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# Term Project Phase 1 Report

The project is forked to my account.[1] I cloned the environment in my computer. I will work on a Mac OS with Docker Desktop during the project. I was able to work with the provided dockerized environment. Python has been chosen as a processor language, and a warm-up exercise has been implemented. Random delays to the ping packets were added with exponential distribution with mean 10, 30, 50, 70, and 90 milliseconds; for each chosen delay, 50 packets were sent for measuring the minimum, maximum, and average of round trip times of packets. The blue line indicates the average of 50 trials, and the black line shows the minimum and maximum values for each delay time. The resulting graph is as follows:
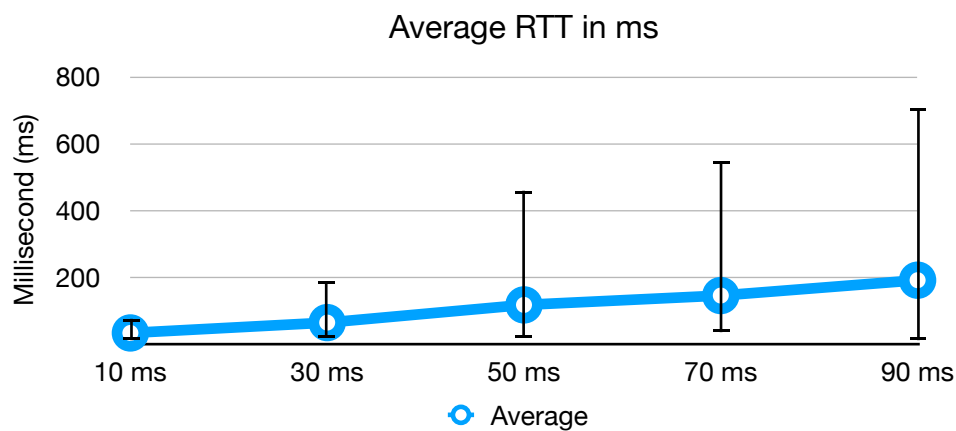
Average RTT in ms

The numerical values for the averages and the graph of mean deviation of RTT is shown graph below:

Numerical Values for Average RTT

Mean of Added Delays	Average RTT (ms)
10 ms	32
30 ms	63
50 ms	116
70 ms	144
90 ms	190

Mean Deviation of RTT in ms
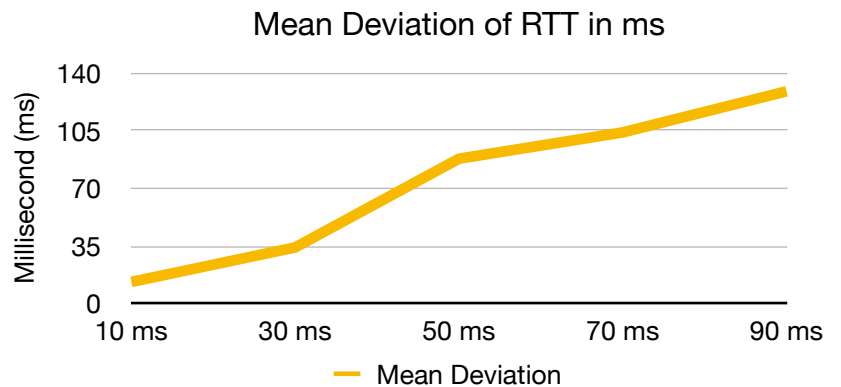
It can be seen that, as expected, mean deviation and average values increase as delay increases. However, the minimum value for the delay does not change since delays are chosen with an exponential distribution and contain very small values. The numerical values of averages are very close to the two times of average delay. This is expected because delay is added twice, once for the request from sec to insec and once for response from insec to sec.

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[1] https://github.com/AliGenis/middlebox