Performance Evaluation
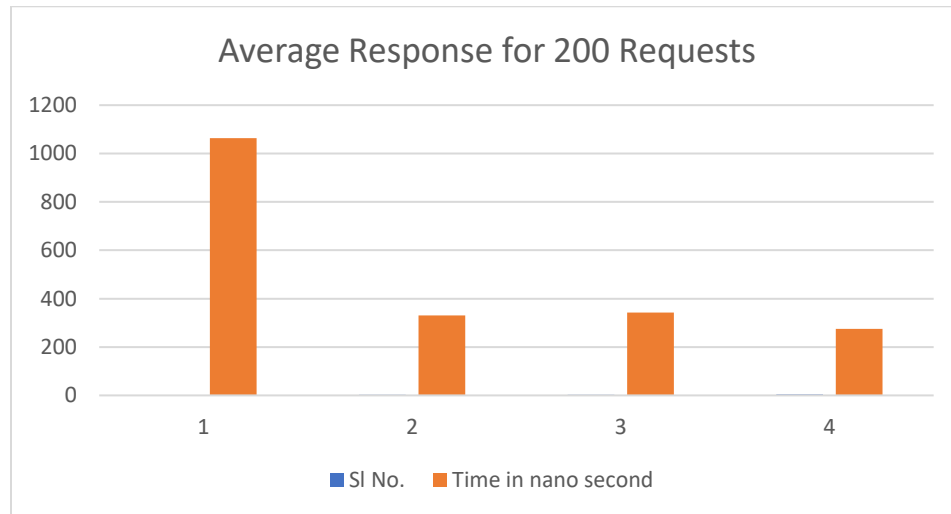
Linear Topology:
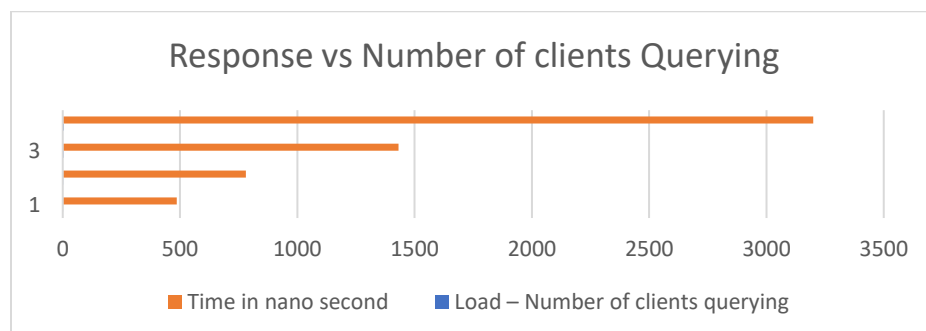
1. Average response seen by a client – repeated 200 times.

Sl No.	Time in nano second
1	1064
2	331
3	343
4	275

Average Response for 200 Requests

2. Client query response time for a search served by the immediate super node is 4137273 nano second and that served by another super peer is 55210177 nano second. This behavior is obvious as, immediate super is chosen first to query by the leaf node(client) and if it cannot serve the clients request, it forwards the query to other super peers.
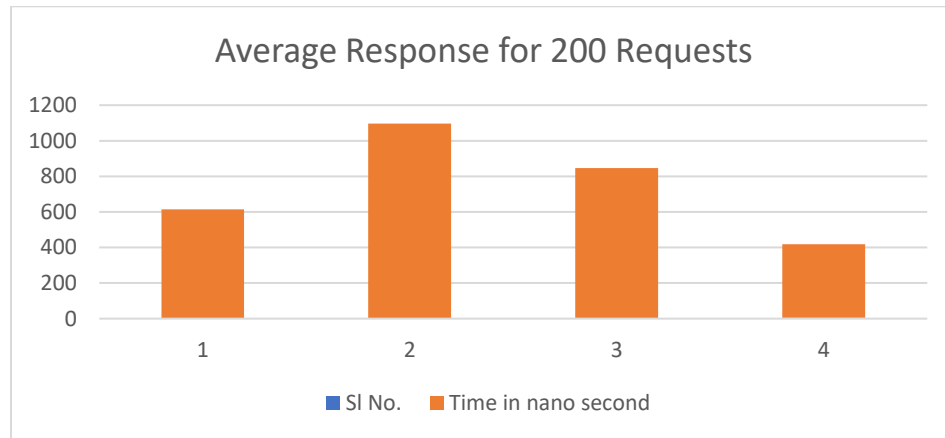
3. Performance with varying system load:

Load – Number of clients querying	Time in nano second
1	486
2	780
3	1432
4	3200

Response vs Number of clients Querying

All to All Topology:

1. Average response seen by a client – repeated 200 times.

Sl No.	Time in nano second
1	614
2	1094
3	844
4	415

Average Response for 200 Requests

2. Client query response time for a search served by the immediate super node is 9578198 nano second and that served by another super peer is 122375827 nano second. This behavior is similar to that of linear topology. Albeit, the time taken for querying is more when compared with linear topology.

3. Performance with varying system load:

Load – Number of clients querying	Time in nano second
1	721
2	1280
3	1352
4	2200

Response vs Number of Clients Querying
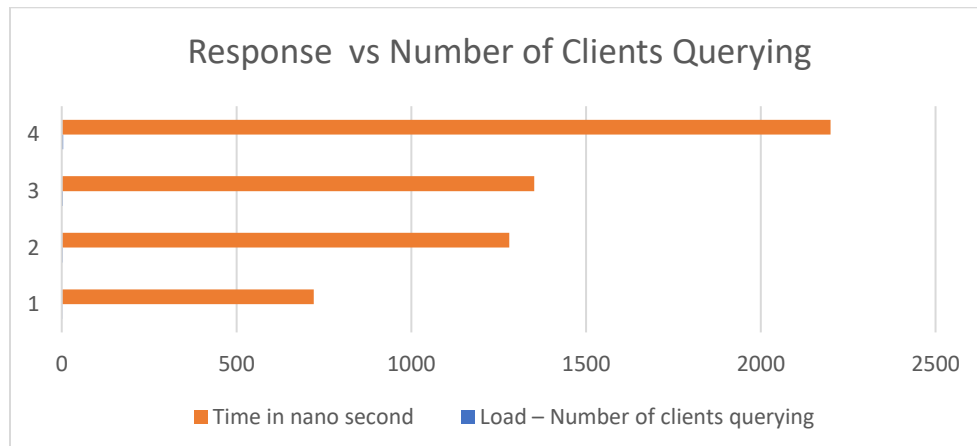
Comparison:

From the above performance log, we can conclude that performance of linear topology is better than all to all topology. All to all topology suffers from complex query passing, i.e it sends query to n-1 peers and waits for the response from all of them.

Although, in real-world scenario all to all topology is preferred because of its robustness. It ensures that even if any peer stops functioning in the network, a peer can still query other super peers for the file, whereas in linear topology if one node fails the entire network experiences downtime.