The Study of Optimizing the Dynamic Task Scheduling in the Grid Environment

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ABSTRACT

In the Grid Environment, unknown number of jobs are issued continuously, to utilize the processing elements, a dynamic scheduling method is required. Moreover , the scheduler must determine that jobs assignments in as shortest time as possible. Some researchers proposed heuristic algorithms to solve task scheduling problem, such as the genetic algorithm and the ant system. These algorithms are not suitable in the Grid Environment due to their large scheduling cost. In our research, we proposed a dynamic scheduling technique based on the greedy method called Dynamic Scheduling for Grid Environment, or DSGE. A user-job is decomposed into several tasks which are assigned to the available processing element in the Grid Environment according to their precedence and priority. Scheduling tasks to suitable processing element is major topic in our research. To solve this problem is used first-come-first-serve in traditional way. Through the scheduling policy maintains the fairness of the jobs processing order, in some cases it might result in the under-utilization problem. So scheduling tasks in this problem, scheduler must consider not only the arrived time but also the waiting time of the jobs. DSGE used highest response ratio next, or HRRN, to estimate jobs ’ waiting time and service time, and our most outgoing branch first, or MOBF, to determine a job ’s impact on subsequent processing. Our experimental results shows better performance against other scheduling policies.

Keywords : Grid Environment ; dynamic scheduling ; task scheduling problem

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