

# A COMPARATIVE STUDY ON CONTAINER AND VM-BASED CLOUD WEB SERVICE PERFORMANCE

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## ABSTRACT

A container's performance compared with the traditional cloud service is an area where research is scarce. This study is focused on comparing the performance of container technology against the traditional VM-based cloud technology. The web service will be used as the application context to make the performance comparisons between the two types of technology. The major technology platform to be included Docker's container technology, Apache server, and open source Operating Systems including Cent-OS and Ubuntu. Research result will be presented at the conference.

**Keywords:** Cloud computing; containers; performance comparisons

## EXTENDED ABSTRACT

Cloud computing represents an important advancement in information and communication technology (ICT). It is a model for enabling ubiquitous network access to a shared pool of configurable computing resources (Wikipedia). In the most recent years corporate use of the public cloud, such as Microsoft Azure or Amazon Web Services, is rapidly rising. For example, Netflix has shut down its last data center in 2015 and become one of the first big companies to run all of its information technology in the public cloud (McMillian and King, 2014).

Traditionally, cloud computing is based on hardware abstraction or virtualization technology. However, there are many issues facing cloud computing, including cloud security and privacy protection, stability, slow deployment, coexistence with the legacy systems, and portability (Vitti et. al, 2014; Aguiar, 2014; Sajid 2014). In particular, portability limits the transitions of cloud computing from one vendor to another.

The latest solution is the container technology. Containers offer a lightweight alternative to traditional full virtualization. The container-based technology is also called operating system virtualization. It is an approach in which the virtualization layer runs as an application within the operating system. They allow applications to be packaged and moved more easily from server to server. The container technology has begun to be used more widely in all types of businesses. Microsoft has partnered with open source project Docker since last year to introduce in its products the container technologies. Windows Server 2016 shows that Microsoft is enhancing its efforts in this area.

A container's performance may not be as good as the traditional VM-based cloud service. The performance comparison with the traditional cloud service is an area where research is scarce. This study is focused on comparing the performance of container technology against the

traditional VM-based cloud technology. The web service will be used as the application context to make the performance comparisons between the two types of technology. The major technology platform to be include Docker's container technology, Apache server, and open source Operating Systems including Cent-OS and Ubuntu. Research result will be presented at the conference.