

ABSTRACT

Private Infrastructure as a Service (IaaS) is *cloud computing* services that providing resources such as *CPU*, *storage*, and *network* in local area network. Development of *private IaaS* become a solution to provide *virtual machines (instances)* more flexible and scalability. *Cloud platform* and *hypervisor* selection will affect the level of performance produced on IaaS is built. *Cloudstack* is a *cloud platform* that serves to manage the resources that form *private cloud* infrastructure. Using of *hypervisor Kernel-Based Virtual Machine (KVM)* to the process of making *instances* and capability of producing performance between 95-135% than *bare metal* technique ^[4].

Existing problem is how the performances and *overhead* value caused by virtualization mechanisms contained in IaaS services? In addition, how the performance in terms of *scalability* and isolation of *resources* each process *instances*? Therefore, required the evaluation of metrics such as *overhead*, linearity, and isolation in *private IaaS* environment to determine performance and behavior of *instances resources*. This final project created *private IaaS* that use *cloudstack* and KVM. *Cloudstack* and KVM allows performance *CPU*, *disk*, and *network* to maximize because KVM was designed based on the *linux kernel* and using *Hardware Assisted Virtualization* techniques. *Resources microbenchmarks* performed on *CPU*, *disk*, and *network*.

Based on test results and performance analysis, on *overhead* metric occurred degradation performance 34.02% on *CPU*, 431.17% on *disk*, and 0.08% on *network*. When increasing number of *instances* which operates have occurred performance degradation of each component. Then, performance isolation between processes occurred on *CPU* and performance isolation between *instances* with optimization effort occurred on *disk* and *network*.

Keywords: Cloudstack, KVM, private cloud, IaaS, scalability