

Optimization Technique on Logistic Economy for Cloud Computing using
Finite-Source Queuing Systems

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Abstract

With the ever-increasing popularity of the cloud platform, cloud backup scheme attracts more attention from both industry and academia. For cloud providers, profit evaluation of server farms is an important issue of cloud computing economics. Optimal logistic policy should be considered to be an indispensable design simultaneously for providing qualified service to cloud users while the whole cloud center is under construction. To maintain contract-based service quality, the administrator of server farm should adopt the necessary redundancy strategy to provide backup servers when some servers fail. To this aim, focusing upon exploring the optimal profit, two decision parameters of spares and repairmen in the system are considered to maintain regulated service quality for the cloud users. The basic point of our approach is that a novel design approach is developed for evaluating the profit patterns using the finite-source queuing theory. A comprehensive mathematical analysis on profit pattern has been made in detail. Numerical simulation has also been conducted to validate the proposed optimization model. The design illustration is presented to demonstrate engineering application scenario in cloud computing environment, hence the proposed approach indeed provides a feasibly cost-effective design framework to meet logistic economy.

Keyword : Cloud Computing