

Performance Evaluation

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As a primary evaluation, some simple experiments are conducted to measure the performance of the system.

1. Experiment configuration:

- a. Multiple peers
- b. One index server

2. Experiment parameters:

- a. Peer number: 1 to 8
- b. Average Response Time: This is calculated by measuring the response time of sending 1000 requests seen by a client.

3. Evaluation policy:

Varying the number of peers to observe the average response time of search request changes.

4. Evaluation result:

Table 1 is the raw results of the experiment. Figure 1 shows the result of the experiment, which indicates the changing of the average response time with various peer numbers. With the gaining of peer numbers, the average response time is increasing. The result is reasonable as expected. Even though multithread is used to handle multiple requests from client side in this system, which has effectively allowed servers to receive multiple requests, the overhead of accepting multiple requests cannot be avoided. For example, multiple requests mean multiple connections, which requires more time to create connections for all requests. Hence, the average response time increases with more peers.

Table I Experiment raw results

Peer Number	Response Time (1000 requests) (ns)	Average Response time (ms)
1	410017287	0.41
2	1072373093	0.54
3	2423032985	0.81
4	4173456202	1.04
5	6394406819	1.29
6	8402923123	1.4
7	11179739078	1.6
8	15326098575	1.92

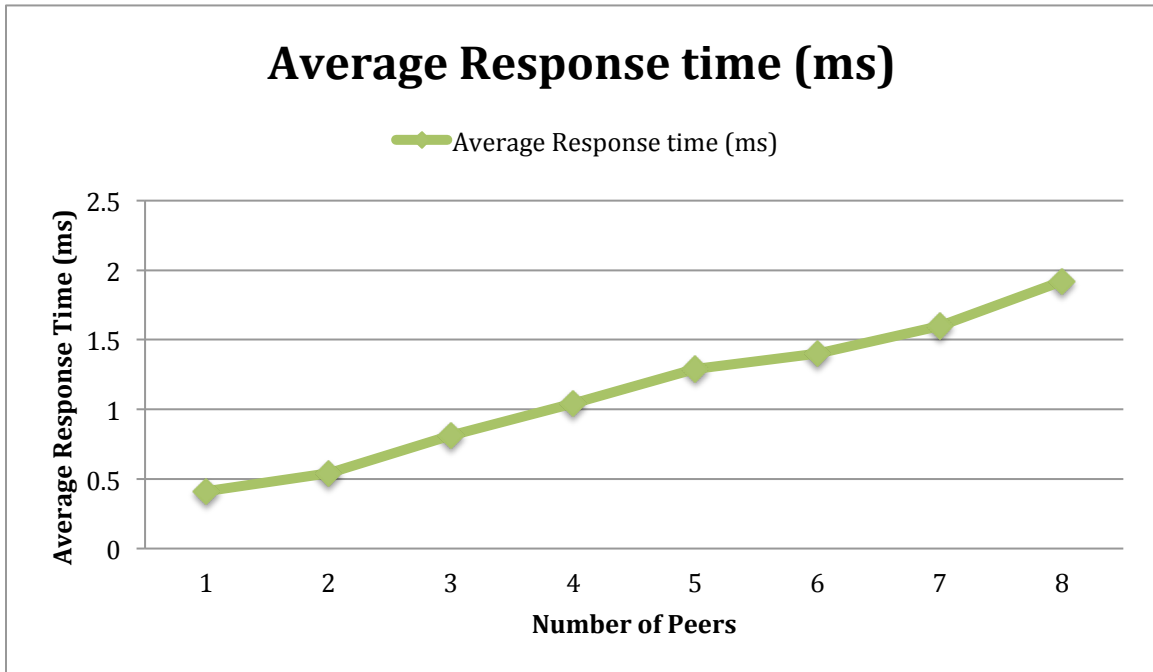


Figure 1 Average response time changing with number of peers