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OPTIMAL MULTISERVER CONFIGURATION FOR PROFIT MAXIMIZATION IN CLOUD COMPUTING

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ABSTRACT: Along with the development of cloud computing, an increasing number of enterprises start to adopt cloud service, which promotes the emergence of many cloud service providers. For cloud service providers, how to configure their cloud service platforms to obtain the maximum profit becomes increasingly the focus that they pay attention to. In this paper, we take customer satisfaction into consideration to address this problem. Customer satisfaction affects the profit of cloud service providers in two ways. On one hand, the cloud configuration affects the quality of service which is an important factor affecting customer satisfaction. On the other hand, the customer satisfaction affects the request arrival rate of a cloud service provider. However, few existing works take customer satisfaction into consideration in solving profit maximization problem, or the existing works considering customer satisfaction do not give a proper formalized definition for it. Hence, we firstly refer to the definition of customer satisfaction in economics and develop a formula for measuring customer satisfaction in cloud computing. And then, an analysis is given in detail on how the customer satisfaction affects the profit. Lastly, taking into consideration customer satisfaction, service-level agreement, renting price, energy consumption and so forth, a profit maximization problem is formulated and solved to get the optimal configuration such that the profit is maximized.

INTRODUCTION

Cloud computing is the delivery of resources and computing as a service rather than a product over the Internet, such that accesses to shared hardware, software, databases, information, and all resources are provided to consumers on-demand [1]. Customers use and pay for services on-demand without considering the upfront infrastructure costs and the subsequent maintenance cost [2]. Due to such advantages, cloud computing is becoming more and more popular and has received considerable attention recently. Nowadays, there have been many cloud

service providers, such as Amazon EC2 [3], Microsoft Azure [4], Salesforce.com [5], and so forth. As a kind of new IT commercial model, profit is an important concern of cloud service providers. As shown in Fig. 1, the cloud service providers rent resources from infrastructure providers to configure the service platforms and provide paid services to customers to make profits. For cloud service providers, how to configure their cloud service platforms to obtain the maximal profit becomes increasingly the focus that they pay attention to.

The optimal configuration problem with profit maximization of cloud service providers has been researched in our previous researches [2, 6] which assumed that the cloud service demand is known in advance and not affected by external factors. However, the request arrival rate of a service provider is affected by many factors in actual, and customer satisfaction is the most important factor. For example, customers could submit their tasks to a cloud computing platform or execute them on their local computing platforms. The customer behavior depends on if the cloud service is attractive enough to them. To configure a cloud service platform properly, the cloud service provider should know how customer satisfaction affects the service demands. Hence, considering customer satisfaction in profit optimization problem is necessary. However, few existing works take customer satisfaction into consideration in solving profit maximization problem, or the existing works considering customer satisfaction do not give a proper formalized definition for it. To address the problem, this paper adopts the thought in Business Administration, and firstly defines the *customer satisfaction level* of cloud computing.

2.EXISTING SYSTEM:

Chen *et al.* adopted utility theory leveraged from economics and developed an utility model for measuring customer satisfaction in cloud. In the utility model, consumer satisfaction is relevant to two factors: service price and response time. They assumed that consumer satisfaction is decreased with higher service price and longer response time. In other work, the user satisfaction is calculated as the ratio of the

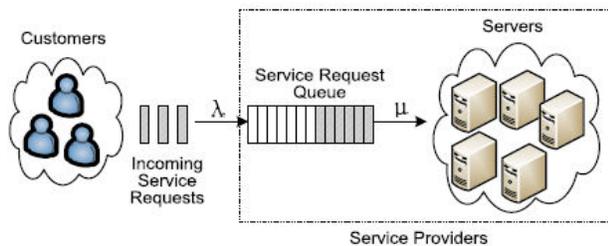
actual QoS level and the expected QoS level. Wu *et al.* proposed an admission control and scheduling algorithms for SaaS providers to maximize profit by minimizing cost and improve customer satisfaction level. However, they did not give a specific formula to measure customer satisfaction level. Chao *et al.* proposed a customer satisfaction aware algorithm based on the Ant-Colony Optimization (AMP) for geodistributed datacenters. The request arrival rate of a service provider is affected by many factors in actual, and customer satisfaction is the most important factor. Few existing works take customer satisfaction into consideration in solving profit maximization problem, or the existing works considering customer satisfaction do not give a proper formalized definition for it. The existing formulas measuring customer satisfaction of cloud computing cannot properly reflect the definition of customer satisfaction, and they did not take into account user's psychological differences

3.PROPOSED SYSTEM:

This paper adopts the thought in Business Administration, and firstly defines the *customer satisfaction level* of cloud computing. Based on the definition of customer satisfaction, we build a profit maximization model in which the effect of customer satisfaction on quality of service (QoS) and price of service (PoS) is considered. In this paper, we build a customer satisfaction-aware profit optimization model and propose a discrete hill climbing algorithm to find the numeric optimal cloud configuration for cloud service providers.

Based on the definition of customer satisfaction level in economics, develop a calculation formula for measuring customer satisfaction in cloud. Analyze the interrelationship between customer satisfaction and profit, and build a profit optimization model considering customer satisfaction. Develop a discrete hill climbing algorithm to find the optimal cloud configuration such that the profit is maximized.

4. SYSTEM ARCHITECTURE



In this module, Initially customer have to register their details and after registering the account activation mail will be send to the customer mail id. Then customer can login into the module and he/she will select the cloud server according to the storage limit and plan then the request will send to the Business Service Provider after request granted customer can upload files in the allocated storage

Business Service Provider:

In this module, Business Service Provider will view all the customer details and activate their accounts then the account activation mail will send to the customer. Business Service Provider also can view the server storage details allocated to the customer.

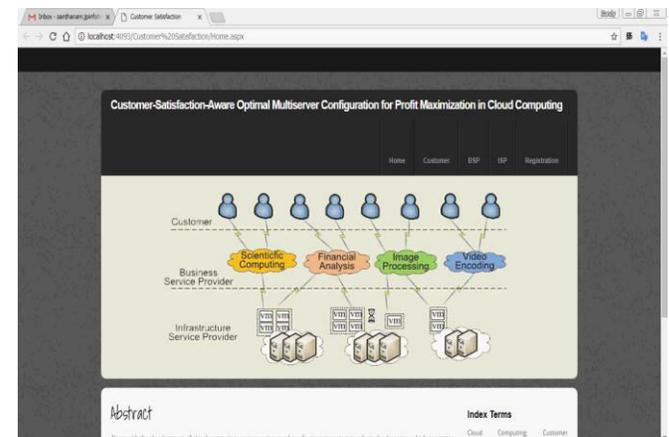
Infrastructure Service Provider:

In this module, Infrastructure Service Provider can view storage server details and file details uploaded on the cloud server

Service Level Agreement:

A service level agreement (SLA) is a contract between a service provider (either internal or external) and the end user that defines the level of service expected from the service provider. SLAs are output-based in that their purpose is specifically to define what the customer will receive. SLAs do not define how the service itself is provided or delivered. The SLA an Internet Service Provider (ISP) will provide its customers is a basic example of an SLA from an external service provider.

5. SCREEN SHOTS



6. CONCLUSION

In this paper, we consider customer satisfaction in solving optimal configuration problem with profit maximization. Because the existing works do not give a proper definition and calculation formula for customer satisfaction, hence, we first give a definition of customer satisfaction leveraged from economics and develop a formula for measuring customer satisfaction in cloud. Based on the affection of customer satisfaction on workload, we

analyze the interaction between the market demand and the customer satisfaction, and give the calculation of the actual task arrival rate under different configurations. In addition, we study an optimal configuration problem of profit maximization. The optimal solutions are solved by a discrete hill climbing algorithm. Lastly, a series of calculations are conducted to analyze the changing trend of profit. Moreover, a group of calculations are conducted to compare the profit and optimal configuration of two situations with and without considering the affection of customer satisfaction on customer demand. The results show that when considering customer satisfaction, our model performs better in overall.

REFERENCES

- [1] P. Mell and T. Grance, "The nist definition of cloud computing," *Communications of the Acm*, vol. 53, no. 6, pp. 50–50, 2011.
- [2] J. Cao, K. Hwang, K. Li, and A. Y. Zomaya, "Optimal multiserver configuration for profit maximization in cloud computing," *IEEE Trans. Parallel Distrib. Syst.*, vol. 24, no. 6, pp. 1087–1096, 2013.
- [3] "Amazon EC2," <http://aws.amazon.com>, 2015.
- [4] "Microsoft Azure," <http://www.microsoft.com/windowsazure>, 2015.
- [5] "Salesforce.com," <http://www.salesforce.com/au>, 2014.
- [6] J. Mei, K. Li, A. Ouyang, and K. Li, "A profit maximization scheme with guaranteed quality of service in cloud computing," *IEEE Trans. Computers*, vol. 64, no. 11, pp. 3064–3078, Nov 2015.
- [7] R. N. Cardozo, "An experimental study of customer effort, expectation, and satisfaction," *Journal of marketing research*, pp. 244–249, 1965.
- [8] J. A. Howard and J. N. Sheth, *The theory of buyer behavior*. Wiley New York, 1969, vol. 14.
- [9] G. A. Churchill Jr and C. Surprenant, "An investigation into the determinants of customer satisfaction," *Journal of marketing research*, pp. 491–504, 1982.