

# Assignment 1

## REPORT

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- 1) a) UDP :- (i) Application Layer :- None  
(ii) Transport Layer :- User Datagram Protocol (UDP)  
(iii) Network Layer :- IPv4

- b) TCP :- (i) Application Layer :- HTTP/1.1  
(ii) Transport Layer :- TCP  
(iii) Network Layer :- IPv4

- 2) pic1.jpg :- Packet Details :-

Wireshark · Packet Lengths · wireshark\_eth0\_20180118112257\_p52lNI

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	74	704.73	66	1514	13.6889	100%	0.7400	2.835
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	40	66.40	66	74	7.3994	54.05%	0.4000	2.835
80-159	0	-	-	-	0.0000	0.00%	-	-
160-319	1	217.00	217	217	0.1850	1.35%	0.0100	2.835
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	1	829.00	829	829	0.1850	1.35%	0.0100	2.840
1280-2559	32	1514.00	1514	1514	5.9195	43.24%	0.3200	2.836
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: ip.addr == 10.5.20.128

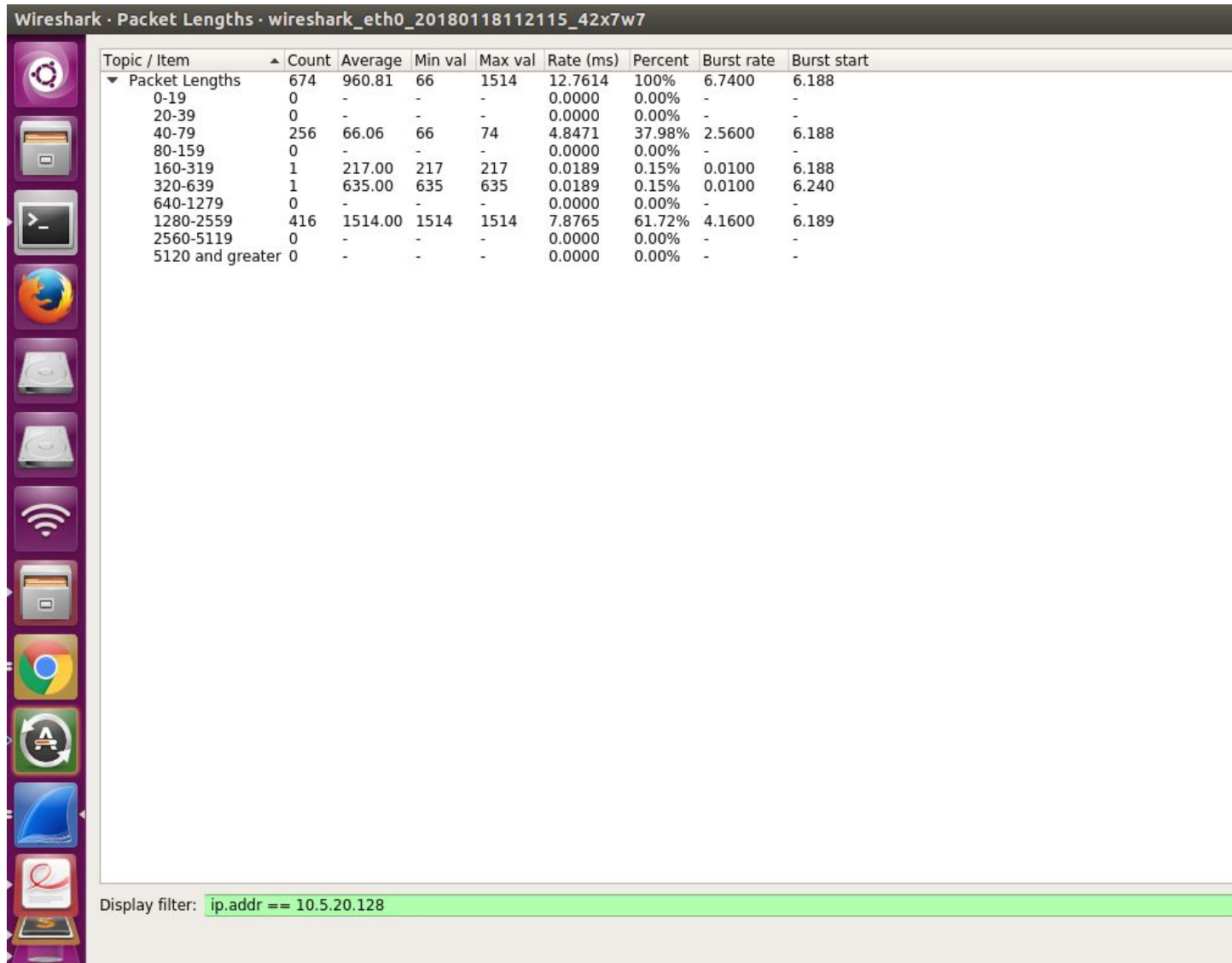
pic2.jpg :- Packet Details:-

Wireshark · Packet Lengths · wireshark\_eth0\_20180118112202\_EQrXxf

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	17413	1015.40	66	24682	12.3830	100%	13.2100	4.455
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	5977	66.62	66	78	4.2505	34.32%	4.6800	4.535
80-159	42	89.81	86	94	0.0299	0.24%	0.4200	4.529
160-319	1	217.00	217	217	0.0007	0.01%	0.0100	4.418
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	1	1181.00	1181	1181	0.0007	0.01%	0.0100	5.823
1280-2559	11389	1514.00	1514	1514	8.0991	65.41%	8.1300	4.420
2560-5119	1	4410.00	4410	4410	0.0007	0.01%	0.0100	5.690
5120 and greater	2	15270.00	5858	24682	0.0014	0.01%	0.0100	4.688

Display filter: `ip.addr == 10.5.20.128`

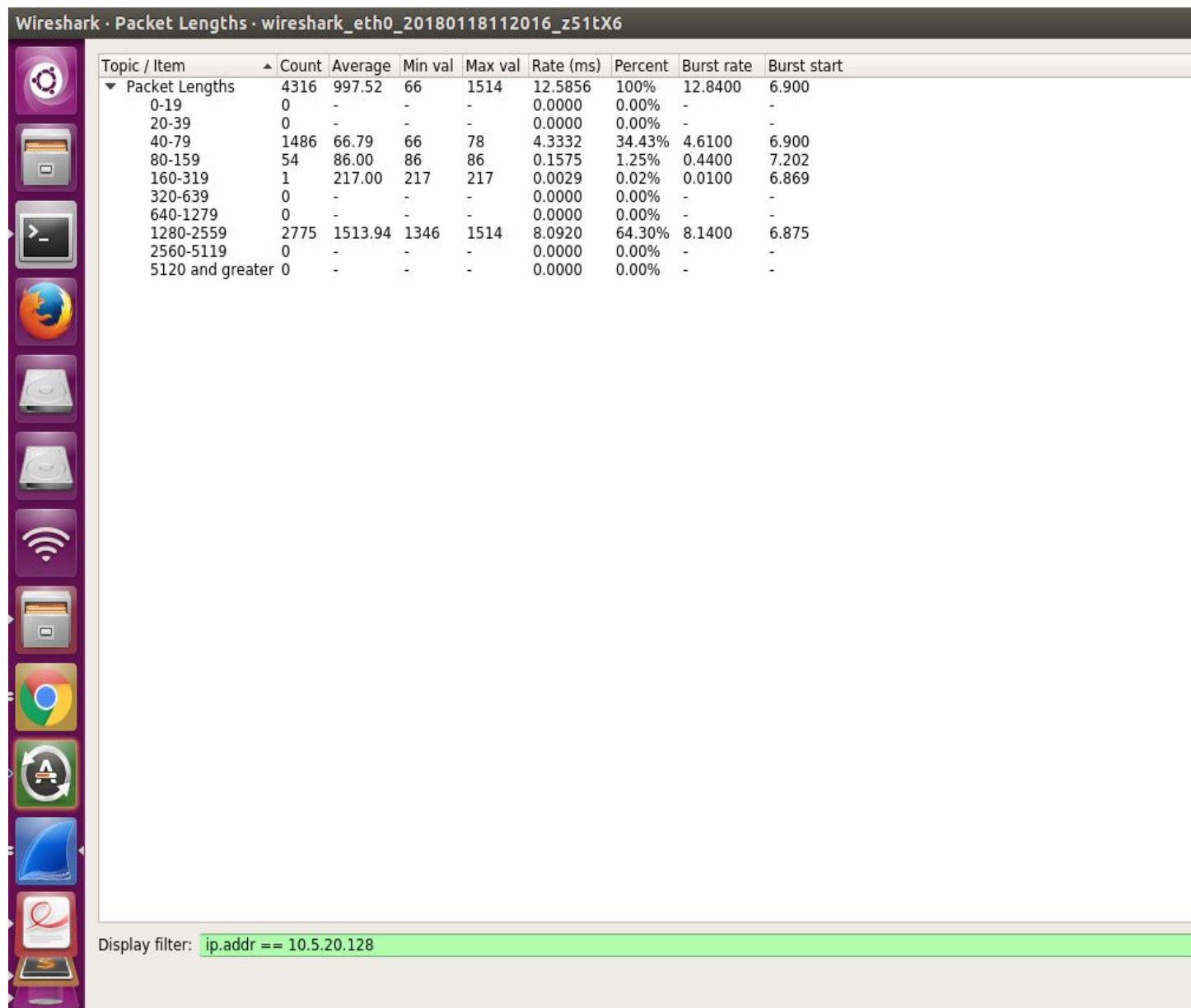
pic3.jpg :- Packet Details :-

The image shows the 'Wireshark · Packet Lengths · wireshark\_eth0\_20180118112115\_42x7w7' window. On the left is a vertical toolbar with icons for various network analysis features. The main area contains a table with statistics for packet lengths. The table has columns for 'Topic / Item', 'Count', 'Average', 'Min val', 'Max val', 'Rate (ms)', 'Percent', 'Burst rate', and 'Burst start'. The data is organized into a hierarchy starting with 'Packet Lengths', which is expanded to show ranges from 0-19 to 5120 and greater. The '1280-2559' range shows the highest count at 416 and a rate of 7.8765 ms. At the bottom, a green bar displays the 'Display filter: ip.addr == 10.5.20.128'.

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	674	960.81	66	1514	12.7614	100%	6.7400	6.188
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	256	66.06	66	74	4.8471	37.98%	2.5600	6.188
80-159	0	-	-	-	0.0000	0.00%	-	-
160-319	1	217.00	217	217	0.0189	0.15%	0.0100	6.188
320-639	1	635.00	635	635	0.0189	0.15%	0.0100	6.240
640-1279	0	-	-	-	0.0000	0.00%	-	-
1280-2559	416	1514.00	1514	1514	7.8765	61.72%	4.1600	6.189
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

Display filter: ip.addr == 10.5.20.128

pic4.jpg :- Packet Details :-

The image shows the 'Wireshark · Packet Lengths · wireshark\_eth0\_20180118112016\_z51tX6' window. On the left is a vertical toolbar with icons for various network-related functions. The main area contains a table with statistics for packet lengths. The table has columns for 'Topic / Item', 'Count', 'Average', 'Min val', 'Max val', 'Rate (ms)', 'Percent', 'Burst rate', and 'Burst start'. The data is categorized under 'Packet Lengths' with sub-entries for ranges like '0-19', '20-39', '40-79', '80-159', '160-319', '320-639', '640-1279', '1280-2559', '2560-5119', and '5120 and greater'. The '1280-2559' range shows the highest count at 2775 and the highest rate at 8.0920 ms. At the bottom, a green bar displays the 'Display filter: ip.addr == 10.5.20.128'.

pic5.jpg :- Packet Details :-

Wireshark · Packet Lengths · wireshark\_eth0\_20180118111902\_SkV4oP

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	915	980.53	66	1514	12.5980	100%	9.1500	3.577
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	336	66.05	66	74	4.6262	36.72%	3.3600	3.577
80-159	0	-	-	-	0.0000	0.00%	-	-
160-319	1	217.00	217	217	0.0138	0.11%	0.0100	3.577
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	1	1198.00	1198	1198	0.0138	0.11%	0.0100	3.649
1280-2559	577	1514.00	1514	1514	7.9443	63.06%	5.7700	3.578
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

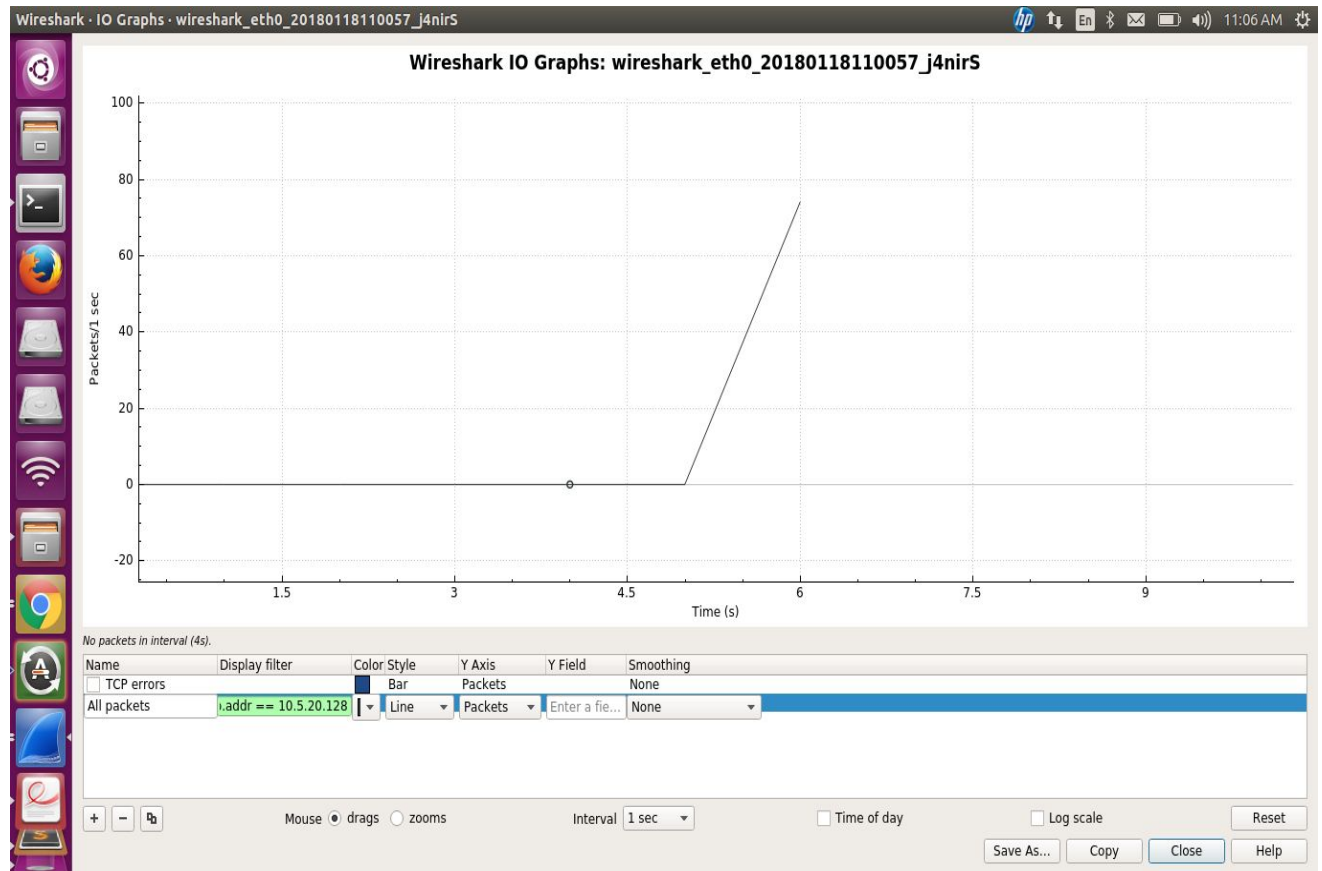
Display filter: `ip.addr == 10.5.20.128`

b) UDP :- 27 packets of equals size (1512 bytes)

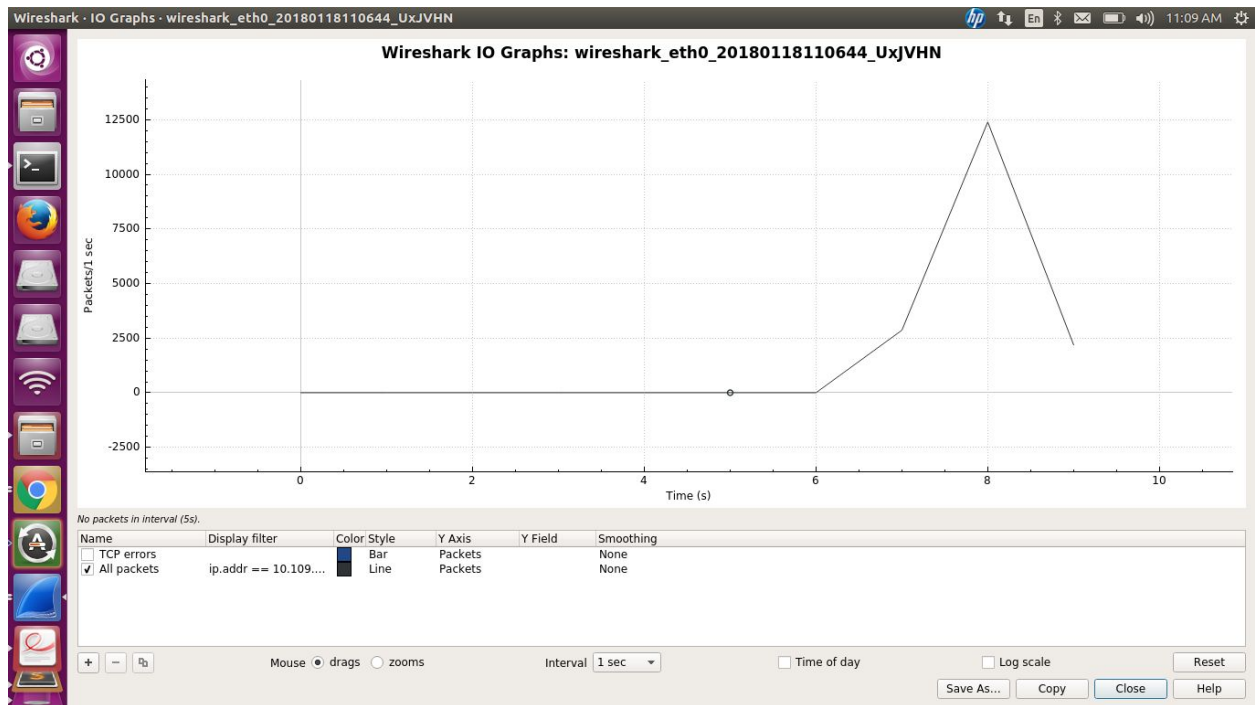
c)

TCP throughput

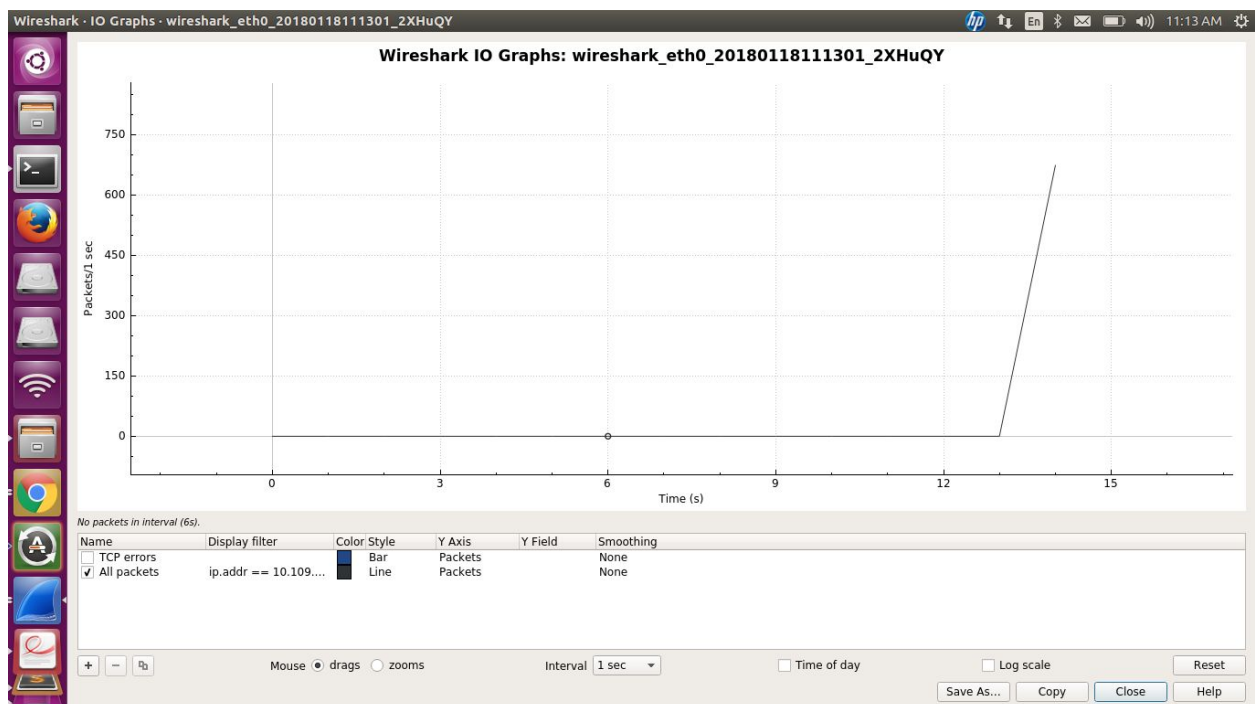
Pic 1



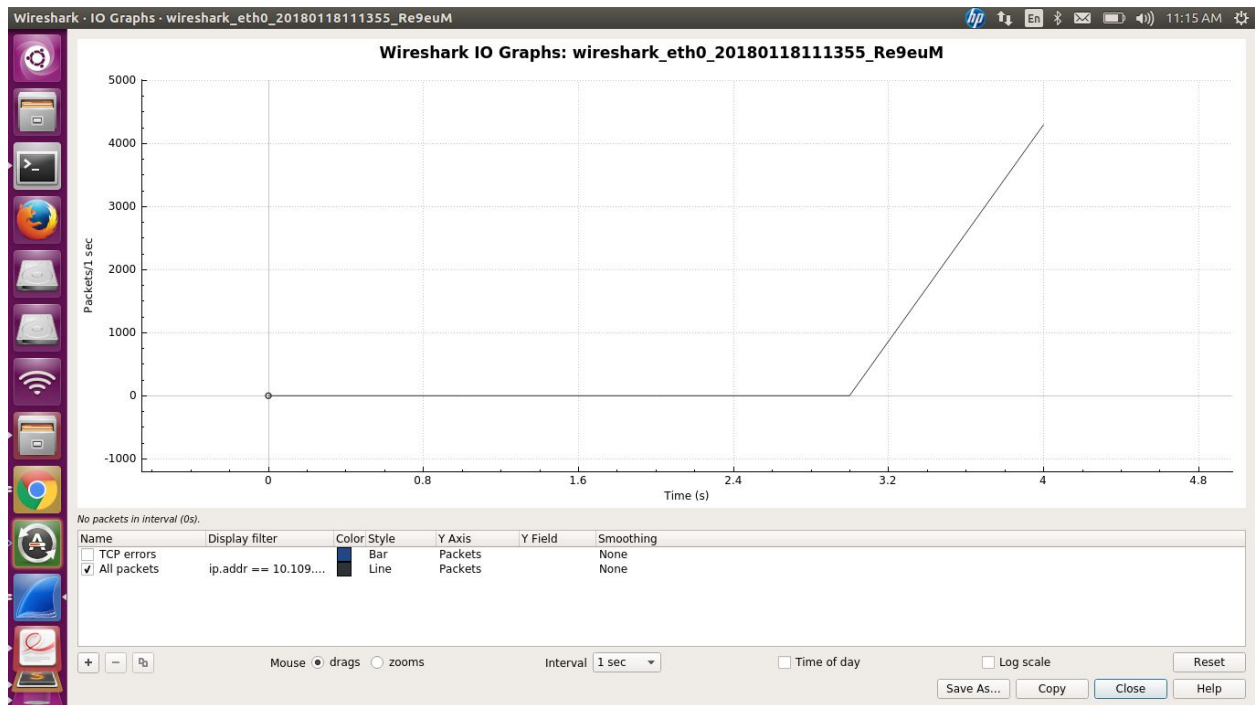
**Pic 2**



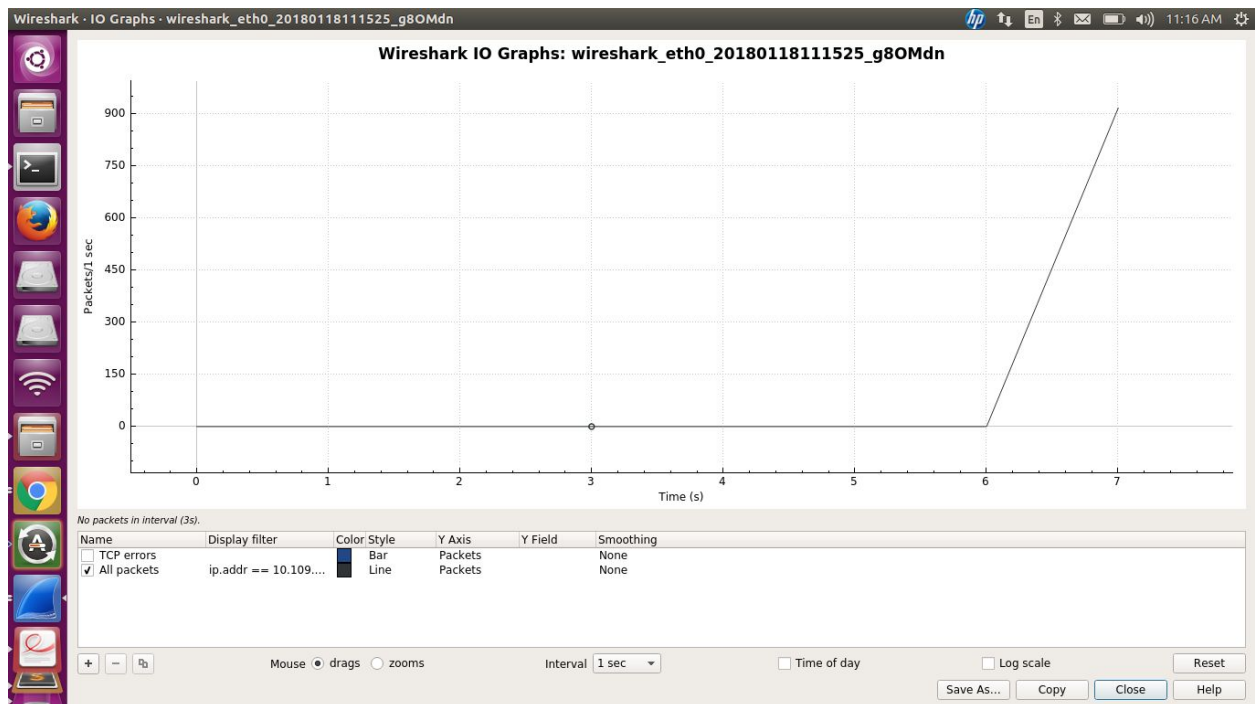
**Pic 3**



**Pic 4**

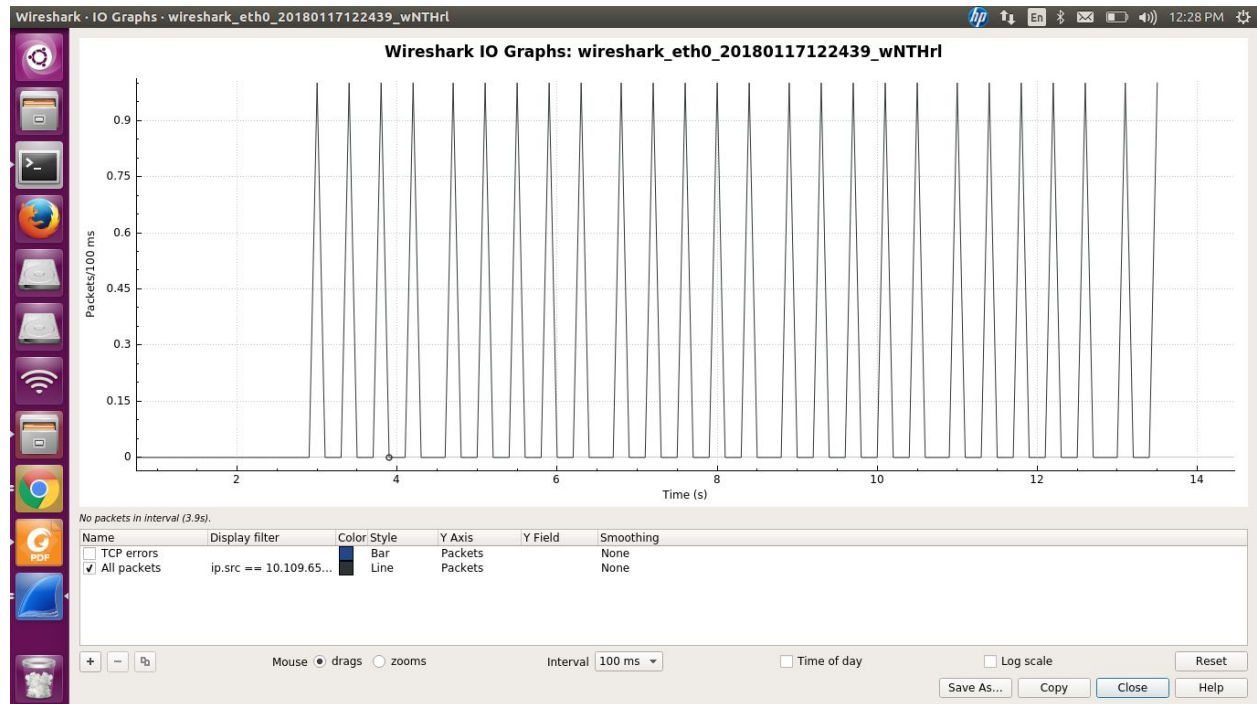


**Pic 5**





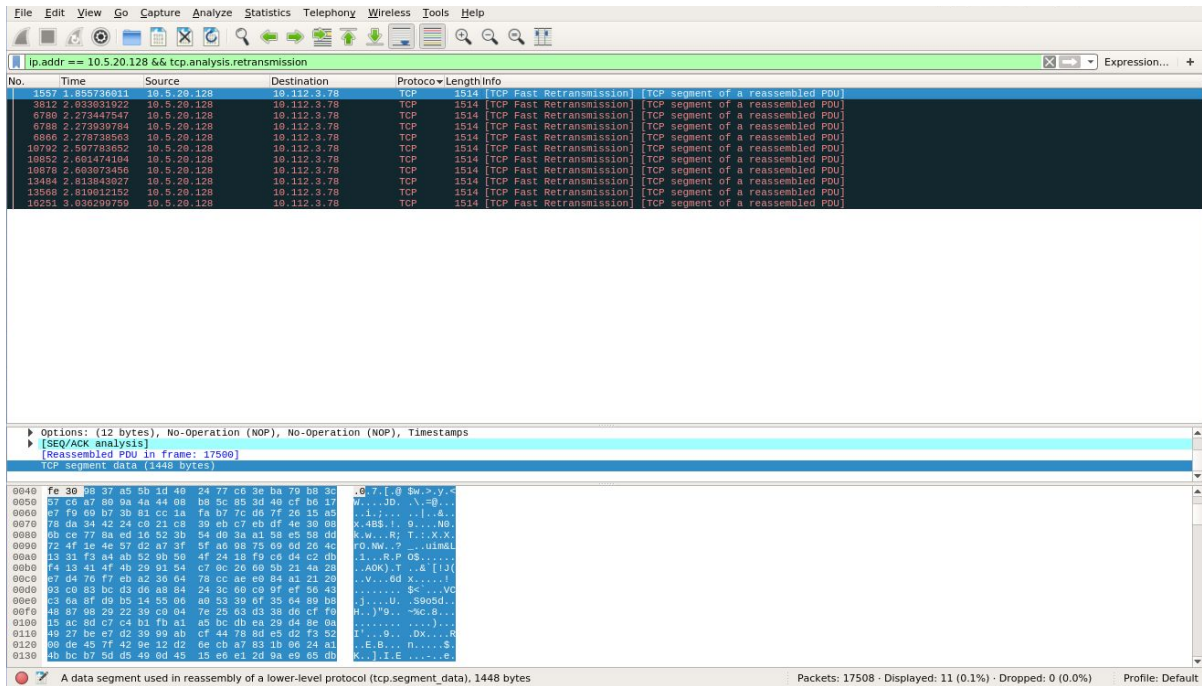
### UDP traffic (28Kbps)



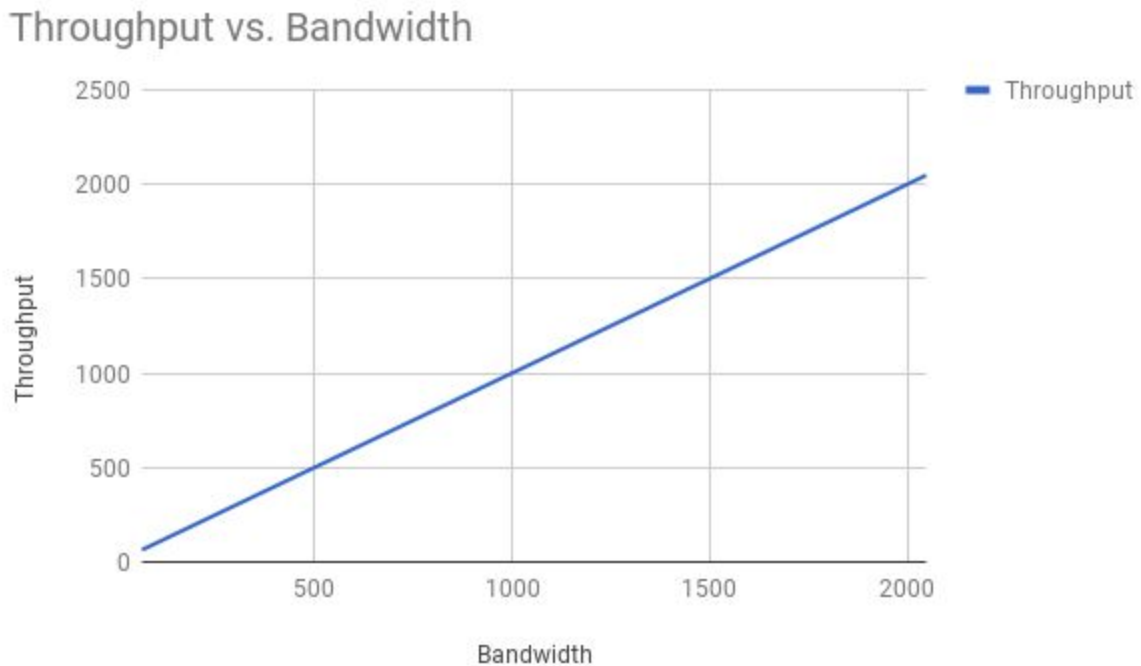
- d)
- (i) 64Kbps :- 64Kbps
  - (ii) 128Kbps :- 128Kbps
  - (iii) 256Kbps :- 256Kbps
  - (iv) 512Kbps :- 512Kbps
  - (v) 1024Kbps :- 1024Kbps
  - (vi) 2048Kbps :- 2048Kbps

### 3) Analyze the number of TCP packets retransmitted

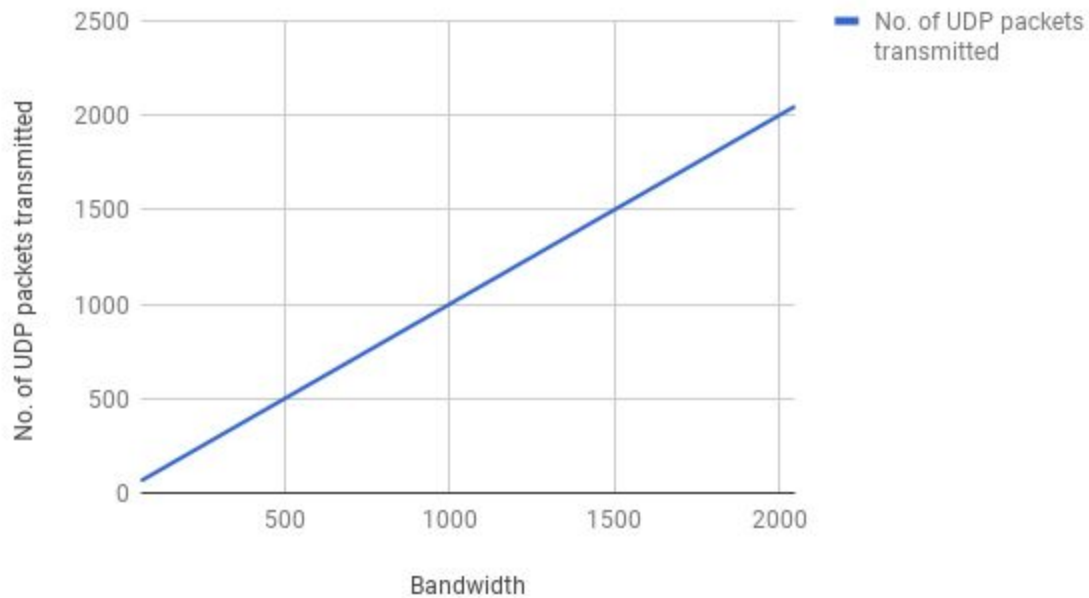
No. of packets retransmitted - **11 packets of size 1514 bytes each**



(4) Plot the following:-



### No. of UDP packets transmitted vs. Bandwidth



**Observations:-** As we see both the graphs turns out to be straight line. However for very large values of bandwidth, the graph flattens out and is no longer linear.