

Query and Buy Latency

Latency per request, calculated by sending 1000 requests.

Probability = 1, ensuring equal number of query and buy requests

Number of Clients	Average Query Latency (without Docker)	Average Query Latency (with Docker)
1	0.01254004693031311	0.020508294105529785
2	0.013019194078445435	0.020540055942535487
3	0.012939156958262127	0.021258777866363525
4	0.013442338407039642	0.021564389621063839
5	0.013619726419448853	0.020894285672149003

Query Latencies Comparison for Docker and without Docker

Number of Clients	Average Buy Latency (without Docker)	Average Buy Latency (with Docker)
1	0.013284863948822021	0.02118386459350586
2	0.014373643708229065	0.02189064328956845
3	0.01360967612584432	0.02183606982231141
4	0.01401466258764267	0.02249060482937894
5	0.015302095103263855	0.02265523875911569

Buy Latencies Comparison for Docker and without Docker

Average Query Latency w/o Docker = 0.013112092558701835

Average Buy Latency w/o Docker = 0.014116988294760385

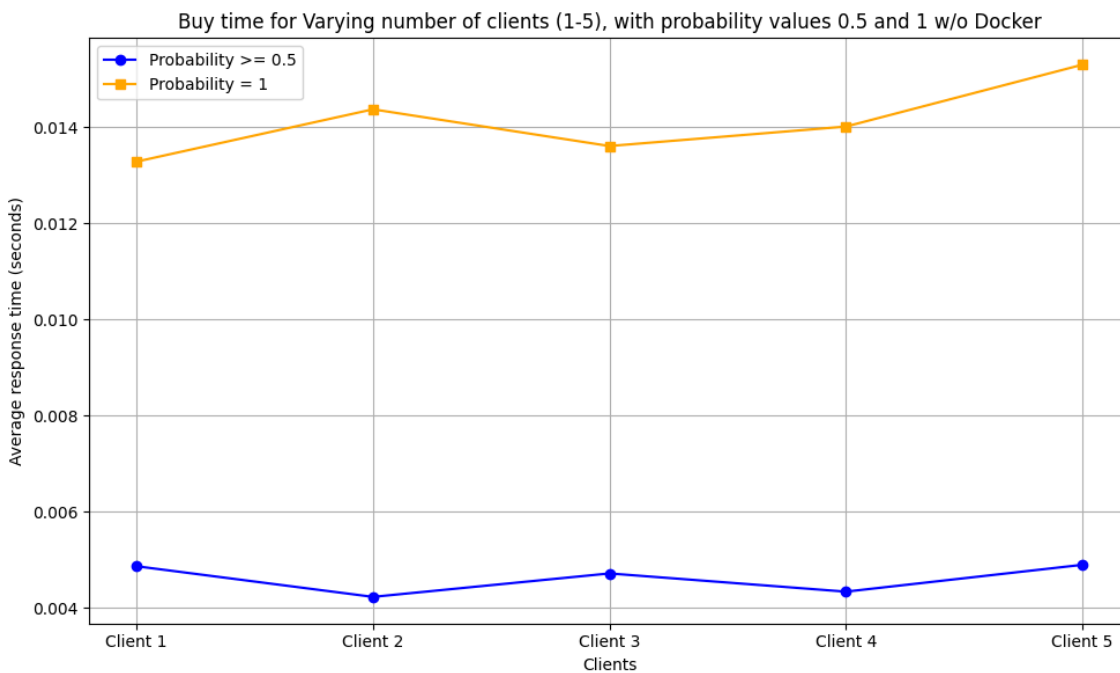
Average Query Latency with Docker = 0.02095316064152833

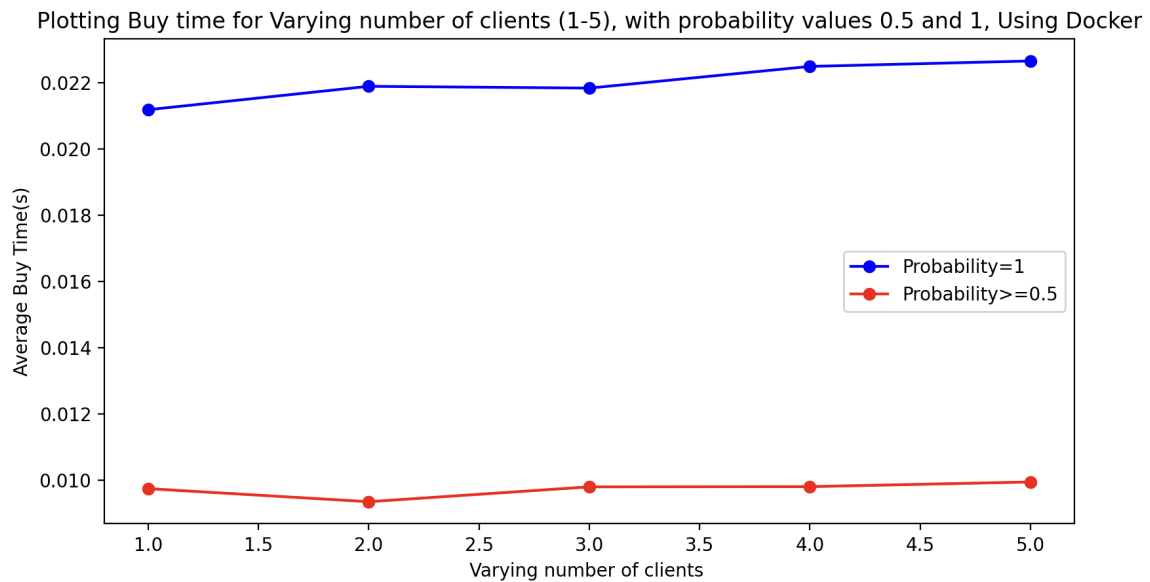
Average Buy Latency with Docker = 0.02201128425877607

Probability ≥ 0.5

Number of Clients	Average Buy Latency (without Docker)	Average Buy Latency (with Docker)
1	0.004864743232727051	0.00974254820484836
2	0.004226887822151184	0.00934847057261349
3	0.00471496335665385	0.009796809434890747
4	0.00433576239808124	0.009803488372635372
5	0.0048945112524178	0.009943876482589849

Buy Latencies Comparison for Docker and without Docker





As observed from the two graphs, the behavior noticed with the two sets of buy times for different probabilities reflects the impact of uncertainty or variability in the system due to the probabilistic nature of events.

When the probability is 1, every buy request is considered and executed. There is a 100% certainty that the buy request would be executed from the client every time. Therefore, with probability 1, the buy times are consistently increasing with the increasing number of concurrent clients (from 1 - 5). Hence, the buy time for this is also higher.

However, when the probability ≥ 0.5 , there is uncertainty introduced into the system, as not all the time buy requests are guaranteed to execute. There's a higher chance of some buy requests not being fulfilled, leading to potential variations in the observed buy times. Therefore, this results in a reduced average buy time, with an increasing number of concurrent clients.

In summary, the behavior noticed with the two sets of buy times reflects the impact of uncertainty introduced by varying probabilities of buy requests being fulfilled.