

Fuzzy Based Resource Usage Prediction Model for Virtualized Data Center

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Abstract

In Data Centers, QoS of the applications and optimized resource utilization is an important problem. With the advent of virtualization technology, underutilized physical servers in data centers can be managed by consolidating multiple heterogeneous virtual machines. However, on-demand provisioning of shared resources to virtual machines becoming a key challenge in Virtualized Data Center (VDC). This paper proposes a Virtual Machine Level Controller (VLC) in VDC for dynamic allocation of resources to virtual containers. VLC can automate the task of monitoring, predicting next time interval resource usage and demanding required resource capacity from the host they are existed on. In this paper, CPU, RAM and Net utilization are considered as physical resources consumed by virtual containers. The simulation of workload is conducted to predict resource usage of virtual machines by using the collected resource usage data set from real world data centers. The simulation results show that the proposed resource management system of VLC can significantly reduce resource consumption while still achieving application performance targets.