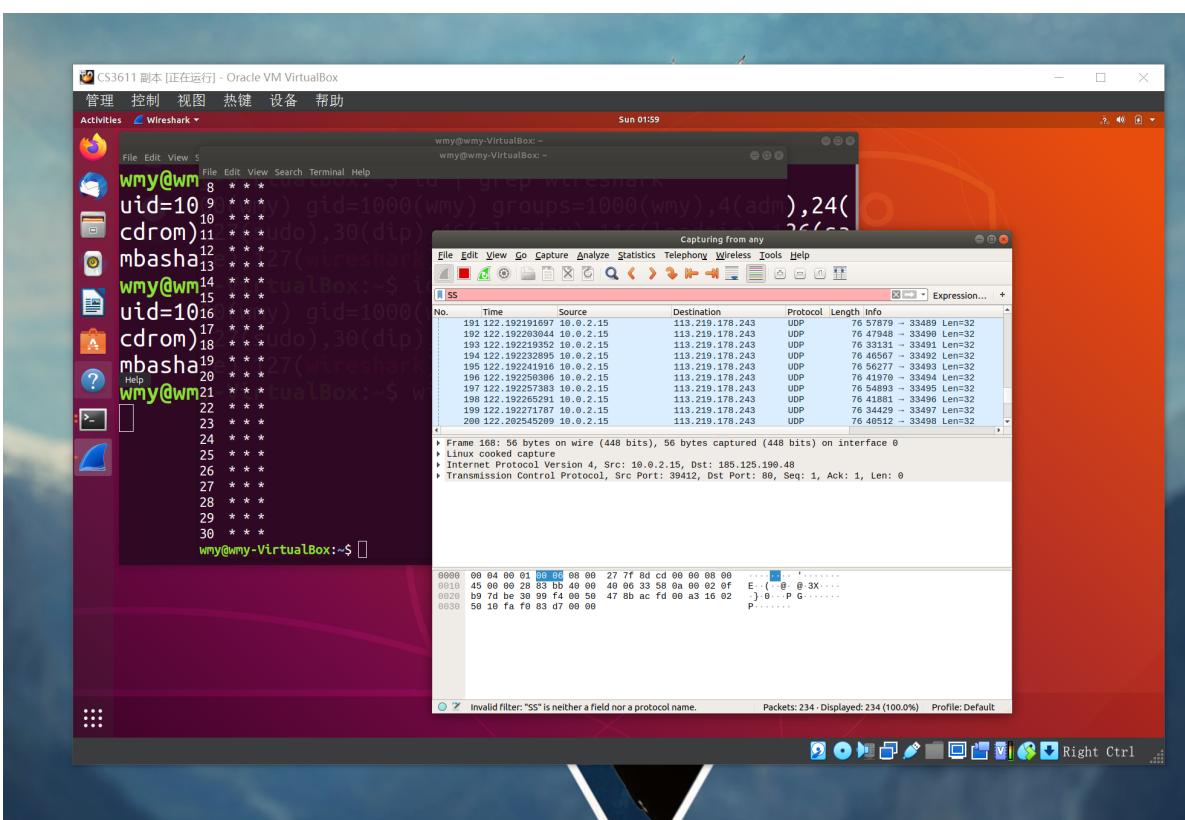
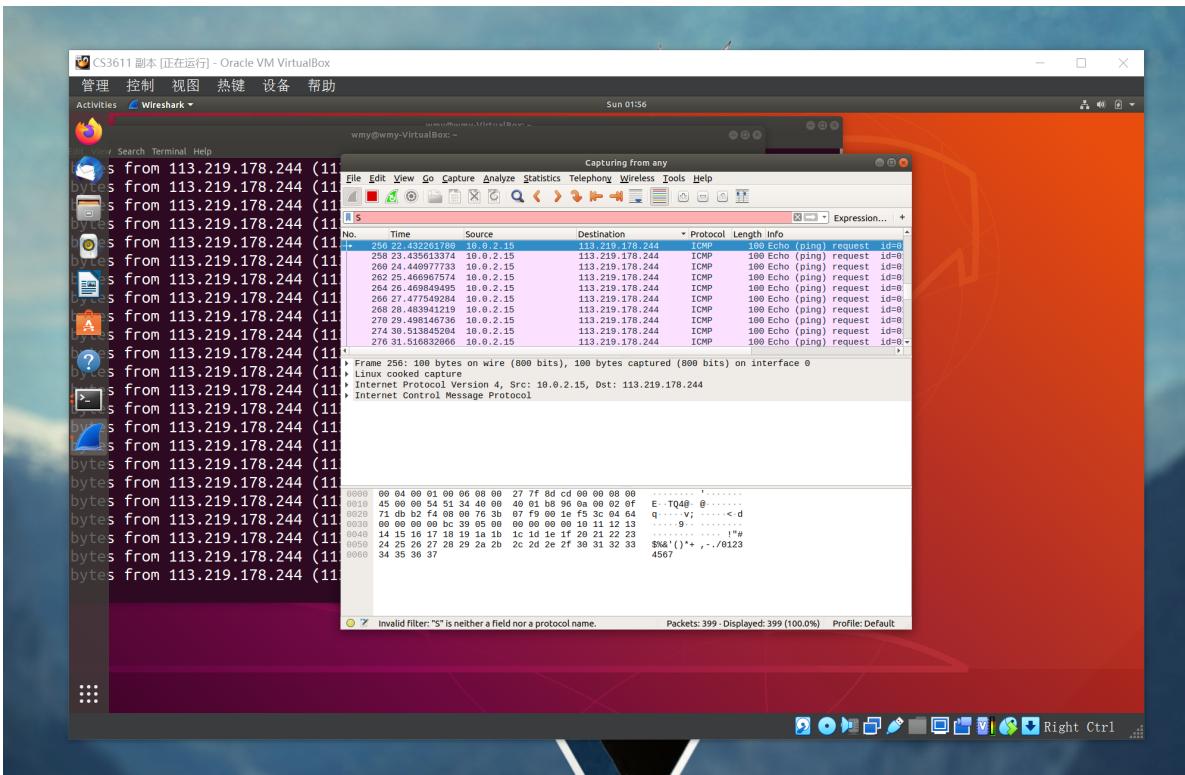


# lab1

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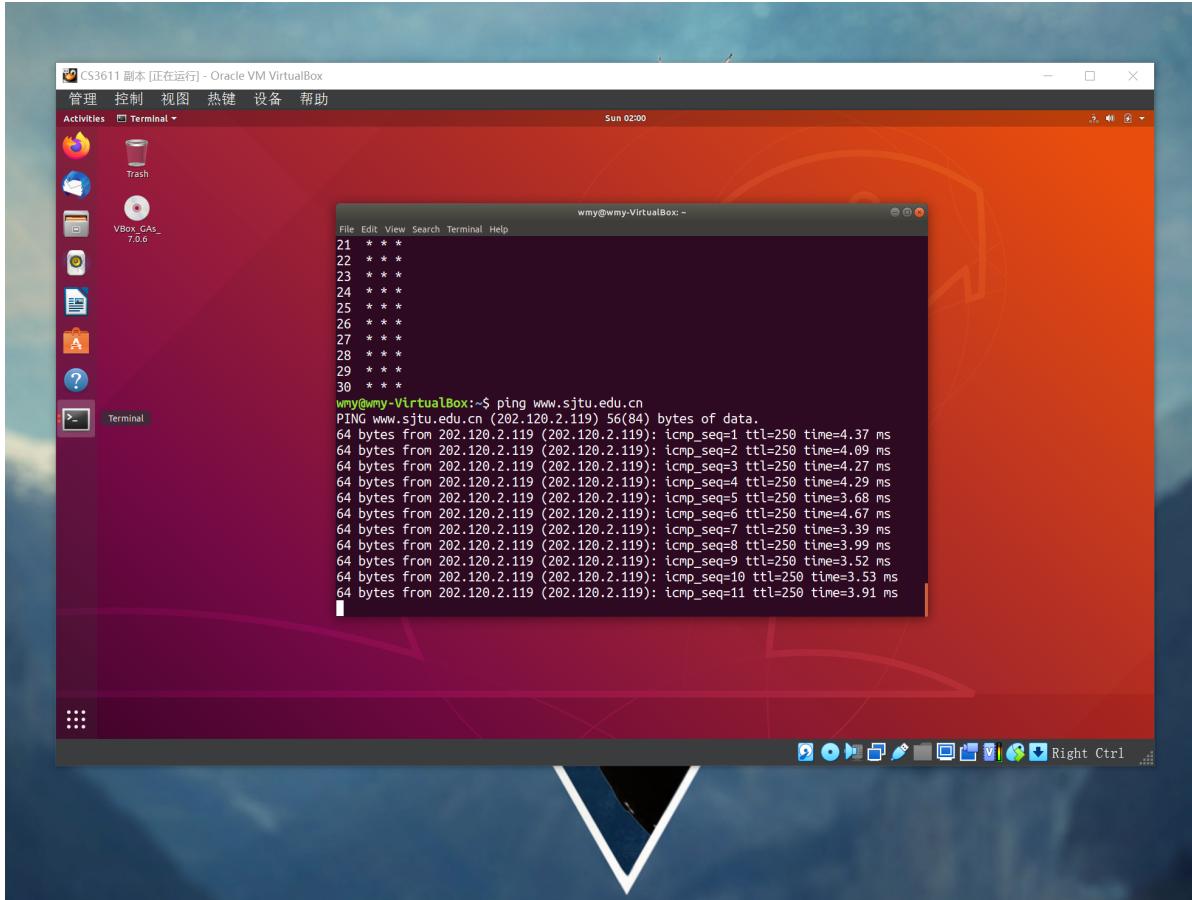
1

- "ping" uses ICMP and "traceroute" uses UDP



2

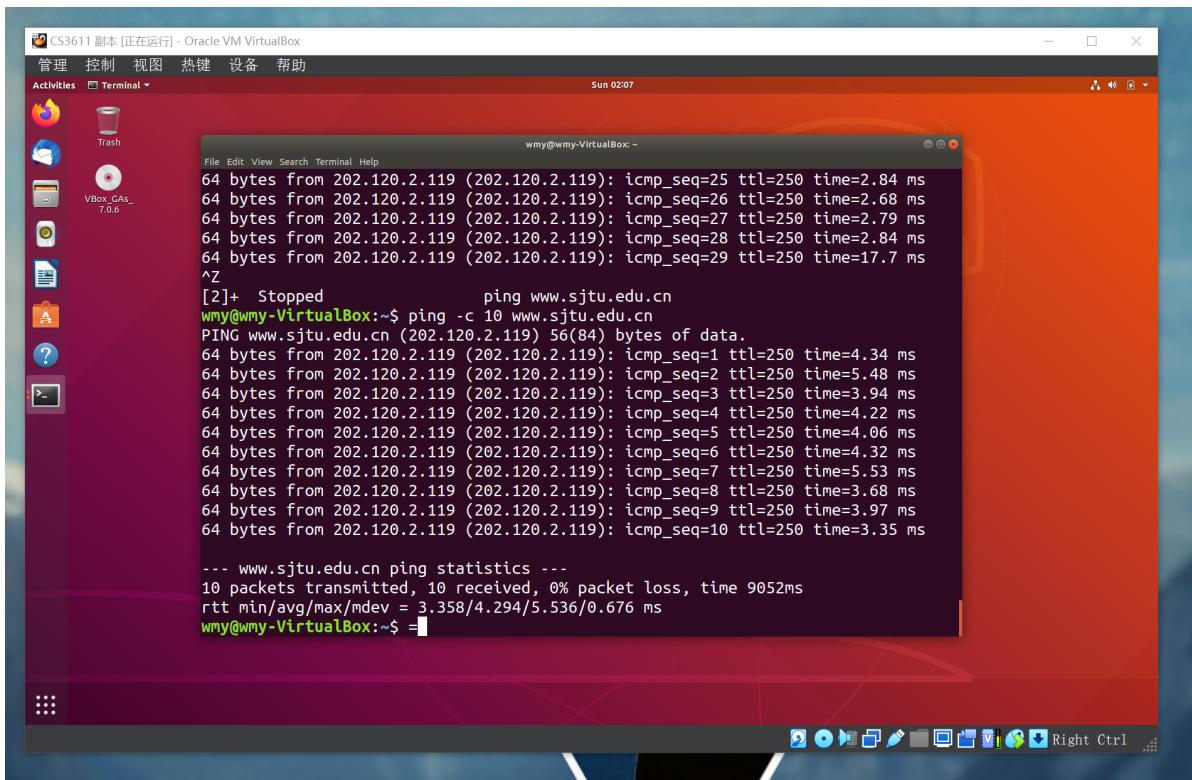
- the IP address of [www.sjtu.edu.cn](http://www.sjtu.edu.cn) is 202.120.2.119



### 3

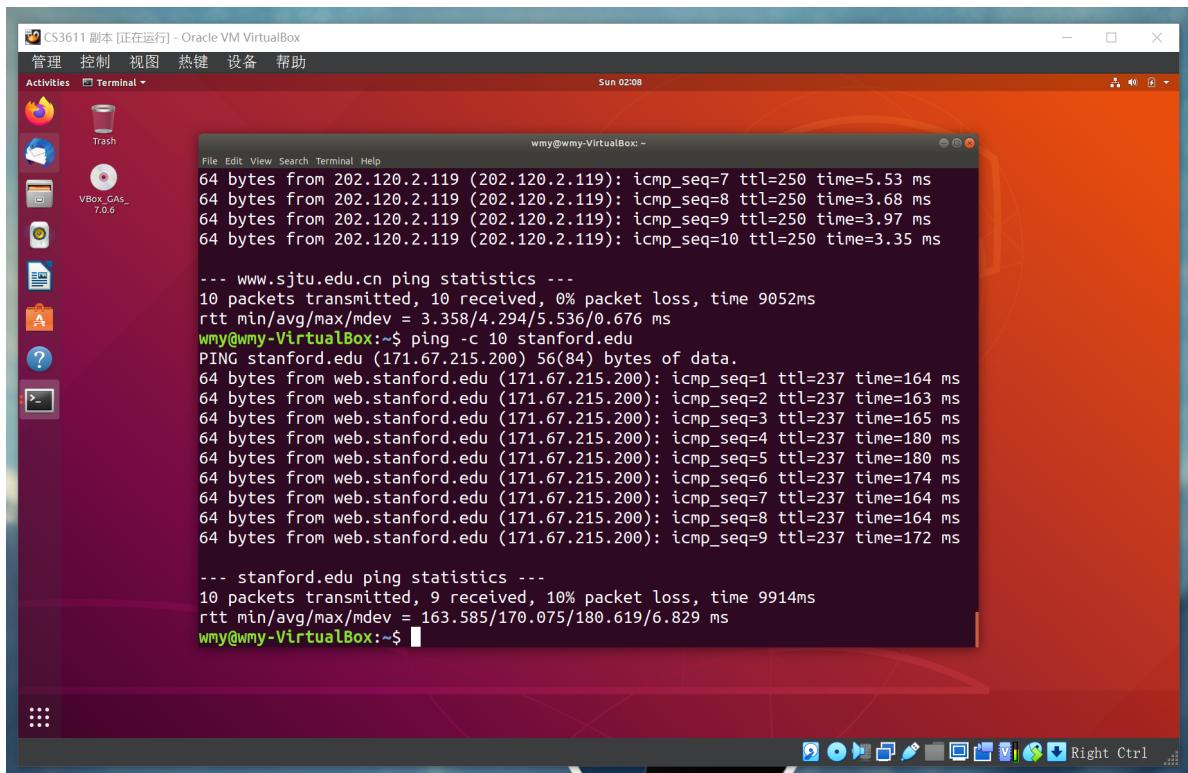
- the RTT to [www.sjtu.edu.cn](http://www.sjtu.edu.cn) is 4.294ms

```
ping -c 10 www.sjtu.edu.cn
```



- the RTT to stanford.edu is 170.075ms

```
ping -c 10 stanford.edu
```



- The differences of their RTTs may be caused by their servers' different distances to the VM.  
And the different distances may lead to different propagation delay times.

## 4

- the TCP bandwidth is 5600 Mbps

host:

```
iperf3 -c 192.168.101 -p 8888 -f m -i 1
```

server:

```
iperf3 -e -i 2 -p 8888
```

The image shows two side-by-side terminal windows running on a Linux desktop environment. Both terminals are titled "CS3611 副本 [正在运行] - Oracle VM VirtualBox".

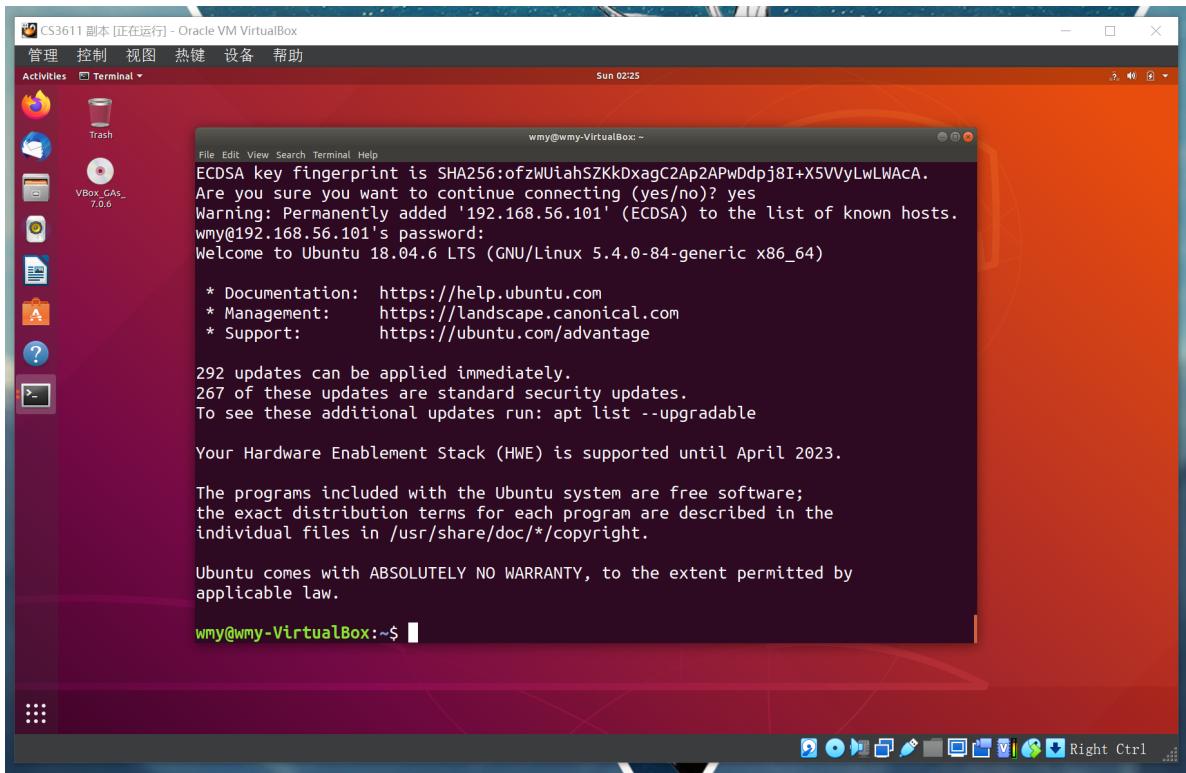
**Terminal 1 (Left):**

```
wmy@wmy-VirtualBox:~$ iperf3 -s -l 2 -p 8888
[3]+ Stopped                  iperf3 -s -l 2 -p 8888
wmy@wmy-VirtualBox:~$ iperf3 -c 192.168.56.101
iperf3: error - unable to connect to server: Connection refused
wmy@wmy-VirtualBox:~$ iperf3 -c 192.168.56.101 -p 8888 -f m -i 1
Connecting to host 192.168.56.101, port 8888
[ 4] local 192.168.56.102 port 60322 connected to 192.168.56.101 port 8888
[ ID] Interval      Transfer     Bandwidth      Retr Cwnd
[ 4]  0.00-1.00    sec   699 MBytes   5862 Mbytes/sec  4021  201 KBytes
[ 4]  1.00-2.00    sec   682 MBytes   5721 Mbits/sec  3924  195 KBytes
[ 4]  2.00-3.00    sec   599 MBytes   5024 Mbits/sec  4087  182 KBytes
[ 4]  3.00-4.00    sec   652 MBytes   5472 Mbits/sec  4965  185 KBytes
[ 4]  4.00-5.00    sec   669 MBytes   5613 Mbits/sec  4203  212 KBytes
[ 4]  5.00-6.00    sec   681 MBytes   5714 Mbits/sec  4051  216 KBytes
[ 4]  6.00-7.00    sec   664 MBytes   5570 Mbits/sec  4256  242 KBytes
[ 4]  7.00-8.00    sec   655 MBytes   5496 Mbits/sec  4472  191 KBytes
[ 4]  8.00-9.00    sec   670 MBytes   5613 Mbits/sec  3946  198 KBytes
[ 4]  9.00-10.00   sec   707 MBytes   5935 Mbits/sec  4736  170 KBytes
[-----]
[ ID] Interval      Transfer     Bandwidth      Retr
[ 4]  0.00-10.00   sec  6.52 GBytes   5602 Mbits/sec  42661
[ 4]  0.00-10.00   sec  6.52 GBytes   5599 Mbits/sec
                                         sender
                                         receiver
iperf Done.
wmy@wmy-VirtualBox:~$
```

**Terminal 2 (Right):**

```
wmy@wmy-VirtualBox:~$ iperf3 -s -l 2 -p 8888
valid_lft 556sec preferred_lft 556sec
inet6 fe80::db91:6ecb:fbba:80d/64 scope link noprefixroute
valid_lft forever preferred_lft forever
wmy@wmy-VirtualBox:~$ iperf3 -s -l 2 -p 8888
-----
Server listening on 8888
-----
Accepted connection from 192.168.56.102, port 60320
[ 5] local 192.168.56.101 port 8888 connected to 192.168.56.102 port 60322
[ ID] Interval      Transfer     Bandwidth
[ 5]  0.00-2.00    sec   1.35 GBytes   5.78 Gbits/sec
[ 5]  2.00-4.00    sec   1.22 GBytes   5.25 Gbits/sec
[ 5]  4.00-6.00    sec   1.32 GBytes   5.66 Gbits/sec
[ 5]  6.00-8.00    sec   1.29 GBytes   5.53 Gbits/sec
[ 5]  8.00-10.00   sec   1.34 GBytes   5.77 Gbits/sec
[ 5] 10.00-10.00   sec   566 KBytes   5.62 Gbits/sec
[-----]
[ ID] Interval      Transfer     Bandwidth
[ 5]  0.00-10.00   sec   0.00 Bytes   0.00 bits/sec
[ 5]  0.00-10.00   sec   6.52 GBytes   5.60 Gbits/sec
                                         sender
                                         receiver
-----
Server listening on 8888
-----
```

5



## 6

- the command is

```
scp ./abc.txt wmy@192.168.56.101:/home/wmy/test
```

