**Programming Assignment – 1**

**From SYN to END**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression/Implementation** | **1+1** | **5+5** | **20+20** | **50+50** |
| **Overall delay (TCP), s** | 24.195195 – 24.061527 = 0.133668 | 16.838609 – 16.706601 = 0.132008 | 12.604211-  12.452890 = 0.151321 | 13.206006 - 13.056882 =  0.149124 |
| **Overall delay (UDP), s** | 8.58-8.45 = 0.13 | 6.4489 – 6.2951 = 0.1538 | 11.4305 – 11.2064 = 0.2241 | 9.7336 – 9.5369 = 0.1967 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expression/Implementation** | **1+1** | **5+5** | **20+20** | **50+50** |
| **Achieved throughput (TCP), bps** | 635 / 0.133668 = 4750.5760 \* 8 = 38000 | 804 / 0.132008 =  6090.5399 \* 8 =  48724.32 | 1490 / 0.151321 =  9846.6174 \* 8  = 78768 | 2805 / 0.149124  = 18809.8495 \* 8  = 150478 |
| **Achieved throughput (UDP), bps** | 628 / 0.13 =  4830 \* 8 = 38646 | 1060 / 0.1538 =  6892 \* 8= 55136 | 360 / 0.2241 = 1606\* 8 = 12850 | 744 / 0.1967 = 3782.40 \* 8 = 30259.27 |

I can see the increasing delay as the expression length increases. So, delays will occur more as the packet size increases. I can see the same thing in the wireshark delays.

One more thing, I can see the sudden increase in the throughput sometimes. It may due to the network traffic.

These two were my observations for the above results.

**I have done the reference from the below links ::**

<http://stackoverflow.com/questions/3422673/evaluating-a-math-expression-given-in-string-form>

<http://codesamplez.com/programming/udp-programming-in-java>