

Performance Evaluation

Total number of peers : 10
Topologies implemented : Linear and star topology
Files with data size : varying from 1kb to 10kb

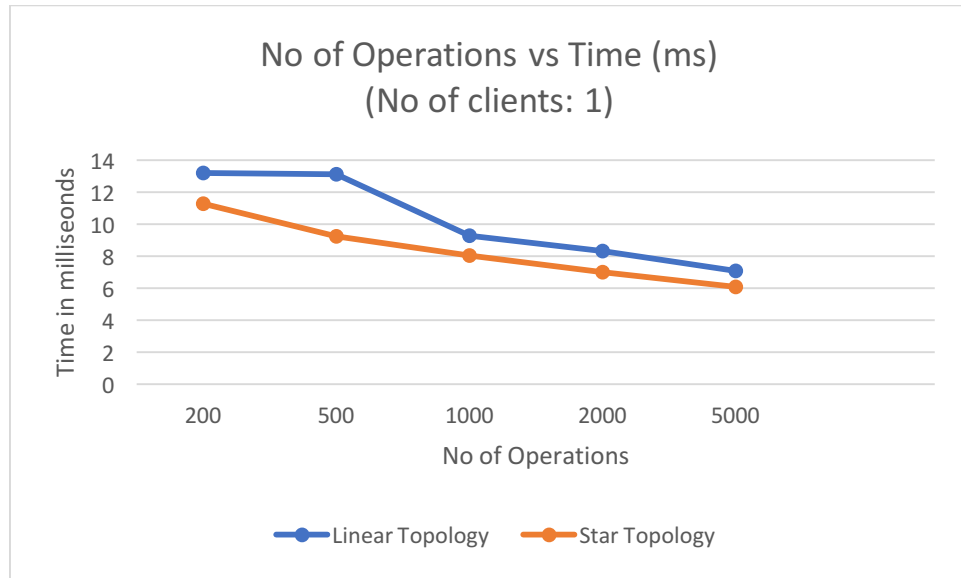
By increasing number of operations:

Performance of a system is measured by generating 200 sequential request from a single client. And then varying the number of operation for concurrent requests. First a single client is run to make 200 requests for searching and downloading file from all the peers where file is located.

Then number of operations are increased gradually and their average time with single requestor are noted. Following results are observed for clients performing various operations

No of Operations	Average time in milliseconds (1 client)	
	Linear	Star
200	13.21	11.275
500	13.128	9.256
1000	9.263	8.054
2000	8.324	6.994
5000	7.0942	6.0662

A line graph is plotted using the above observations



X-axis: Number of operations:
Y-axis: Average time taken to process x requests

Observation -

- Star topology is faster than linear topology.
- As number of request increases, average time to execute also decreases.

By increasing number of clients:

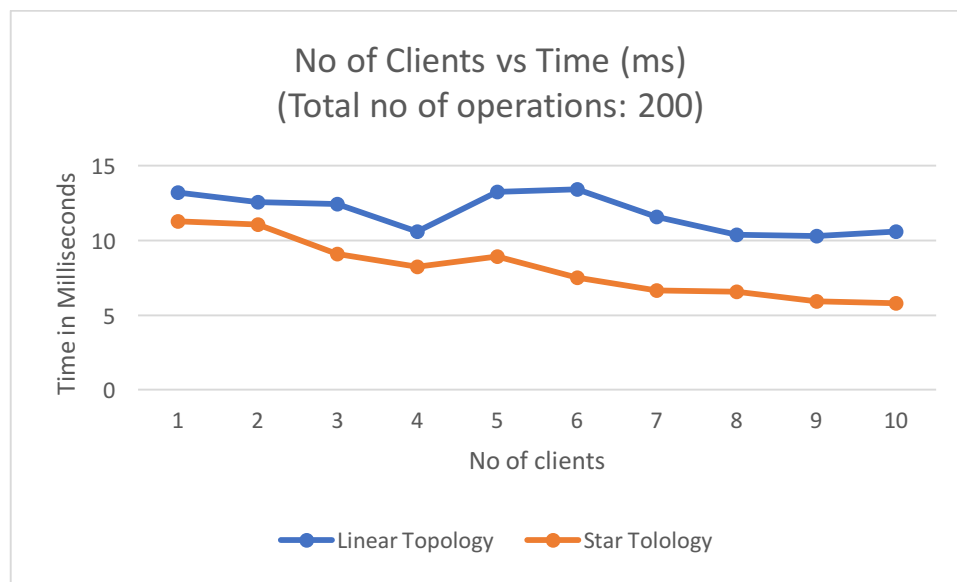
Performance of a system is measured by generating 200 sequential request from a multiple client for concurrent requests. First a single client is run to make 200 requests for searching and downloading file from all the peers where file is located.

Then number of clients are increased gradually and their average time with single requestor are noted. Following results are observed for clients performing various operations

No of clients	Average time in milliseconds (200 requests)	
	Linear	Star
1	13.21	11.275

2	12.55	11.07
3	12.43	9.095
4	10.575	8.235
5	13.24	8.91
6	13.425	7.51
7	11.585	6.64
8	10.395	6.565
9	10.28	5.92
10	10.615	5.795

A line graph is plotted using the above observations



Observation -

- Star topology is faster than linear topology.
- As number of request increases, average time to execute also decreases.

Linear Topology

Advantages of a Linear Topology

1. Easy to connect a computer or peripheral to a linear bus.
2. Requires less cable length than a star topology.

Disadvantages of a Linear Topology

1. Entire network shuts down if there is a break in the main cable.
2. Terminators are required at both ends of the backbone cable.
3. Difficult to identify the problem if the entire network shuts down.
4. Not meant to be used as a stand-alone solution in a large building.

Applications:

1. In Local Area Network
2. In small classroom/labs or small workstation

Star Topology

Advantages of a Star Topology

1. Easy to install and wire.
2. No disruptions to the network when connecting or removing devices.
3. Easy to detect faults and to remove parts.

Disadvantages of a Star Topology

1. Requires more cable length than a linear topology.
2. If the hub, switch, or concentrator fails, nodes attached are disabled.
3. More expensive than linear bus topologies because of the cost of the hubs, etc.

Applications:

1. Military mining & mobile application

Conclusion:

1. In comparison with assignment 1 results, P2P file sharing system, if number of request per seconds is less then we can say that it is faster than Gnutella, but as number of request increases Gnutella is faster as it can directly check for file with another peer instead of having central index.
2. In this assignment, we can say that star topology is faster than linear, because in star topology one peer is connected to all other peers, so maximum neighbor request forwarding count will be 2, that can vary to 'n' in linear topology.