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## ABSTRACT

This research performs an analysis on the performance of virtual machines in para-virtualized environment. As the size and complexity of modern computing systems keep increasing to meet the demanding requirements of high performance applications, manageability is becoming an important concern to achieve both performance and productivity computing. Meanwhile, virtual machine (VM) technologies have become well-liked in both industry and academia due to various features designed to ease system management and administration. With these market trends toward virtual environments, many research groups are developing evaluation tools to check the performance of virtual systems and their overheads. However, the performance characterization in virtual environments has not been established yet for many challenging issues. Furthermore, achieving close to peak performance requires careful attention to a plethora of system details. One main challenge for virtualization is the need to maximize throughput with minimal loss of CPU and I/O efficiency.

In this research, the performance of virtual machines is improved by identification and optimization of weight parameter in credit scheduler of Xen Server. A new CPU scheduling algorithm has been developed and this algorithm dynamically detects the workload of the running virtual machines and assigns the CPU share to the most needy virtual machines with greater workload by updating the weights accordingly. The result from the research shows the improvement of performance in virtual machines with varying amount of workload in Xen Virtualized Systems.

**Keywords: Virtualization, Virtual Machines, Virtual Machine Monitors, XEN, Paravirtualization, CPU Scheduler, weight, dynamic workload.**

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## **LIST OF ABBREVIATIONS**

BVT	Borrowed Virtual Time
CPU	Central Processing Unit
EVT	Effective Virtual Time
IDD	Isolated Driver Domains
I/O	Input Output
ISR	Interrupt Service Routine
KVM	Kernel-based Virtual Machine
NWC	Non Work Conserving
QEMU	Quick Emulator
SEDF	Simplest Earliest Deadline First
VM	Virtual Machine
VMM	Virtual Machine Monitor
VCPU	Virtual Central Processing Unit
WC	Work Conserving

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