

Max-average: an extended max-min scheduling algorithm for Grid computing environment

ABSTRACT

Sharing numerous computational and communication power from connected heterogeneous systems over the world are the two key points of Grid computing. Grid computing can also be referred as a computing platform for users to utilise the remote heterogeneous resources for solving their large scale jobs that require a huge amount of processing power or a huge data storage. Sharing these resources that way effectively requires a very good scheduling strategy, which is the focus of this research. This paper presents a new proposed grid based scheduling algorithm called Max-Average, inspired from Max-Min algorithm. In order to produce good quality solutions, the proposed algorithm is designed in two phases; firstly it uses an initial task queue like the traditional Max -Min for estimating task completion time for each of resources, and in the second phase choose the fitting resource for scheduling according to requirements. The results from our simulation showed that our proposed algorithm is performing better in producing good quality solutions, particularly in executing tasks fast and in balancing the load (resource utilisation) among the resources more effectively when compared to standard Minimum Execution Time (MET), Minimum Completion Time (MCT), Min-Min, and Max-Min heuristic approaches.

Keyword: Scheduling algorithm; Grid computing; Minimum Execution Time (MET); Minimum Completion Time (MCT)