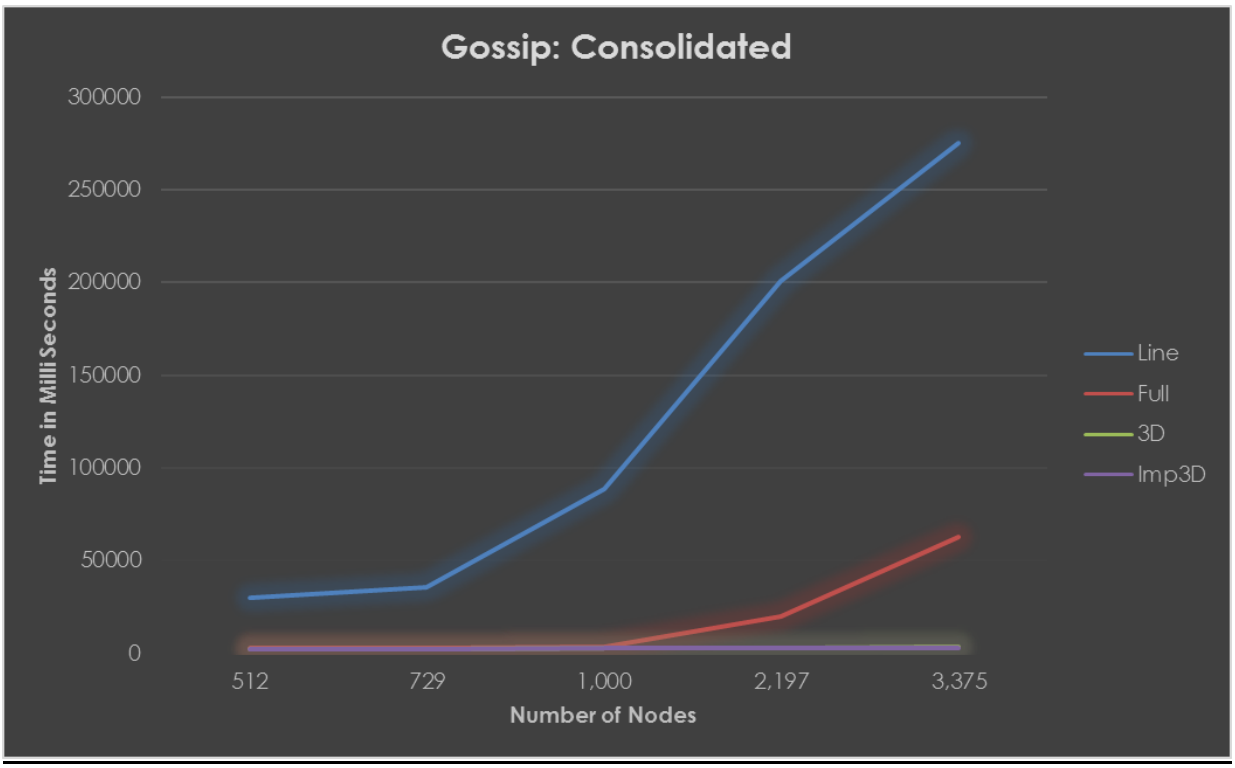
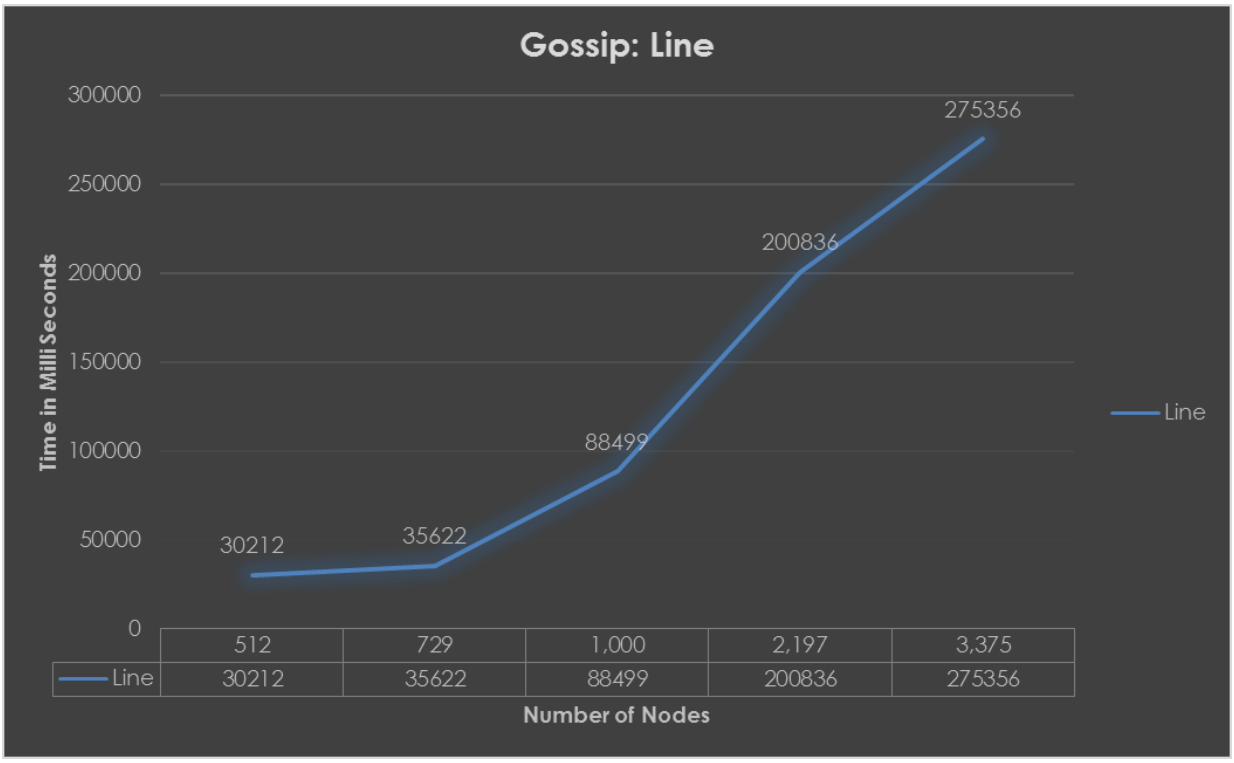
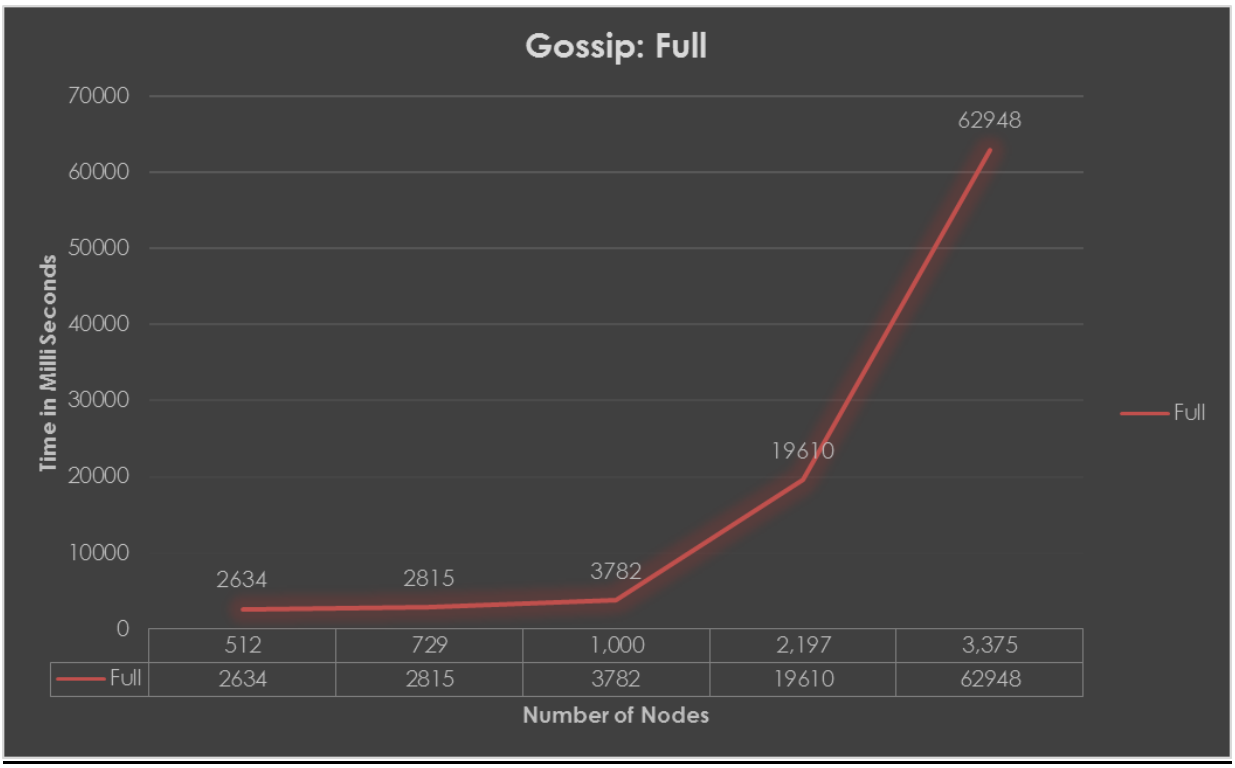
Topology Performance: Gossip & Push-Sum

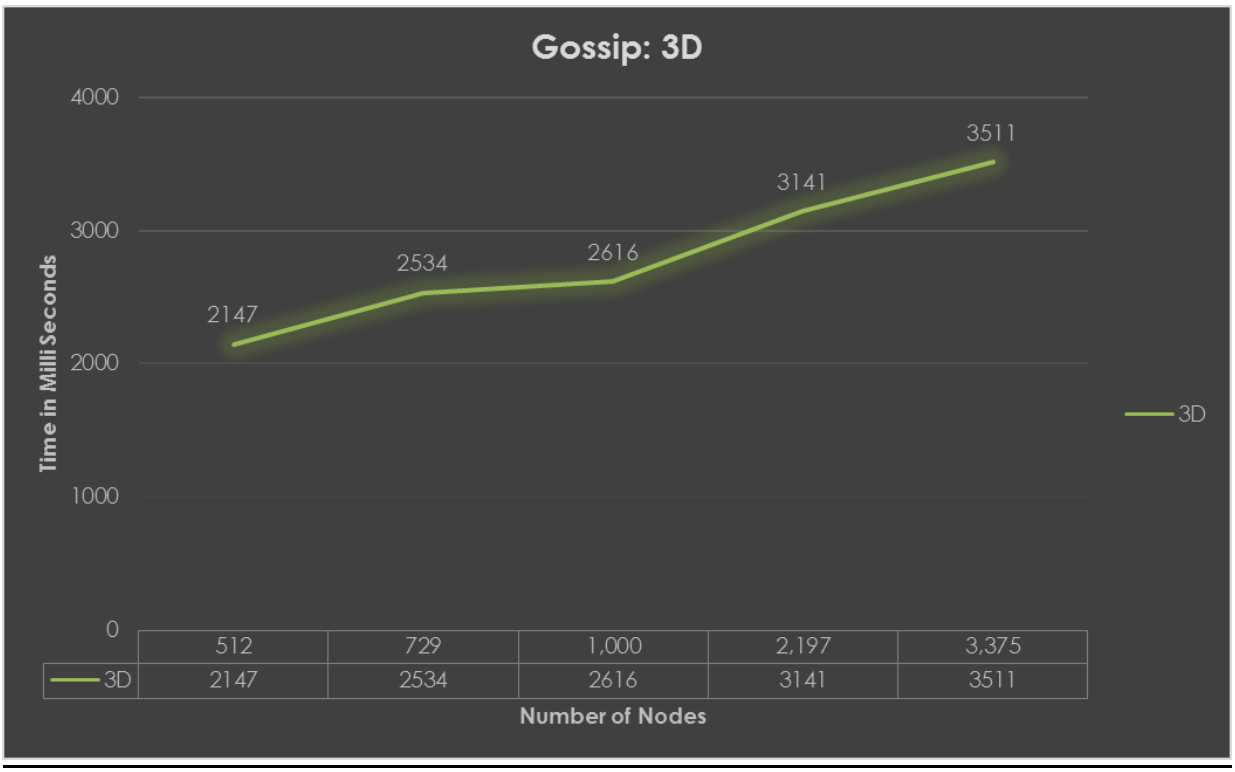
Group Members: ***Umar Majeed***: 96119334 ***Gagan Sharma***: 91349422

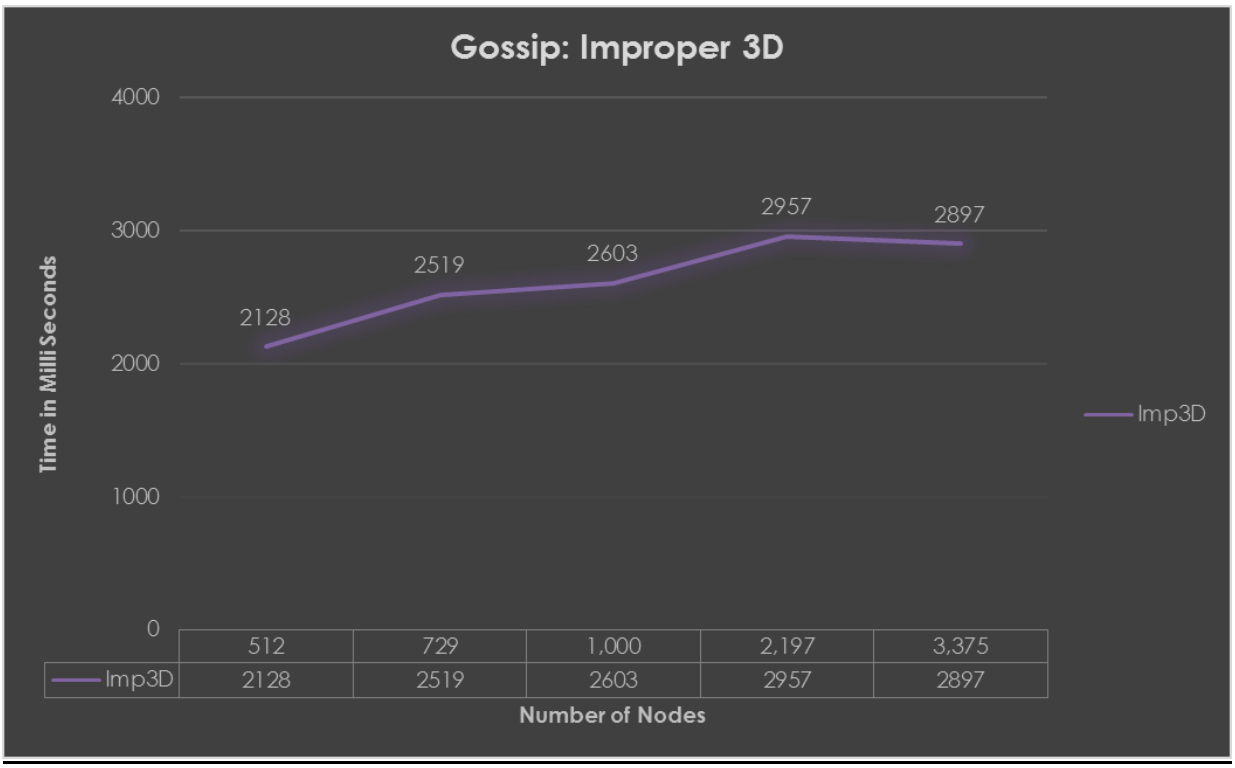
Gossip



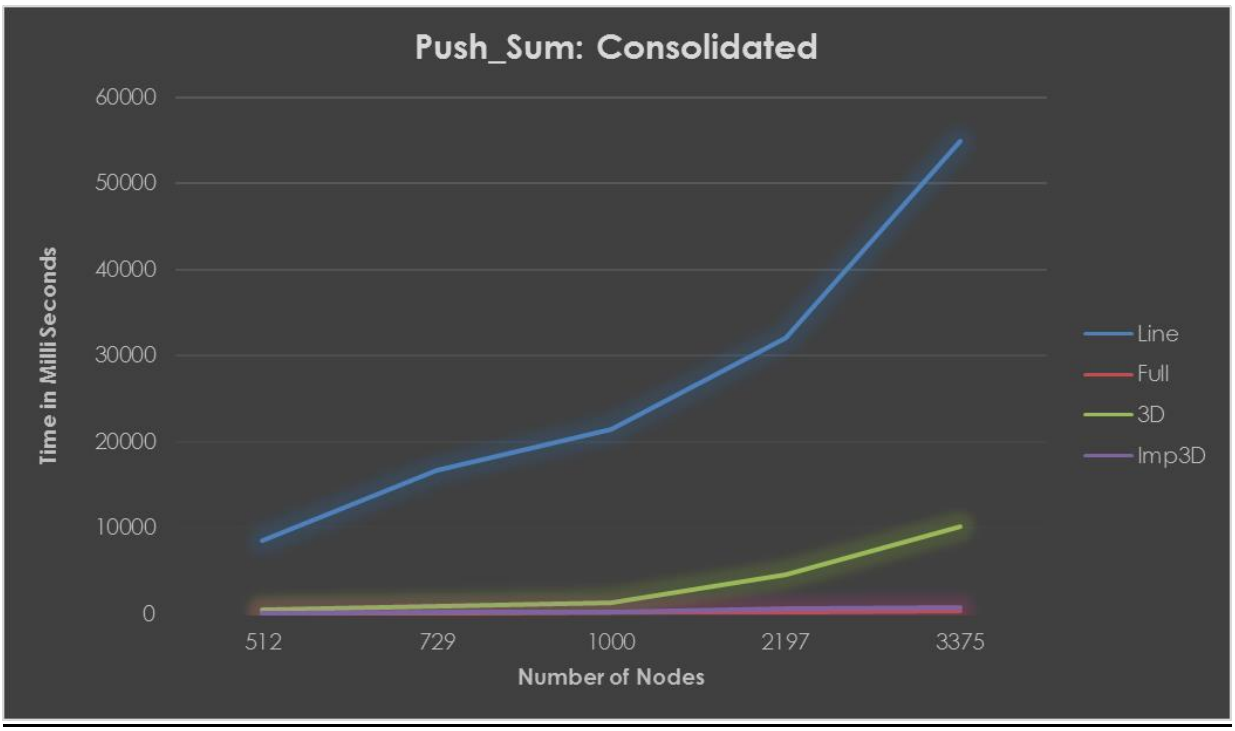


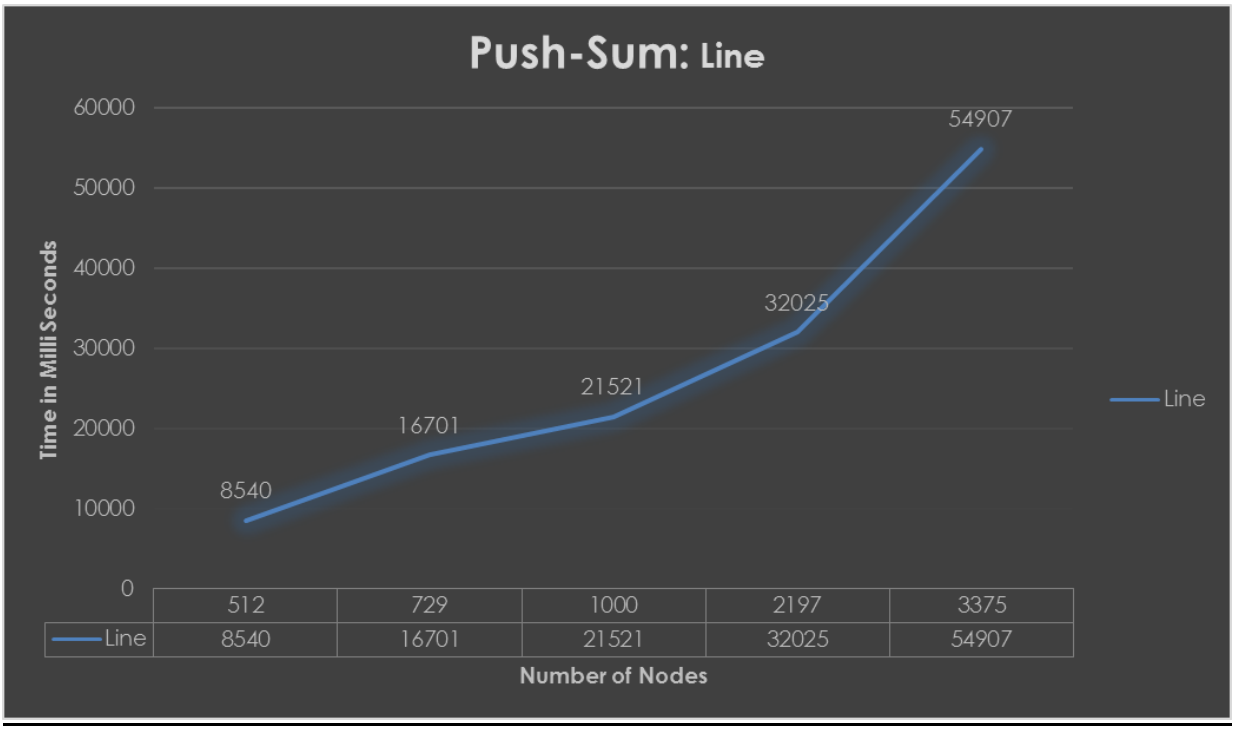

Gossip: Full
70000
60000
50000
40000
30000
20000
10000
0
Time in Milli Seconds
62948
19610
3782
2815
2634
Full
512
729
1,000
2,197
3,375
Full
2634
2815
3782
19610
62948
Number of Nodes

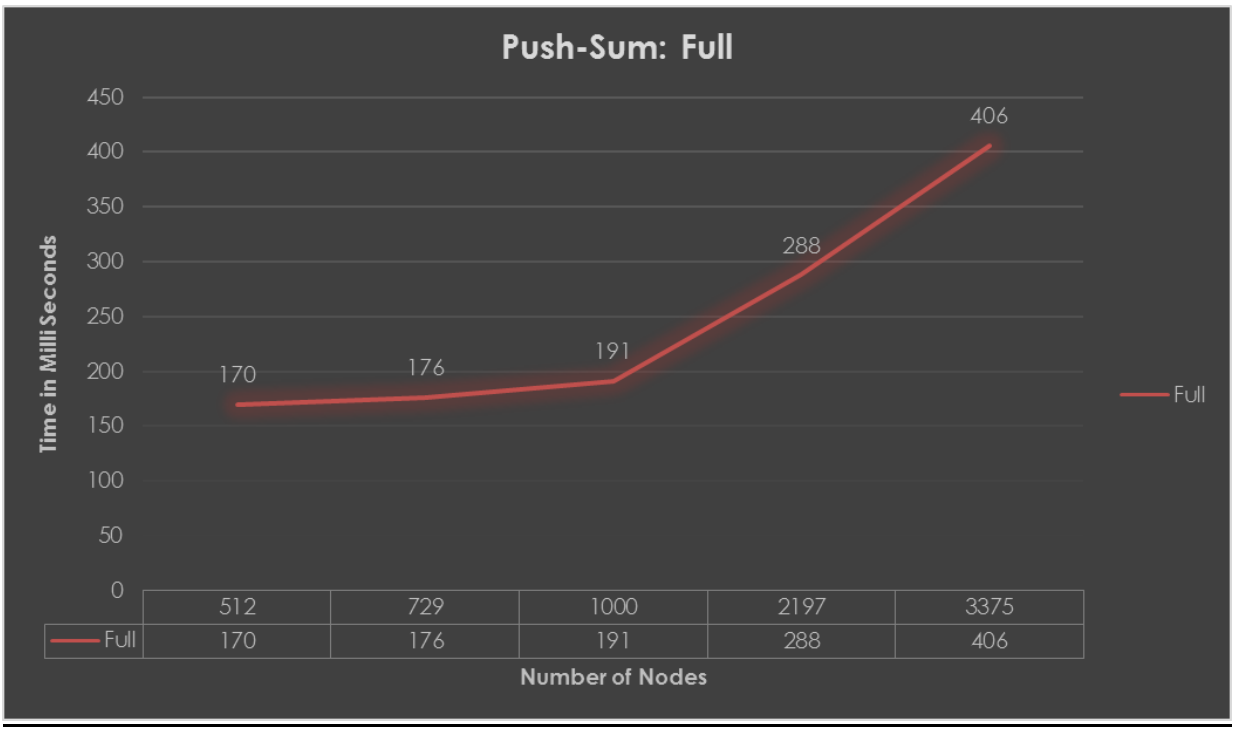

Gossip: 3D
4000
3000
2000
1000
0
Time in Milli Seconds
3511
3141
2616
2534
2147
3D
512
729
1,000
2,197
3,375
3D
2147
2534
2616
3141
3511
Number of Nodes

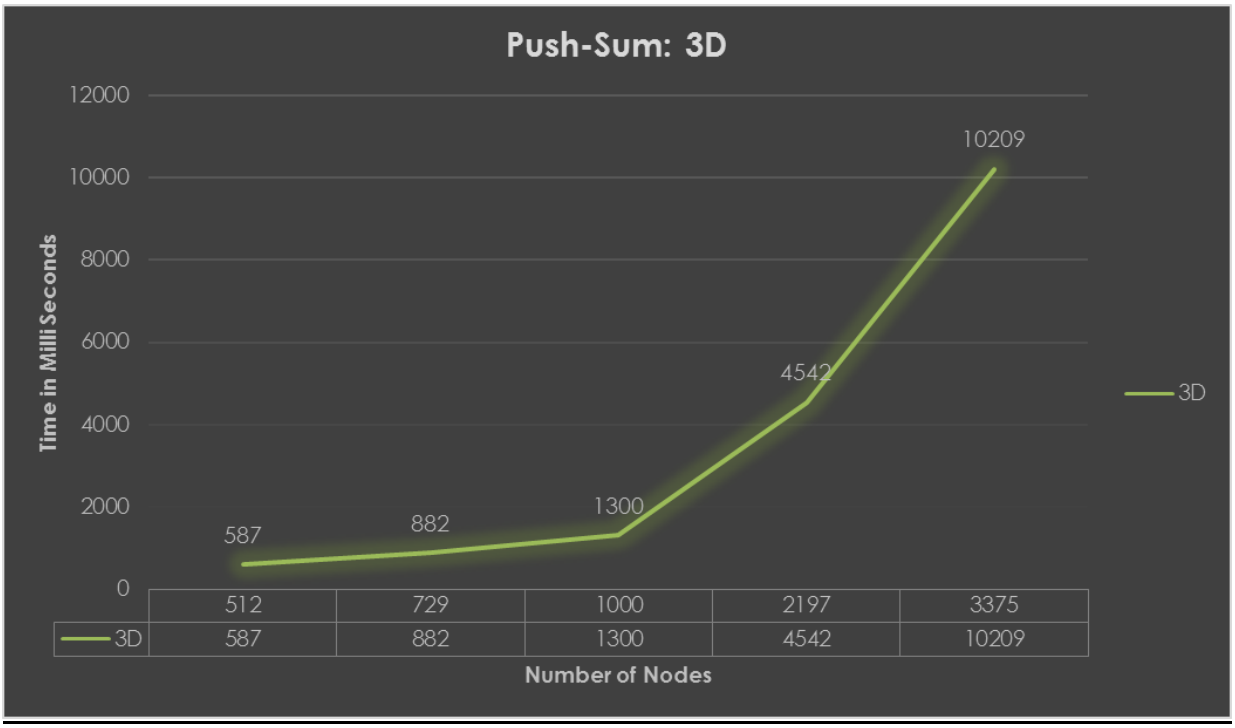

Gossip: Improper 3D
4000
3000
2000
1000
0
Time in Milli Seconds
2128
2519
2603
2957
2897
Imp3D
512
729
1,000
2,197
3,375
Imp3D
2128
2519
2603
2957
2897
Number of Nodes

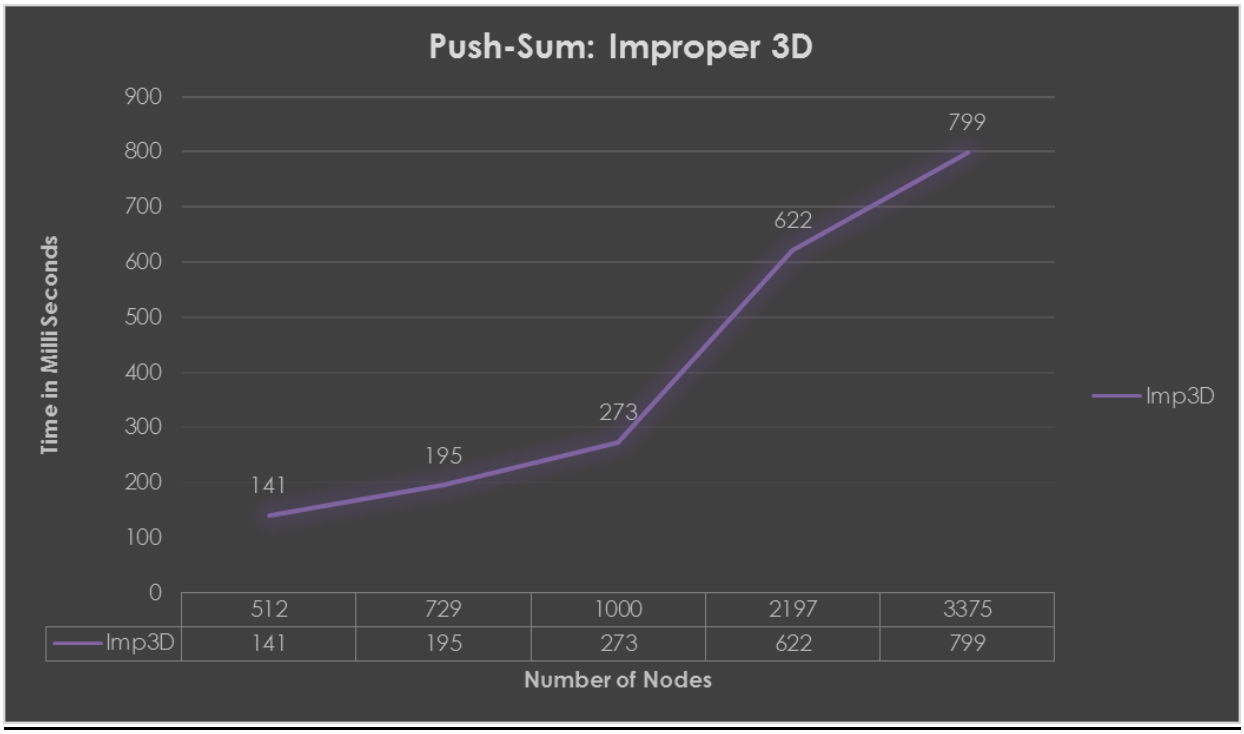
Push-Sum


Push_Sum: Consolidated
60000
50000
40000
30000
20000
10000
0
Time in Milli Seconds
512
729
1000
2197
3375
Number of Nodes
Line
Full
3D
Imp3D


Push-Sum: Line
60000
50000
40000
30000
20000
10000
0
Time in Milli Seconds
8540
16701
21521
32025
54907
512
729
1000
2197
3375
Line
8540
16701
21521
32025
54907
Number of Nodes
Line


Push-Sum: Full
Time in Milli Seconds
450
400
350
300
250
200
150
100
50
0
406
288
191
176
170
Full
512
729
1000
2197
3375
Full
170
176
191
288
406
Number of Nodes


Push-Sum: 3D
Time in Milli Seconds
12000
10000
8000
6000
4000
2000
0
10209
4542
1300
882
587
3D
512
729
1000
2197
3375
3D
587
882
1300
4542
10209
Number of Nodes



Analysis

Tested System Config:

OS: Windows 10

Processor: Intel Core i7

RAM: 6 GB

1) In Gossip as well as Push-Sum, Line topology takes the maximum time to converge.
2) Time taken by Push-Sum was considerably lower than Gossip
3) Executing Full topology with Gossip as well as Push-Sum, takes lesser time, but started giving memory errors as soon number of nodes were more than 7,000
4) 3D and Improper 3D could easily handle 100,000 nodes