Note:-
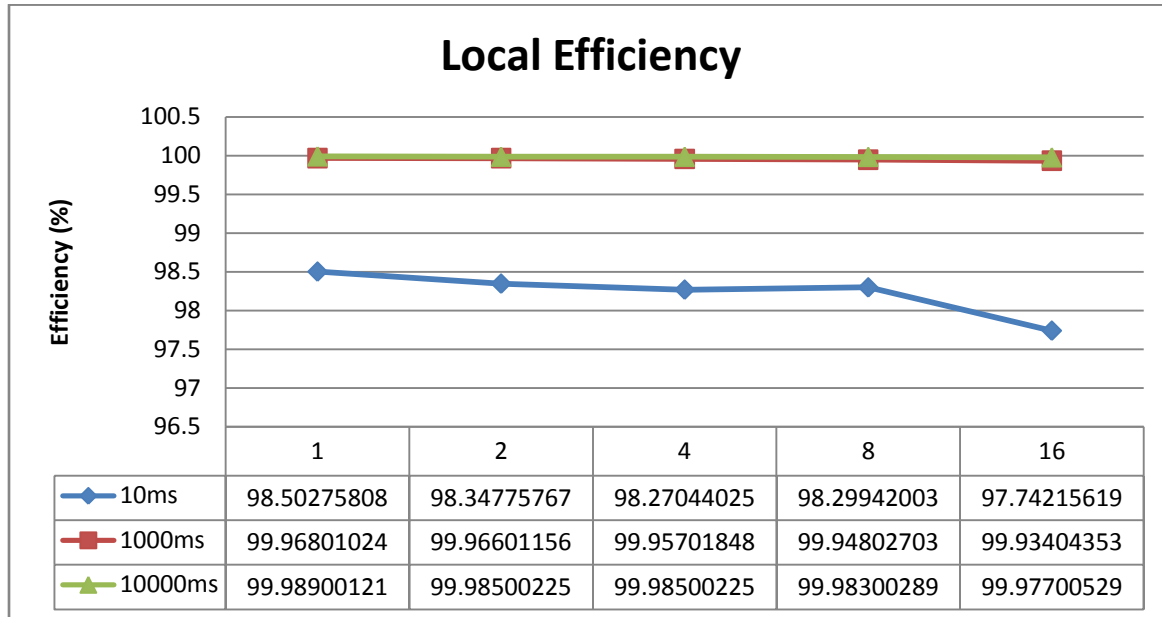
1)I have referred amazon sample codes which come with amazon AWS java kit to understand how to connect SQS, DynamoDB and S3.

2) I am putting ID and job command in DynamoDBso execution time increases, if I put only ID in DynamoDB time comes down.This signifies that it is costly to work withDynamoDB.

3) I am using amazon t2.micro instance for executing this assignment.

1) Local Execution:-

Throughput graph of sleep 0 100K tasks:-

	1	2	4	8	16
throughput	155520.9953	162601.626	166666.6667	166112.9568	170648.4642

Local Sleep 0 throughput
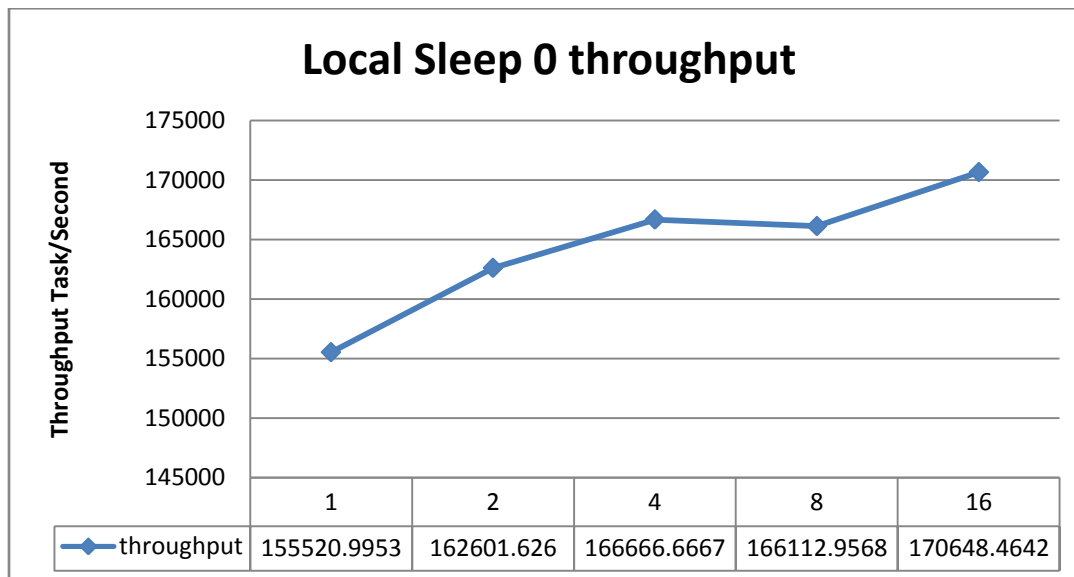
Efficiency graph of sleep 0 100K tasks:-

Local Efficiency

	1	2	4	8	16
10ms	98.50275808	98.34775767	98.27044025	98.29942003	97.74215619
1000ms	99.96801024	99.96601156	99.95701848	99.94802703	99.93404353
10000ms	99.98900121	99.98500225	99.98500225	99.98300289	99.97700529

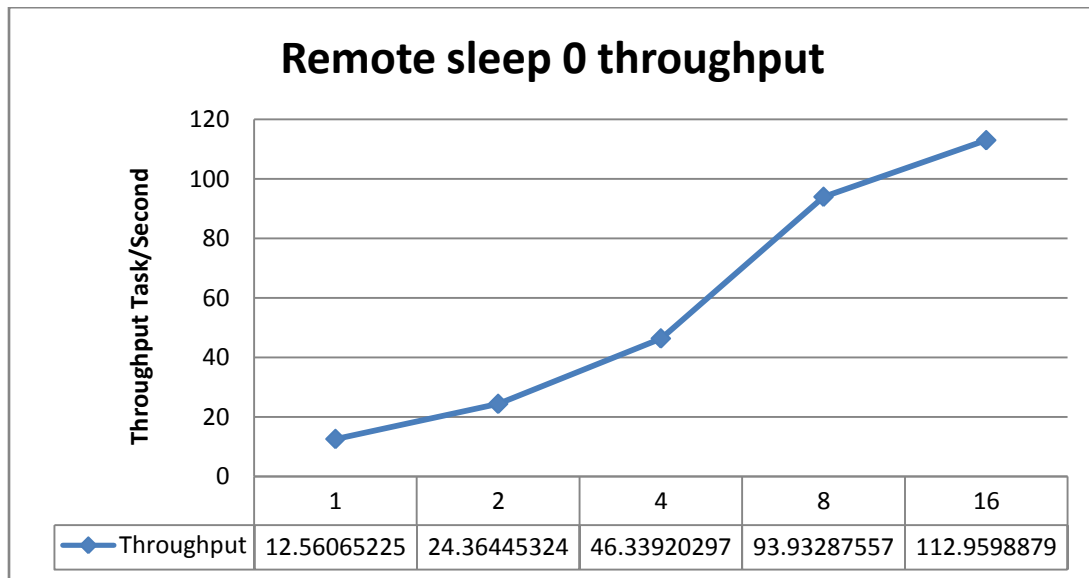Efficiency (%) axis: 100.5, 100, 99.5, 99, 98.5, 98, 97.5, 97, 96.5
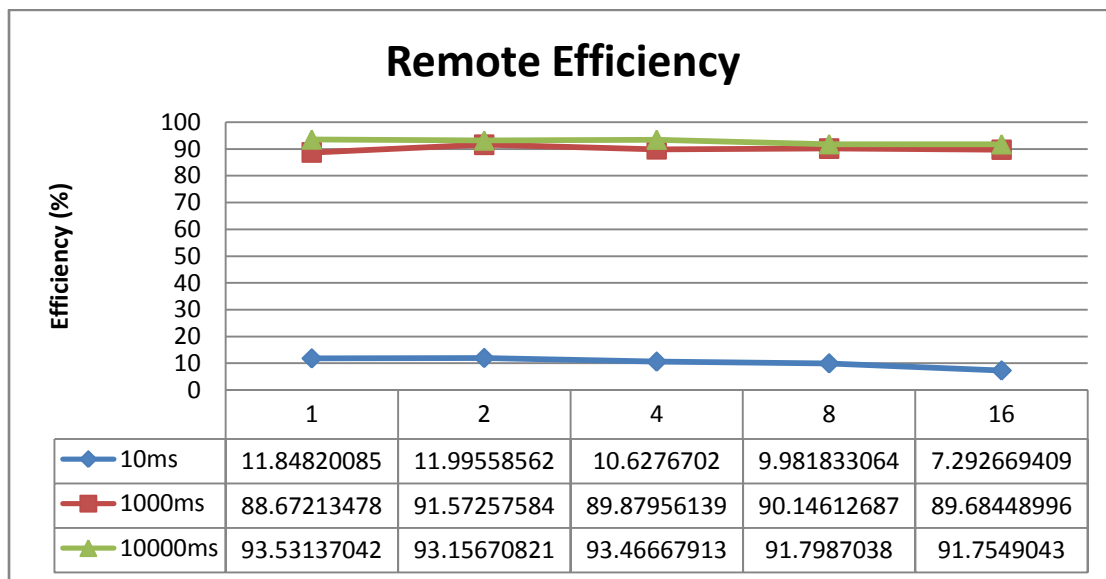
Observations:-

- By looking at the above graph we can say that as we increase number of worker threads efficiency of sleep 0 task goes on decreasing this is because t2.micro instance as only one core so it gives best performance at single thread as we increase threads more than 1 it spend more time in synchronizing rather than actual execution.
- We can see that as we increase sleep time from 10ms to 10000ms we are getting better efficiency.
- By looking at sleep 0 throughput graph we can see that throughput goes on increasing as we increase number of workers.

Remote Execution:-

Remote Throughput:-

Remote sleep 0 throughput

Throughput Task/Second

	1	2	4	8	16
Throughput	12.56065225	24.36445324	46.33920297	93.93287557	112.9598879

Remote Efficiency:-

Remote Efficiency

Efficiency (%)

	1	2	4	8	16
10ms	11.84820085	11.99558562	10.6276702	9.981833064	7.292669409
1000ms	88.67213478	91.57257584	89.87956139	90.14612687	89.68448996
10000ms	93.53137042	93.15670821	93.46667913	91.7987038	91.7549043

Observations:-

- By looking at above graphs of remote execution we can see that efficiency goes on decreasing as we increase number of workers from 1 to 16. At 10ms efficiency is very low which signifies that it spend more time in connecting SQS incoming queue ,remote queue and dynamo DB rather than actual execution.
- Also we can see that as we increase sleep time from 10ms to 10000ms we are getting better efficiency.
- By looking at throughput graph we can say that remote execution throughput goes on increasing as we increase number of workers from 1 to 16.
- By looking at both local and remote execution we can say that local worker has better throughput in all three execution as queue are in memory and does not have any network overhead of communication hence local execution is very quick as compared to remote execution.