FTaB: ASL Project
Final Presentation for Milestone 1

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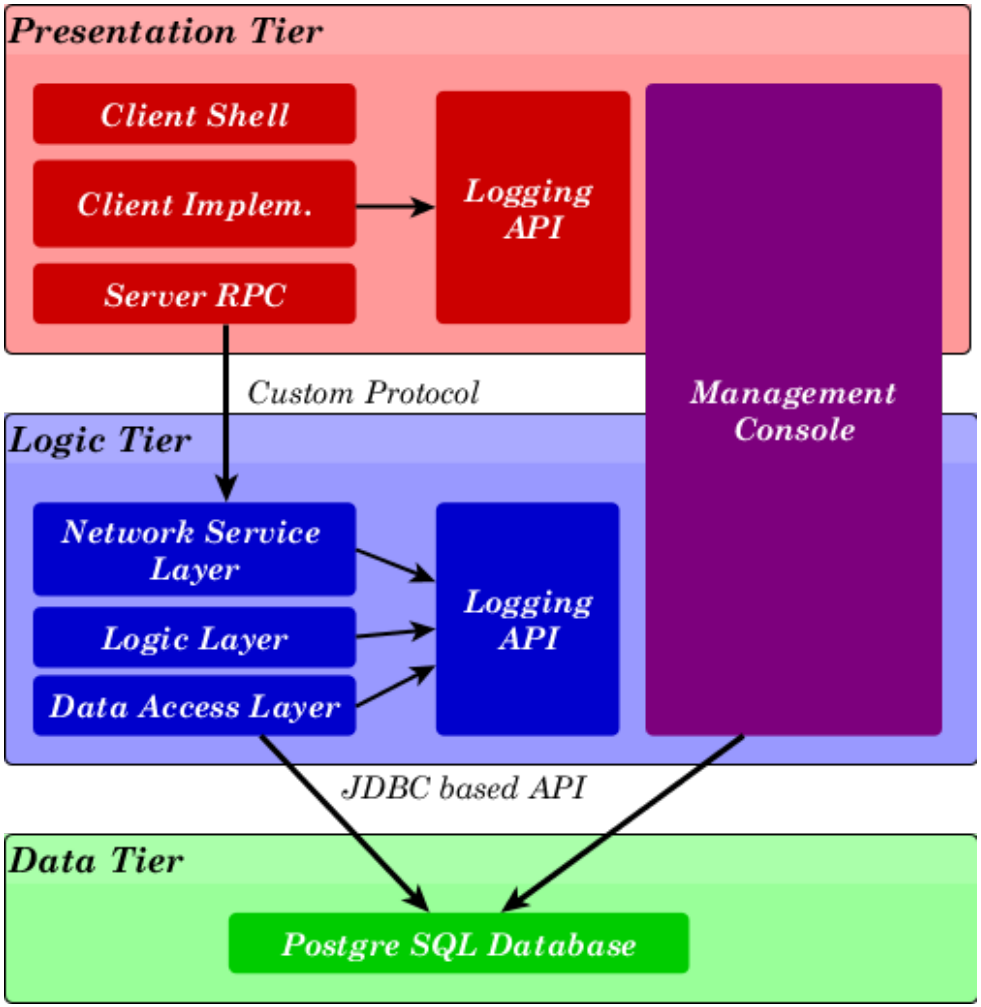
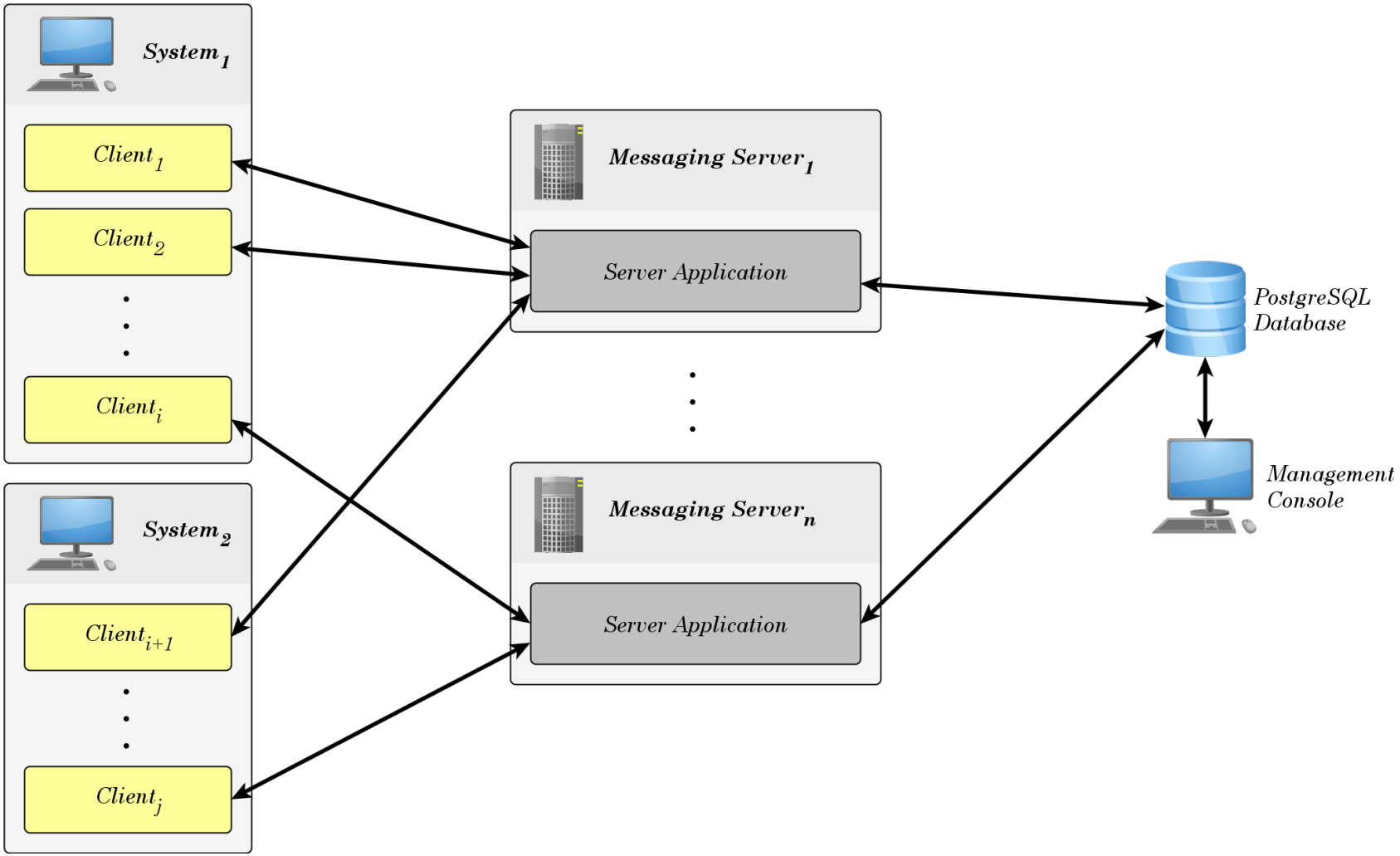
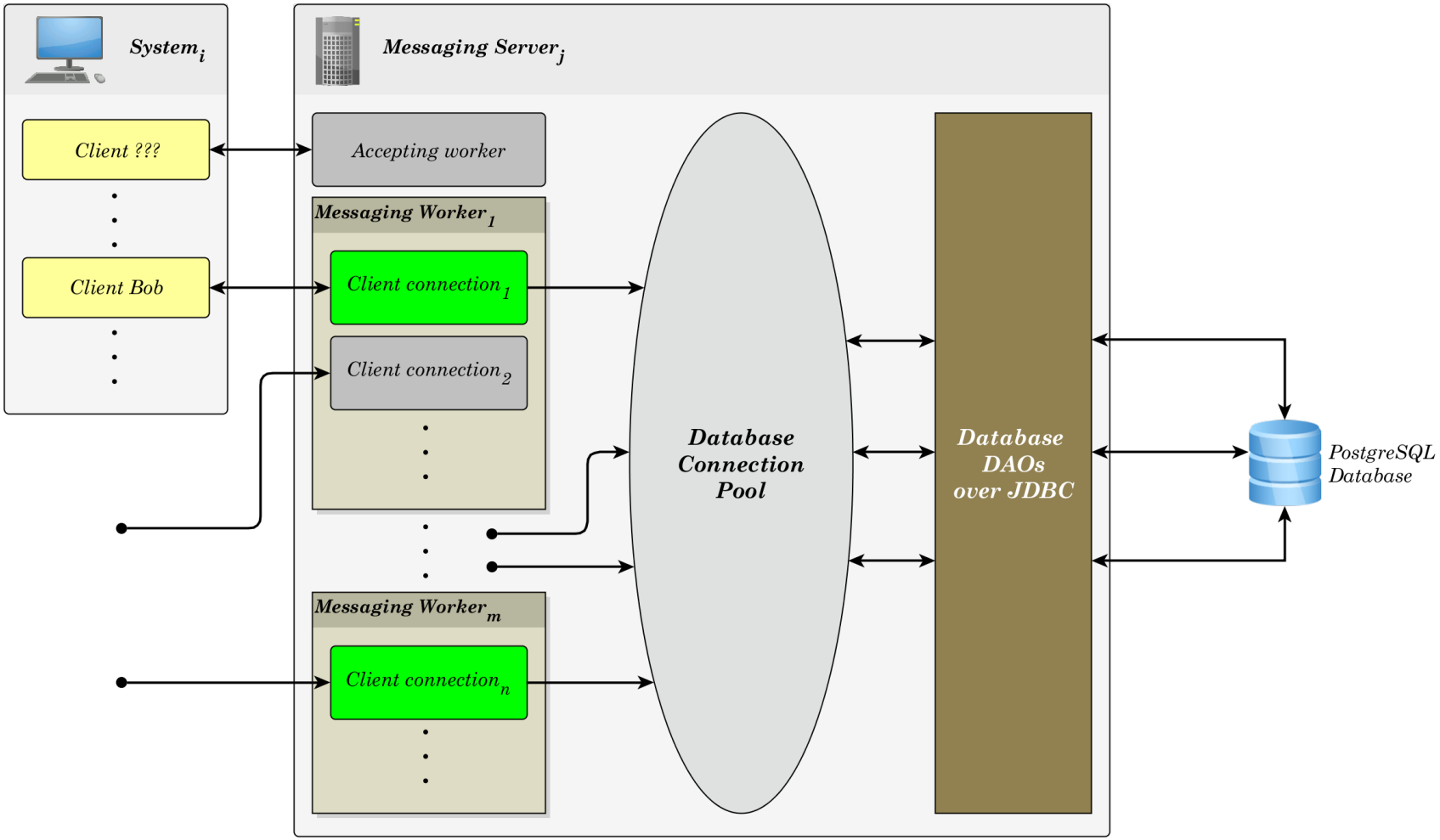
System tiers



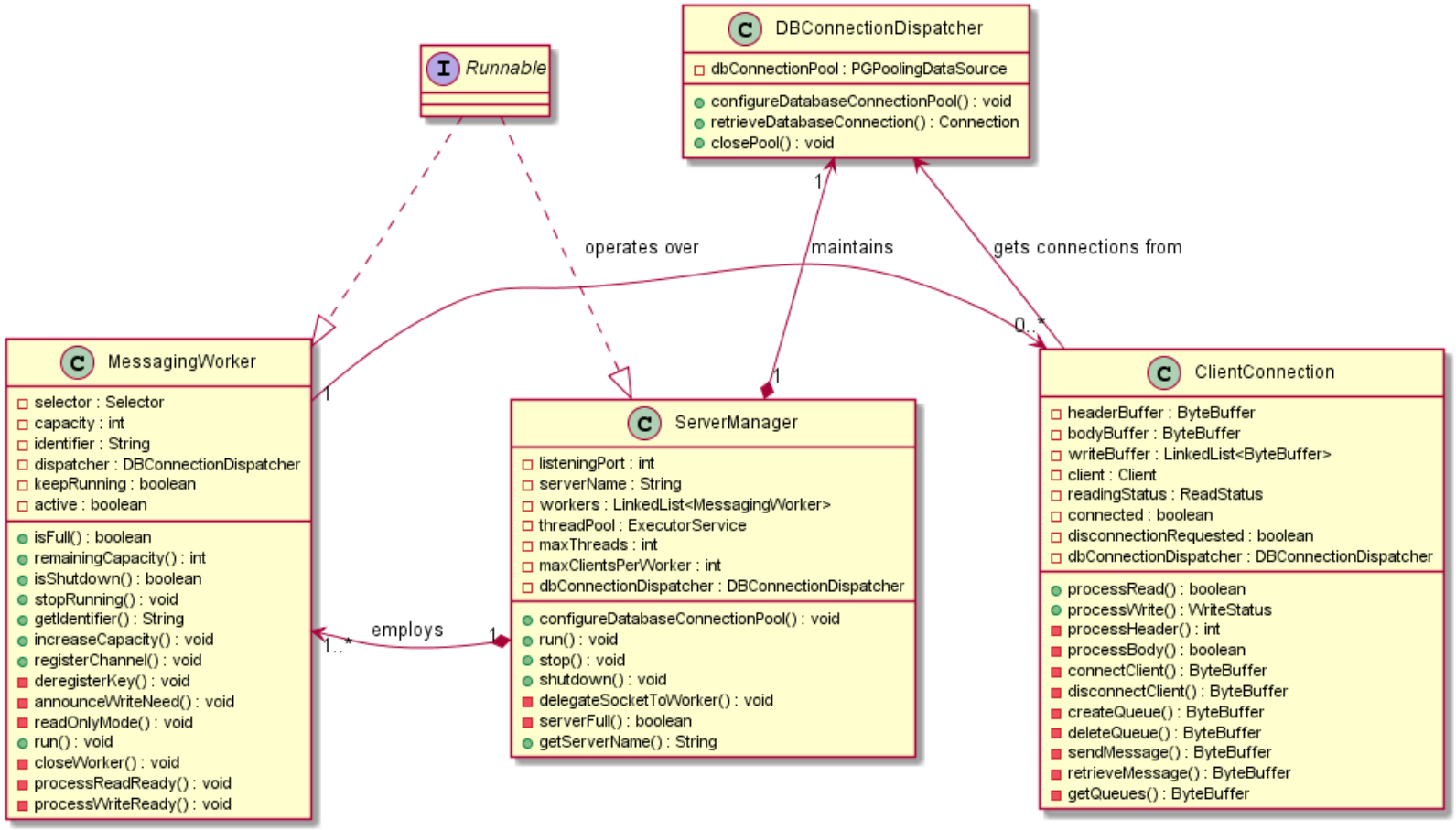
Overview of the major system components



Internal structure of the server



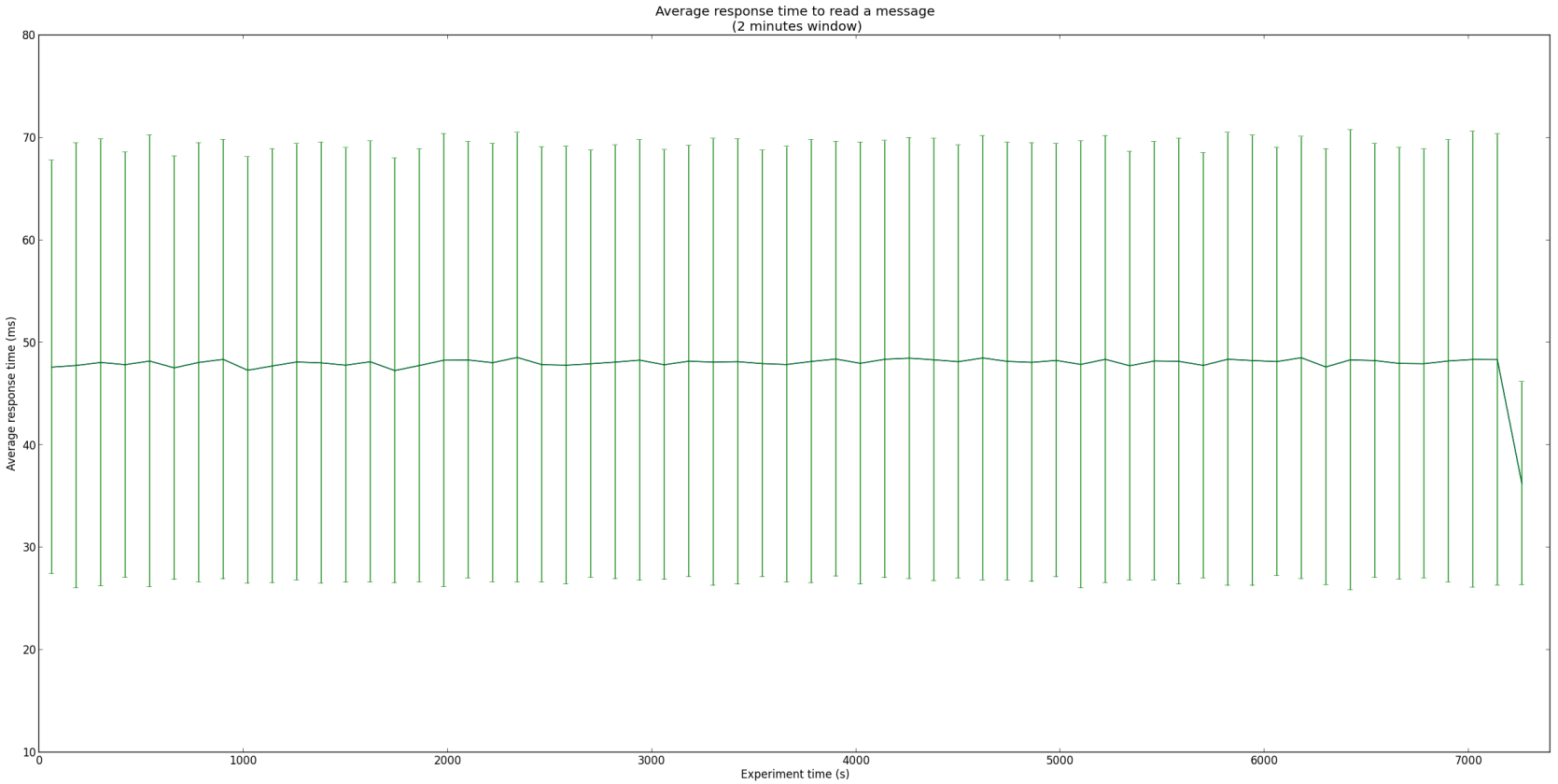
UML diagram of the server component classes



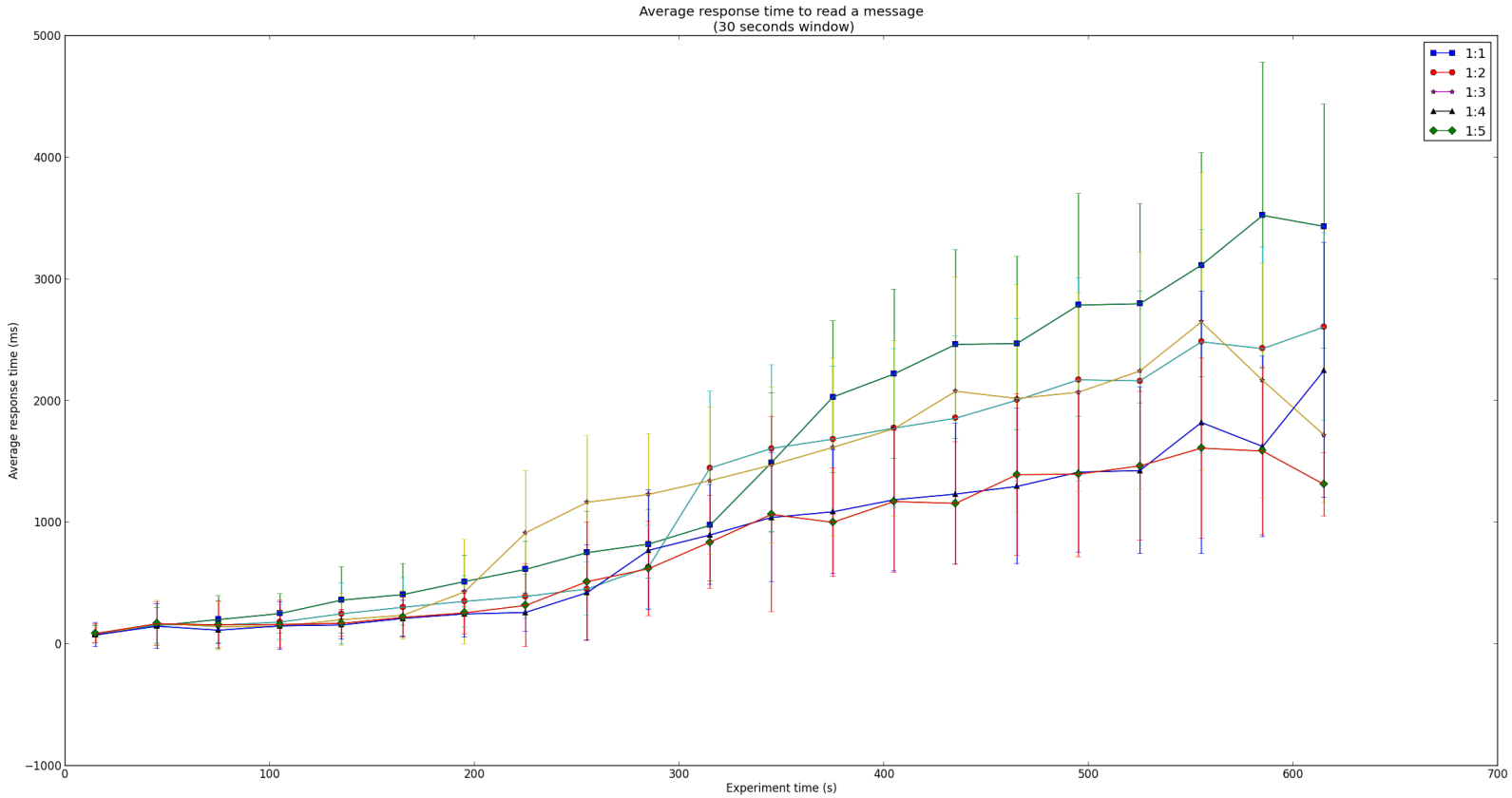
Dryad experiments - Summary

- Experiment 1: Initial trace, 50 random echo clients.
- Experiment 2: Varying server parameters.
- Experiment 3: Exploring database size.
- Experiment 4: Varying the load through client numbers.
- Experiment 5: Revisiting database size after schema change.

Dryad experiments - Experiment 1 read response time



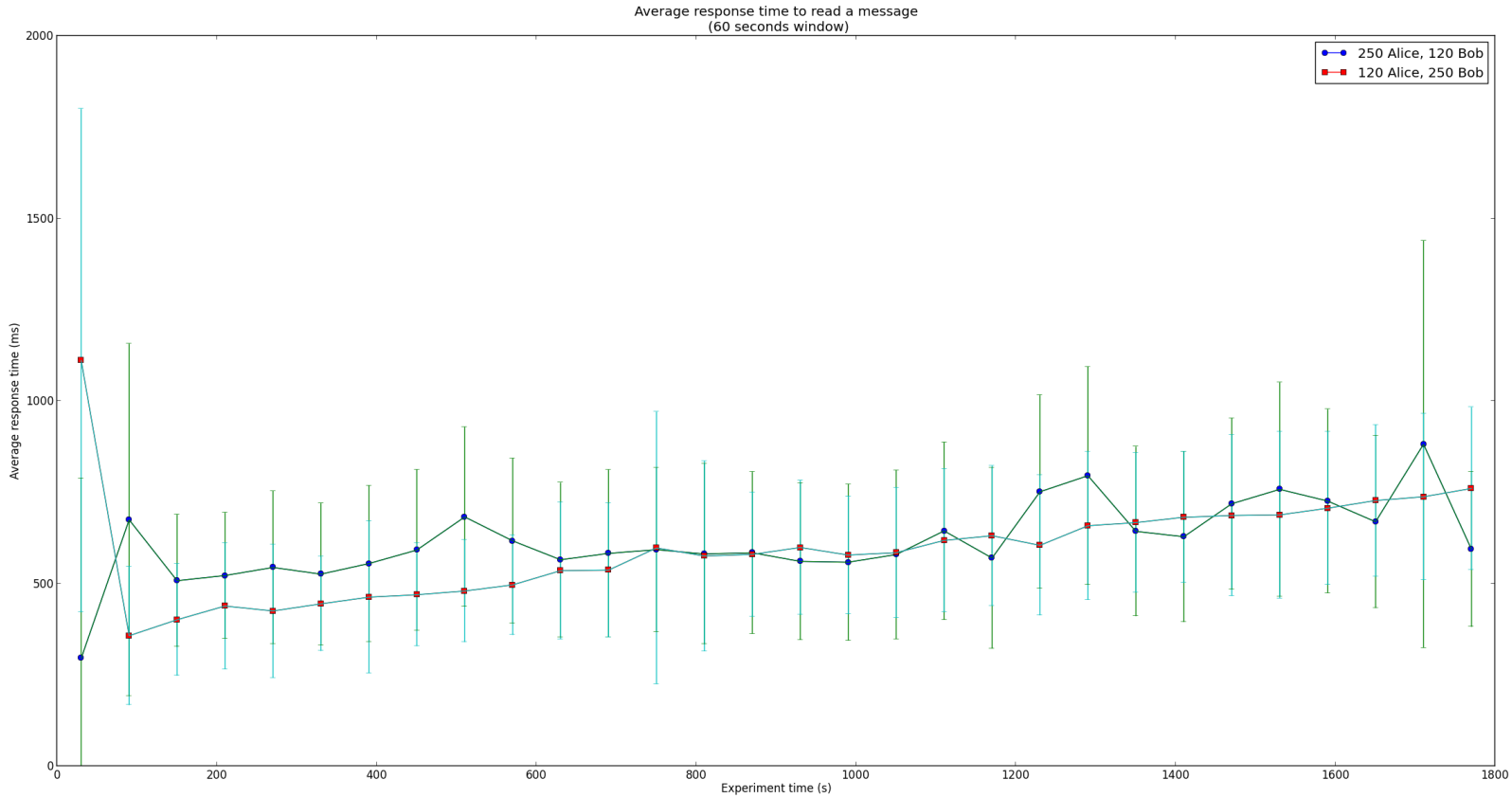
Dryad experiments - Experiment 3 read response time



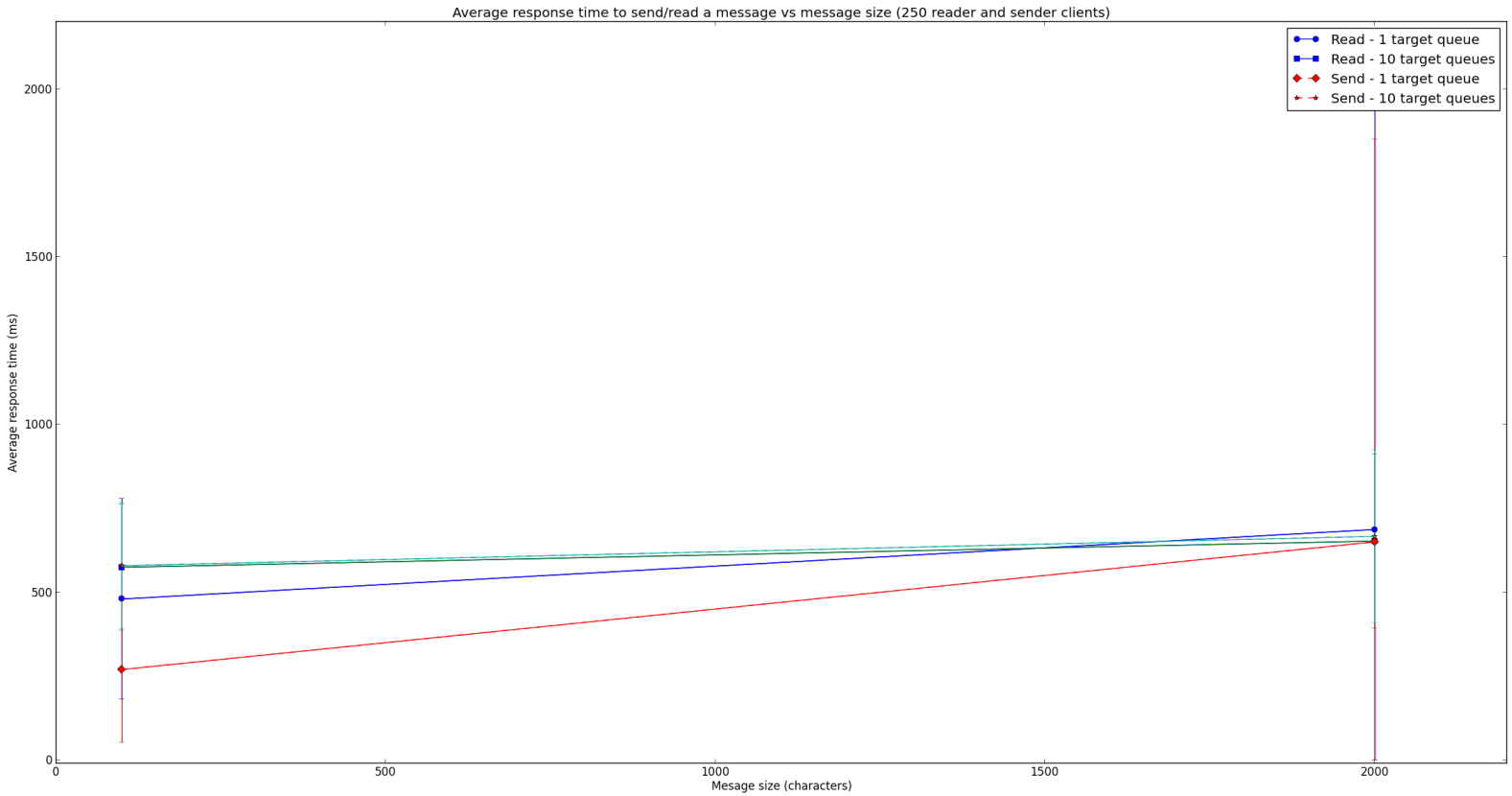
EC2 experiments - Summary

- Experiment 6: 2^k factorial experiment on load parameters
  - Number of reader clients
  - Number of sender clients
  - Message size
  - Number of target queues
- Experiment 8: 2^k factorial experiment on server parameters
  - Clients per thread
  - Threads per server
  - Number of servers

Load variation (EC2) - Varying clients



Load variation (EC2) - Message size

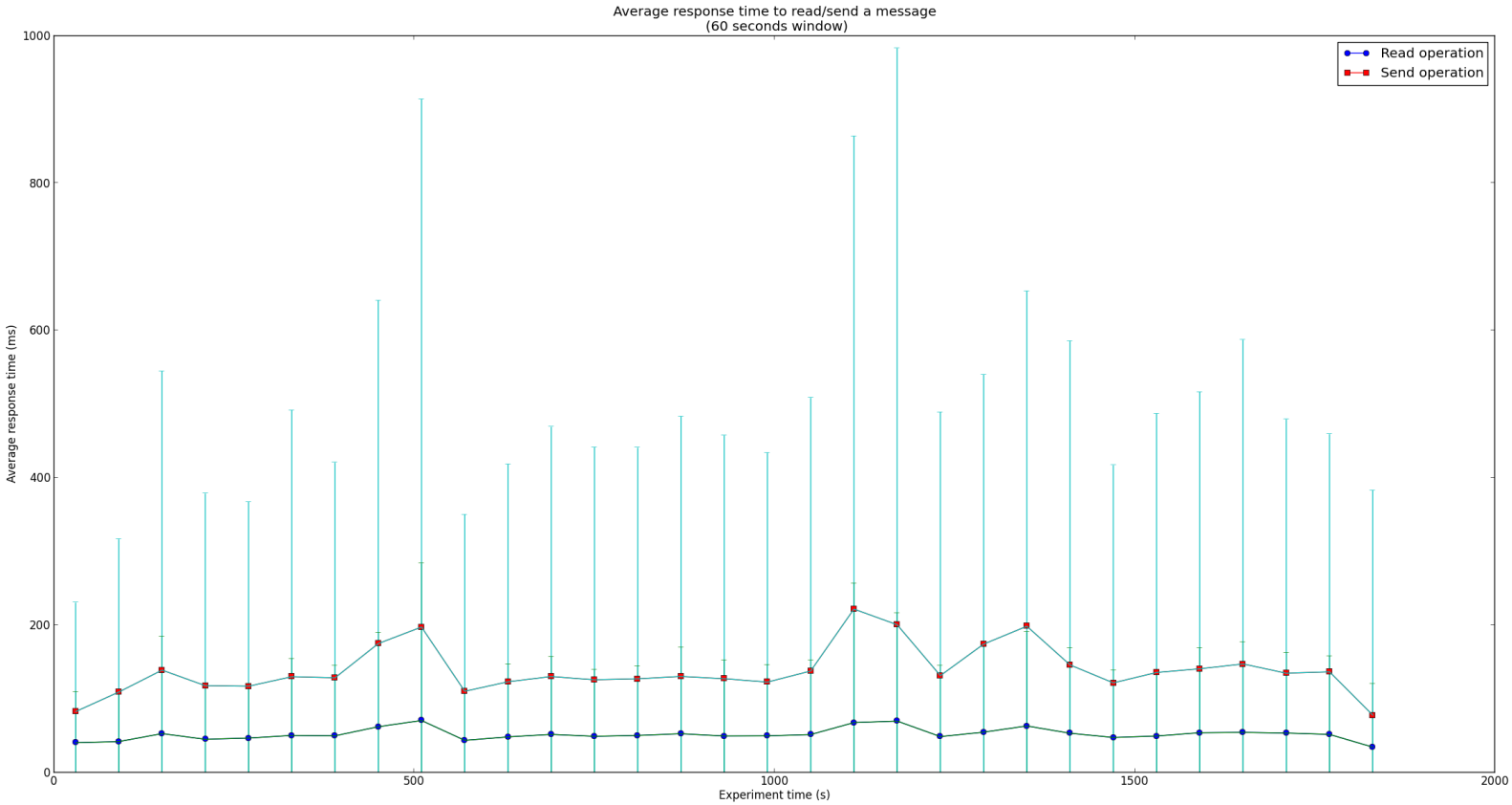


Server scaling (EC2) - Send throughput

Table : Statistical results from experiment No. 7 for the send throughput

Clients per thread	**Threads per server**	**Servers**	$\overline{X}$ $(\frac{msg}{s})$	$\sqrt{S^2}$ $(\frac{msg}{s})$
1	10	1	356.0	27.7
1	10	5	746.5	68.5
1	20	1	508.8	29.5
1	20	5	941.2	121.2
50	10	1	303.0	82.1
50	10	5	456.0	47.2
50	20	1	432.5	39.7
50	20	5	482.0	42.1

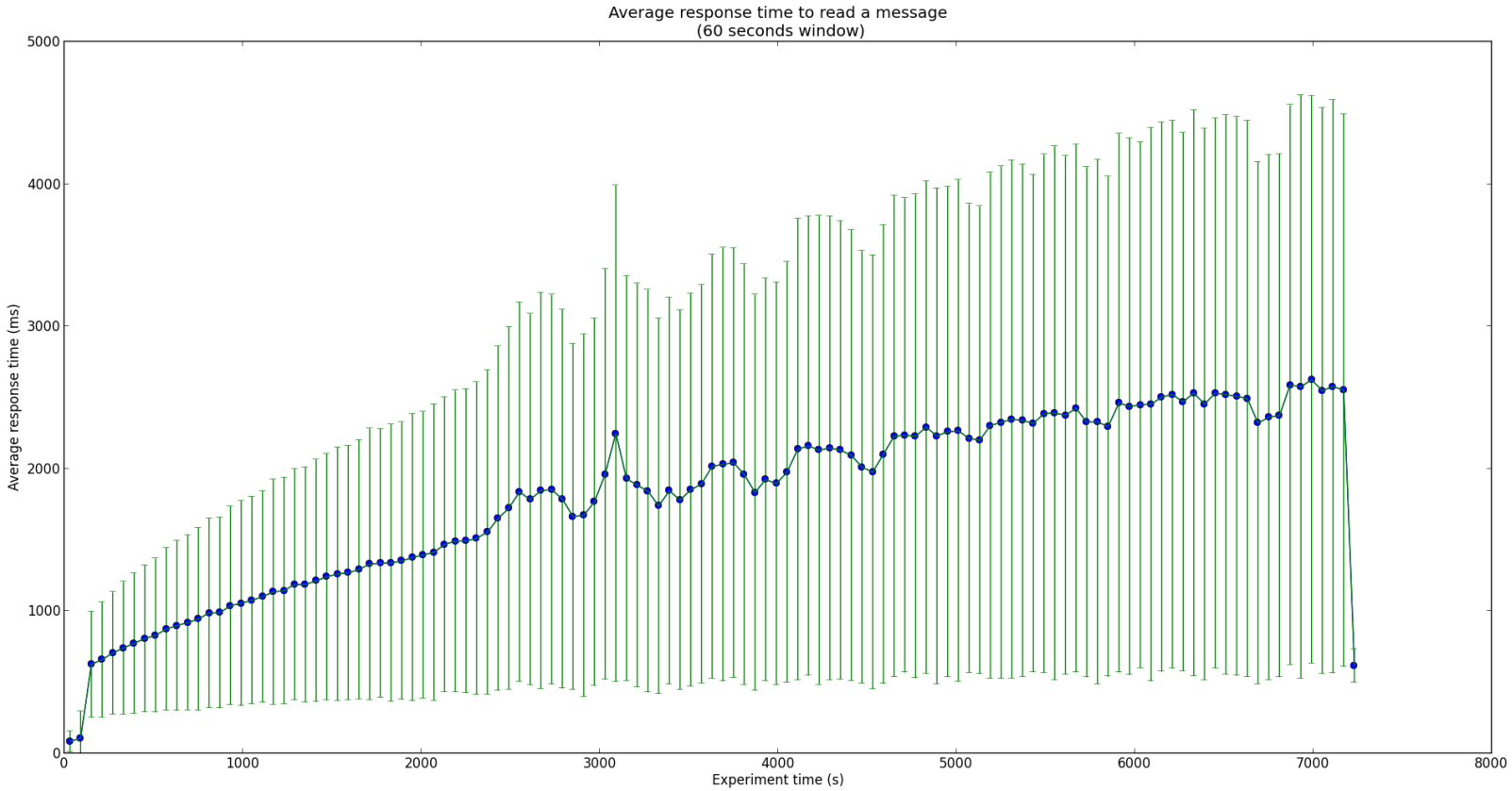
Server scaling (EC2) - Best observed server configuration



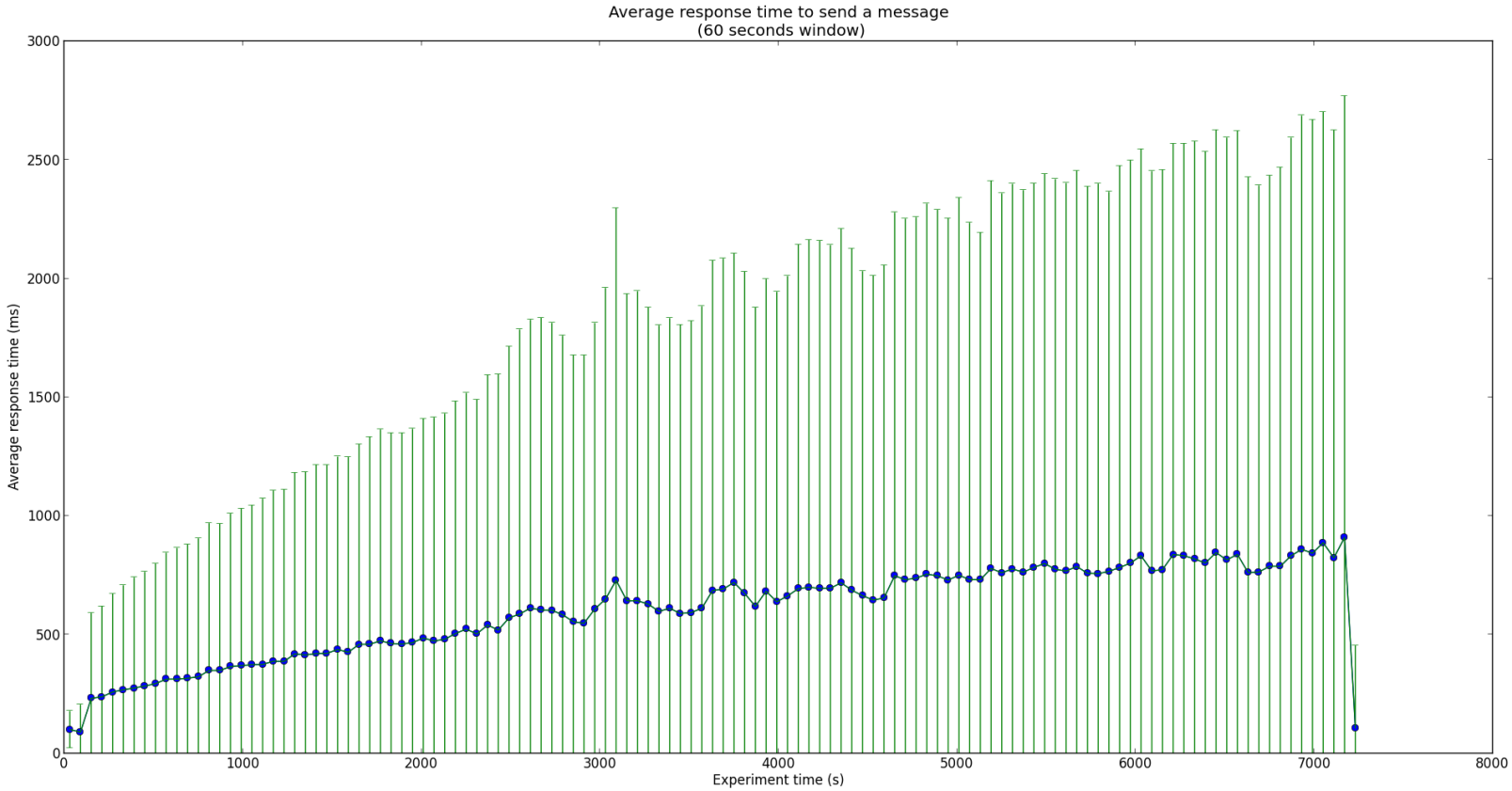
System trace - Summary

- 50 Larry clients
- 15 Tola-Maruja (client-server) clients
- 5 Rick (server) clients
- 15 Carl (client) clients
- 2 hour running time
- 2 servers, 25 threads per server, 2 clients per thread

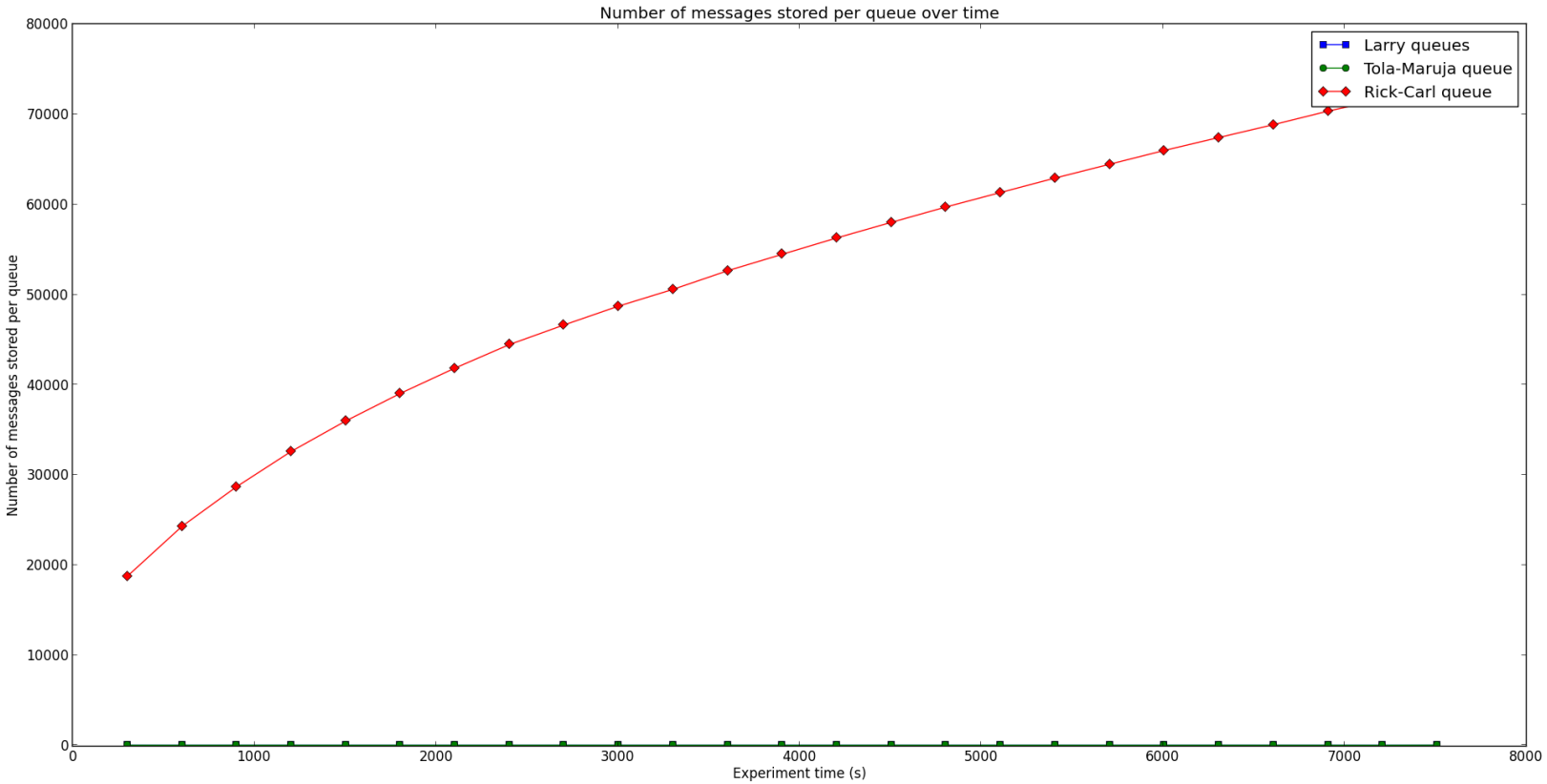
System trace - Read response time



System trace - Send response time



System trace - Database size



Conclusions

- The biggest factors affecting the system performance are the number connected clients and their distribution in the middleware in terms on worker threads.
- The performance of the system in most of the experimental scenarios was found to be significantly noise and therefore not very precise.
- The observed variance of the response time in the different experiments could be explained by the effect of concurrency in the system.
- In the dryad environment, the usual response time was 50 *ms* for both read and send operations in average.
- The response time for operations in the amazon cluster with a load of around 500 clients is 500 *ms* in average for send and read operations.

The End