

COP5615- Distributed Operating Systems

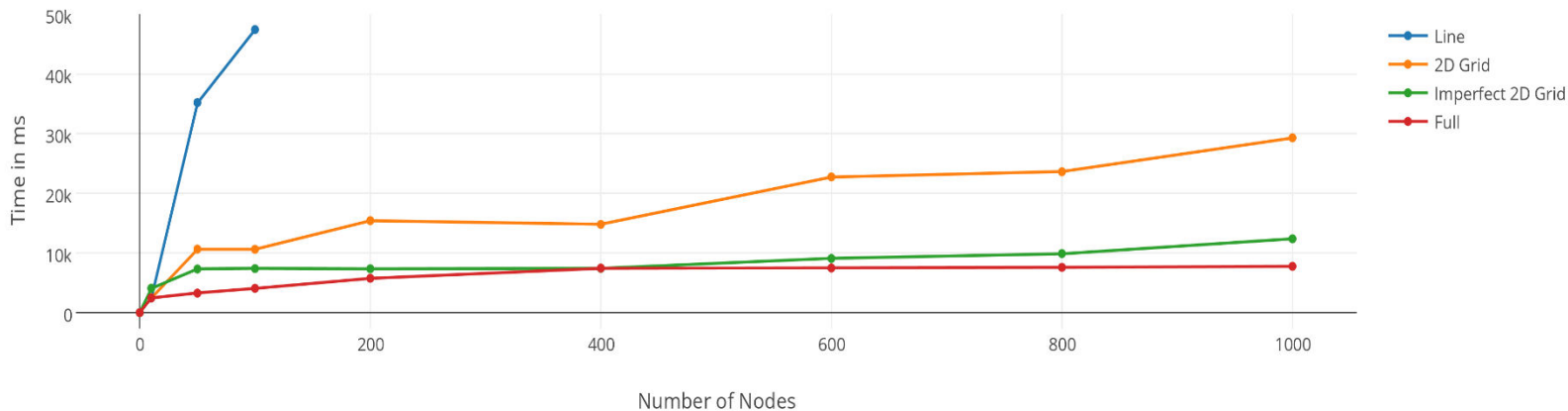
Project 2 Report – Gossip Simulator

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1 CONVERGENCE TIME V/S NUMBER OF NODES FOR GOSSIP ALGORITHM

Time of Convergence with respect to Number of Nodes in Gossip Algorithm

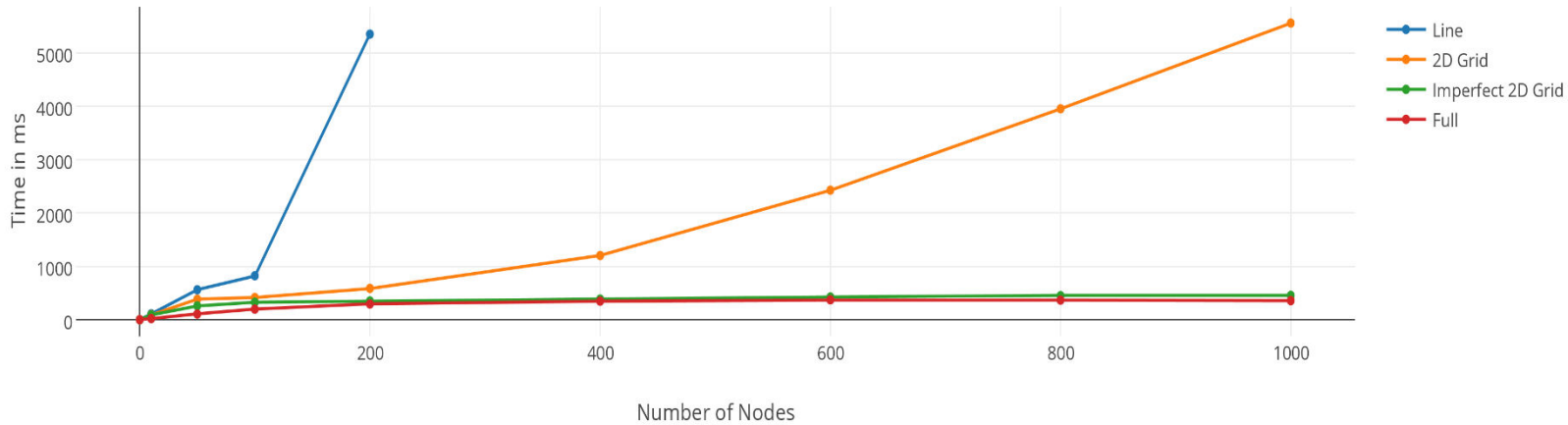


Source: Project2 Gossip NonBonus

As evident from the above plot, network with full topology gives the shortest convergence, closely beating imperfect 2D topology. Then follow 2D grid and line topologies. Line topology has the longest convergence time which is roughly $O(n^2)$. Full topology being the fastest seems to have an $O(\log n)$ convergence.

2 CONVERGENCE TIME V/S NUMBER OF NODES FOR PUSH-SUM ALGORITHM

Time of Convergence with respect to Number of Nodes in Push-sum Algorithm



Source: Project2 Push-Sum NonBonu

Similar to gossip algorithm, full topology gives the fastest convergence for push-sum algorithm also. Then comes imperfect 2D grid and 2D grid. Slowest being line topology.

For push-sum algorithm, 2D grid topology comes up with a regularly increasing graph where it's convergence gets slower with increasing nodes.