

# Project 2 – Gossip propagation

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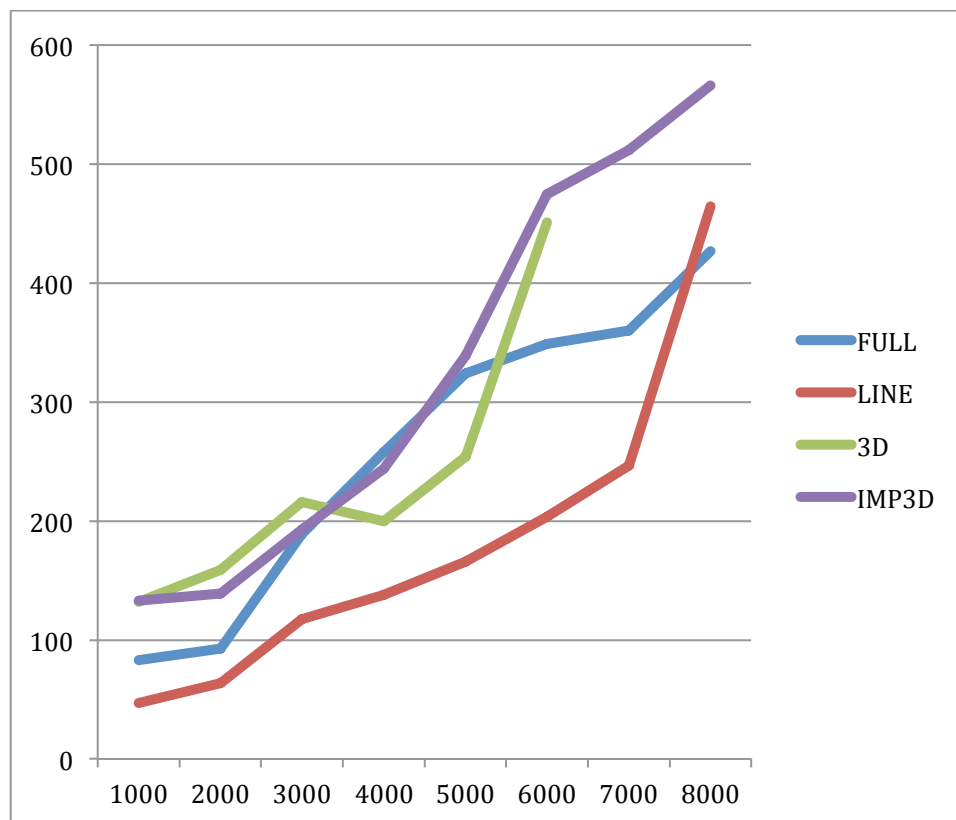
## Gossip Algorithm

Parameters:

- Number of Gossips: 1
- Number times to hear gossip: 10

Observations:

- We can observe that the slowest topology is line, giving the largest convergence times (Divided by 100 in the graph to make it fit with the others) following an exponential curve
- Among the others, they seem to follow a  $\log(n)$  curve.
- The experiments showed that the convergence times as a function of the number of nodes is not very stable since messages are sent randomly, therefore the convergence times vary between runs. The posted runtimes are an average of three runs.



## Push-Sum Algorithm

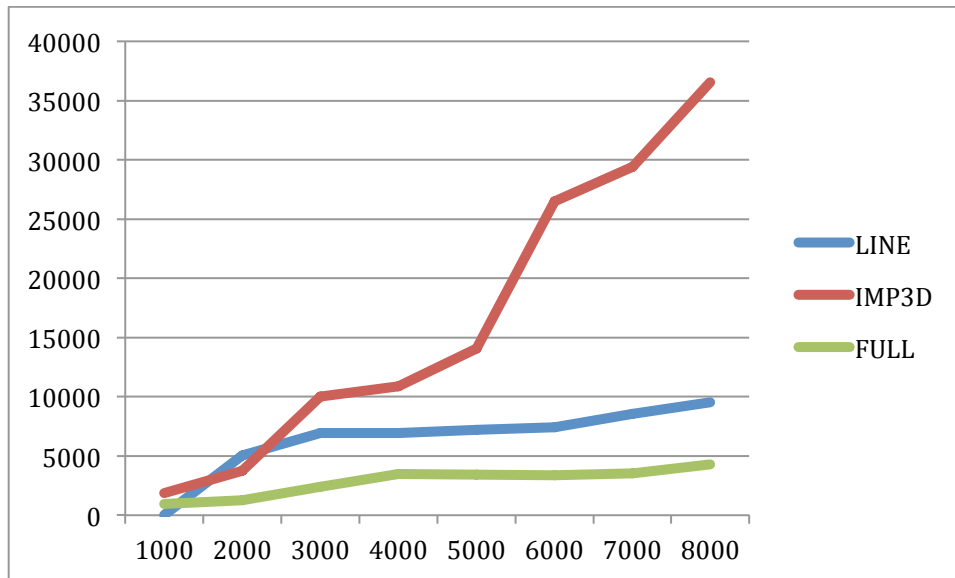
Parameters:

- Convergence = 3

Observations:

- Full, and line show a  $\log(n)$  curve, the line curve is divided by 10 to fit in the plot.
- The biggest 3D network to work was only of 200 nodes. The data in showed separately on a chart.
- We observed through out the push-sum experiments that it takes some time for the first nodes to converge to the answer but after a percentage of them is finished then rest of them can complete the task faster taking advantage of the computation of previous already converged nodes.

Results:



ALGORITHM	TOPOLOGY	NODES	TIME(ms)
PushSum	3D	100	4789
PushSum	3D	200	22488
PushSum	3D	300	48561