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Abstract

Grid computing is a mainstream technology to integrate large scale distributed sharing resources. To achieve the promising potentials of tremendous distributed resources, effective and efficient scheduling algorithms are fundamentally important. Most of the applications in grid computing fall into interdependent task model called workflow application. Task scheduling is a

fundamental issue in achieving high performance in grid computing systems. It is well known that the complexity of a general scheduling problem is NP-Complete [1]. The grid workflow task scheduling problem is described by a Directed Acyclic Graph (DAG) or task graph. The graph represents the dependency among tasks, their computation time and communication time between them. In the management of workflow execution scheduling, the key issues that impact on the performance of the system is based on proper scheduling. In this paper, a new algorithm, named Efficient Dual Objective Scheduling (EDOS) is proposed to maximize the resource utilization in a grid and to minimize makespan by reserving the resources in advance and schedule the task on priority. The proposed algorithm has been implemented for arbitrary task graphs in a simulated environment. Finally, the results are compared with the well known Min-Min and HEFT scheduling algorithms and showing that the proposed algorithm is yielding better results, that is, minimizing makespan and higher utilization of resources.

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Index Terms

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Key words

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