Cloud Capacity Planning and HSI based Optimal Resource Provisioning

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Abstract-

Cloud service providers offer spot instances through highest bidding plans that are at a very economical price compared to other pricing plans, namely on-demand and reservation. The usage of spot instance enables utilization of idle resources and provides service for cost sensitive tasks. However, this approach introduces the problem of cloud capacity allocation to different pricing plans that will have impact on the task completion time. To address these issues and improve the provider's revenue, in this paper a capacity planning has been carried out based on the prediction of resource requirements for each of the different resource pricing pools. The paper also presents a solution to overcome the burden faced by the service provider due to the free issue of last hour at the time of out-of-bid situation. Simulation carried out based on capacity planning along with hybrid spot instance using Amazon EC2's price show that the resource utilization is improved across the different resource pricing pools with increased number of task completion and improved provider's revenue.

Keywords-

- Cloud Computing;
- Capacity Planning;
- Resource Provisioning;
- Prediction;
- Hybrid Spot Instances