Priority Based Resource Allocation and Demand Based Pricing Model in Peer-to-Peer Clouds

Naidila Sadashiv
Department of Computer Science and Engg., Acharya Institute of Technology, Bangalore, India 560 107
S. M. Dilip Kumar
Department of Computer Science and Engg., University Visvesvarya College of Engg., Bangalore, India 560 001
R. S. Goudar
Redknee, Bangalore, India 560 045

Abstract:

Management of resources in large scale distributed cloud environment is a major challenge due to the nature of cloud. On-demand resource provisioning allows the requests to be made on the fly. In order to provide QoS in accordance with the SLA in such a distributed environment, an effective resource handling scheme and pricing models that will benefit both the provider and cloud users is required. This paper aims to provide priority based resource allocation to the tasks by giving higher preference to the tasks that requests large amount of CPU. The tasks are classified into high, medium and low priority sets using the k-means algorithm. We also propose a dynamic pricing model where in the price is calculated based on the current demand for a resource and its availability. During high resource contention across the network, the resources are priced more than when there are surplus amount of resources. In such scenarios, the resources are discovered from the peer clouds through content addressable network for prioritized tasks. Simulation under different contention periods is carried out based on our priority based allocation. The results show that our algorithm provides better resource utilization ratio and throughput ratio when compared with non-prioritized tasks.

Keywords

- Cloud computing,
- resource management,
- pricing,
- k-means clustering,
- peer-to-peer cloud