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Optimization of Live Virtual Machine Migration in Cloud Computing: A Survey and Future Directions

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Abstract

In the growing age of cloud computing, shared computing and storage resources can be accessed over the Internet. Conversely, the infrastructure cost of the cloud reaches an incredible limit. Therefore, virtualization concept is applied in cloud computing systems to help users and owners to achieve better usage and efficient management of the cloud with the least cost. Live migration of virtual machines(VMs) is an essential feature of virtualization, which allows migrating VMs from one location to another without suspending VMs. This process has many advantages for data centers such as load balancing, online maintenance, power management, and proactive fault tolerance. For enhancing live migration of VMs, many optimization techniques have been applied to minimize the key performance metrics of total transferred data, total migration time and down-time. This paper provides a better understanding of live migration of virtual machines and its main approaches. Specifically, it focuses on reviewing state-of-the-art optimization techniques devoted to developing live VM migration according to memory migration. It reviews, discusses, analyzes and compares these techniques to realize their optimization and their challenges. This work also highlights the open research issues that necessitate further investigation to

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