

**COP5612 – Fall 2017**  
**Project 2 – Gossip Simulator Report**  
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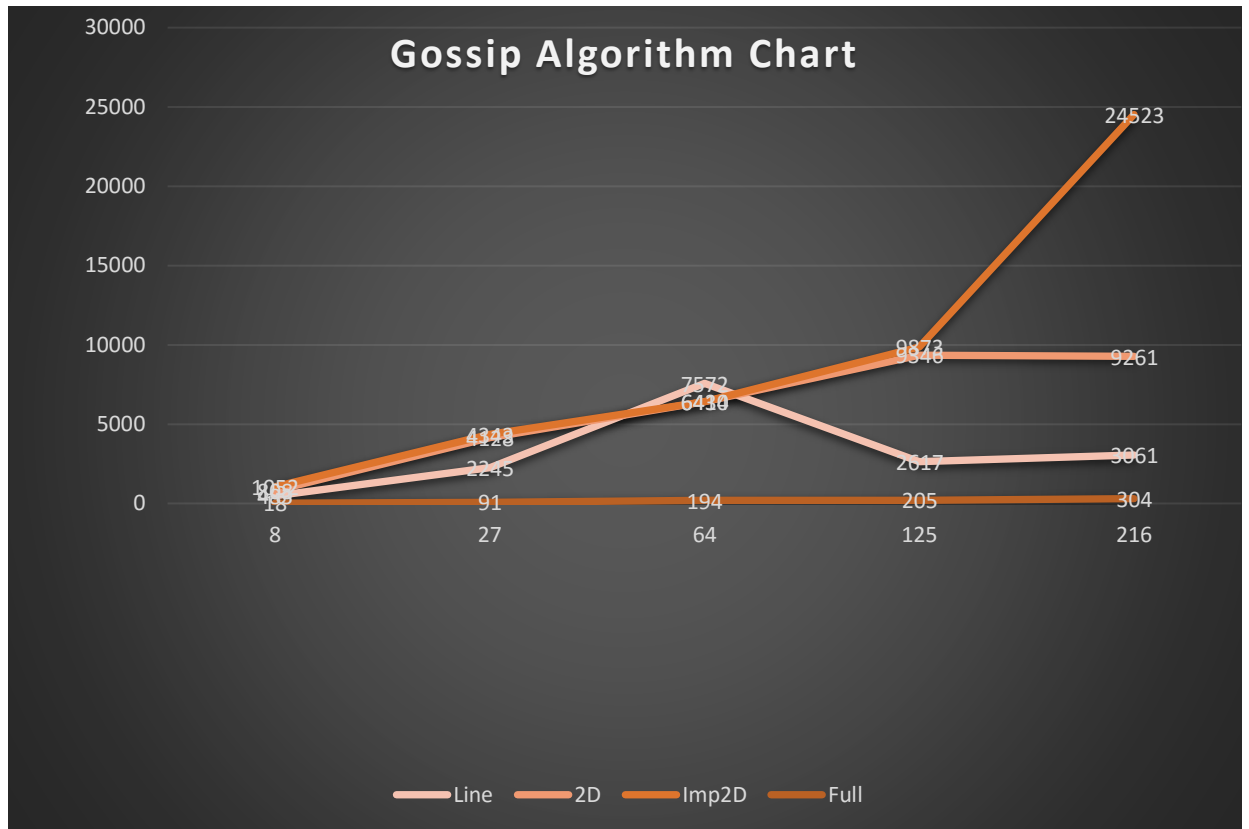
We have run the program for all possible combinations of (topology, algorithm) and for the below mentioned number of nodes we have run the program 3 times and considered average of the 3 results to plot the graphs.

**Observations:**

1. The order in which convergence takes time for a typical topology as per our observation in the order from fast to slow is:  
Full (fastest) < Imperfect2D < 2D < Line (slowest)  
Thus, we can say that, the more number of active neighbors you have, the faster will be the convergence.
2. The order of convergence time for an algorithm as per our observation:  
Gossip < Push-Sum  
Thus, we can say that, compared to a simple self-counter for Gossip, Push-Sum implements a stringent check on message variation and accordingly increments self-counter.
3. As number of nodes increase, for a given time 't' the convergence rate achieved in time t:  
Full (most) < Imperfect2D < 2D < Line (least)  
This is mainly because the topologies convergence time discussed in observation no 1.

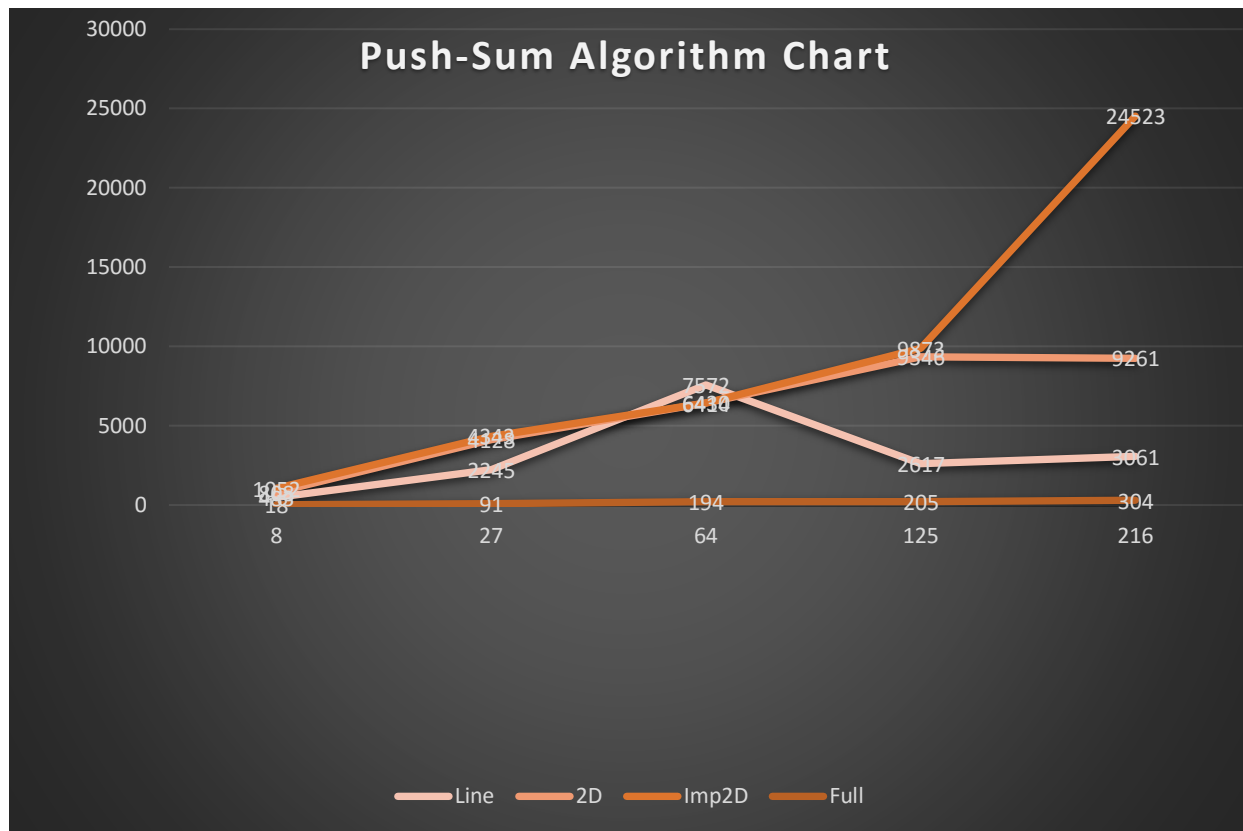
For **Gossip Algorithm** following table and graphs show our observation:

No of Nodes	Line	2D	Imperfect 2D	Full
	Time(ms)	Time(ms)	Time(ms)	Time(ms)
8	17	14	38	6
27	45	57	62	29
64	80	111	95	48
125	224	205	219	111
216	227	515	354	136



For **Push-sum Algorithm** following table and graphs show our observation:

No of Nodes	Line	2D	Imperfect 2D	Full
	Time(ms)	Time(ms)	Time(ms)	Time(ms)
8	483	808	1052	18
27	2245	4128	4343	91
64	7572	6414	6430	194
125	2617	9346	9873	205
216	3061	9261	24523	304



\*\*\*\*THE END\*\*\*\*