Profitable cloud broker inventory strategy with adjustable financial risks

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Abstract

A cloud broker is an intermediary layer between cloud users and providers with additional functionalities. To keep the broker operation running, it needs revenue. Without putting the responsibility onto the users, the broker has to generate revenue by itself. One of the methods is to use a strategy of buying low and selling high.

The main idea of our approach is to utilise profitability related parameters to avoid doing a direct profit maximisation. We have modelled these parameters along the line of the finance risk concept. Similar to financial risk, broker operational risks are parameters that are identified to affect the profit. The minimisation of the risk will make the broker operation safer ie harder to lose money. However, it is essential that the broker takes some risks to allow the chance to make a profit. By controlling the risk level we can make the broker turn a profit and lower the chance of losing money. Based on a broker simulation, we found that the method works well with real server trace datasets.

Currently, we are experimenting with the idea of deterministic causal equation model. In addition to the profit-making, the performance characteristics of a computer, in our case a cloud VM, has been looking into. The VM performance is still mostly defined by the benchmarked number. It is widely accepted as an industry standard. However, the connections between the benchmark numbers and real workloads have not been clearly linked and quantified. Hence, perfectly matching the user workloads with an appropriate VM is still difficult.