

Rakpong Kaewpuang 2010: The Development of a High Performance Framework for Transportation Simulation and Optimization Problem. Master of Engineering (Computer Engineering), Major Field: Computer Engineering, Department of Computer Engineering. Thesis Advisor: Assistant Professor Putchong Uthayopas, Ph.D.
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This thesis presents a high performance framework for PDPTW (Pickup and Delivery Problem with Time Windows) which is an important problem in transportation industry. Usually, this problem is a very large and complex problem which requires a very long computation time on a single computer. This thesis propose a framework that collect the computing power from many processors and use it to solve this problem. Furthermore, this framework allows the problem being developed to run on a single multicore computer and scale to multicore cluster without change. In this work, microsoft CCR/DSS is used to hide the complexity of parallel computing from users. From the experiments, it has been found that the prototype application can reduce the computation time significantly. For the best case, the execution time is reduced by 56.68 times using 16 node 64 core cluster running in parallel.

Student's signature

Thesis Advisor's signature