OS LAB 2

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Q1.

Server H/W specifications:

- CPU: 1.70GHz, 4 Processors
- Memory: 3.95 GB

Client H/W specifications:

- CPU: 2.50GHz, 4 Processors
- Memory: 1.92 GB

Server and Client are connected over 100Mbps ethernet, with a switch in between.

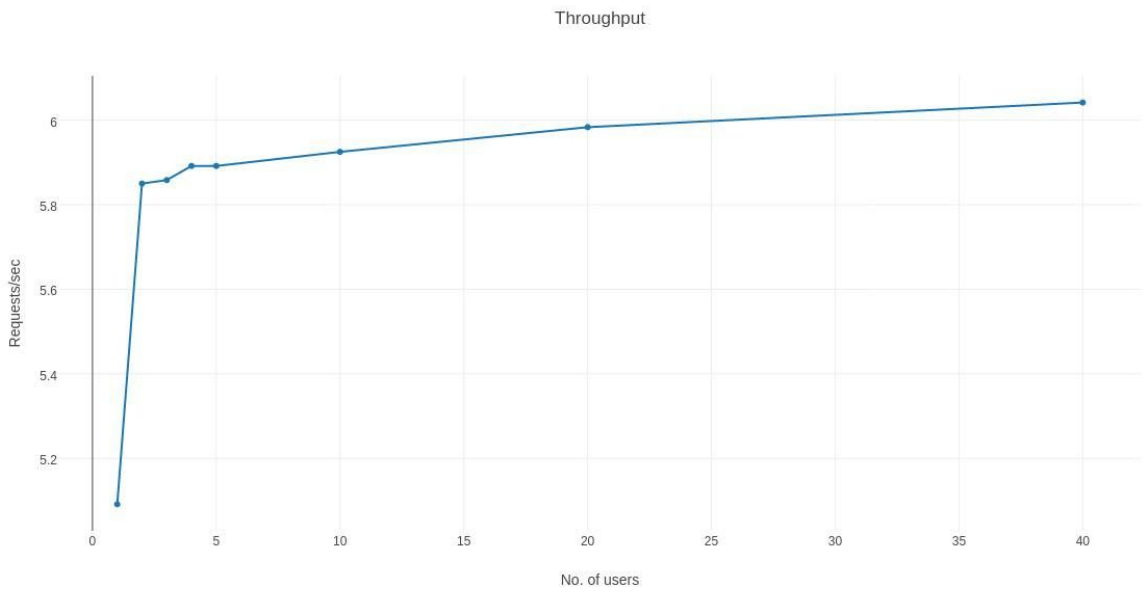
File size: 2 MB

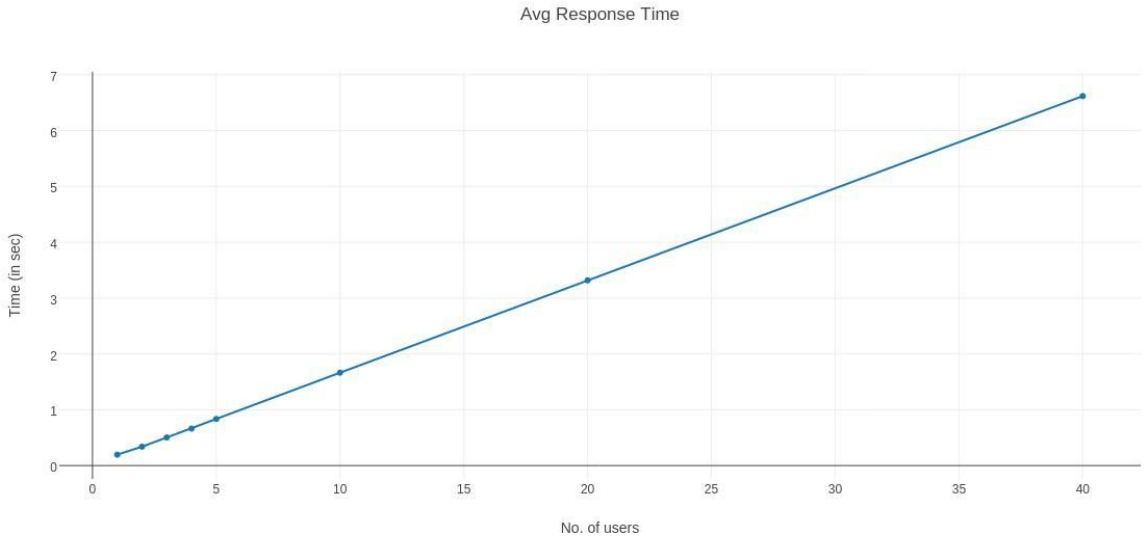
Disk Read Bandwidth: 42.9 MB/s
Max Req./s served due to Disk: 21.45

Network Bandwidth: 12.15 MB/s
Max Req./s served due to Network: 6.075

Using “ethtool eth0” command we found that the connecting ethernet is 100Mbps, which justifies maximum network bandwidth to be around 12.5MBps

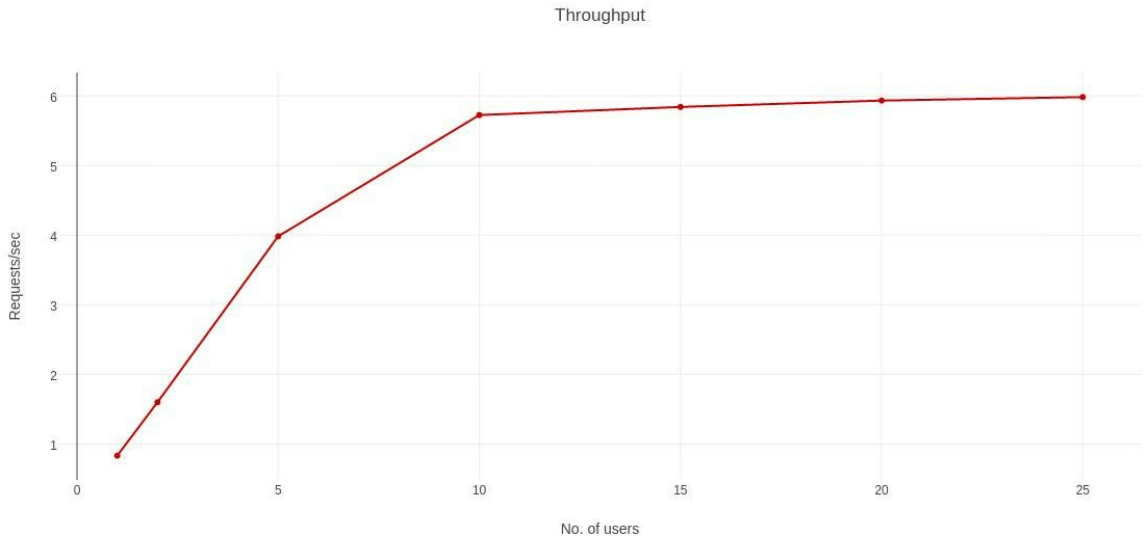
Q2.

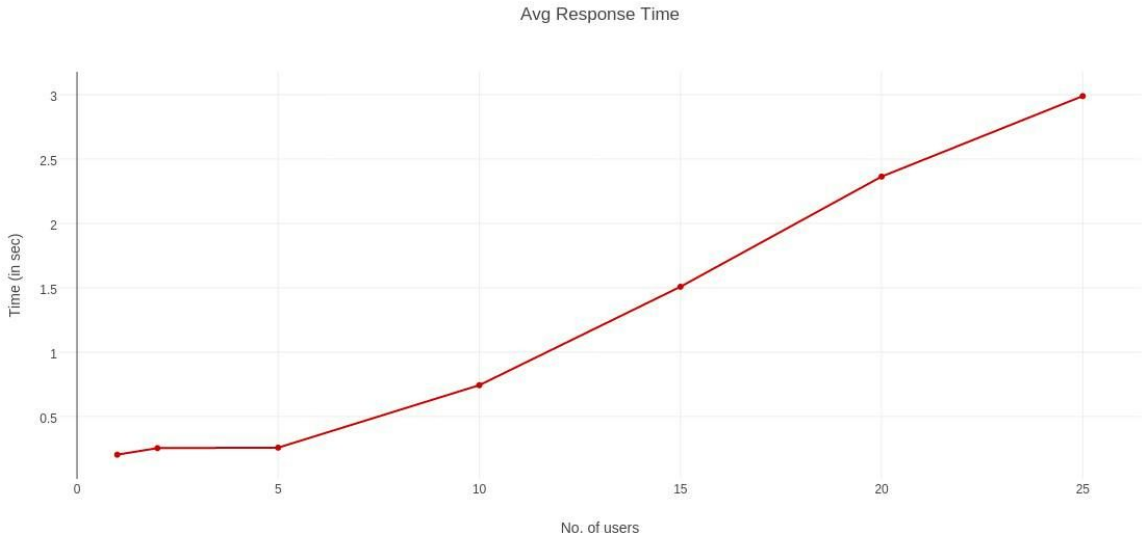




A. N=2
B. For N<2, the throughput increases till N<2 and then becomes constant due to network bandwidth bottleneck. The avg. response is not affected much by optimal value, it keeps increasing almost linearly with load.
C. **Network Bandwidth** is the bottleneck because maximum value of disk read bandwidth is much larger network bandwidth. Also the optimum request rate corresponds with maximum network bandwidth.
D. At Optimal N
   Requests/sec ≈ 6
   Server Throughput ≈ 12MB/s

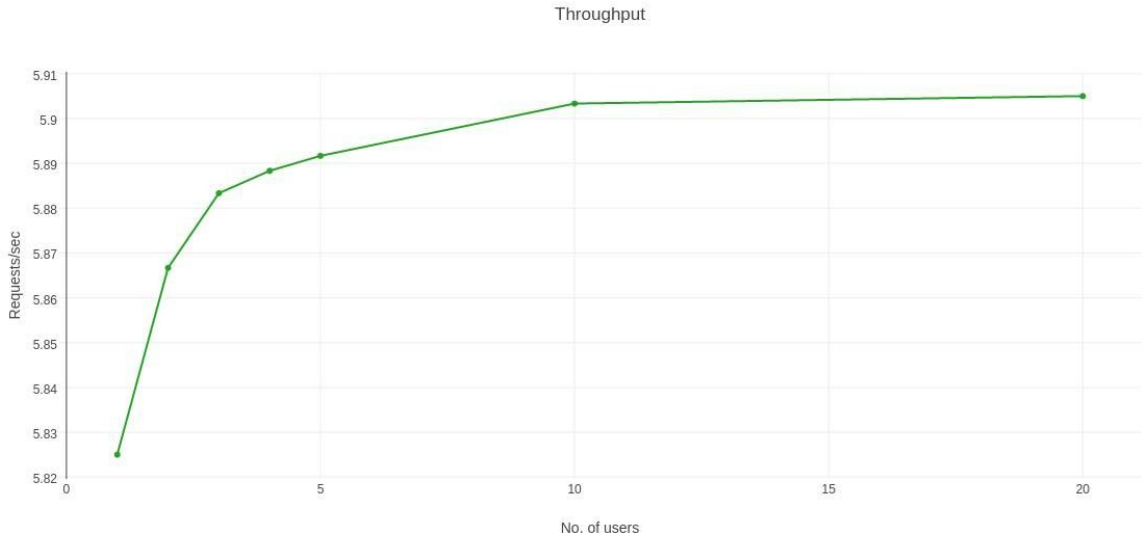
Q3.

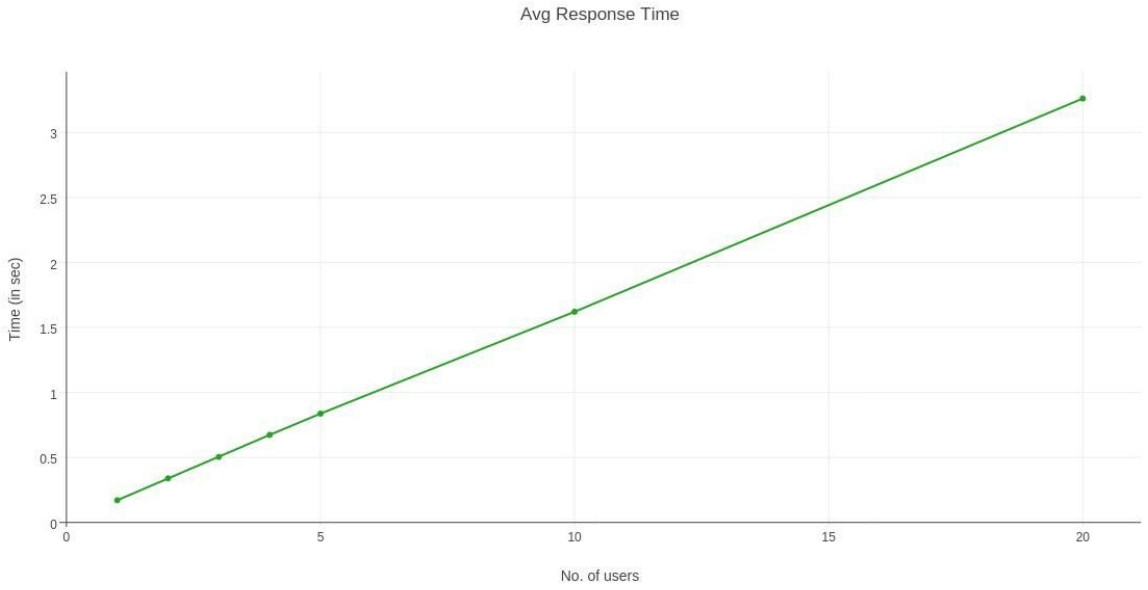




A. N=10
B. For N<10, the throughput increases with N and the avg. response time remains mostly constant, with a little increase. For N>10, the throughput becomes constant at 6 requests and the avg. response time now starts increasing.
C. **Network Bandwidth** is the bottleneck resource, because maximum value of disk read bandwidth is much larger network bandwidth. Also the optimum request rate corresponds with maximum network bandwidth.
D. At Optimum N
   Requests/sec ≈ 6
   Server Throughput ≈ 12MB/s

Q4.





A. N=10 is optimal N value.
B. For N<10, the throughput increases with N.
   For N>10, the throughput becomes constant at 6 requests.
   Avg response time increases linearly with the no. of users.
C. **Network Bandwidth** is the bottleneck resource, because maximum value of disk read bandwidth is much larger network bandwidth. Also the optimum request rate corresponds with maximum network bandwidth.
D. At Optimum N
   Requests/sec ≈ 6
   Server Throughput ≈ 12MB/s