

Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

Student:

Shoumya Rayamajhi

Email:

sxr230169@utdallas.edu

Time on Task:

3 hours, 4 minutes

Progress:

100%

Report Generated: Sunday, February 22, 2026 at 12:35 AM

Hands-On Demonstration

Part 1: Design a Simple Network Topology

34. Make a screen capture showing the results of the ping attempt from PC4 to PC3.

The screenshot shows a Solar-PuTTY terminal window titled "Designing a Secure Network Topology (4e)". The window displays the following ping results:

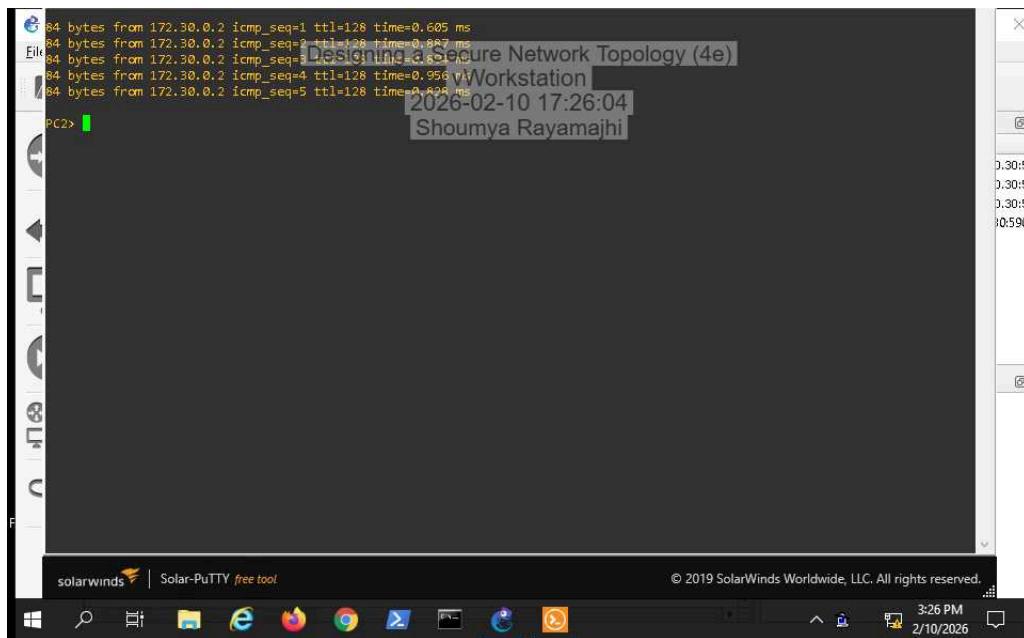
```
84 bytes from 172.30.1.2 icmp_seq=1 ttl=64 time=0.380 ms
84 bytes from 172.30.1.2 icmp_seq=2 ttl=64 time=0.605 ms
84 bytes from 172.30.1.2 icmp_seq=3 ttl=64 time=0.644 ms
84 bytes from 172.30.1.2 icmp_seq=4 ttl=64 time=0.644 ms
84 bytes from 172.30.1.2 icmp_seq=5 ttl=64 time=0.437 ms
```

The terminal window also shows the date and time as "2026-02-10 17:25:20" and the user name as "Shoumya Rayamajhi". The Solar-PuTTY logo is visible in the bottom left corner, and the SolarWinds logo is in the bottom right corner. The taskbar at the bottom shows various icons for Windows applications like File Explorer, Edge, and Task View.

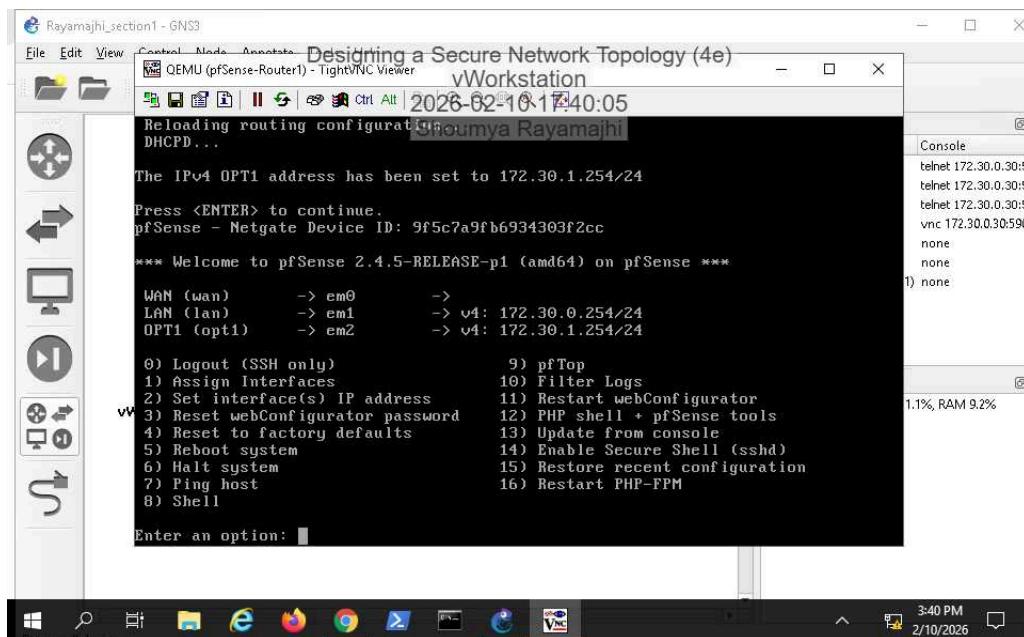
Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

37. Make a screen capture showing the results of the ping attempt from PC2 to vWorkstation (172.30.0.2).



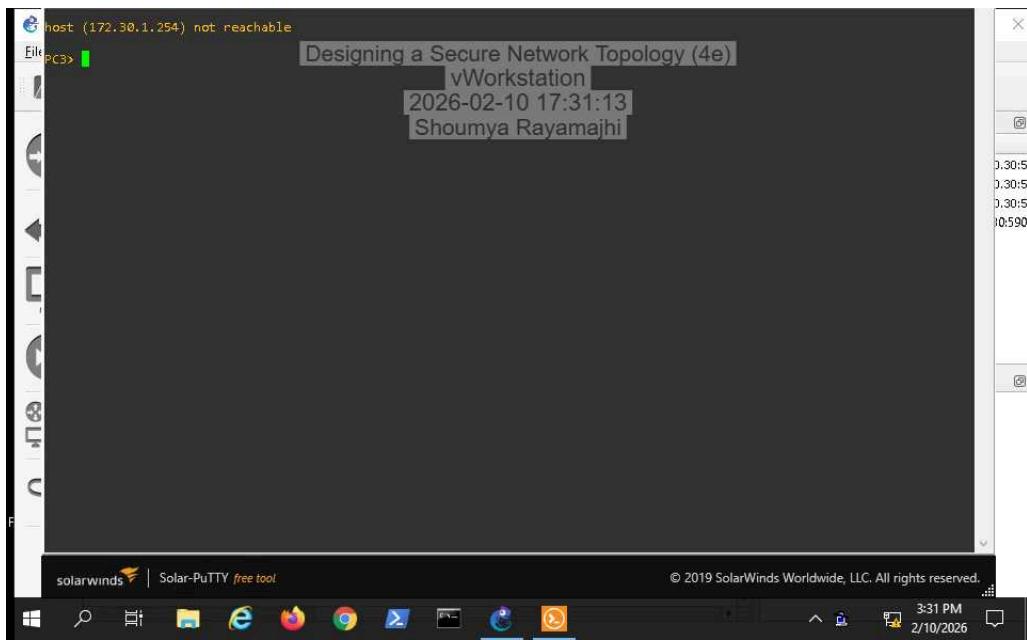
49. Make a screen capture showing the IP address assignments in the pfSense console.



Designing a Secure Network Topology (4e)

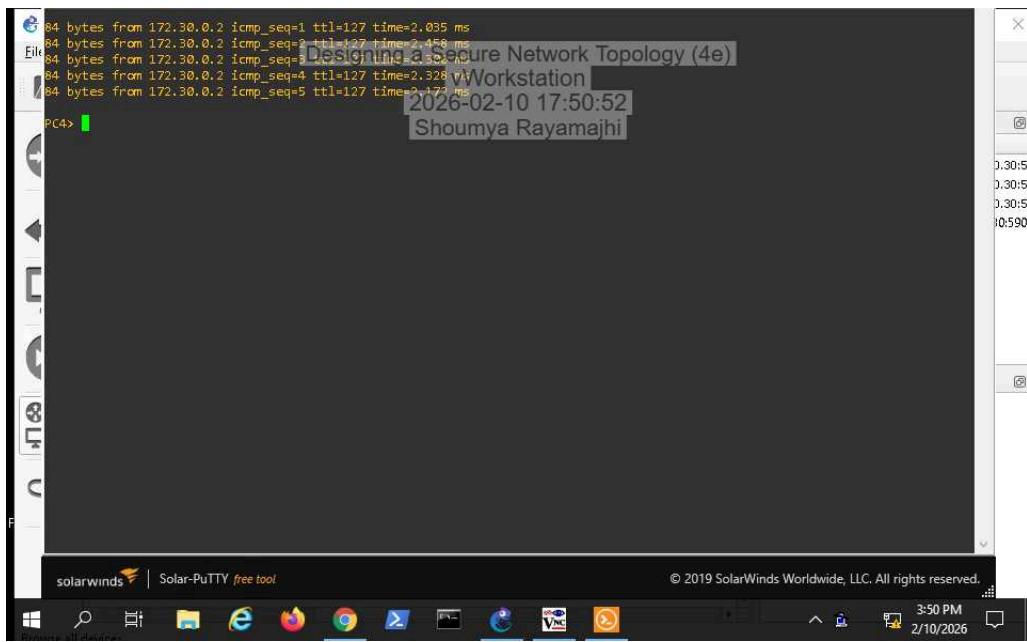
Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

53. Make a screen capture showing the ICMP timeout message.



A screenshot of a Solar-PuTTY terminal window titled "Designing a Secure Network Topology (4e)". The session name is "vWorkstation". The date and time are "2026-02-10 17:31:13". The user is "Shoumya Rayamajhi". The terminal shows the command "host (172.30.1.254) not reachable" followed by several blank lines. The Solar-PuTTY interface includes a toolbar on the left with icons for file operations, and a status bar at the bottom showing the software version "solarwinds Solar-PuTTY free tool" and the system date and time "© 2019 SolarWinds Worldwide, LLC. All rights reserved. 3:31 PM 2/10/2026".

76. Make a screen capture showing the successful ping from PC4 to vWorkstation.



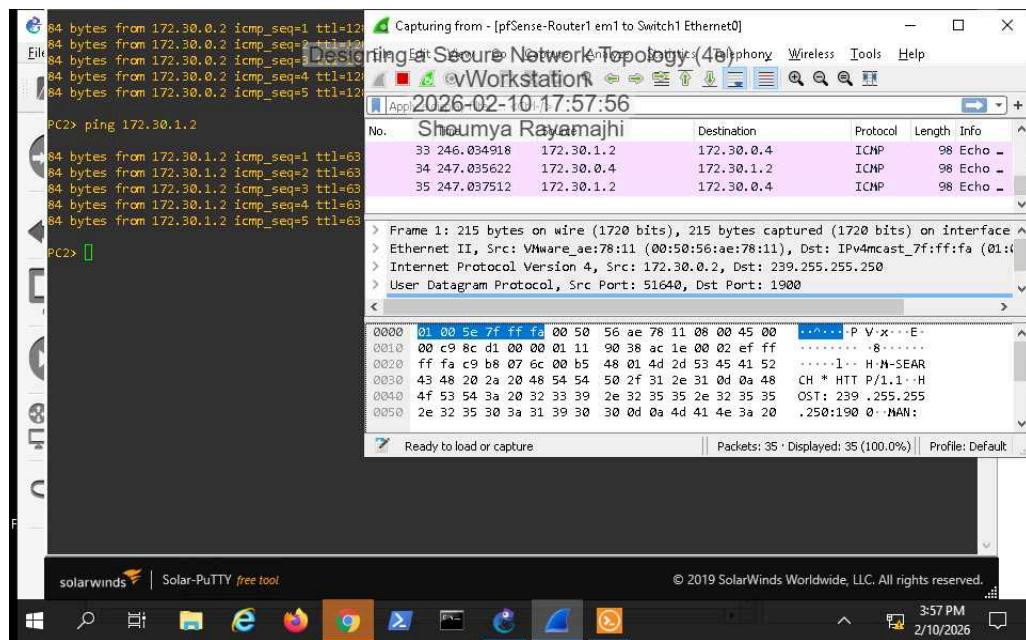
A screenshot of a Solar-PuTTY terminal window titled "Designing a Secure Network Topology (4e)". The session name is "vWorkstation". The date and time are "2026-02-10 17:50:52". The user is "Shoumya Rayamajhi". The terminal shows the command "PC4>" followed by five lines of output: "84 bytes from 172.30.0.2 icmp_seq=1 ttl=127 time=2.035 ms", "84 bytes from 172.30.0.2 icmp_seq=2 ttl=127 time=2.458 ms", "84 bytes from 172.30.0.2 icmp_seq=3 ttl=127 time=2.328 ms", "84 bytes from 172.30.0.2 icmp_seq=4 ttl=127 time=2.328 ms", and "84 bytes from 172.30.0.2 icmp_seq=5 ttl=127 time=2.328 ms". The Solar-PuTTY interface includes a toolbar on the left with icons for file operations, and a status bar at the bottom showing the software version "solarwinds Solar-PuTTY free tool" and the system date and time "© 2019 SolarWinds Worldwide, LLC. All rights reserved. 3:50 PM 2/10/2026".

Part 2: Capture the Network Traffic to Validate Connectivity

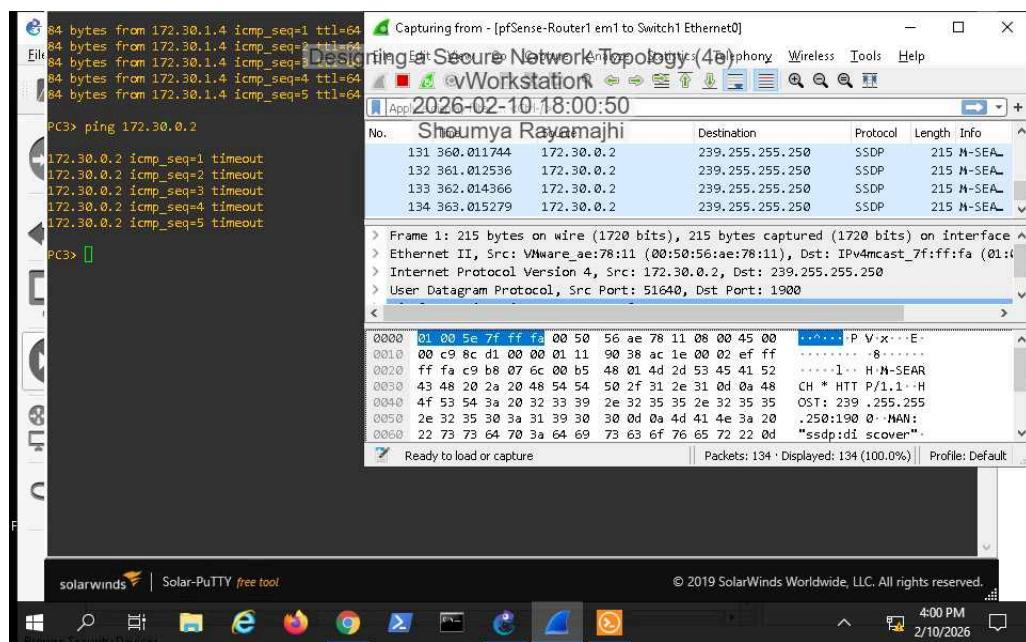
Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

7. Make a screen capture showing the Wireshark capture for the PC2 to PC3 ping request.



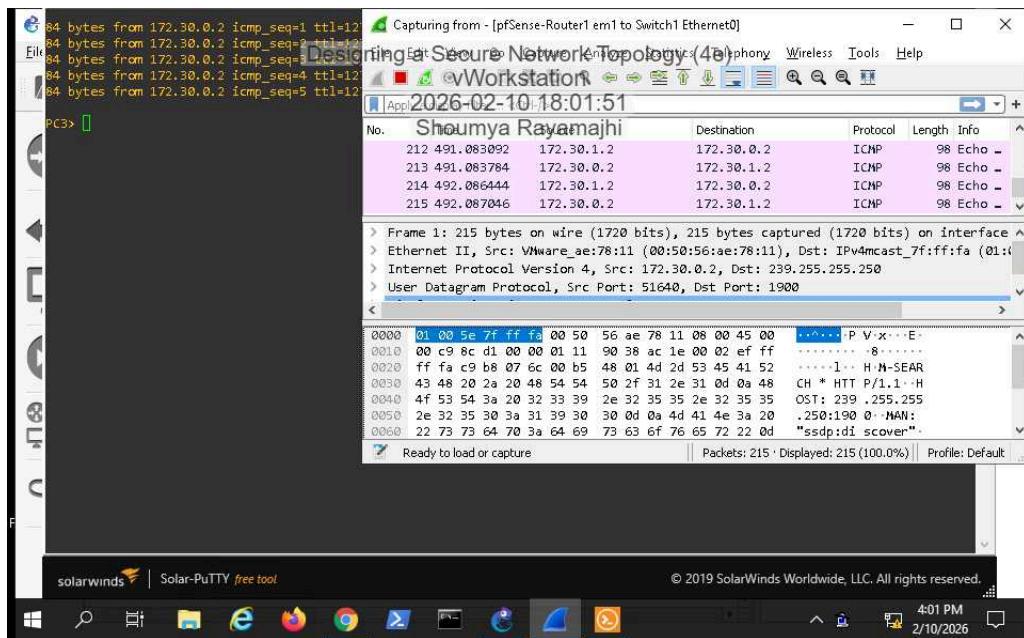
17. Make a screen capture showing the timed out ping request.



Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

20. Make a screen capture showing the Wireshark capture for the PC3 to vWorkstation ping request.



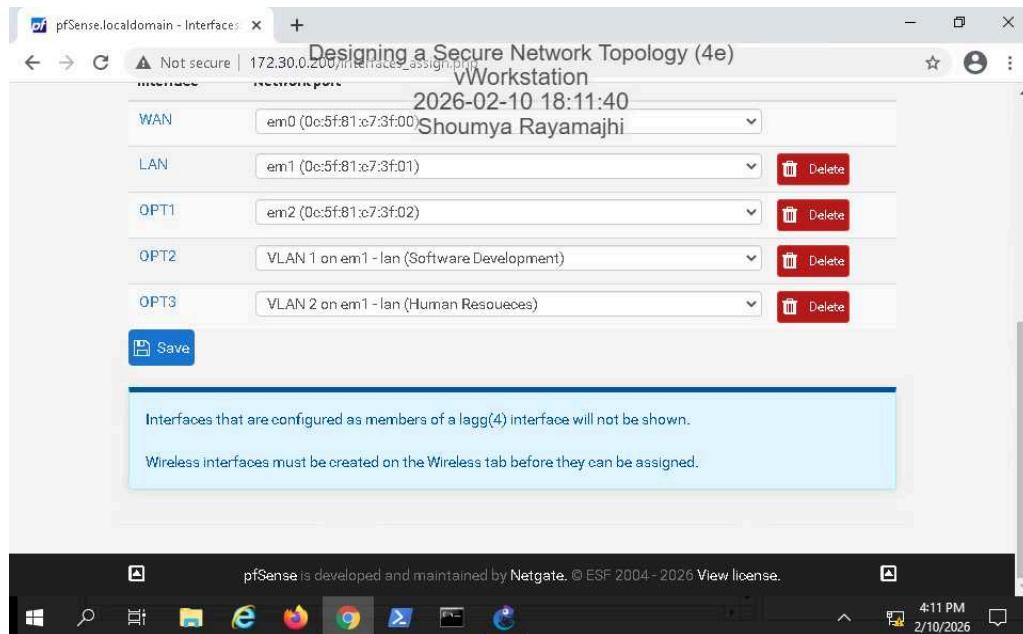
Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

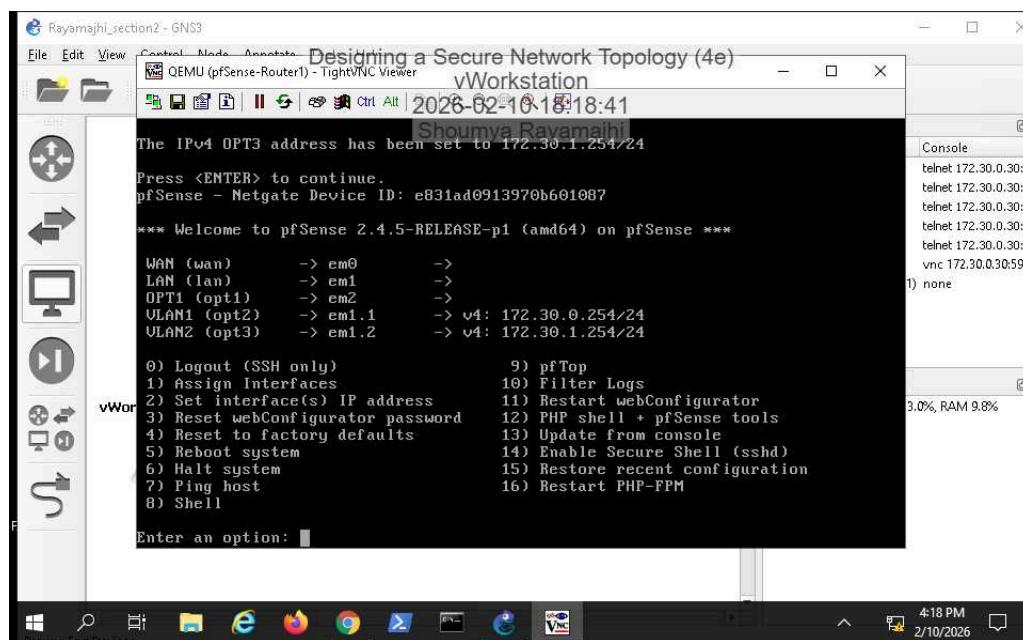
Applied Learning

Part 1: Design a More Complex Network Topology

14. Make a screen capture showing the Interface Assignments page.



28. Make a screen capture showing the updated pfSense router settings with the VLAN IP address assignments.



Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

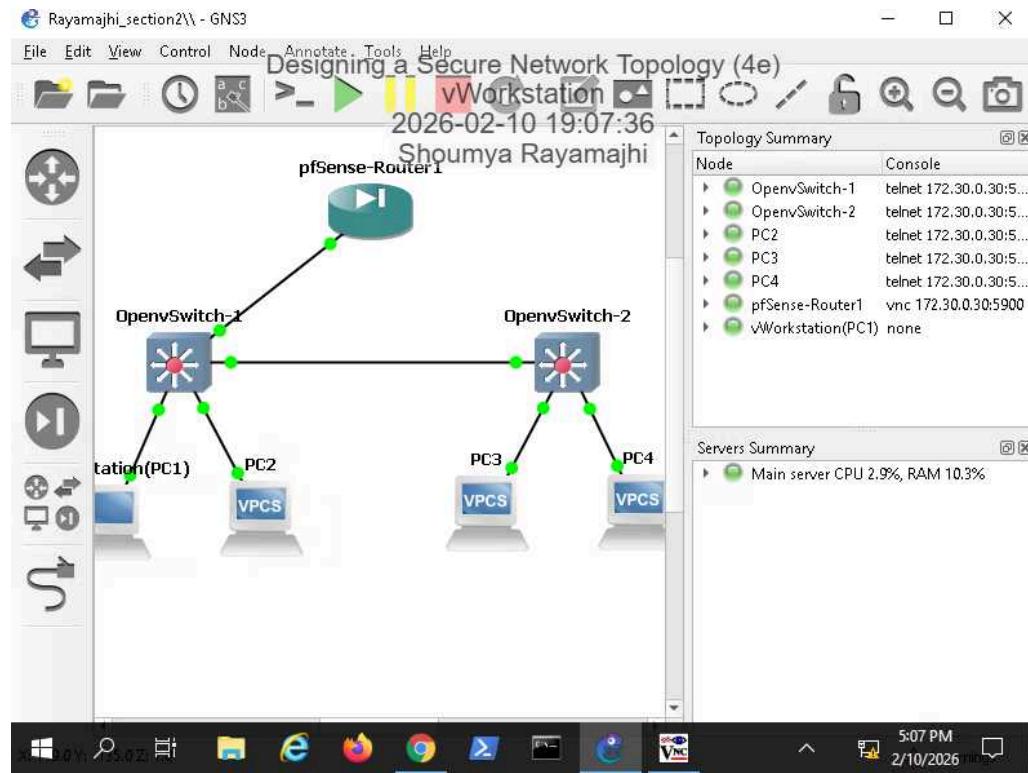
36. Make a screen capture showing the **eth1** and **eth2** interfaces with their assigned VLAN tags on **Switch2**.

The screenshot shows a terminal window titled "Designing a Secure Network Topology (4e)" running on a vWorkstation. The terminal output displays the configuration of network interfaces on a switch. Key lines from the output include:

```
Port "eth15"
    Interface "eth15"
        error: "could not open network device eth15 (No such device)"
Port "eth8"
    Interface "eth8"
        error: "could not open network device eth8 (No such device)"
Port "eth11"
    Interface "eth11"
        error: "could not open network device eth11 (No such device)"
Port "eth10"
    Interface "eth10"
        error: "could not open network device eth10 (No such device)"
Port "eth6"
    Interface "eth6"
        error: "could not open network device eth6 (No such device)"
Port "eth3"
    Interface "eth3"
Port "eth2"
    tag: 2
    Interface "eth2"
Port "eth9"
    Interface "eth9"
        error: "could not open network device eth9 (No such device)"
Port "eth5"
    Interface "eth5"
        error: "could not open network device eth5 (No such device)"
Port "eth1"
    tag: 1
    Interface "eth1"
Port "eth0"
    Interface "eth0"
```

The terminal window is part of SolarWinds Putty, as indicated by the logo in the title bar.

39. Make a screen capture showing the **completed topology**.

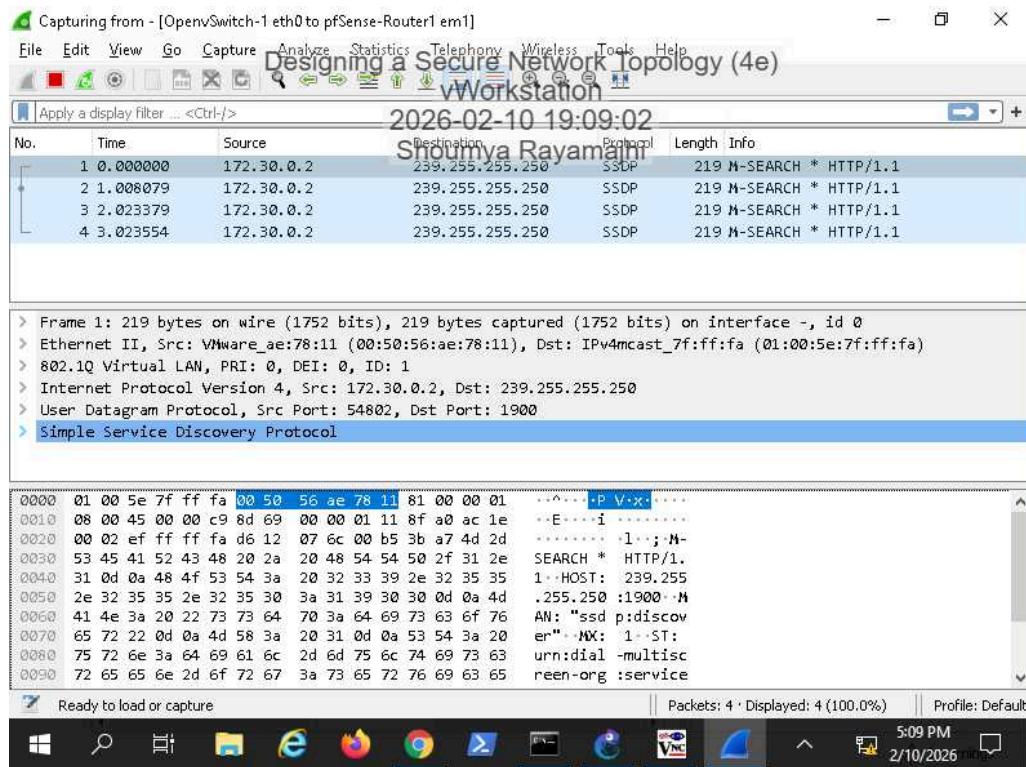


Part 2: Capture Network Traffic to Validate Connectivity

Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

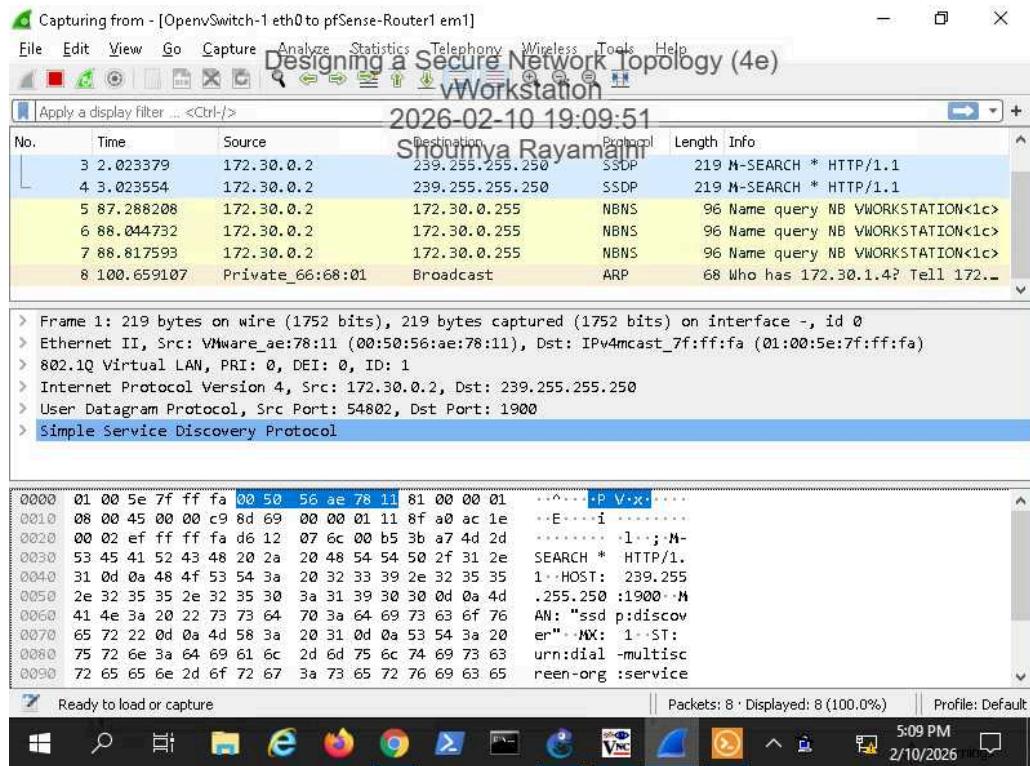
3. Make a screen capture showing the Wireshark capture for the vWorkstation to PC3 ping request.



Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

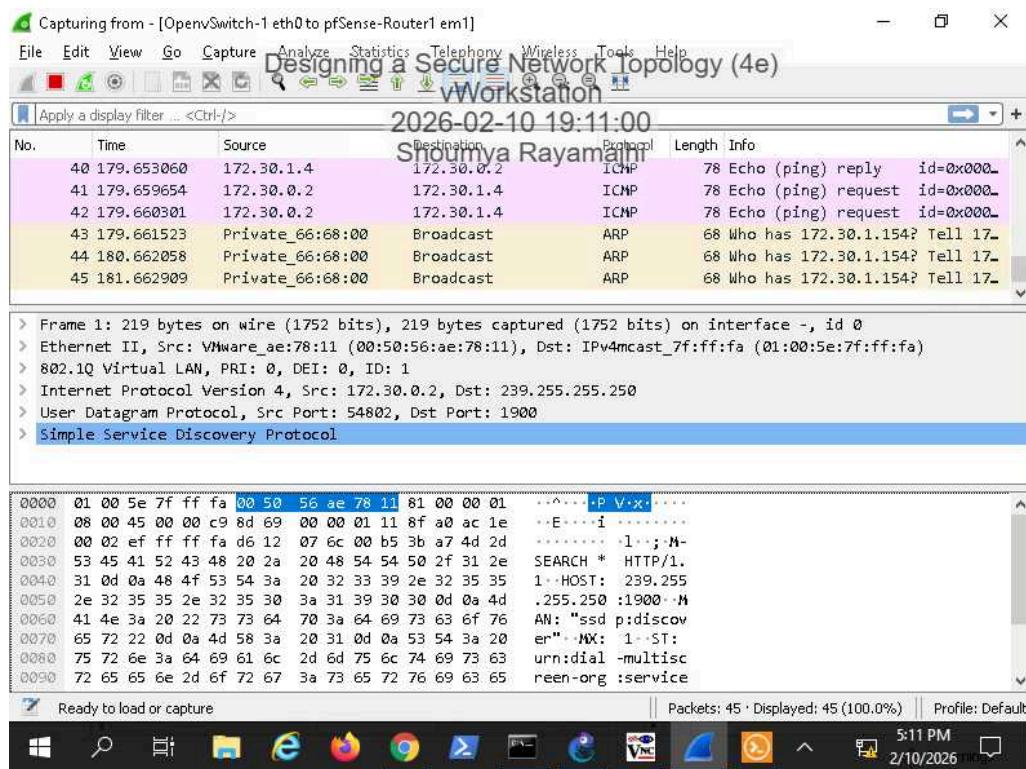
5. Make a screen capture showing the Wireshark capture for the PC2 to PC4 ping request.



Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

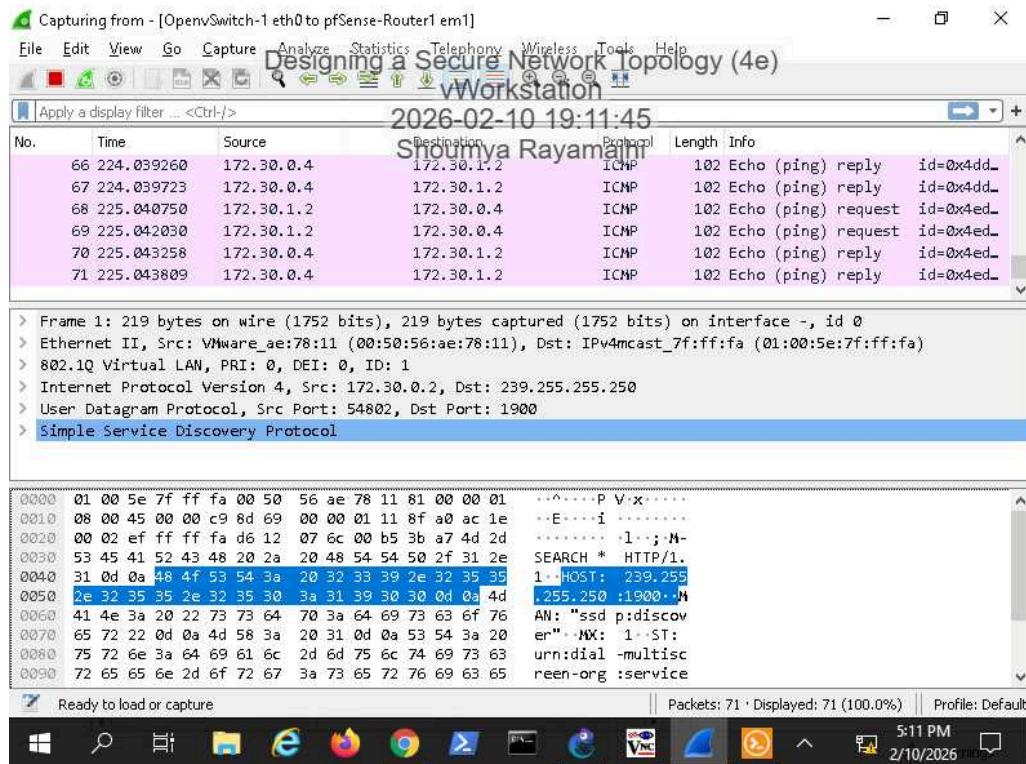
7. Make a screen capture showing the Wireshark capture for the vWorkstation to PC2 ping request.



Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

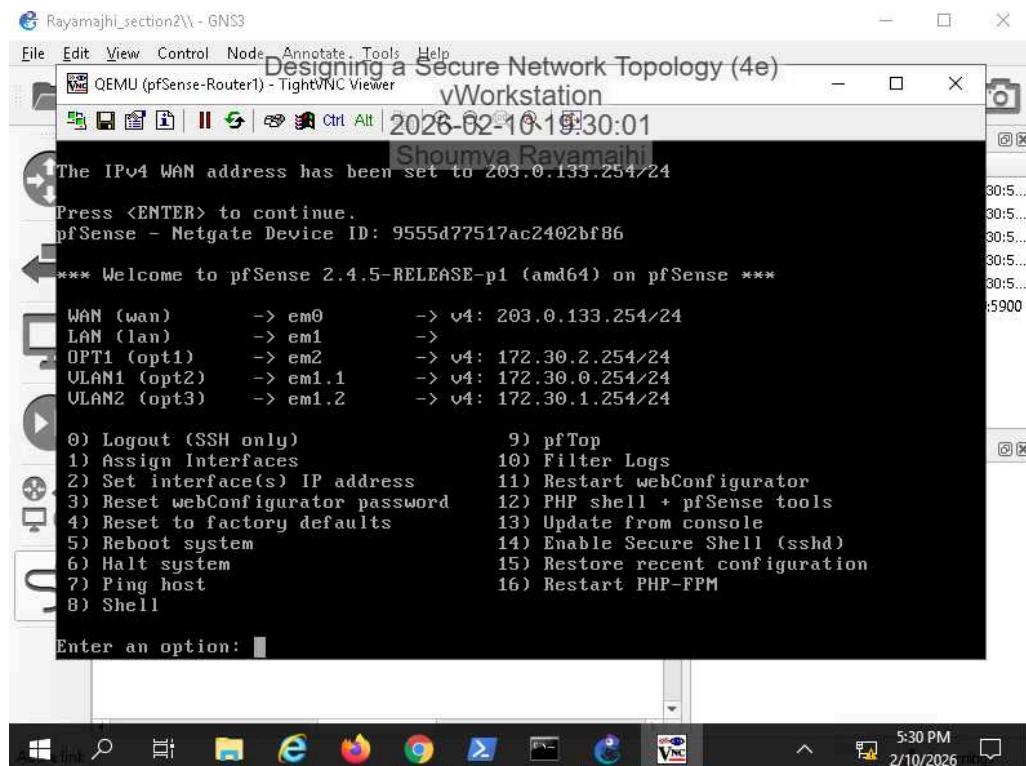
9. Make a screen capture showing the Wireshark capture for the PC2 to PC3 ping request.



Challenge and Analysis

Part 1: Enhance the Network Topology with a DMZ

1. Make a screen capture showing the interface configurations in the pfSense console.



Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03

2. Make a screen capture showing the firewall rule on the WAN interface in the pfSense webConfigurator.

The screenshot shows the pfSense webConfigurator interface. The title bar reads "Designing a Secure Network Topology (4e) vWorkstation". The top navigation bar includes the pfSense logo, the date "2026-02-10 19:33:17", and the user "Shoumya Rayamajhi". A red warning message in a box states: "WARNING: The 'admin' account password is set to the default value. Change the password in the User Manager." Below this, the main menu shows "Firewall / Rules / WAN" with the "WAN" tab selected. Under "Rules (Drag to Change Order)", there is one rule listed:

States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description	Actions
0/B	IPv4	*	*	*	*	*	*	none		

Buttons at the bottom include "Add", "Delete", "Save", and "Separator". The taskbar at the bottom shows various icons and the date "2/10/2026".

Part 2: Validate DMZ Connectivity

1. Make a screen capture showing the results of both pings.

The screenshot shows a Windows Command Prompt window titled "Rayamajhi_section2\ - GNS3". The title bar also displays "Administrator: Command Prompt", "Designing a Secure Network Topology (4e)", and the date "2026-02-10 19:41:29". The user "Shoumya Rayamajhi" is logged in. The command entered was "ping 172.30.2.2". The output shows the ping results:

```
Pinging 172.30.2.2 with 32 bytes of data:  
Reply from 172.30.2.2: bytes=32 time=3ms TTL=63  
Reply from 172.30.2.2: bytes=32 time=2ms TTL=63  
Reply from 172.30.2.2: bytes=32 time=2ms TTL=63  
Reply from 172.30.2.2: bytes=32 time=3ms TTL=63  
  
Ping statistics for 172.30.2.2:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 2ms, Maximum = 3ms, Average = 2ms
```

The taskbar at the bottom shows various icons and the date "2/10/2026".

Designing a Secure Network Topology (4e)

Network Security, Firewalls, and VPNs, Fourth Edition - Lab 03
