Hybrid Spot Instance based Resource Provisioning Strategy in Dynamic Cloud Environment

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:

Utilization of resources to the maximum extent in large scale distributed cloud environment is a major challenge due to the nature of cloud. Spot Instances in the Amazon Elastic Compute Cloud (EC2) are provisioned based on highest bid with no guarantee of task completion but incurs the overhead of longer task execution time and price. The paper demonstrates the last partial hour and cost overhead that can be avoided by the proposed strategy of Hybrid Spot Instance. It aims to provide reliable service to the ongoing task so as to complete the execution without abruptly interrupting the long running tasks by redefining the bid price. The strategy also considers that on-demand resource services can be acquired when spot price crosses on-demand price and thereby availing high reliability. This will overcome the overhead involved during checkpointing, restarting and workload migration as in the existing system, leading to efficient resources usage for both the providers and users. Service providers revenue is carefully optimized by eliminating the free issue of last partial hour which is a taxing factor for the provider. Simulation carried out based on real time price of various instances considering heterogenous applications shows that the number of out-of-bid scenarios can be reduced largely which leads to the increased number of task completion. Checkpointing is also minimized maximally due to which the overhead associated with it is reduced. This resource provisioning strategy aims to provide preference to existing customers and the task which are nearing the execution completion.

Keywords

- Cloud Computing
- Resource Provisioning
- Spot Instances
- Bidding
- Check pointing
- Reliability