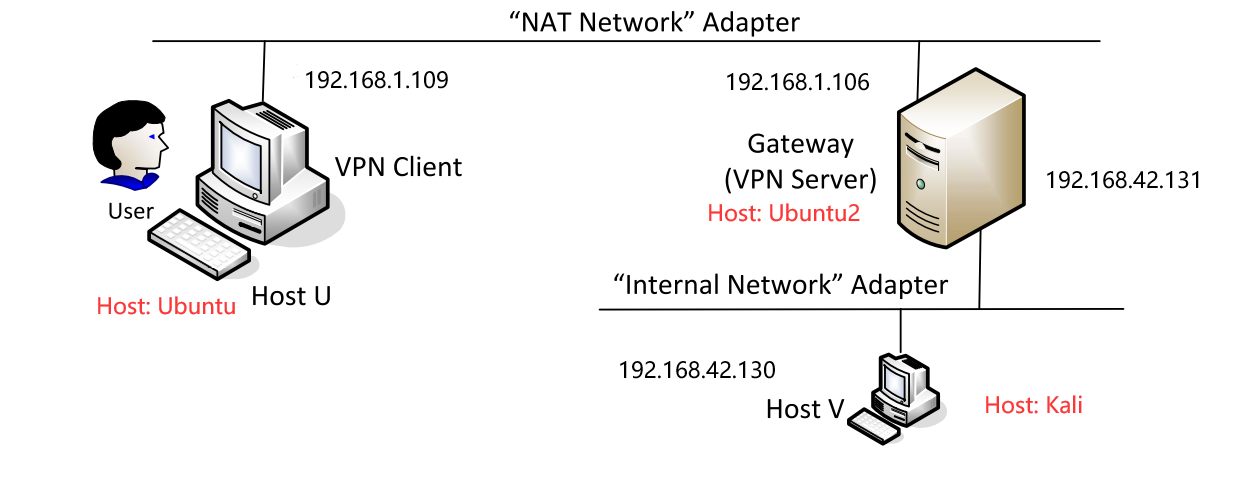
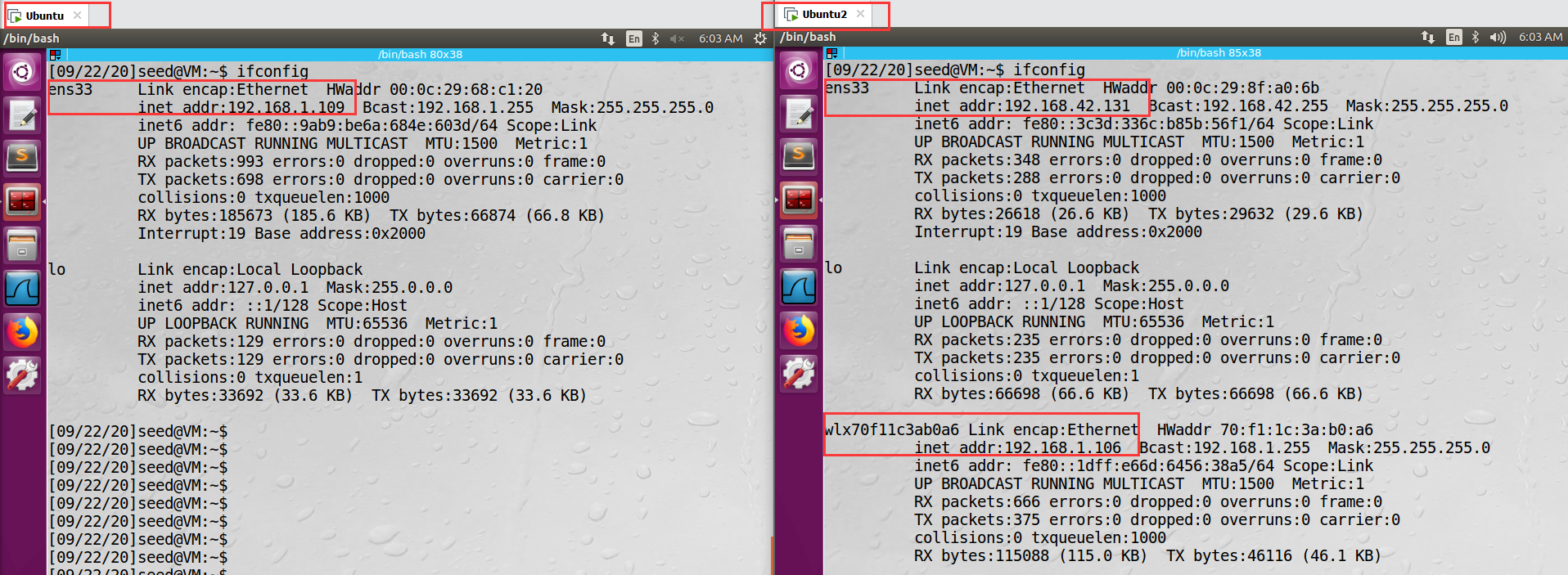
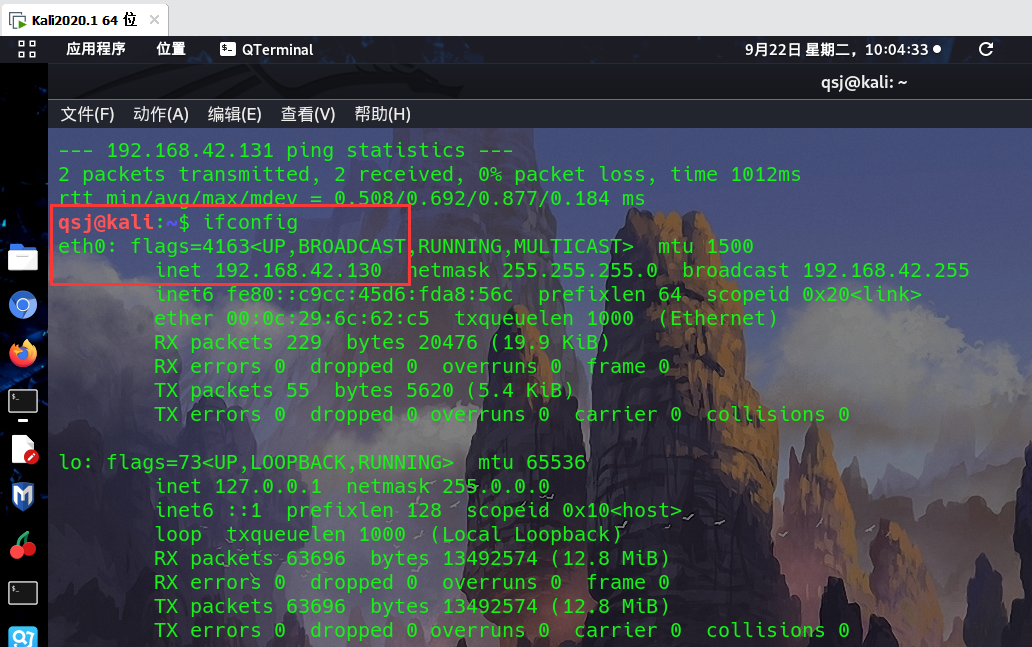
# VPN Tunneling Lab

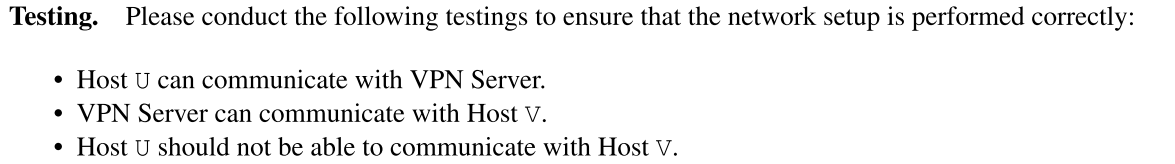
57117217戚吴祺

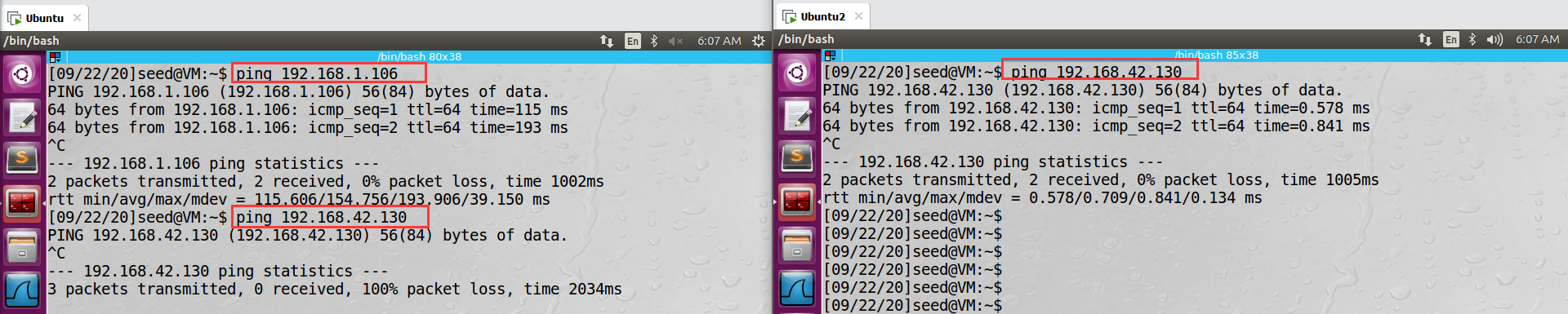
## Task 1: Network Setup





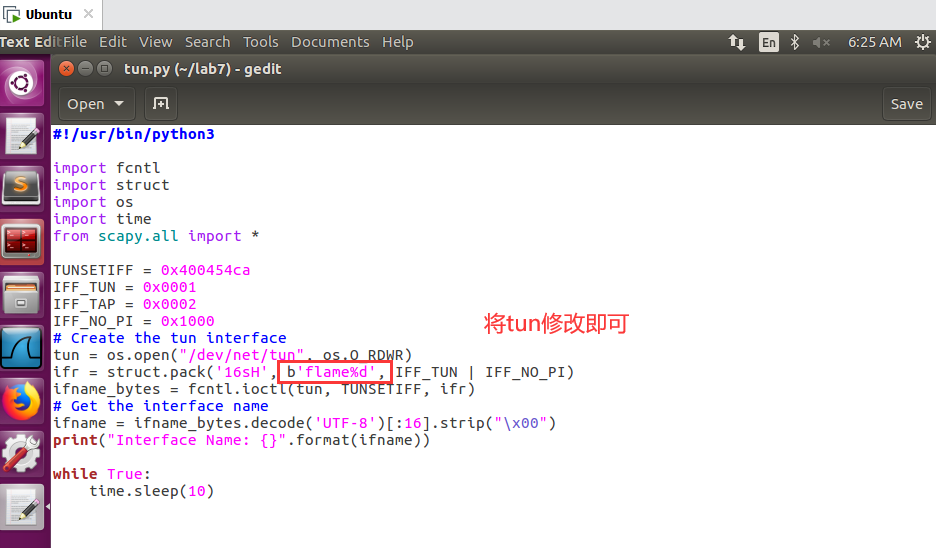




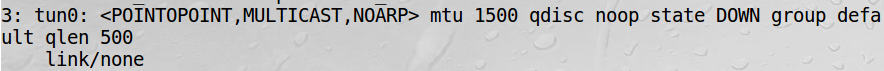


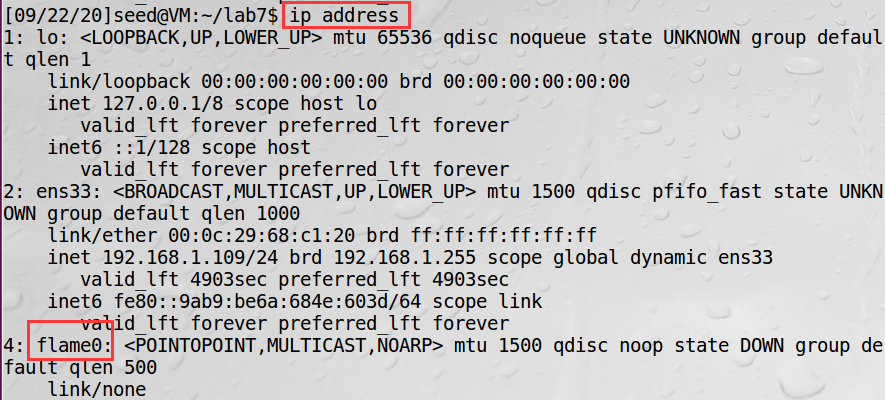
## Task 2: Create and Configure TUN Interface

**Task 2.a: Name of the Interface**

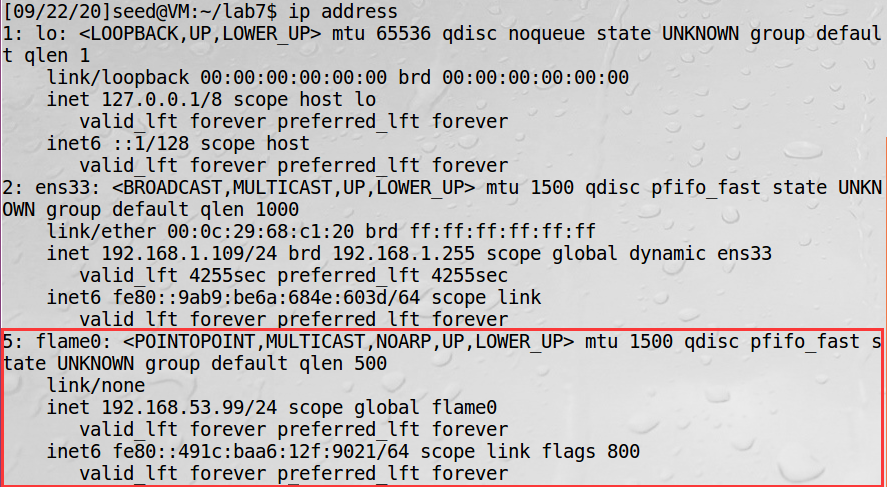


tun 修改为flame



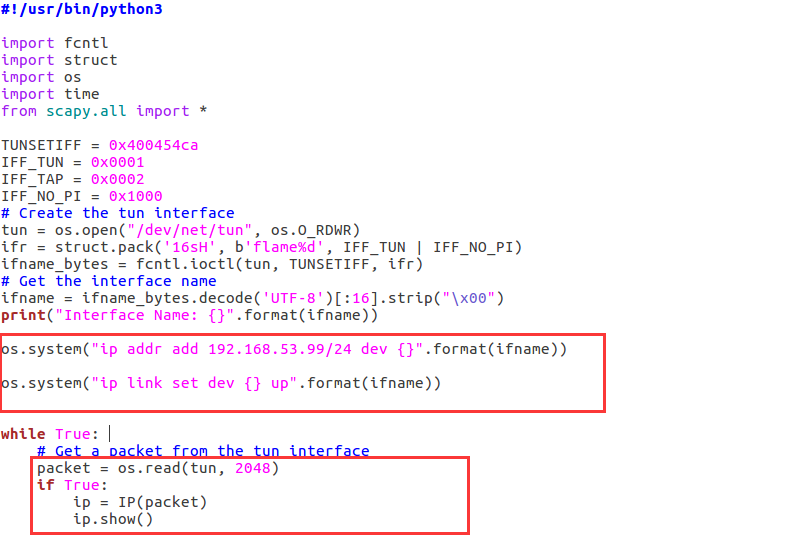


**Task 2.b: Set up the TUN Interface**



添加命令后，tun网卡启动，处于up状态，之前是down状态

**Task 2.c: Read from the TUN Interface**

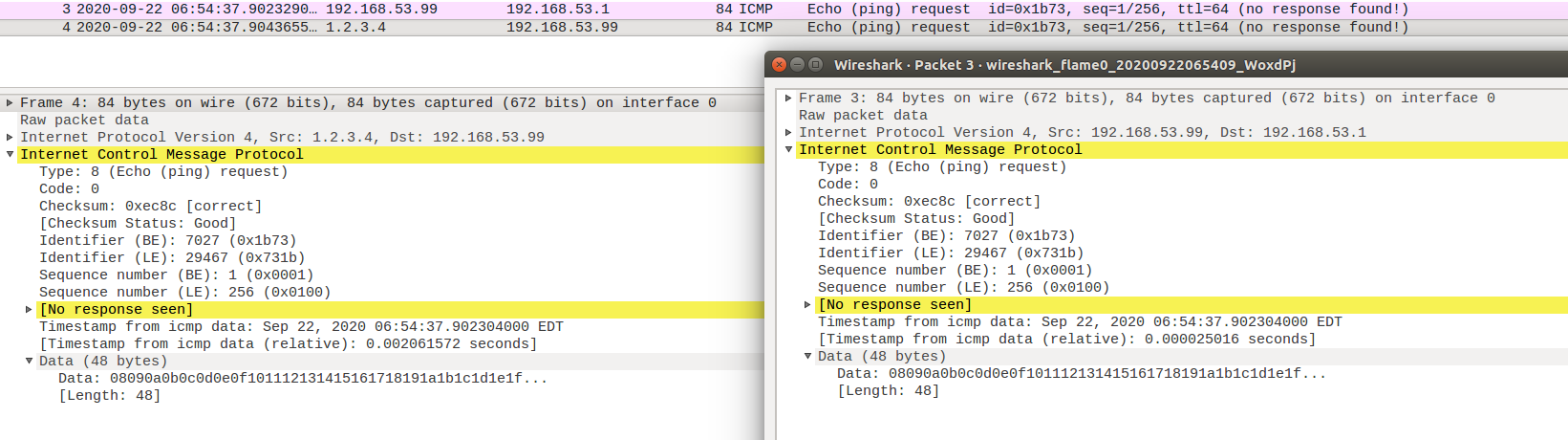


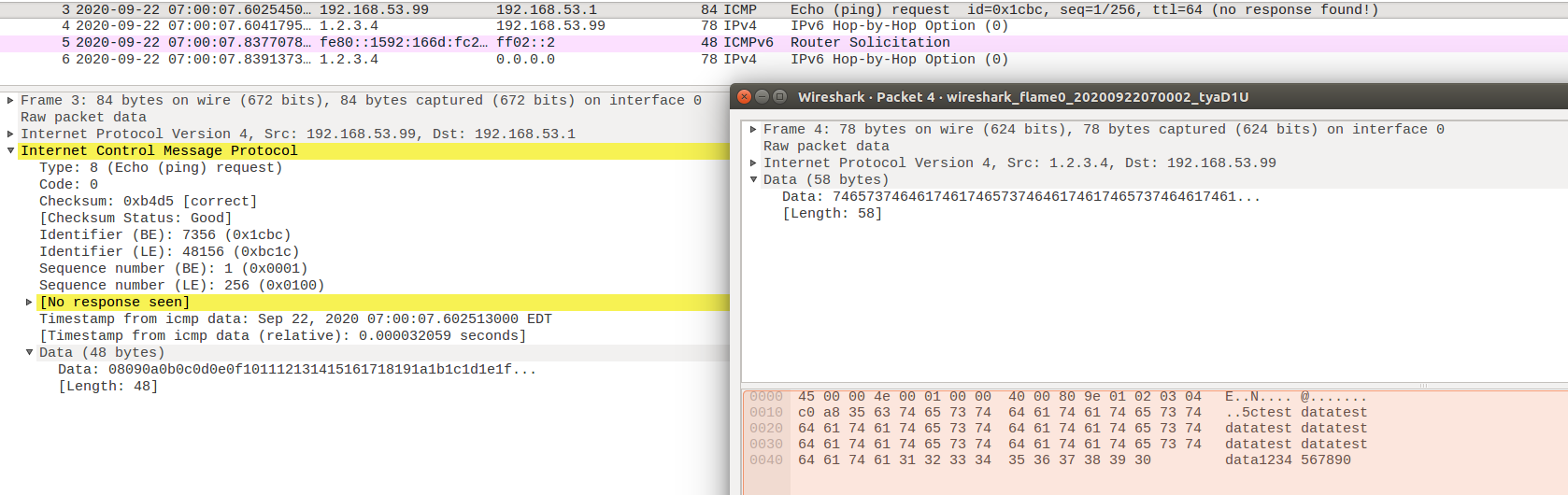
ping 192.168.53.1，tun.py输出结果如下，tun发送ping数据包



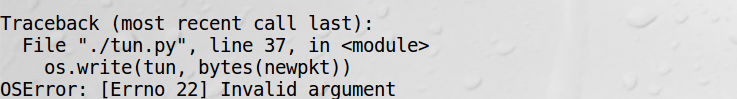
ping 192.168.42.130，tun.py没有输出，不在同一个网段不由tun.py处理

**Task 2.d: Write to the TUN Interface**

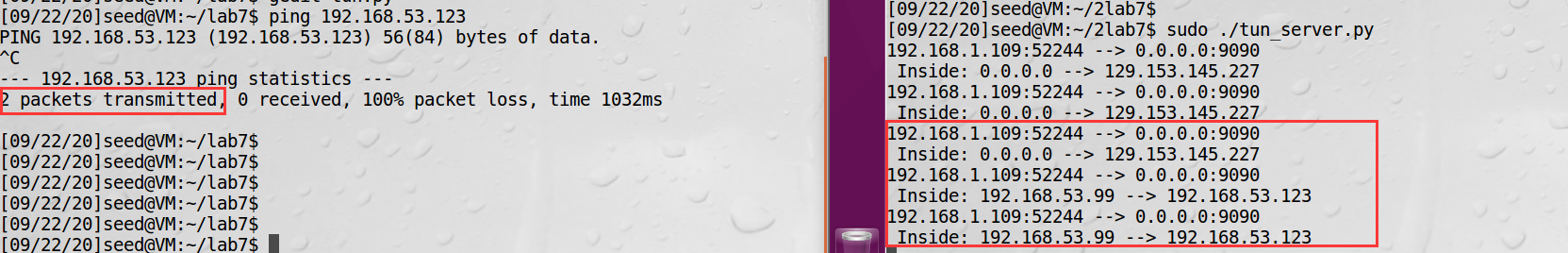




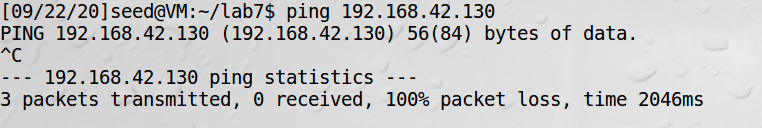
当尝试随机值时报错



**Task 3: Send the IP Packet to VPN Server Through a Tunnel**

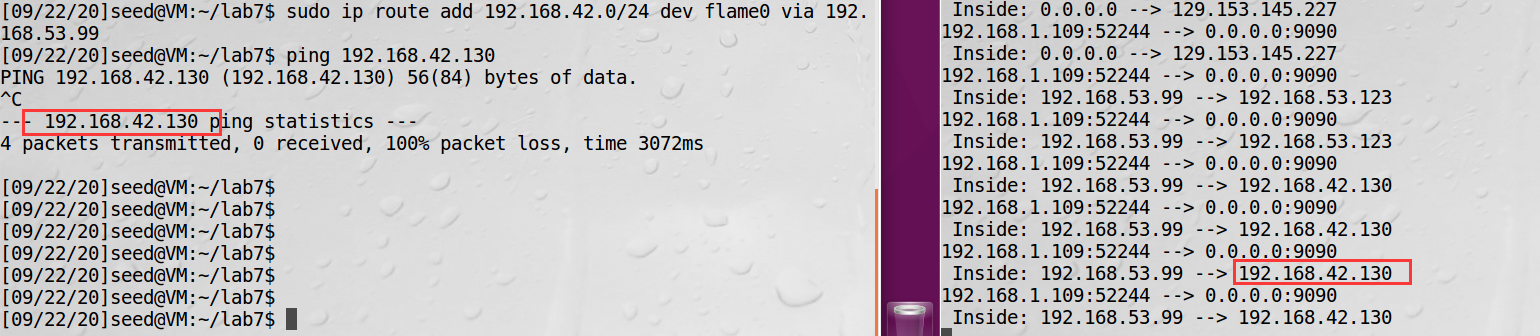


HostU 已经与VPNServer建立了连接

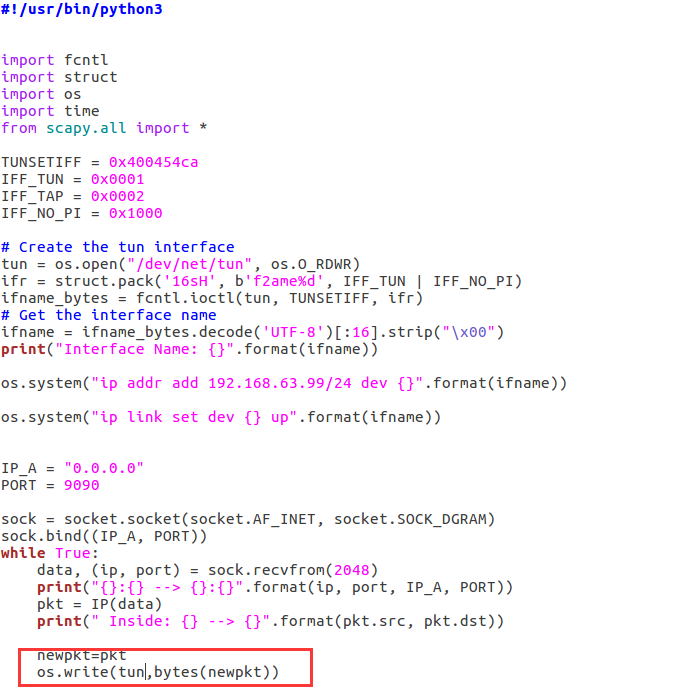


但仍无法访问192.168.42.0/24

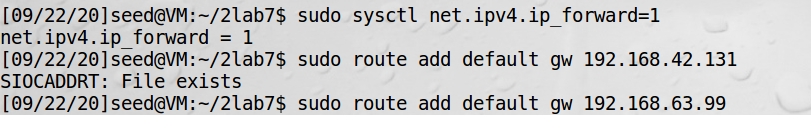
添加路由后server成功收到访问192.168.42.0/24的数据包



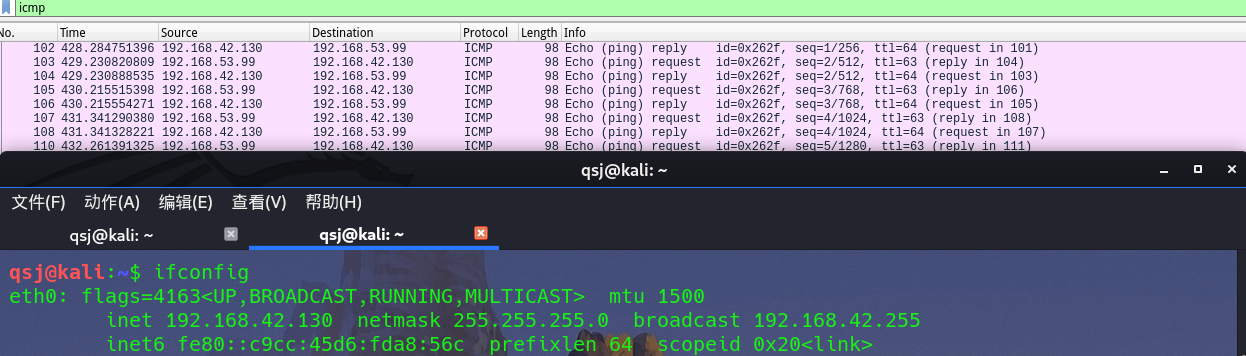
**Task 4: Set Up the VPN Server**



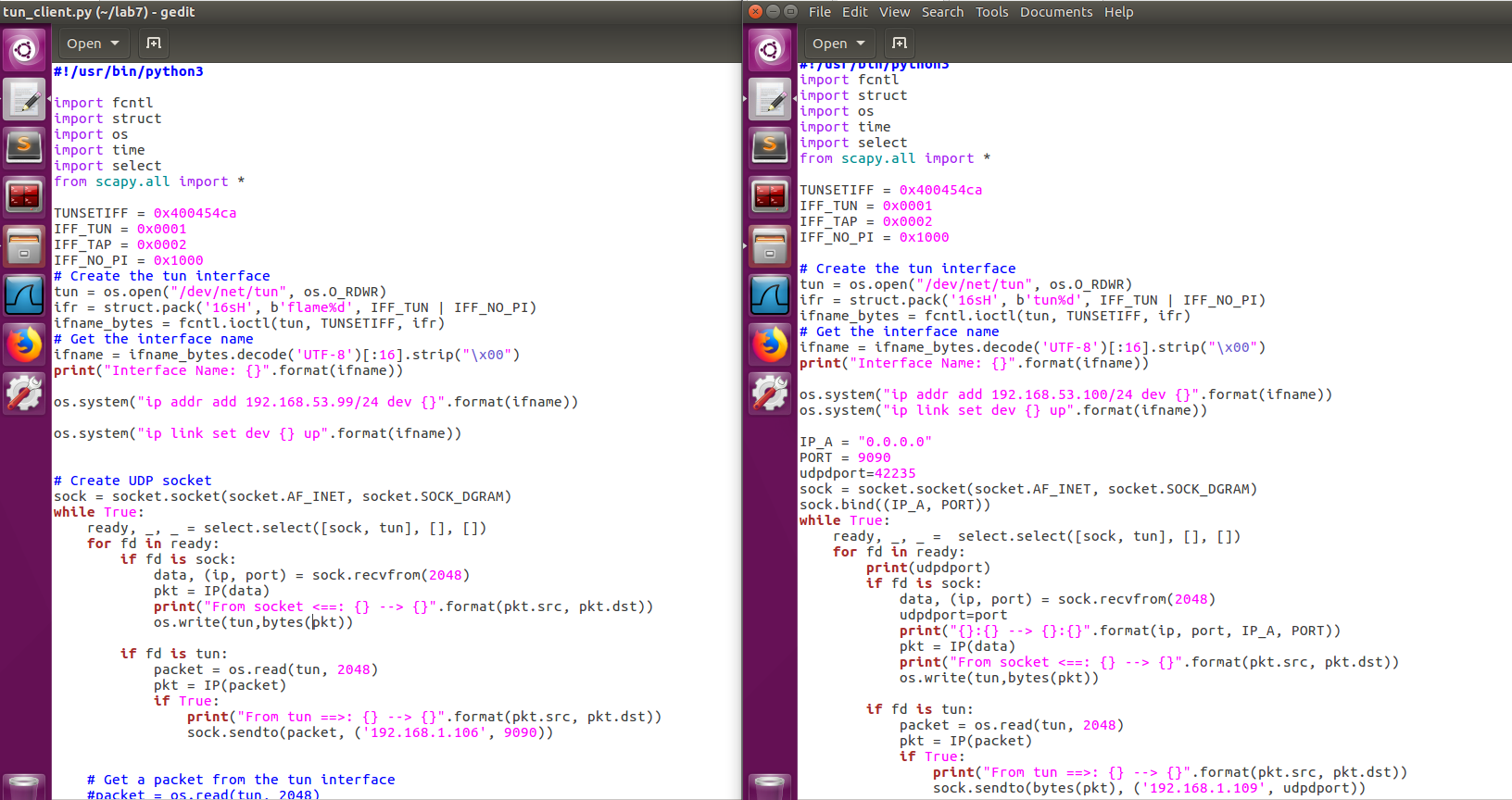
开启转发并添加路由

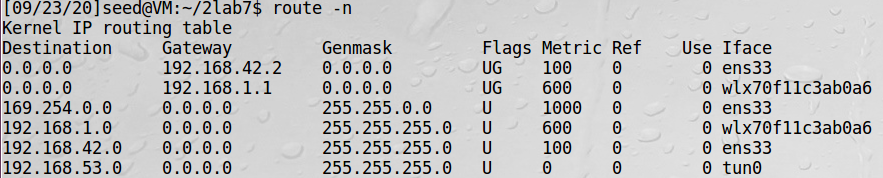


ICMP packets from Host U have arrived at Host V.



**Task 5: Handling Traffic in Both Directions**





代码写的没问题，但不知道为什么reply包一直发给ens33网卡，而不发给tun0，路由配的也没什么问题，

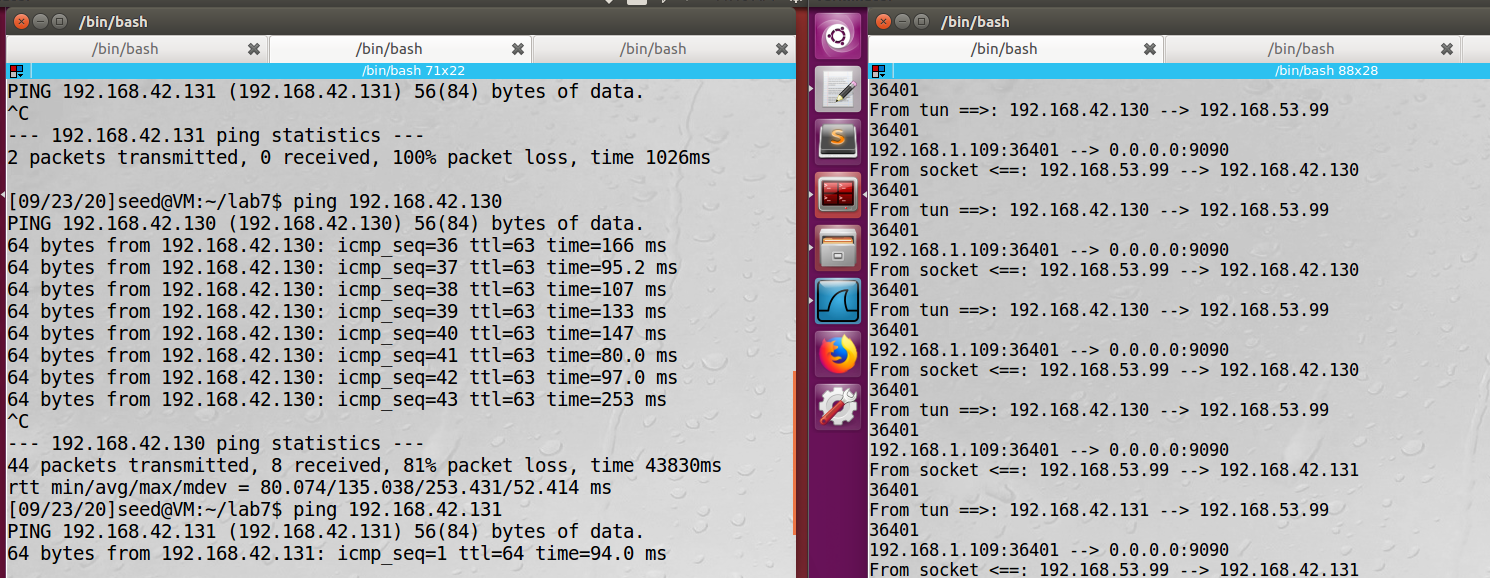
按理说reply在ens33和tun0 网卡上都能收到的，

如果tun0能收到，那么第二个方向就建立了，hostU就能收到回包。

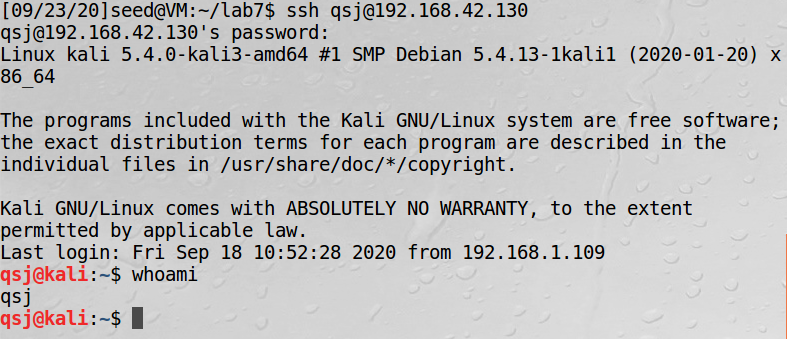
搞了好久也没解决，就放弃了。

telnet 同样能成功，如果失败，关闭防火墙并确保开启telnet服务即可。

再次尝试：调整了server VPN 和host V之间的网关，取消dhcp，即不使用dhcp的网关192.168.42.2，将v的网关指向Server，其他不做任何变化，连接建立成功



由于kali上没装telnet服务，用ssh替代，ssh连接成功

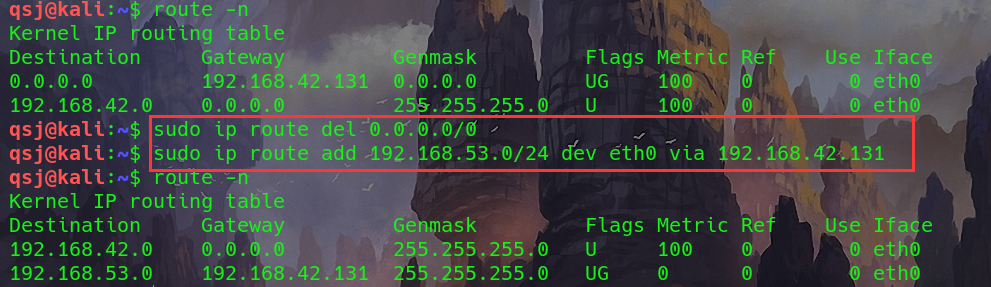


Wireshark中包的走向是，udp包从U发往vpn，vpn将隧道中的包取出发往192.168.42.130，reply包再从隧道用udp包发出。

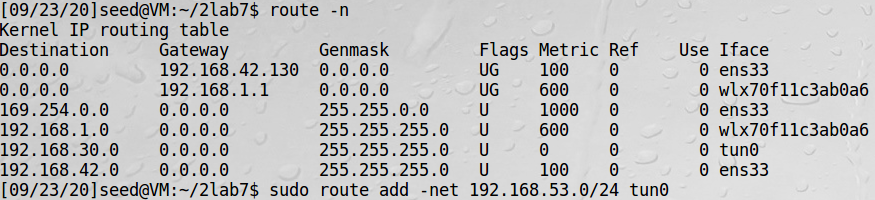
**Task 6: Tunnel-Breaking Experiment**

Tunnel断了，Host U是不会知道的，依旧会持续发包，当重新建立连接后，立马获得回包

**Task 7: Routing Experiment on Host V**



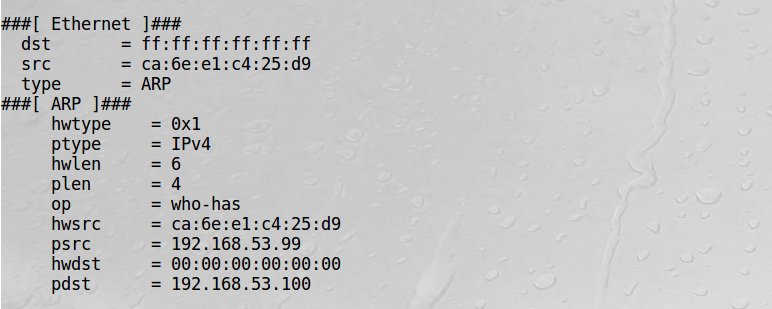
**Task 8: Experiment with the TUN IP Address**



增加一条上图中的路由即可

因为在server上不清楚192.168.53.0/24该去哪

**Task 9: Experiment with the TAP Interface**



会去发arp找100的mac