Bonus Report

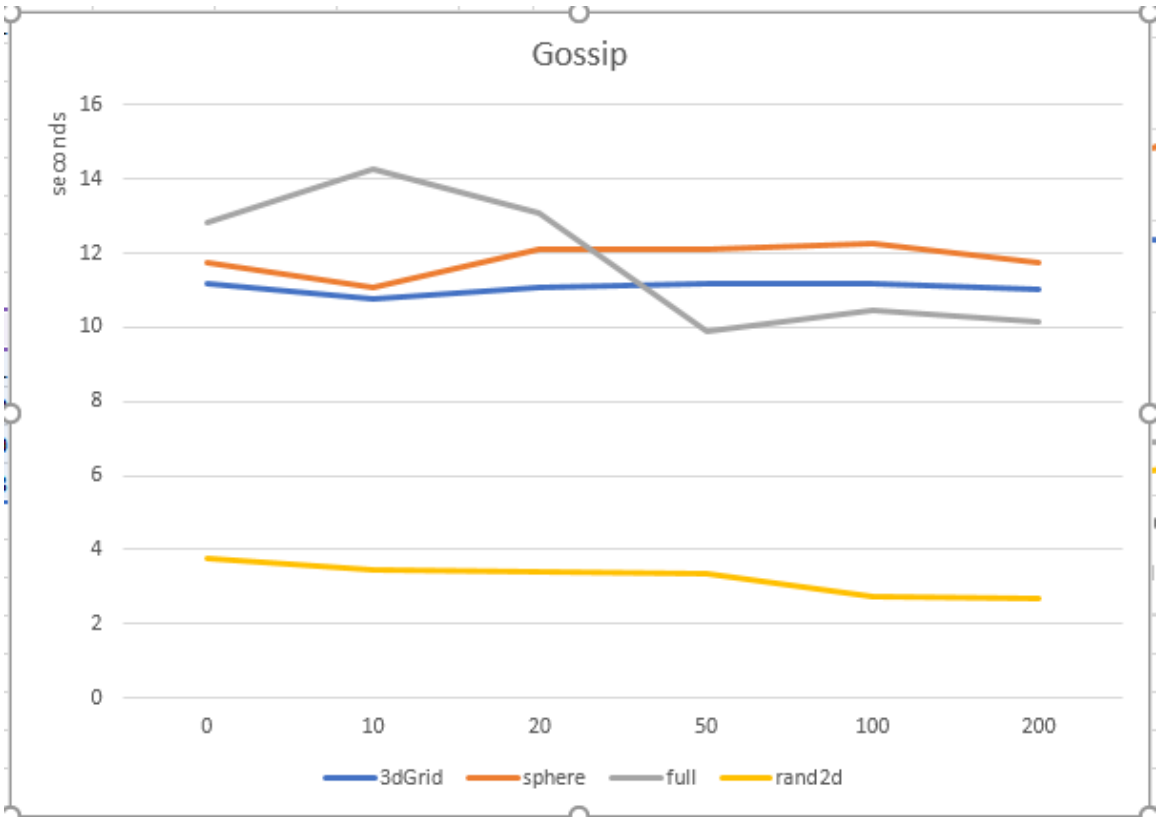
Tried to vary the frequency of nodes failing and capping the value of nodes failure to 10% of total nodes. Below is the details of my finding where Time interval between two node failure is increased from 10-200.

Gossip Algorithm

Topology	Nodes	Max nodes to kill (10%)	Time Interval(ms)	Time with kill(microSeconds)	Normal Case (microSeconds)
3dGrid	50000	0	0		11170000
3dGrid	50000	500	10	10795000	
	50000	500	20	11076000	
	50000	500	50	11185000	
	50000	500	100	11201000	
	50000	500	200	11029000	
sphere	50000	0	0		
sphere	50000	500	10	11091000	11747000
	50000	500	20	12121000	
	50000	500	50	12106000	
	50000	500	100	12246000	
	50000	500	200	11763000	
Full	10000	0	0		
Full	10000	100	10	14290000	12855000
	10000	100	20	13104000	
	10000	100	50	9875000	
	10000	100	100	10436000	
	10000	100	200	10141000	
Rand2d	10000	0	0		
	10000	100	10	3479000	3744000

	10000	100	20	3416000	
	10000	100	50	3370000	
	10000	100	100	2730000	
	10000	100	200	2667000	

Graph:
X-Axis represent time interval between two failing nodes in millisecond.
Y-Axis represent time taken to converge in seconds
It can be noted that in most cases the time to converge decreases as we decrease the frequency of node failure or increase the time interval between node failure.
"Full" topology has maximum variation in convergence.



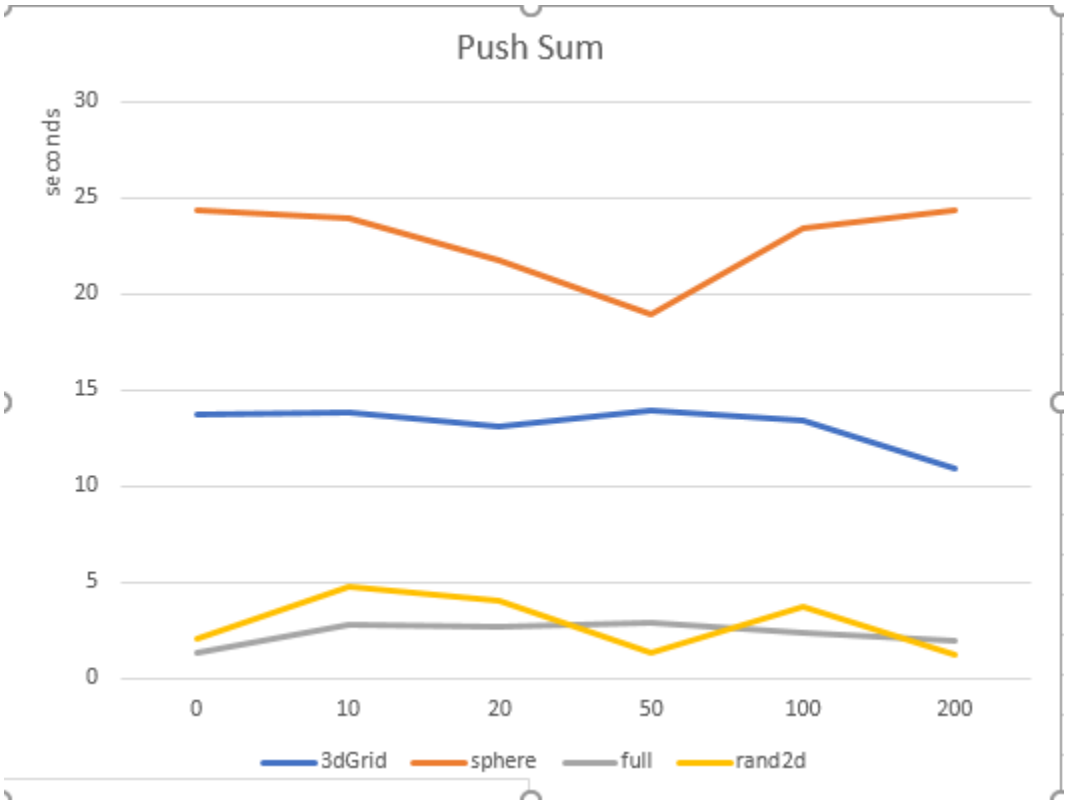
PushSum Algorithm

Topolog	Nodes	Max	Time	Time with	Normal Case	Average Value

y		nodes to kill (10%)	Interval(ms)	kill(microSeco nds)	(microSeconds)	
3dGrid	2000	0	0		13759000	
	2000	20	10	13791000		
	2000	20	20	13073000		
	2000	20	50	13947000		
	2000	20	100	13416000		
	2000		200	10920000		
sphere	2000	0	0		24368000	
sphere	2000	20	10	23962000		
	2000	20	20	21793000		
	2000	20	50	18985000		
	2000	20	100	23463000		
	2000	20	200	24321000		
Full	2000	0	0		1310000	500.6583313703705
Full	2000	20	10	2793000		500.50000000046117
	2000	20	20	2715000		500.4007415357914
	2000	20	50	2886000		500.62350475219824
	2000	20	100	2340000		500.4541112617944
	2000	20	200	1903000		500.5012170550489
Rand2d	15000	0	0		2075000	7435.163605927808
Rand2d	15000	150	10	4727000		7438.999725990332
	15000	150	20	4072000		7340.83254420

						1772
	15000	150	50	1295000		7681.8666332297325
	15000	150	100	3713000		7468.479414090732
	15000	150	200	1201000		7829.927702660597

Graph:
X-Axis represent time interval between two failing nodes in millisecond.
Y-Axis represent time taken to converge in seconds
It can be noted that in most cases the time to converge decreases as we decrease the frequency of node failure or increase the time interval between node failure. There are few exception cases of rand2d where no particular pattern can be observed.
“Sphere” topology has the maximum variation in time converge.
From the table above it can be observed that there is slight variation in the average value as the nodes start failing.



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