



## **Framework for Managing Lightweight and Heavyweight Virtualization in the cloud**

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### **Abstract:**

High performance computing (HPC) applications demand a huge amount of resources. HPC applications have traditionally been executed in Cluster and Grid platforms. Cloud computing has emerged as a platform able to reduce costs while offering on demand access to large amount of computing resources. Hence, it has become attractive to run HPC applications in the cloud. However, the performance penalty imposed by cloud platforms is prohibitive to certain kind of HPC applications. An additional challenge to efficiently run HPC applications in the cloud involves reducing performance interference, which negatively impacts the performance of such applications. In this doctoral dissertation, we present a virtual machine placement approach for infrastructure clouds. We propose the use of a simulated annealing algorithm in order to minimize the interference produced by HPC applications while maintaining the contracted service level agreement (SLA) and minimizing monetary costs.