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VIRTUAL MACHINE VS CONTAINER: AN APPLICATION PERFORMANCE REVIEW

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ABSTRACT

Cloud Computing is one of the main advancements that offer a promising future. One of the fundamental tools which are making the Cloud a reality is virtualization. Cloud computing provides various types of services such as Software as a service, PaaS, IaaS etc. PaaS vendors confront challenges in proficiently furnishing services with the huge growth of their offerings and hosting the distributed Applications. Hypervisor based virtualization comes with higher resource and operational overhead due to an extra level of abstraction. Virtual machine gives high service downtime when the application is updated to the new version. Containers have a favorable position over virtual machines because of performance enhancements and reduced start up time. Containers are particularly strong in managing PaaS clouds, such as application building, shipping and orchestration. Lightweight containers being the recent trends in the cloud scenario are also evolving as an important stage in PaaS service with the rise of Docker. In this paper, we have presented the performance overheads and application performance comparison among traditional hypervisor and container based virtualization.

KEYWORDS: Cloud Computing, Container, Docker, Paas, Iaas, Virtualization

NOMENCLATURE

PaaS-Platform as a service, IaaS: Infrastructure as a service, SaaS-Software as a service, VM-Virtual machine, OS-Operating system, pCPU-physical CPU, vCPU-virtual CPU.