REPORT

IAP Assignment 3

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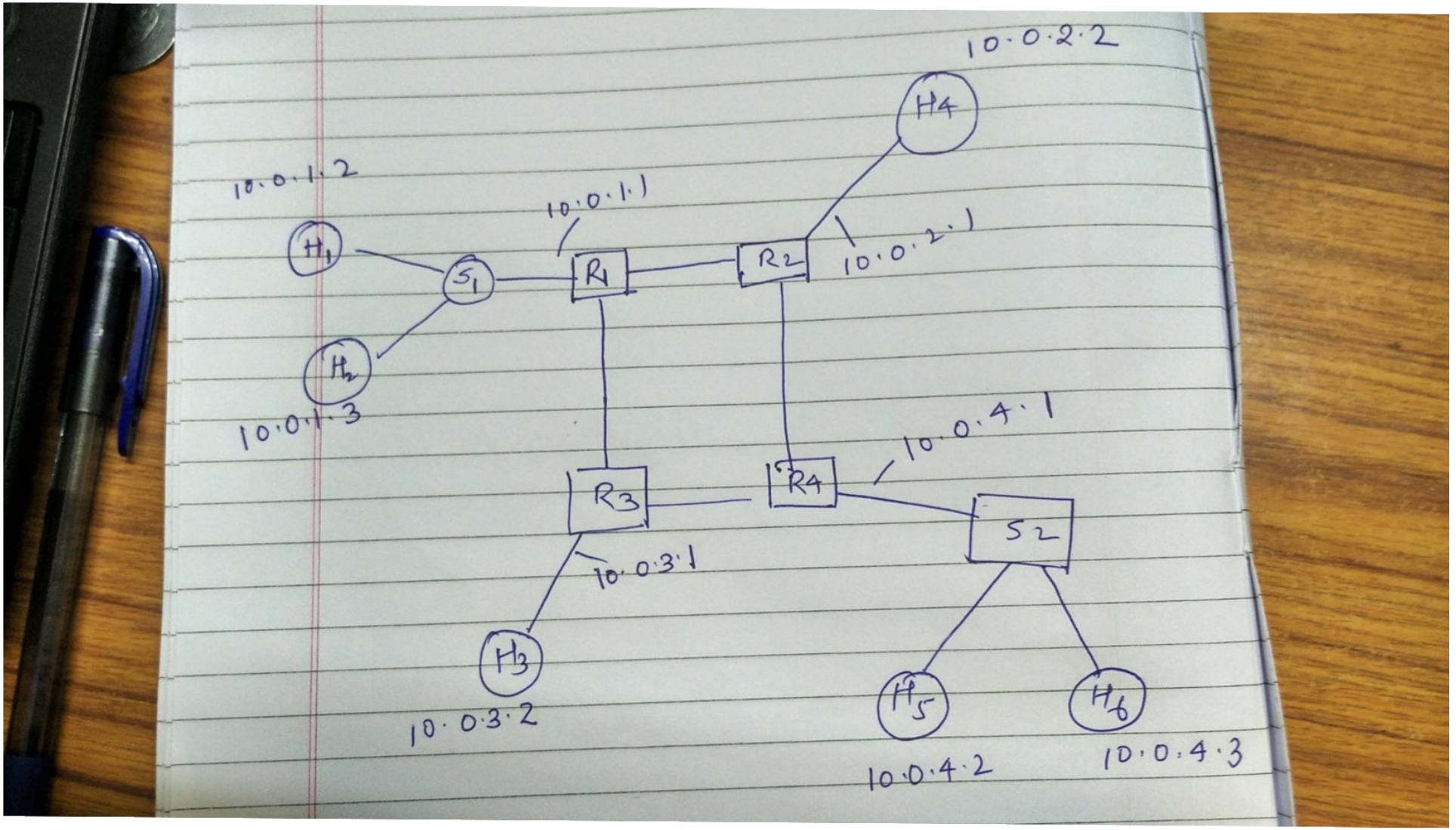
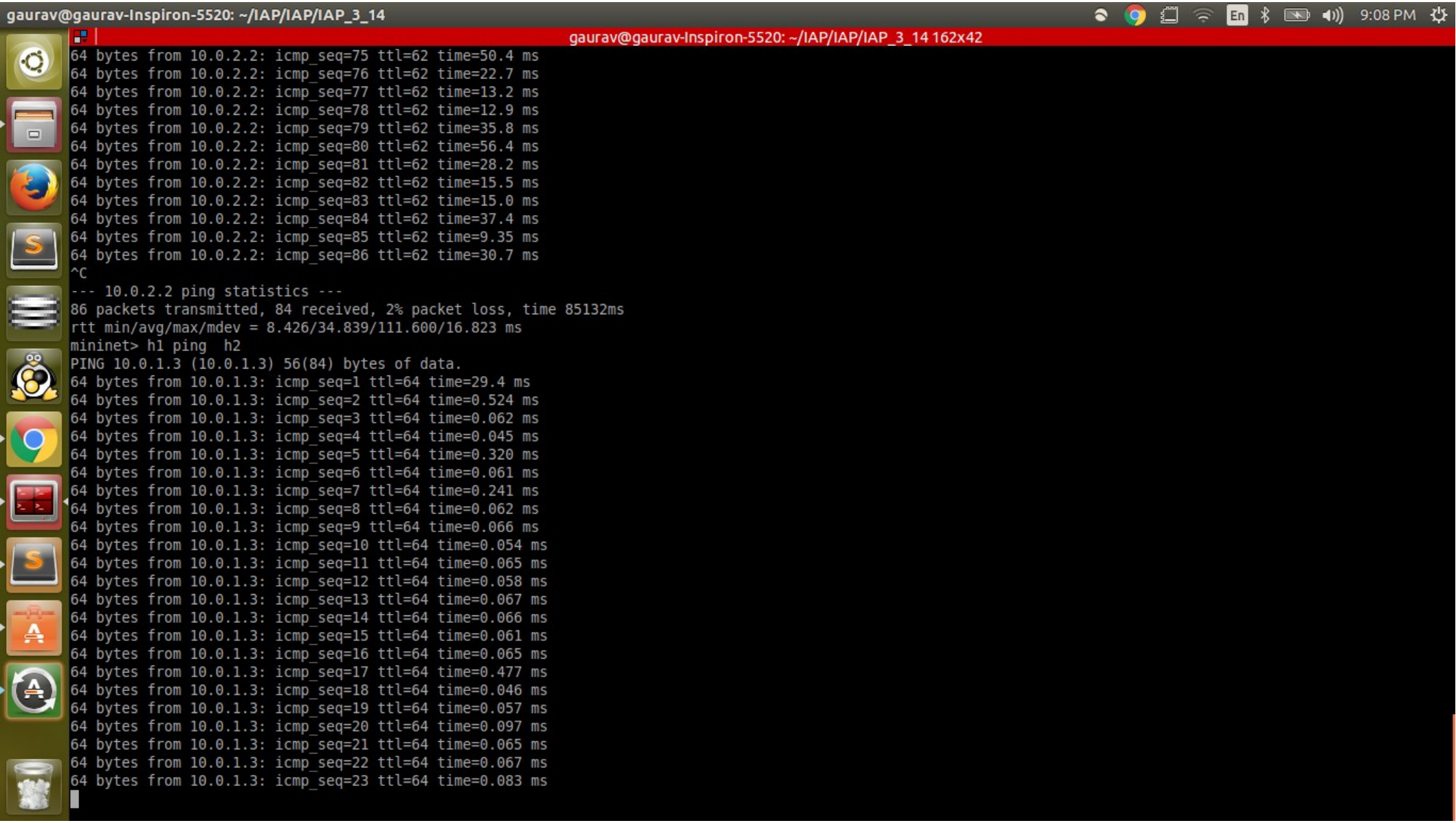
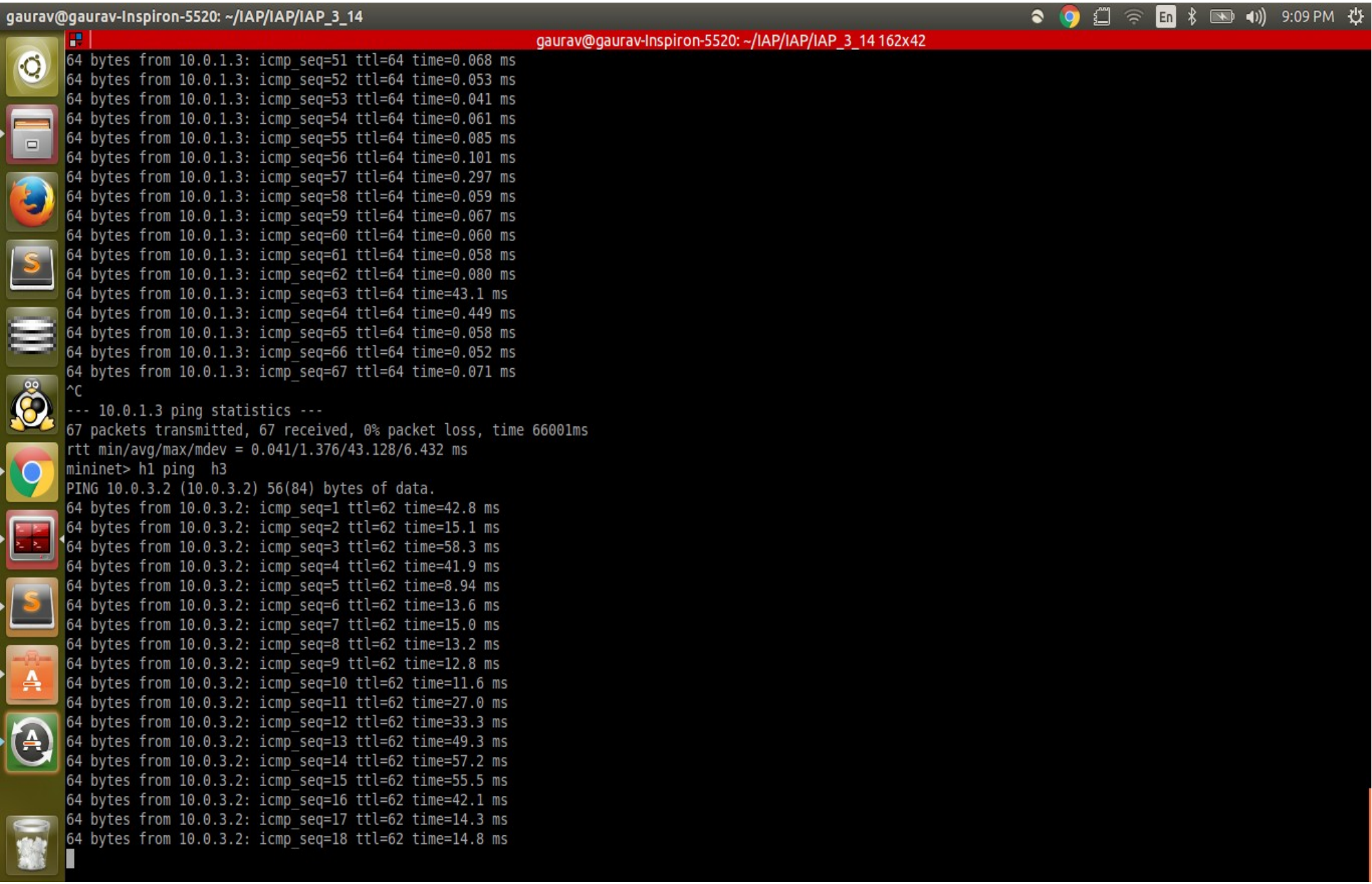
Q1)


10.0.2.2
H4
10.0.1.2
10.0.1.1
H1
S1
R1
R2
10.0.2.1
H2
10.0.1.3
10.0.4.1
R3
R4
S2
10.0.3.1
H3
10.0.3.2
H5
H6
10.0.4.2
10.0.4.3

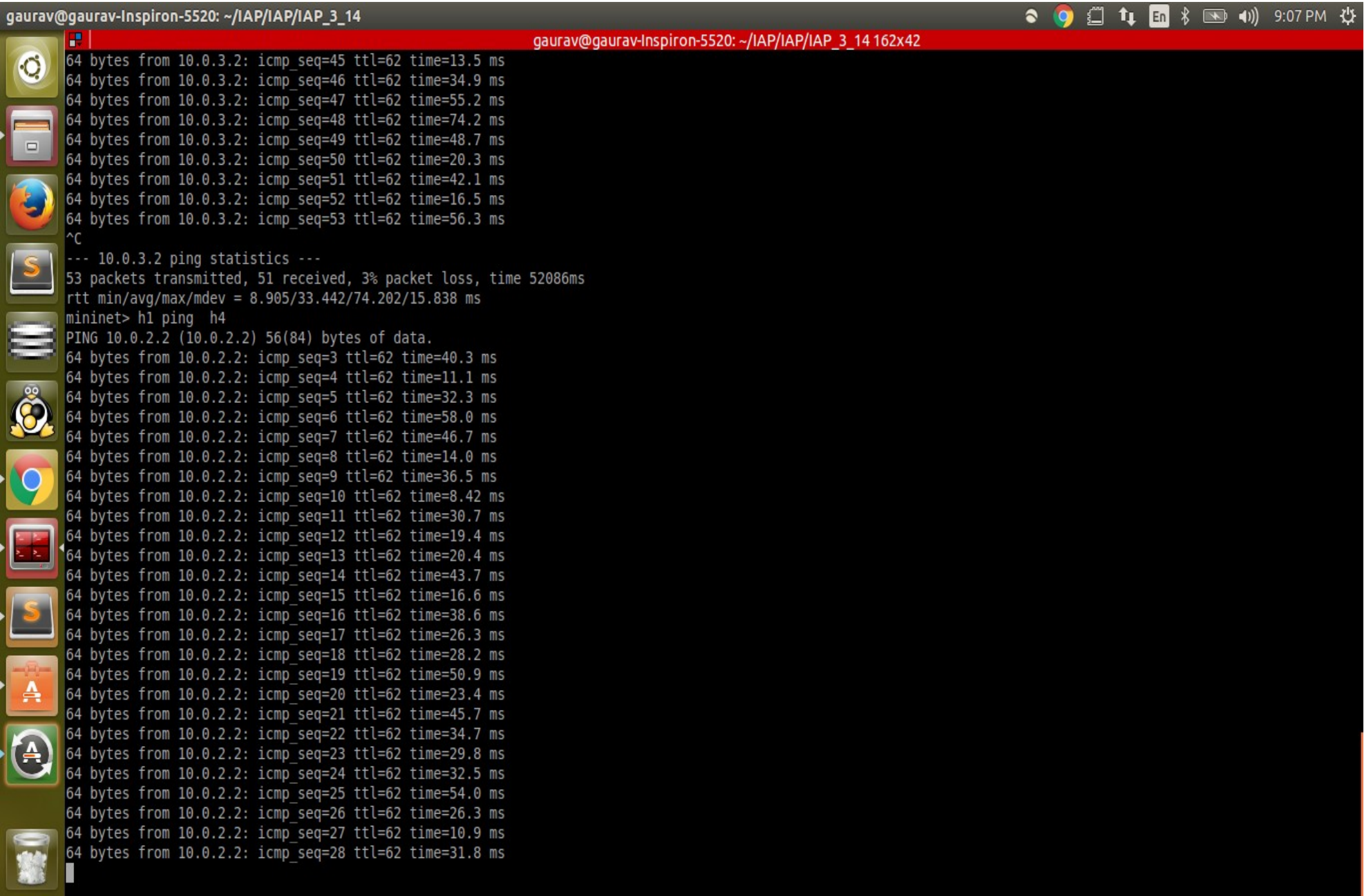
Q3)ping from h1-h2



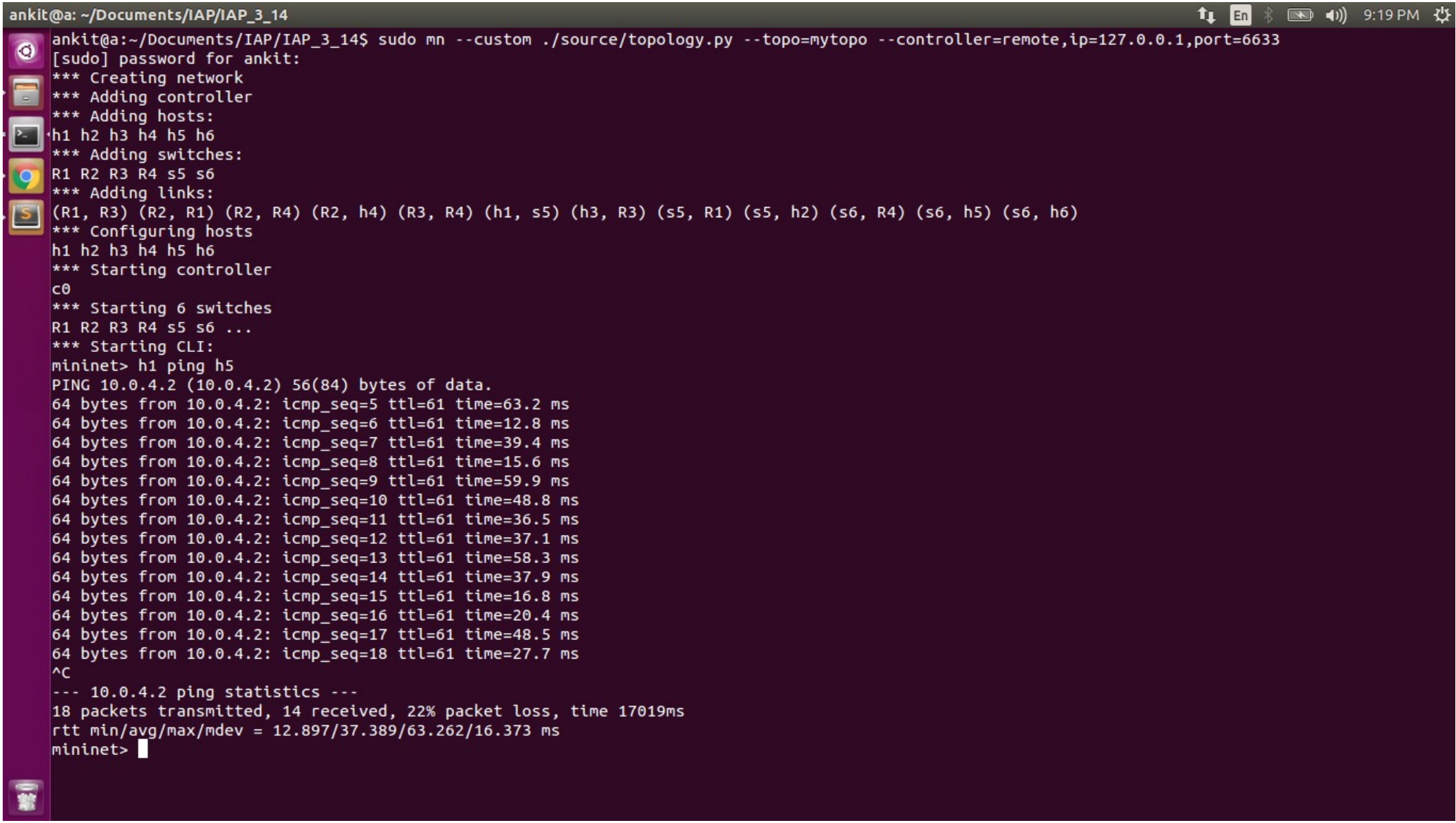
Ping from h1-h3



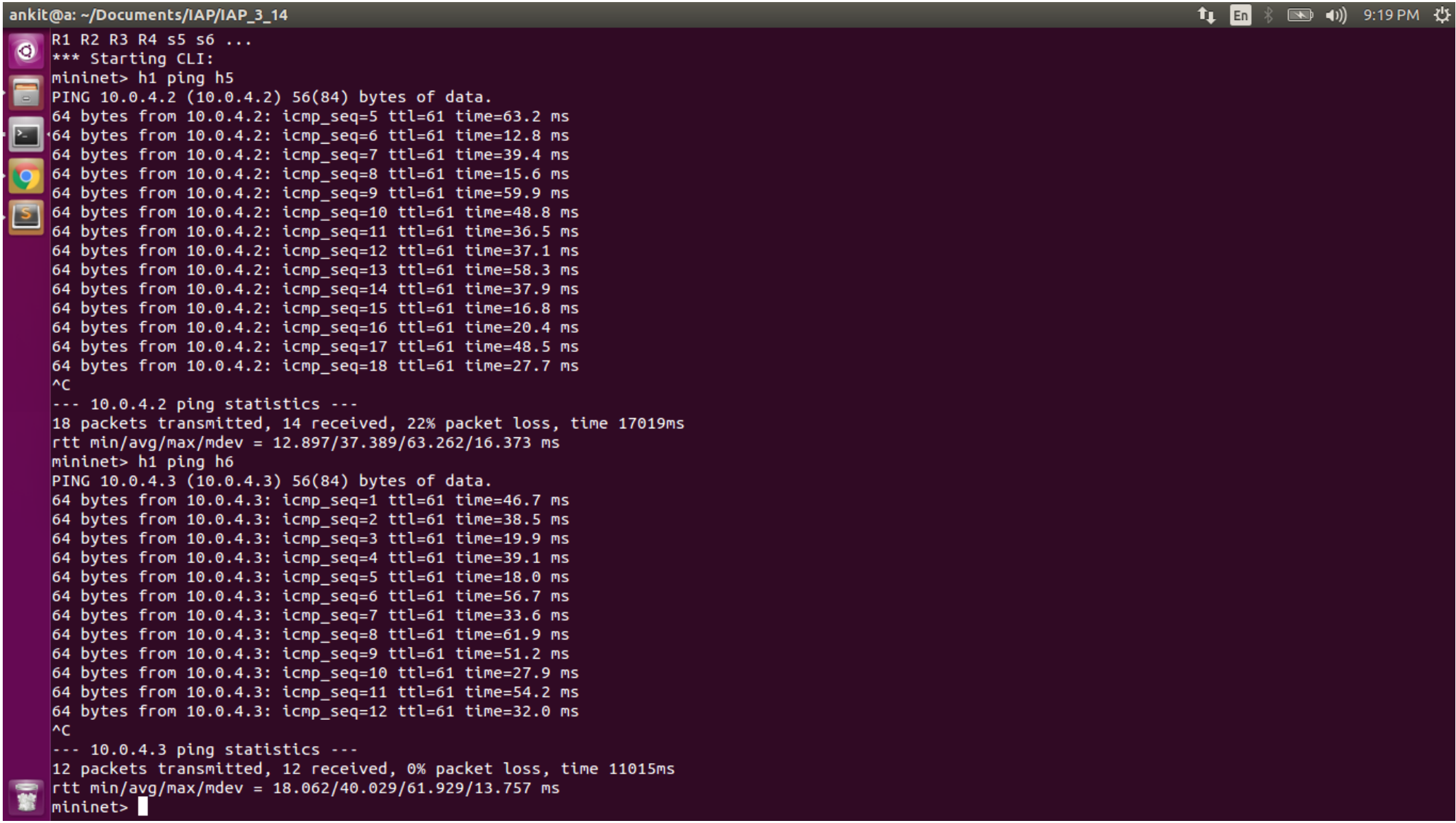
Ping from h1 to h4



Ping from h1 to h5



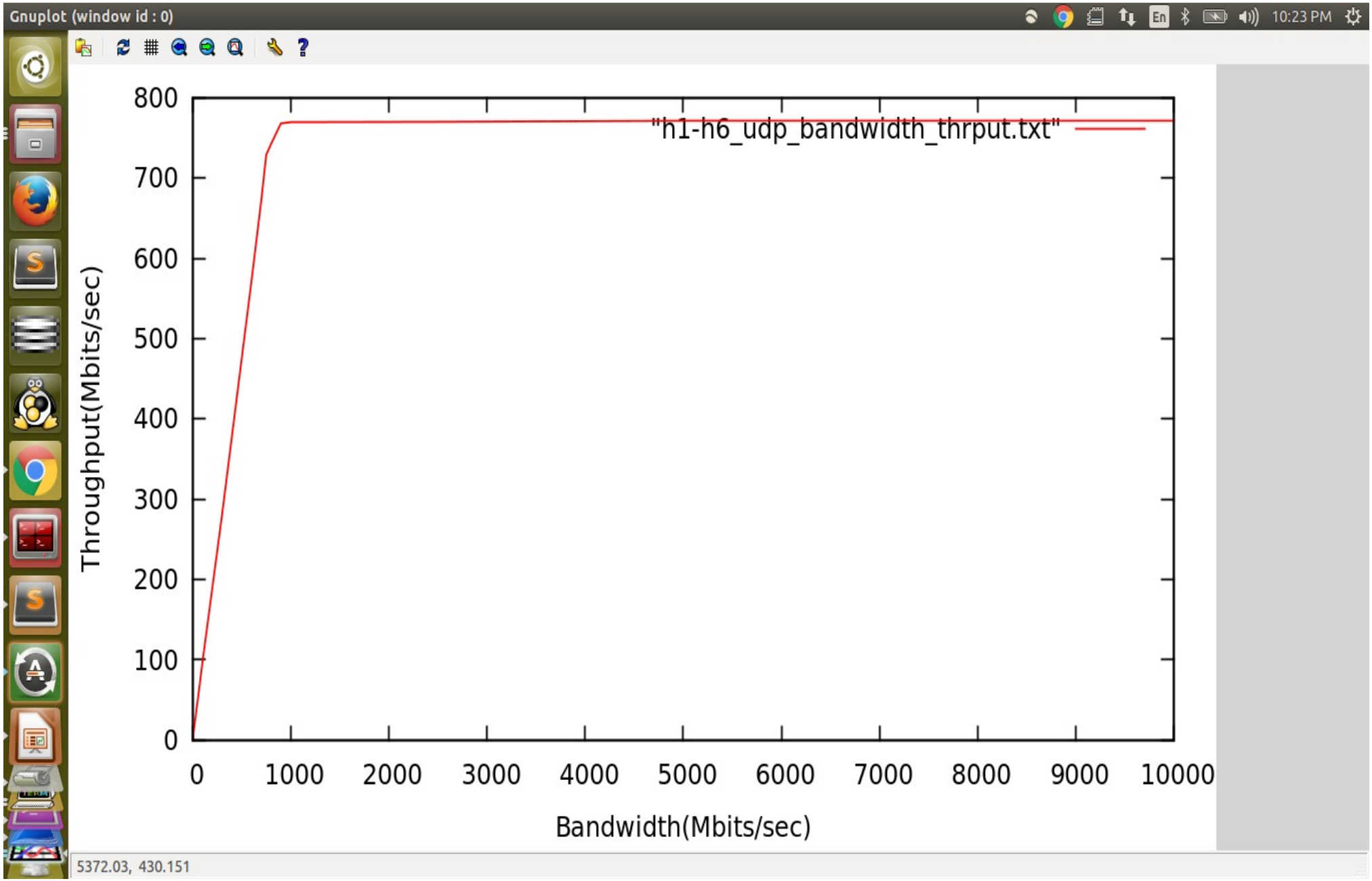
Ping from h1 to h6



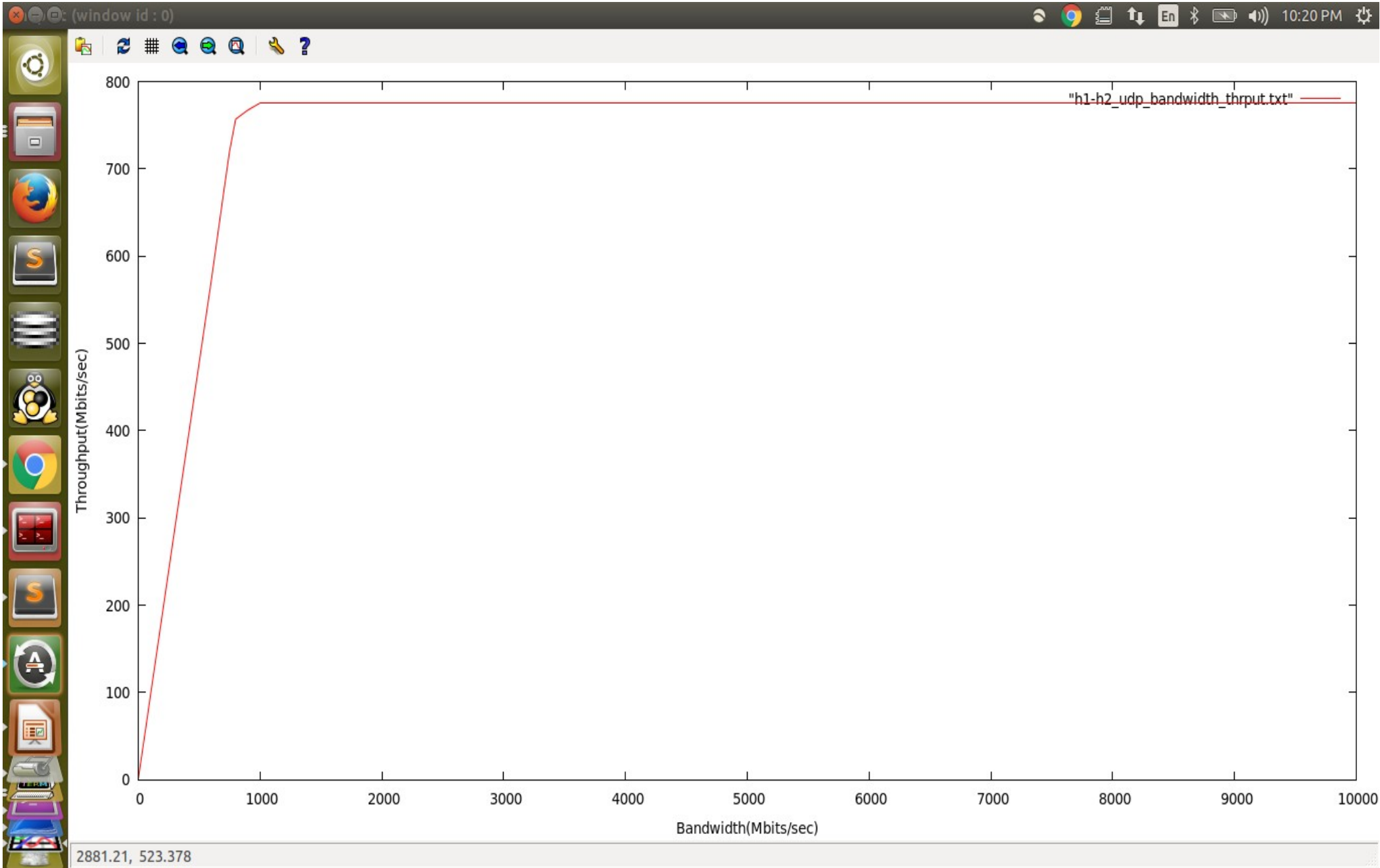
Q 5,6,7,8

- Refer folder wireshark_screenshot
- You can observe network and destination host unreachable behavior
- You can also see trace route behavior in pcap file
- Middle host are sending Time to live exceeded message and final destination is sending Echo Reply message

Plot of Bandwidth vs throughput (h1-h6) for UDP



Plot of bandwidth vs throughput (h1-h2) for UDP



Observations from ping h1-H*

- As you can see the ping screen shots that time taken for ping form h1-h* increases with number for hops between h1-h*.

  so ping time for h1-h6 > h1-h2

- For any Ping H1-H* :

  First ping taken more time that subsequent pings since in the first ping router do an ARP query to find next hop HW address after than it caches that address.

Observations from ping h2 to unreachable IP

- For this case ICMP reply type to TYPE_DEST_UNREACH
- And then we set code for unreachable in two ways
  - Network unreachable : router first checks whether the destination network exists or not. If it doesn't

    it sets code to CODE_UNREACH_NET
  - Host unreachable : it destination network exists it forwards packet

    to the next Hop using routing table. Once the packet reaches to that

    networks gateway router it checks whether host exists or not. If

    destination Host doesn't exist set

    code to CODE_UNREACH_HOST

    You can see this behavior in the wireshark traces of that ping.

Observations from ipef with UDP

- Since every channel has a maximum data rate which it can support hence throughput does not always increase with bandwidth. After some bandwidth it becomes constant. Initially it increases linearly with bandwidth.
- Max. Throughput for H1-H6 UDP – 770 Mb/sec
- Max. Throughput for H1-H2 UDP – 776 Mb/sec
- Since H2 is near to h1 as compare to H6 and hence Max Throughput of H1-H2> H1-H6

Contribution Table

- Every one equally contributed to assignment