ملخص البـــــحث باللغة الانجليزية :

In recent years, Cloud computing has been developed and become the foundation of a wide range of applications. It allows users to access a catalog of standardized services and respond to their business needs flexibly and adaptively, in the event of unforeseen demands, paying solely for the consumption they have made. Task scheduling problem is considered one of the most critical cloud computing challenges. The problem refers to how to reasonably order and allocate the applications tasks provided by the users to be executed on virtual machines. Furthermore, the quality of scheduling performance has a direct effect on customer satisfaction. The task scheduling problem in cloud computing must be more accurately described in order to improve scheduling performance. In this paper, a multi-objective task scheduling algorithm is proposed based on the decision tree in a heterogenous environment. We introduce a new Task Scheduling-Decision Tree (TS-DT) algorithm for allocating and executing an application's task. To evaluate the performance of the proposed TS-DT algorithm, a comparative study was conducted among the existing algorithms; Heterogeneous Earliest Finish Time (HEFT), Technique for Order of Preference by Similarity to Ideal Solution that incorporates the Entropy Weight Method (TOPSIS-EWM), and combining Q-Learning with the Heterogeneous Earliest Finish Time (QL-HEFT). Our results show that the proposed TS-DT algorithm outperforms the existing HEFT, TOPSIS-EWM, and QL-HEFT algorithms by reducing makespan by 5.21%, 2.54%, and 3.32%, respectively, improving resource utilization by 4.69%, 6.81%, and 8.27%, respectively, and improving load balancing by 33.36%, 19.69%, and 59.06%, respectively in average.

البحث مشتق من رسالة علمية

يقع البحث ضمن مجالات البحث بالقسم العلمي

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