Abstract

Cloud computing emerged as need for rapidly increasing computational power thus results in greater power consumption, increased operational costs and high carbon footprints to environment. A key issue for Cloud Providers is to maximize their profits by minimizing power consumption along with SLA considerations of hosted applications. Dynamic Virtual Machine (VM) consolidation is promising approach for reducing energy consumption by dynamically adjusting the number of active machines to match resource demands but it is one of the most important challenges in the cloud based distributed systems. In this work, the researchers tried to investigate “SLA and Energy-Efficient Dynamic Virtual Machine (VM) Consolidation” that meets Quality of Service expectations and Service Level Agreements (SLA) requirements. The analysis of VM consolidation algorithms based on various heuristics on legitimate host is presented as key contribution of this work. We also present a comparative analysis and results by conducting a performance evaluation study of various existing energy efficient VM consolidation techniques using real world workload traces from more than a thousand VMs using CloudSim toolkit. This paper is aimed at helping cloud providers analyze several power characteristics of their own technologies as well as pre-existing IT resources to identify their
favorability in the migration to the new energy efficient cloud architectures. The results also helps in analyzing the existing frameworks and offers substantial energy savings while effectively dealing with firm QoS requirements negotiated by SLA.

References

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Index Terms

Computer Science Distributed Computing

Keywords

Cloud Computing (CC) Cloud Providers Energy Energy efficient Quality of Service (QoS) Service Level Agreements (SLA) Virtual Machine (VM) VM Consolidation