Adrien Protzel
Protzela

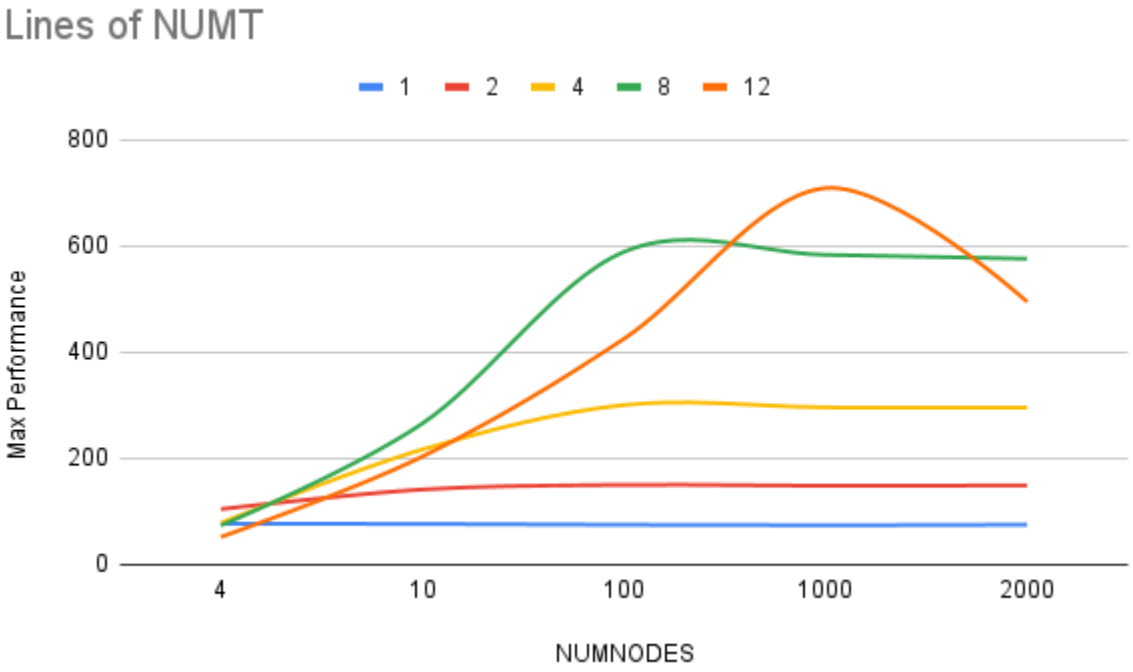
1. Tell what machine you ran this on
    a. Home desktop, vpn to run on Flip server

2. What do you think the actual volume is?
    a. The average of all my volumes is 3.7774

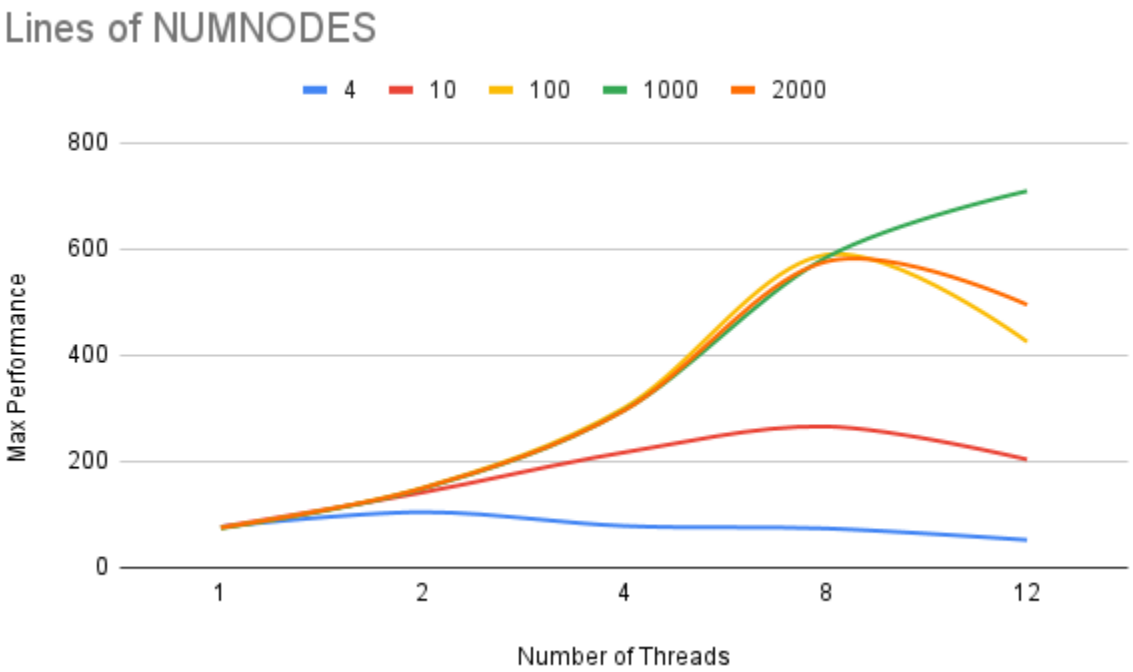
3. Show the performances you achieved in tables and two graphs showing:

| NUMT | 4 | 10 | 100 | 1000 | 2000 |
|---|---|---|---|---|---|
| 1 | 76.9 | 76.73 | 75.14 | 74.31 | 75.26 |
| 2 | 104.58 | 141.58 | 150.28 | 148.57 | 149.36 |
| 4 | 78.61 | 216.97 | 300.64 | 296.11 | 295.81 |
| 8 | 73.87 | 265.88 | 589.05 | 583.34 | 575.99 |
| 12 | 52.17 | 203.67 | 425.33 | 709.07 | 494.99 |
| | | | | | |
| NUMNODES | 1 | 2 | 4 | 8 | 12 |
| 4 | 76.9 | 104.58 | 78.61 | 73.87 | 52.17 |
| 10 | 76.73 | 141.58 | 216.97 | 265.88 | 203.67 |
| 100 | 75.14 | 150.28 | 300.64 | 589.05 | 425.33 |
| 1000 | 74.31 | 148.57 | 296.11 | 583.34 | 709.07 |
| 2000 | 75.26 | 149.36 | 295.81 | 575.99 | 494.99 |

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




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



4. What patterns are you seeing in the speeds?
    a. Generally, the more threads, the faster. When there are too many NUMNODES (2000), the speed starts to drop.

5. Why do you think it is behaving this way?
    a. [This could also have been from flip]. The more nodes there are to loop through, the less the multiple threads starts to help because each extra thread is maxed out on the number of calculations it can do at any given moment. While with less nodes, more threads can split up the work.

6. What is the Parallel Fraction for this application, using the Inverse Amdahl equation?
    a. 0.113130279

7. Given that Parallel Fraction, what is the maximum speed-up you could ever get?
    a. 7.8393665158

n = 8
T1 = 75.14
Tn = 589.05

SpeedUp = S = $\frac{Tn}{T1}$ = $\frac{589.05}{75.14}$ = 7.8393665158

Fp = $\frac{P}{P+S}$ = $\frac{1}{1+7.8393665158}$ = 0.113130279