Project-3 Bonus

Failure model

Abstract: The failure model that we have implemented is based on the principles stated below:

- In step-1 we are building our p2p pastry and initializing the Boss in the Boss module.
- Then we are calculating the number of nodes that are to be deleted.
- We randomly select nodes to kill until the nodes to be killed counter is zero.
- After this we will again call the Boss to update the state of the pastry after this deletion.
- The state of the pastry is update in the Node module.
- Each node gets updated leaf sets, neighbor set and routing table.
- The above is accomplished in the Node module. Functions for updating the leaf sets, neighbor set and routing table are created in the Node module.

Results:

Table-1

Number of nodes	Number of requests	Percent to kill	Average Hop Count
100	**25**	**10**	**1.3568**
100	**25**	**20**	**1.4275**
100	**25**	**40**	**1.3480**
100	**25**	**80**	**1.4560**

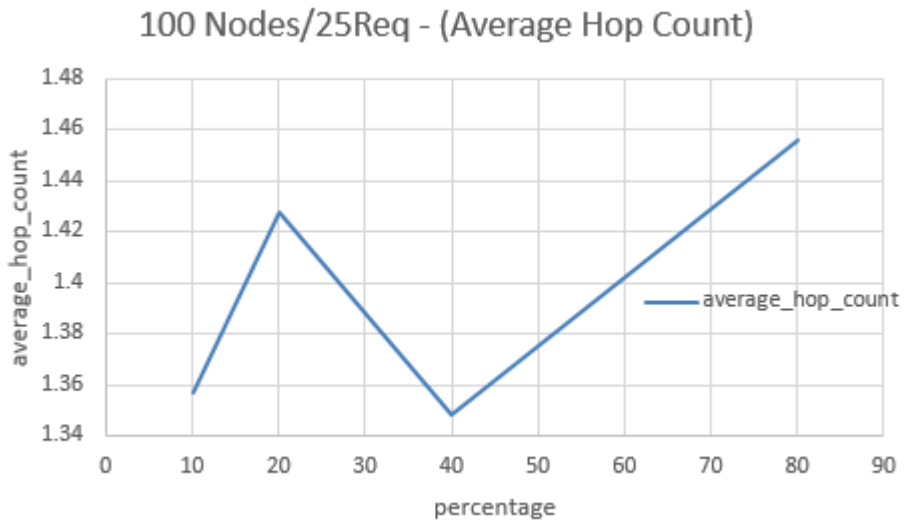

Fig. 1 Graph between average hop count and percentage nodes to kill for 100 nodes

Table-2

Number of nodes	Number of requests	Percent to kill	Average hop count
400	**25**	**10**	**1.2903**
400	**25**	**20**	**1.3208**
400	**25**	**40**	**1.3525**
400	**25**	**80**	**1.3860**

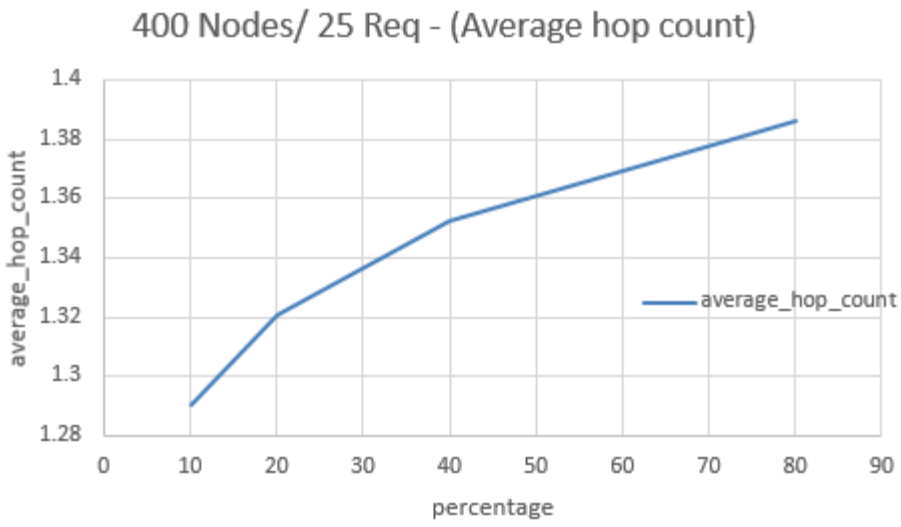

Fig. 2 Graph between average hop count and percentage nodes to kill for 400 nodes

Table-3

Number of nodes	Number of requests	Percent to kill	Average hop count
800	**25**	**10**	**1.2570**
800	**25**	**20**	**1.2730**
800	**25**	**40**	**1.3073**
800	**25**	**80**	**1.3262**

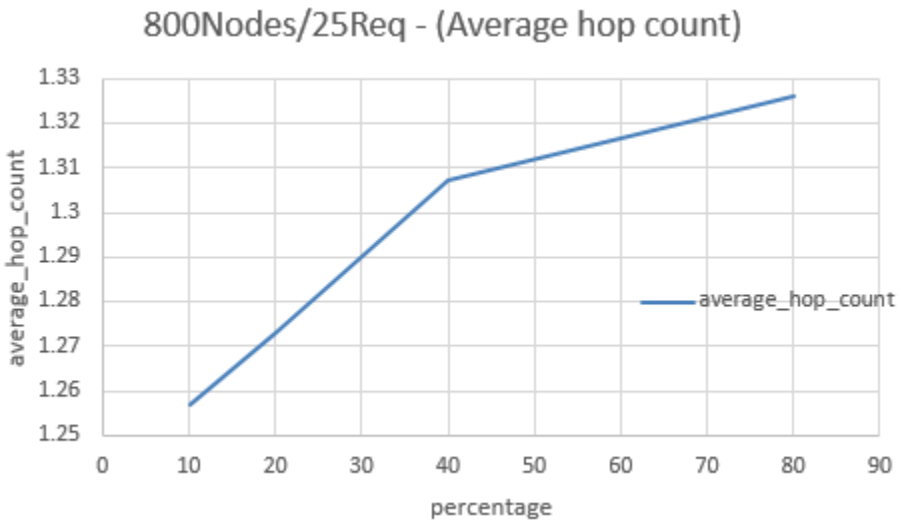

Fig. 3 Graph between average hop count and percentage nodes to kill for 800 nodes

Conclusion: After implementing the failure model we noticed that as we increase the percentages of the nodes to kill the average hop count increases almost linearly. This observation is seen for a network which have more than 100 nodes. For a network of 100 nodes or less even in the worst case the dht routes almost in the same time.