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A tool for Image Management in Cloud Computing

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Entering information industry, the most new technologies talked about are virtualization and cloud computing. Virtualization makes the heterogeneous resources transparent to users, and plays a huge role in large-scale data center management solutions. Cloud computing emerges as a revolution in computing science which bases on virtualization, demonstrating a gigantic advantage in resource sharing, resource utilization, resource flexibility and resource scalability. And the new technology comes with new problems in which IT infrastructure is deployed with virtual machines. Among these is the problem of managing the virtual machine images that are indispensable to cloud environment.

In order to deploying a large-scale cloud infrastructure within a tolerant time, how to distribute image to hypervisor quickly and make its validity and integrity is the most important thing to be considered. To address that, this paper proposes an image management system acting as image repository as well as image distributor that provides users a friendly portal and also effective standard commands. The system interfaces implement the operations like register, upload, download, unregister, delete and so on. Hence, some other features like access control rules for diverse users to guarantee security in cloud computing. To optimize the performance, different storage systems such as NFS, Lustre, AFS and gLusterFS are compared in detail as well as the image distribution protocol like peer-to-peer(P2P), http and scp are analyzed, which demonstrates the proper storage system and distribution protocol are essential to the performance of the system.

The workflow of the deployment of a cloud using virtual machine provisioning like Opennebula is introduced and the comparison between diverse storage systems and transfer protocols is discussed. The high performance and scalability of image distribution of the system in production are fully proved and one virtual machine is deployed quickly within minute in average. Some useful tips for image management are also proposed.

Summary

This paper proposes an image management system acting as image repository as well as image distributor that provides users a friendly portal and also effective standard commands. The system interfaces implement the operations like register, upload, download, unregister, delete and so on. Hence, some other features like access control rules for diverse users to guarantee security in cloud computing.

Besides, the workflow of the deployment of a cloud using virtual machine provisioning like Opennebula is introduced and the comparison between diverse storage systems and transfer protocols is discussed. The high performance and scalability of image distribution of the system in production are fully proved. Some useful tips for image management are also proposed.

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