

Project 3: Pastry

Mohammed Haroon Rasheed Kalilur Rahman

6751 2967

mkalilurrahman@ufl.edu

Ariz Ahmad

7111 2167

ariz.ahmad@ufl.edu

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1 Description

There is one master actor, and the number of child actors is as many as is provided in the input. A unique nodeId (of length 8) is generated for each of the child actors. Each digit in the nodeId ranges in the ranges from 0 to 5 (both inclusive). Our program can, in theory, run on a system of 1,679,616 (6^8) nodes.

Leaf nodes, Neighbor nodes and routing tables are set for each of the nodes according to the pastry algorithm. Once the network has been set up, routing is performed for each request. After each request is converged for each actor, the total convergence is reached. The average hop count can be calculated using the formula below:

$$\text{Averagehopcount} = \text{Totalhopcount} / \text{totalnumberofrequests}$$

2 What is working

All the requests are being successfully carried out by the algorithm. The average hop count can be calculated using the formula above. The average hop count increases with increase in the number of nodes. Also, we observe that the average hop count increases logarithmically, in terms of $\log_6 N$.

3 Largest network managed

We managed to run our program on a system of 25,000 nodes on our local system.

4 Results

Requests = 10

Nodes	Average Hop Count
10	0.9
100	2.012
500	2.771
1000	3.161
5000	3.840
10000	4.170
25000	4.608