

Parallel programming

Bonus Assignment





Requirements

- Take a solution of either HW1 or HW2 and create an **analytical report** of the following structure:
 - Introduction
 - Scalability graph
 - Performance graph
 - Discussion and conclusion
- The experimental data must be obtained from **Metacentrum**



Introduction

- Which parallel technology is used: OpenMP, MPI?
- Which fragment of the algorithm is parallelized?
- What's the bottleneck of the program?



Graphs: general requirements

- Each graph should have a title, legend, and an appropriate format of axes (+units)
- Description of the hardware and software must be provided

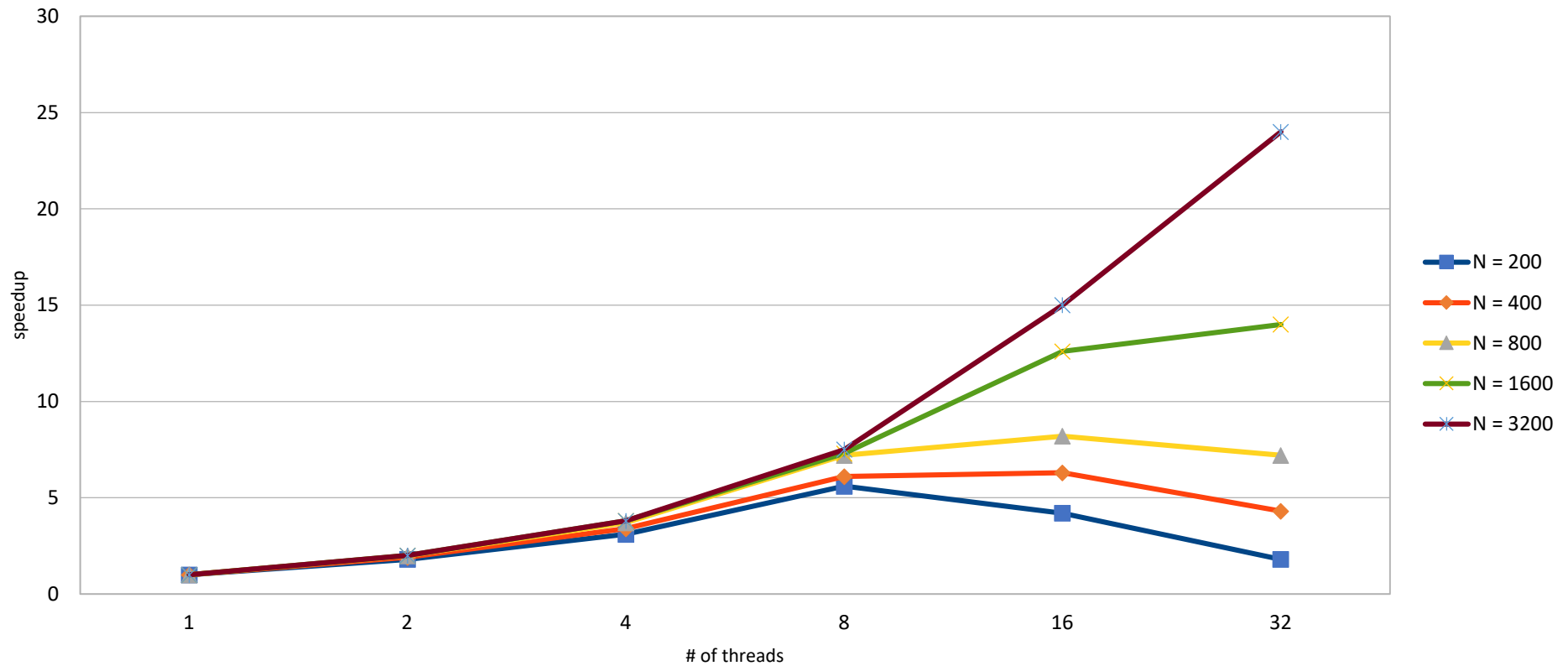


Scalability graph details

- Scalability graph:
speedup of parallel versions vs
sequential version for a fixed problem size
- Create scalability graph for up to 64
parallel processors



Scalability graph



Where N is the number of records (HW1)



Performance graph details

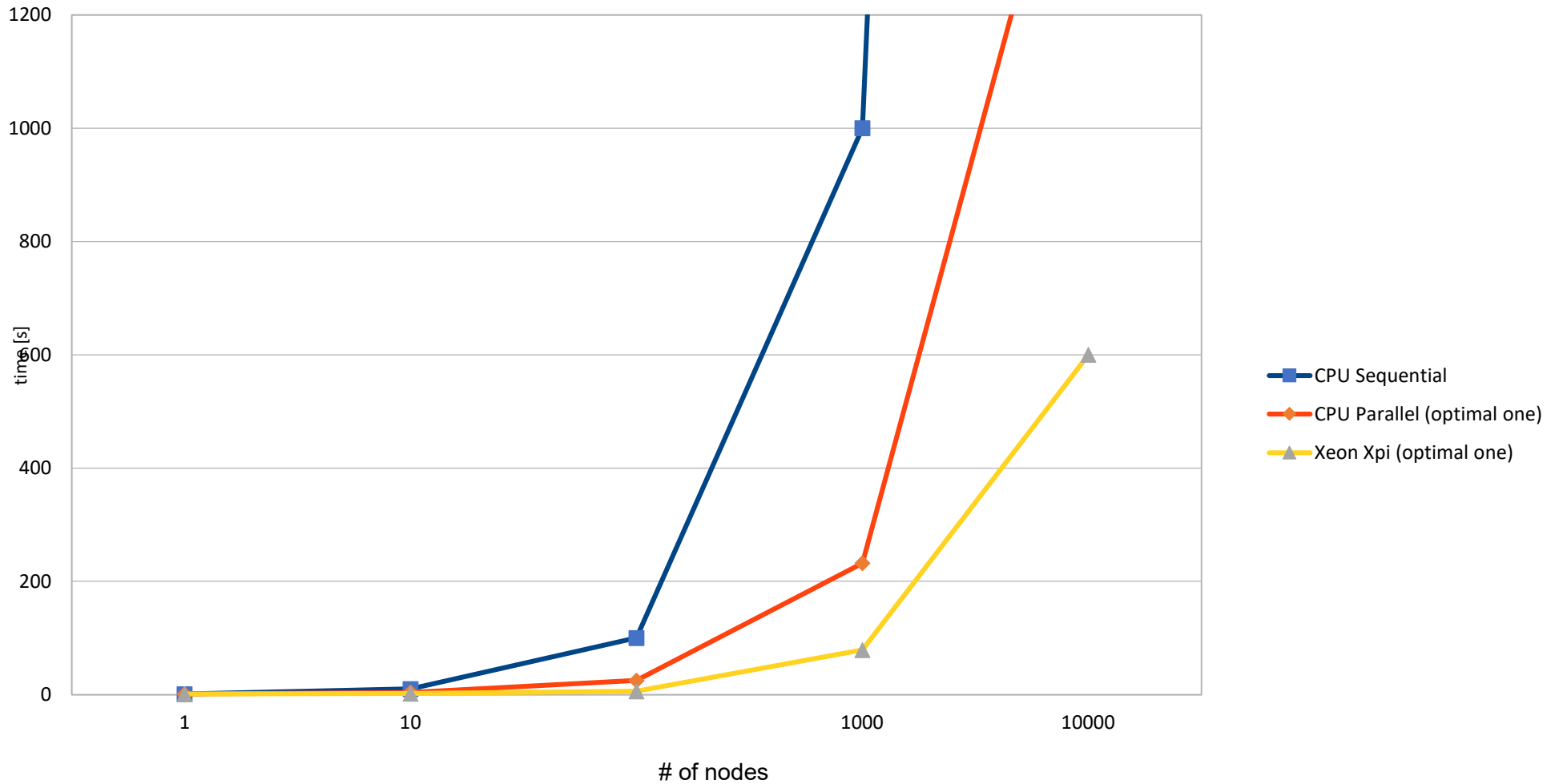
- Performance graph:

runtime vs problem size for a fixed number of processors (or different processing models)

- Try to compare sequential version with the parallel ones executed on 1, 2, 4, 8, 16, 32, 64 processors



Performance graph





Discussion and conclusion

- Explain what was the most complicated part and why the results are as provided
- What is the limiting factor of the parallelization in your algorithm