Performance Evaluation

Star topology

Deploy 10 peers on one machine, and send queried repeatedly.

The average response time (ms) of 5 queries is shown below:

#of peers	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
1	15201									
2	15232	15157								
3	15128	15134	15138							
10	15138	15142	15224	15253	15147	15102	15174	15154	15136	15223

From the result we can see that there is no obvious different in average time the system takes when 1 peer is running from when 10 peers are running.

One possible reason is that the queries processed by multiple threads, so the workload is low.

2D mesh topology

In 2D mesh topology, we test the same average response time in million second as star topology, the result is shown below:

#of peers	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
1					15620					
2		15957			16003					
3	16020	15934	16038		15880					
10	15738	1842	16024	16093	16047	16131	15970	15774	15897	15870

From the result we can see that due to the 2D mesh topology, the average response time is larger than the star topology.

One possible reason is that in 2D mesh topology, each peer has more neighbors, it broadcasts queries to all neighbors, which will cause message forwarding repeatedly.