

OPTIMIZING SERVICE PERFORMANCE THROUGH HYBRID FOG-CLOUD OFFLOADING

ABSTRACT

In Cloud systems, Virtual Machines (VMs) are scheduled to hosts according to their instant resource usage (e.g., to hosts with most available RAM) without considering their overall and long-term utilization. Also, in many cases, the scheduling and placement processes are computational expensive and affect performance of deployed VMs.

In this work, a Cloud VM scheduling algorithm that considers already running VM resource usage over time by analysing past VM utilization levels to schedule VMs by optimizing performance by using KNN and Naive Bayes classification technique. The Euclidean distance of KNN is measured and then virtual machine is scheduled on the physical machine. The Cloud management processes, like VM placement, affect already deployed systems so the aim is to minimize such performance degradation. Moreover, overloaded VMs tend to steal resources from neighbouring VMs, so the work maximizes VMs real CPU utilization.

The results show that our solution refines traditional Instant-based physical machine selection as it learns the system behaviour as well as it adapts over time. The concept of VM scheduling according to resource monitoring data extracted from past resource utilizations (including PMs and VMs). The count of the physical machine gets reduced by four using K-NN & NB classifier.