COP5615 – Distributed Operating System Principles

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Project 3 - Pastry

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USAGE

"dotnet fsi /langversion:preview Pastry.fsx {number of nodes} {number of requests} [options]"

Options:

{1}: 1 to print detailed Statistics

WHAT IS WORKING

- We have successfully implemented Pastry APIs for network join and routing as mentioned in the paper.
- The neighborhood set for the first set of M nodes get initialized with all the other nodes present in the said set. Although in the pastry paper, the neighborhood set initialization for a new node is done geographically, we implement it by selecting a random node from the existing network and initialize with its neighborhood set.
- Each node sends a request per second numRequests number of times.
- The constants in the program Pastry.fsx, b(base of NodeId), l(length of NodeId) and M(Size of the leaf and neighborhood set) can be modified (b should be within 2 to 10) to check the results with multiple values.
- For the final output: By default, we print the average number of hops traversed to deliver a message. For a detailed statistic the third parameter can be entered as 1. This groups the messages delivered with respect to number of hops taken and displays the info.

LARGEST WORKING NETWORK

The largest network for which the program works are with values number of nodes= 9000, number of request = 2. The average number of hops it takes is 3.638.

GRAPH SHOWING THE AVG HOPS FOR DIFFERENT VALUES OF b AND l