An Optimal Task Scheduling Mechanism for Mobile Cloud Computing

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Abstract

Mobile devices limited storage and computation capabilities are largely affected by the compute intensive, resource intensive or energy drain applications. These limitations of the mobile devices can be eliminated with the help of mobile cloud computing by delivering the energy drain or computing intensive parts of the task to more resourceful resources and receiving the result from the resources. This process (a.k.a code offloading) helps the mobile device to increase performance and reduce energy consumption. We have proposed an optimal task scheduling code offloading mechanism which optimally identify the remote executable tasks and also identify the remote VM to execute the task. We have also proposed some greedy algorithms to evaluate the result of our proposed task scheduling algorithm. Herein, the local execution time, maximum allowable time and communication latency information and scheduling a task based on the remote VM execution time and queuing time etc. information are served to the master cloud. In our experimentation, we have used an image processing application to validate the proposed system. From our evaluation we show that tasks executed on high capacity VM improve the overall execution time comparing with local mobile device
execution. It also shows that the proposed mechanism for offloading task from mobile device to remote resource perform efficiently for resource heterogeneity.

References


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Index Terms

Computer Science Distributed Systems

Keywords

Mobile cloud computing, code offloading, migration, partitioning.