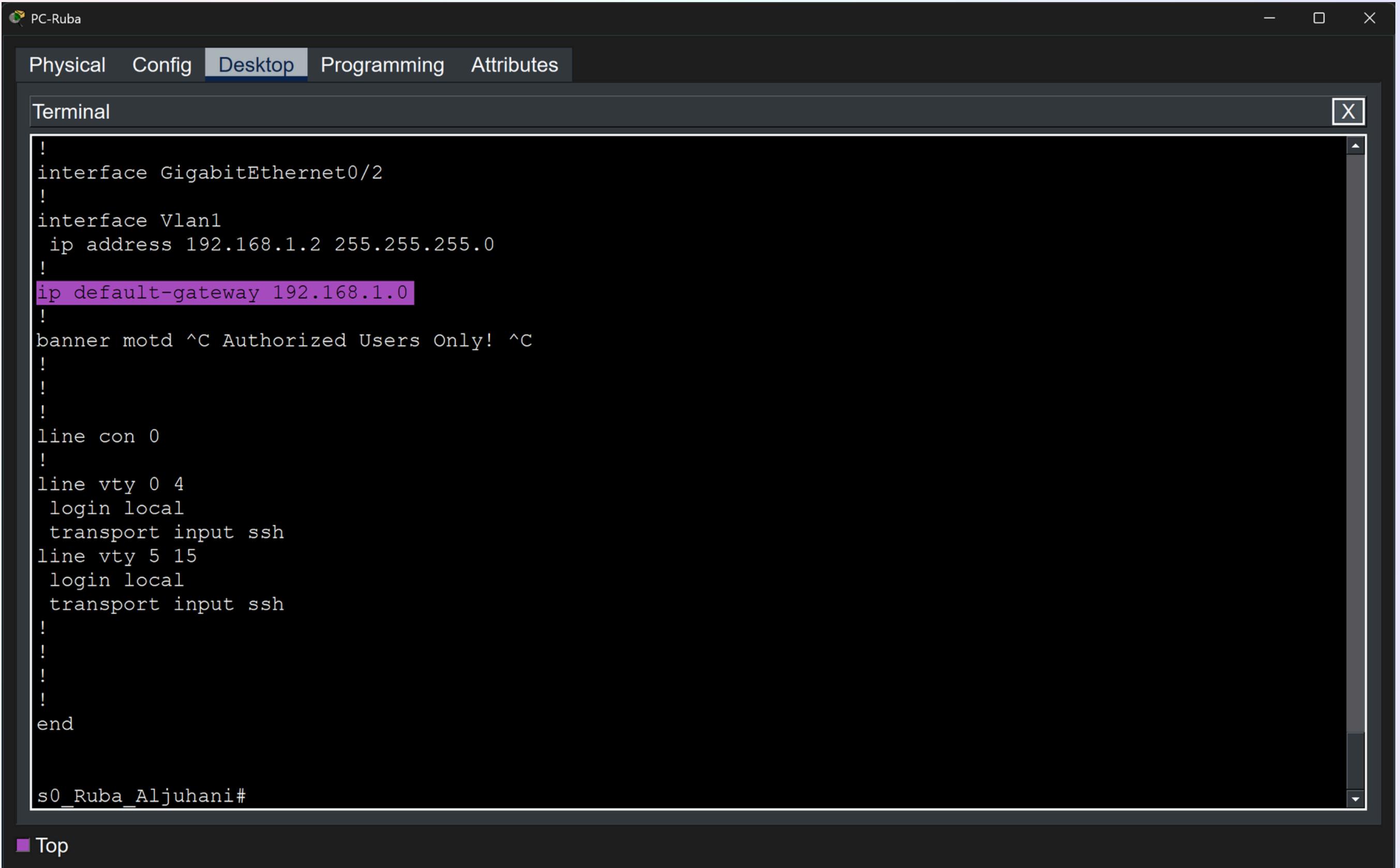
s0_Ruba_Aljuhani#show run
Building configuration...

Current configuration : 1376 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname s0_Ruba_Aljuhani
!
```

■ Top

# PING

# Identify the Problem.



```
PC-Ruba
Physical Config Desktop Programming Attributes

Terminal X
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 192.168.1.2 255.255.255.0
!
ip default-gateway 192.168.1.0
!
banner motd ^C Authorized Users Only! ^C
!
!
line con 0
!
line vty 0 4
 login local
 transport input ssh
line vty 5 15
 login local
 transport input ssh
!
!
!
end

s0_Ruba_Aljuhani#
```

Top

IP DEFAULT  
GATEWAY  
SHOULD BE  
192.168.1.1

PC-Ruba

Physical Config Desktop Programming Attributes

Terminal X

```
!
banner motd ^C Authorized Users Only! ^C
!
!
!
line con 0
!
line vty 0 4
  login local
  transport input ssh
line vty 5 15
  login local
  transport input ssh
!
!
!
end

s0_Ruba_Aljuhani#conf term
Enter configuration commands, one per line. End with CNTL/Z.
s0_Ruba_Aljuhani(config)#ip default-gateway 192.168.1.1
s0_Ruba_Aljuhani(config)#end
s0_Ruba_Aljuhani#
%SYS-5-CONFIG_I: Configured from console by console

s0_Ruba_Aljuhani#show run |
```

Top

PC-Ruba

Physical Config Desktop Programming Attributes

Terminal X

```
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 192.168.1.2 255.255.255.0
!
ip default-gateway 192.168.1.1
!
banner motd ^C Authorized Users Only! ^C
!
!
!
line con 0
!
line vty 0 4
 --More--
```

■ Top

# Problem FIXED

# PING

The image shows two terminal windows side-by-side, both titled "PC-Ruba". The left window is labeled "Terminal" and displays the following command-line session:

```
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#
s0_Ruba_Aljuhani#ping 10.1.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/1/6 ms

s0_Ruba_Aljuhani#ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

s0_Ruba_Aljuhani#ping 209.165.200.226
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 209.165.200.226, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

s0_Ruba_Aljuhani#
```

The right window is also labeled "Terminal" and displays the following command-line session:

```
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 10.1.1.2 to network 0.0.0.0

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      10.1.1.0/30 is directly connected, GigabitEthernet0/0/0
L      10.1.1.1/32 is directly connected, GigabitEthernet0/0/0
        192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C      192.168.1.0/24 is directly connected, GigabitEthernet0/0/1
L      192.168.1.1/32 is directly connected, GigabitEthernet0/0/1
S*     0.0.0.0/0 [1/0] via 10.1.1.2

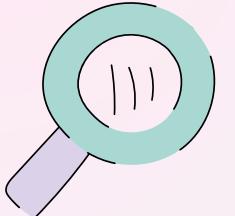
R0_Ruba_Aljuhani#ping 10.1.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

R0_Ruba_Aljuhani#ping 209.165.200.226
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 209.165.200.226, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

R0_Ruba_Aljuhani#
```

■ Top

■ Top



# Part 4: Document Findings and Configuration Changes

## Findings:

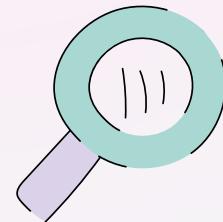
1. Some switch interfaces were shut down, preventing communication between PC-A and the router.
2. The default gateway on the switch was configured incorrectly (192.168.1.0 instead of 192.168.1.1).
3. There was no static route configured on R1 to reach the external network.

## Verification:

After applying the changes, all devices (PC-A, S1, and R1) were able to successfully ping the external server (209.165.200.226) with stable response times.



# Reflection Question



This lab had you troubleshoot all devices before making any changes. Is there another way to apply the troubleshooting methodology?

Yes, another way to apply the troubleshooting methodology is to use a step-by-step or layer-by-layer approach. You can start from the physical layer (checking cables and interfaces) and move up to the data link and network layers. This helps identify the root cause more efficiently instead of checking all devices at once.