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Parallel Programming Project 2

1. Tell what machine you ran this on

   I used the Flip server

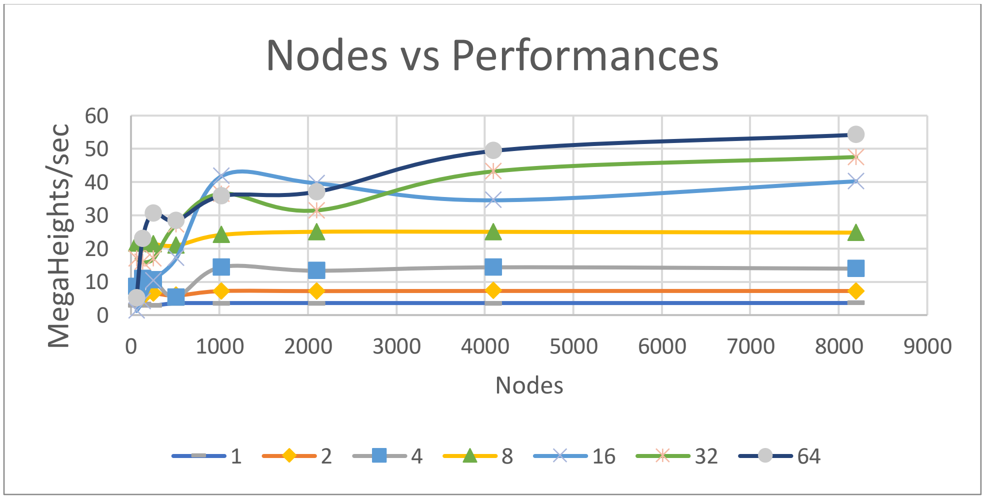
2. What do you think the actual volume is?

   7.67 cubic units (mostly repeated value)

3. Show the performances you achieved in tables and two graphs showing:

Threads\Nodes	64	132	256	512	1024	2096	4096	8196
1	2.946536	3.298542	2.887424	3.553477	3.61653	3.623761	3.613273	3.636905
2	7.256676	5.396581	6.476561	5.862917	7.221295	7.211324	7.257992	7.240433
4	8.466574	10.987203	10.647669	5.434115	14.441375	13.336587	14.366725	13.964723
8	21.504921	21.682478	21.391323	20.914707	24.116907	25.056915	25.041563	24.79998
16	1.250524	4.104032	10.438973	17.13472	41.772717	39.633312	34.520786	40.236206
32	16.965219	15.910194	16.951471	27.29458	36.510967	31.472717	43.21674	47.551956
64	5.194955	23.022259	30.625286	28.391592	35.807693	37.06934	49.369556	54.236301

I. Performance as a function of NUMNODES with colored lines showing different NUMT values



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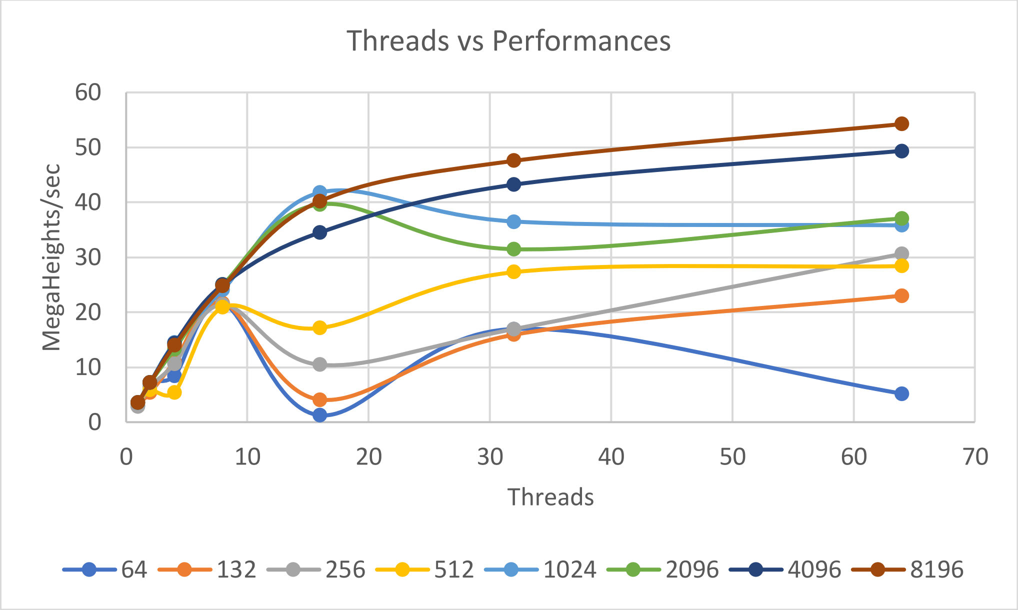
II. Performance as a function of NUMT with colored lines showing different NUMNODES values



4. What patterns are you seeing in the speeds?

The performance increases gradually and remains constant after 32 threads.

5. Why do you think it is behaving this way?

This might be due to the overloaded tasks on the server or there might be less number of cores that are available than that are needed by the program.

6. What is the Parallel Fraction for this application, using the Inverse Amdahl equation?

Fp = (4./3.)*(1. - (1./S)) S = 13.964723/3.636905 (4 cores: 1 core)

= 0.986 S = 3.84

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7. Given that Parallel Fraction, what is the maximum speed-up you could *ever* get?

$S = 1 / (1 - Fp)$

$S = 1 / (1 - 0.986)$

$S = 1 / 0.014$

$S = 71.48$