

Data Communication and Computer Networks (CS536)

Lab 2

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Bonus Problem

My Experiments:

1. Experiments within same lab (POD Machines) :

Server Chosen : 128.10.25.217

Client Chosen : 128.10.25.219

T= Client wait time before sending a packet

D= Server wait time before sending a response

N = Number of Packets, the client is sending

- **T=0, D=0, N=3** : 0.449ms , 0.228ms , 0.204ms (Avg - 0.293ms)
- **T=3, D=5, N=3** : 5000.553223ms , 7000.74517ms , 10000.590820ms (Avg - 7333.96307ms)
- **T=5, D=3, N=3** : 3000.667969ms , 3000.605957ms, 3000.587891ms (Avg - 3000.62158ms)

The Avg RTT from /bin/ping from 128.10.25.217 to 128.10.25.219 is 0.190ms

Interpretation:

When Server doesn't wait before sending response, then the obtained RTT (0.293ms) is equivalent to the RTT value obtained by using ping (/bin/ping) application(0.190ms). Some difference is there because of the way of calculation, we have chosen in the program.

When the server waits for sending response, the wait time is added to the real RTT value, therefore, the obtained RTT is much higher than /bin/ping RTT.

if T=3 and D=5, then Client sends the first request, server starts waiting for 5 seconds. But after 3 seconds, the Client sends second packet. 2 seconds after this, client gets response for the first message.(RTT is around 5000 ms). Now, server waits for 5 seconds more to send the second response. So, RTT becomes (2+5)sec = 7 secs almost for second packet.

if $T=5$, $D=3$, server response comes back before client sends next packet. So, the RTT value has only increased for wait time in server which is 3 seconds. Calculated RTT is also around 3 seconds.

1. Experiments across lab (POD Machines & Amber Machines) :

Server Chosen : 128.10.25.217 (POD)

Client Chosen : 128.10.112.148 (Amber)

T = Client wait time before sending a packet

D = Server wait time before sending a response

N = Number of Packets, the client is sending

- **$T=0$, $D=0$, $N=3$** : 0.414ms , 0.369ms , 0.373ms (Avg - 0.385)
- **$T=3$, $D=5$, $N=3$** : 5000.958008ms , 7001.061113ms , 10000.458008ms (Avg - 7334.15904ms)
- **$T=5$, $D=3$, $N=3$** : 3001.000977ms , 3000.927002ms , 3000.897949ms (Avg - 3000.94197ms)

While Experimenting across lab, got similar results as of same lab experiments.

But the RTT increases by few milliseconds, because of the distance between the devices. for $T=0$, $D=0$, RTT is almost 0.385ms which is 0.092 ms higher than same lab experiment(0.293ms).