

Profit Maximization in Cloud Computing for Customer-Satisfaction-Aware Optimal Multi-Server Configuration

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Abstract— Along with the event of cloud computing, associate increasing vary of enterprises begin to adopt cloud service, that promotes the emergence of the numerous cloud service suppliers. For cloud service suppliers, some way to place along their cloud service platforms to get the utmost profit becomes more and more the most focus that they concentrate to. throughout this paper, we tend to tend to require shopper satisfaction into thought to take care of this draw back. shopper satisfaction affects the profit of cloud service suppliers in a pair of ways in which during which. On one hand, the cloud configuration affects the quality of service that's an awfully necessary issue poignant shopper satisfaction. On the other hand, the client satisfaction affects the request arrival rate of a cloud service provider. However, few existing works take shopper satisfaction into thought in determination profit maximization draw back, or the current works considering shopper satisfaction do not provides an accurate formalized definition for it. Hence, we tend to tend to 1st of all talk to the definition of shopper satisfaction in economic science and develop a formula for mensuration shopper satisfaction in cloud computing. And then, associate analysis is given intimately on but the shopper satisfaction affects the profit. Lastly, taking into thought shopper satisfaction, service-level agreement, dealing value, energy consumption then forth, a profit maximization draw back is developed and solved to induce the optimum configuration such the profit is maximized.

Key words: Cloud Computing, Multi-Server Configuration

I. INTRODUCTION

Cloud computing is that the delivery of resources and computing as a service rather than a product over the online, mere accesses to shared hardware, software, databases, data, and each one resources unit provided to shoppers on-demand. Customers use and pay cash for services on-demand whereas not considering the direct infrastructure costs and thus the ensuing maintenance value .due to such advantages, cloud computing is becoming lots of and lots of stylish and has received respectable attention recently. Nowadays, there square measure many cloud service suppliers, like Amazon EC2 , Microsoft Azure, Salesforce.com , so forth. As a type of recent IT industrial model, profit could be a crucial concern of cloud service suppliers. the cloud service suppliers rent resources from infrastructure suppliers to line up the service platforms and provide paid services to customers to form profits .For cloud service suppliers, a way to tack their cloud service platforms to get the largest profit becomes progressively the main focus that they concentrate to. The best configuration downside with profit maximization of cloud service suppliers has been researched in our previous researches that assumed that the cloud service demand is thought ahead and

not littered with external factors. However, the request arrival rate of a service supplier is littered with several factors in actual, and client satisfaction is that the most vital issue. as an example, customers might submit their tasks to a cloud computing platform or execute them on their native computing platforms. The client behaviour depends on if the cloud service is enticing enough to them. To tack a cloud service platform properly, the cloud service supplier ought to acumen client satisfaction affects the service demands. Hence, considering client satisfaction in profit improvement downside is important. However, few existing works take client satisfaction into thought in finding profit maximization downside, or the prevailing works considering client satisfaction don't provides a correct formalized definition for it. to handle the matter, this paper adopts the thought in Business Administration, and first defines the client satisfaction level of cloud computing. supported the definition of client satisfaction, we tend to build a profit maximization model within which the impact of client satisfaction on quality of service (QoS) and value of service (PoS) is taken into account. From associate economic posture, 2 factors moving client satisfaction square measure QoS and PoS. The PoS is decided by cloud service suppliers. The QoS is decided by the service capability of a cloud service supplier that for the most part depends on its platform configuration. beneath the given rating strategy, the sole thanks to improve the client satisfaction level is to push the QoS, which might be achieved by configuring cloud platform with higher service capability. Doing thus can have an impression on a cloud service provider from a pair of asides. On one hand, the higher shopper satisfaction level finally ends up within the next market share, thus the cloud service provider can gain extra revenues. On the alternative hand, extra resources unit rented to spice up the service capability, that finally ends up within the rise of costs. Hence, the last word answer of up profit is to look out associate best cloud platform configuration theme. throughout this paper, we tend to tend to make a shopper satisfaction aware profit optimization model and propose a definite hill rising algorithmic rule to look out the numeric best cloud configuration for cloud service suppliers..

II. MOTIVATION

Customer satisfaction acts the prot of cloud service suppliers in 2 ways in which. On onehand, the cloud congurationaects the standard of service that is a crucial issueaecting client satisfaction. On the opposite hand, the client satisfaction aectsthe request arrival rate of a cloud service supplier. thus we tend to resolve a protmaximization problem , within which supported the aection of client satisfaction on employment, we analyze the interaction between the market demand and therefore the client satisfaction, and provides

the calculation of the particular task arrival rate below different configurations.

III. PROBLEM STATEMENT

In this system, supported the definition of client satisfaction level in social science, develop a calculation formula for measurement client satisfaction in cloud; Analyze the interrelationship between client satisfaction and profit, and build a profit improvement model considering client satisfaction; Develop a distinct hill rise formulation the best cloud configuration specified the profit is maximized.

IV. PROPOSE SYSTEM

In this paper, we've got an inclination to tend to want client satisfaction into thought to influence this client satisfaction affects the profit of cloud service suppliers in 2 ways in {which} throughout which. On one hand, the cloud configuration affects the standard of service that is a very important issue touching client satisfaction. On the other hand, the shopper satisfaction affects the request arrival rate of a cloud service supplier. However, few existing works take client satisfaction into thought in resolution profit maximization disadvantage, or this works considering client satisfaction don't provide an associated degree correct formalized definition for it. Hence, we've got an inclination to tend to first raise the definition of client satisfaction in economic science and develop a formula for live client satisfaction in cloud computing. And then, Associate in Nursing analysis is given intimately on however the buyer satisfaction affects the profit. Lastly, taking into thought client satisfaction, service-level agreement, dealing worth, energy consumption thus forth, a profit maximization disadvantage is developed and resolved to urge the foremost effective configuration we've got an inclination to use the definition of shopper satisfaction leveraged from political economy and develop a formula to measure shopper satisfaction in cloud. And then, but cloud configuration affects shopper satisfaction and also the manner shopper satisfaction affects the profit of cloud service suppliers unit of measurement analyzed. supported these works, a profit maximization downside considering shopper satisfaction is developed and solved given the most effective configuration. shopper satisfaction may be a crucial issue that have to be compelled to be thought of throughout a service market, i.e., cloud computing, which will be a live of but merchandise and services equipped by a company meet or surpass shopper expectation [9, 10], and it directly affects the amount of shoppers of a company, and thus the profit consequently. In general, the shopper satisfaction level of a company is associated accumulation of the satisfaction values of all customers. at intervals the subsequent, we've got an inclination to first supply the satisfaction formula of each shopper, then the shopper satisfaction of a company. we've got an inclination to check associated best configuration disadvantage of profit maximization. the foremost effective solutions are solved by a separate hill rising rule. Lastly, a series of calculations are conducted to analysis the dynamic trend of profit. Moreover, a gaggle of calculations unit of measurement conducted to match the profit and best configuration of 2 things with and whereas not considering the sensation of client satisfaction on client demand. The

results show that when considering client satisfaction, our model performs higher in overall is obtained. such the profit is maximize

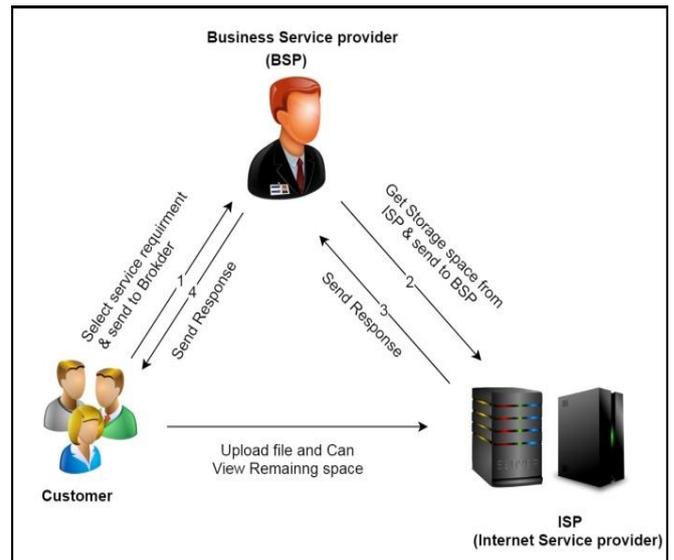


Fig. 1: System Architecture

A. Advantages

- 1) Performance is high.
- 2) Customer satisfaction in solving optimal configuration problem with profit maximization.
- 3) Improve the service quality of cloud service provider.

B. Disadvantages

- 1) In existing system, customer satisfaction did not give a proper formalized.
- 2) optimal configuration problem with profit maximization in cloud service.

V. MATHEMATICAL MODEL:

- 1) Let's be a system. $S = \{ I, O, P, F, s, Ic \}$
- 2) Identify set of input as I Let $I = \{ \text{select cloud services and send to business service provider} \}$
- 3) Identify set of output as O Let $O = \{ \text{Customer satisfaction in solving optimal configuration problem with profit maximization} \}$
- 4) Identify the set of processes P
 $P = \{ S_{QoS}, S_{PoS}, S, M_s, M_{opt}, P_{ROpt} \}$
 QoS -quality of service and
 PoS- price of service
 S=Service provider.
 Ms=Market share.
 Mopt- Optimal server.
 P rooftop- optimal profit.
- 5) Identify failure cases as F $F = \{ \text{Customer is not satisfied with Service provider and Business service provider} \}$.
- 6) Identify successes. $s = \{ \text{Improved the service quality of cloud service provider with customer satisfaction.} \}$
- 7) Identify the initial conditions as $Ic = \{ \text{select cloud service provider as per requirement} \}$.

VI. ALGORITHMS

A. C-DISC Algorithm

Algorithm 1: C-DSIC

Input : Set of bids $\hat{b}_1, \hat{b}_2, \dots, \hat{b}_n$
Output: Winner and payments for participants (h_1, h_2, \dots, h_n)

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1  $min \leftarrow \infty$ ;
2  $winner \leftarrow 0$ ;
3 for  $i \leftarrow 1$  to  $n$  do
4   if  $(\frac{\hat{c}_i}{\hat{q}_i}) < min$  then  $min \leftarrow \frac{\hat{c}_i}{\hat{q}_i}$ ;
5    $winner \leftarrow i$ ;
6 end
7 for  $i \leftarrow 1$  to  $n$  do
8   // The payment for each cloud vendor
9   //  $i$  as per (4)
10   $h_i(\hat{b}) \leftarrow g_i(\hat{b})\hat{c}_i + \sum_{j \neq i} \hat{c}_j g_j^{-i}(\hat{b}) - \sum_{j \neq i} \hat{c}_j g_j(\hat{b})$ ;
11 end

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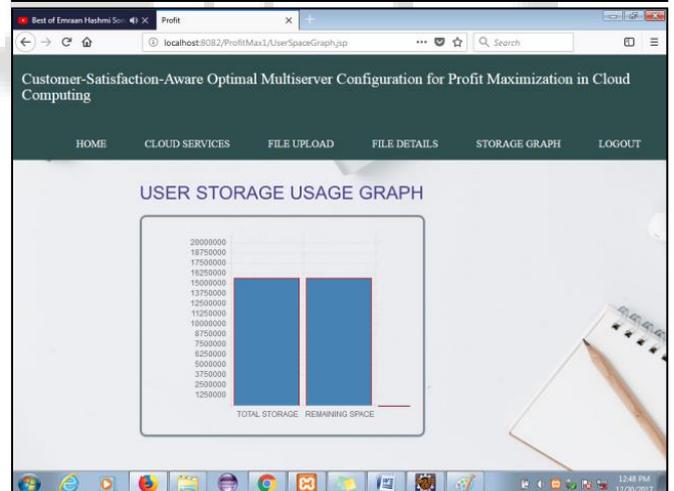
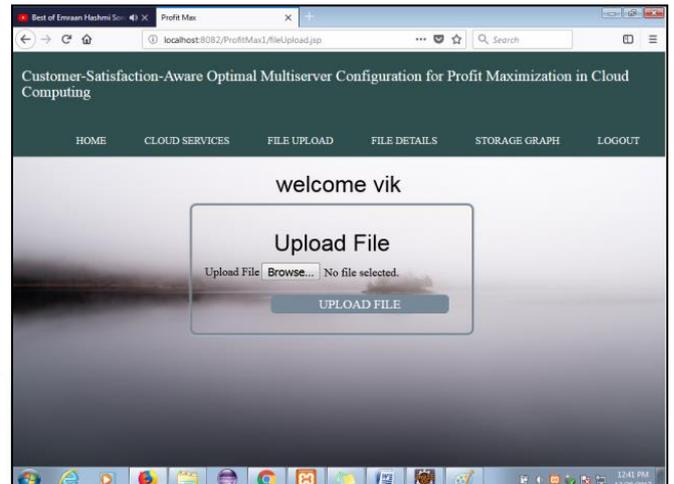
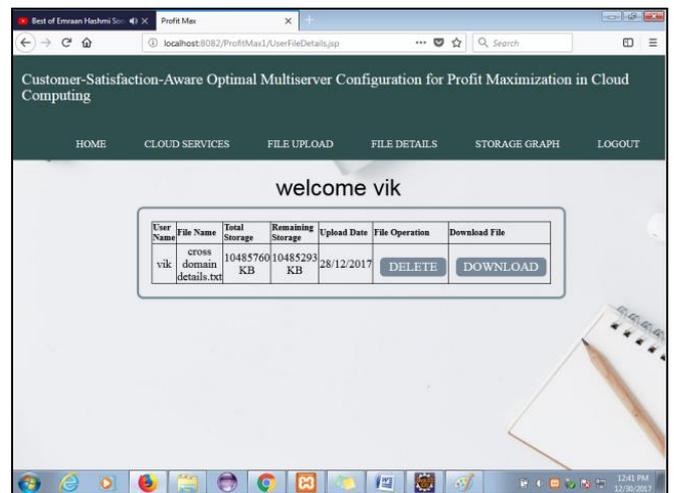
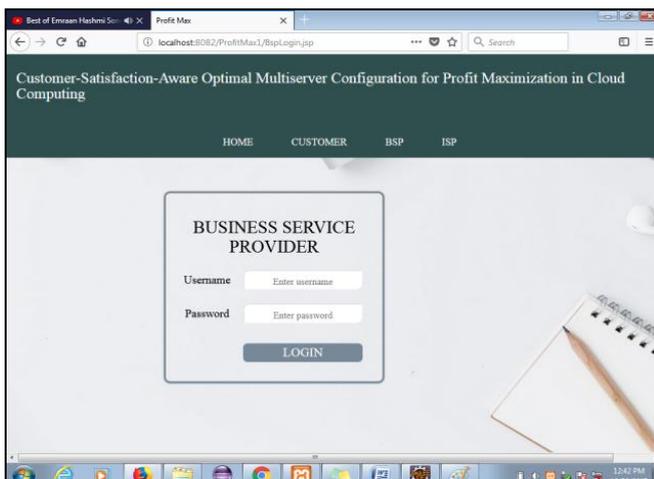
B. HILL CLIMBING ALGORITHM:

Hill Climbing is a technique to solve certain optimization problems. In this technique, we start with a sub-optimal solution and the solution is improved repeatedly until some condition is maximized. The idea of starting with a sub-optimal solution is compared to starting from the base of the hill, improving the solution is compared to walking up the hill, and finally maximizing some condition is compared to reaching the top of the hill.

1) Algorithm: Hill Climbing

- Evaluate the initial state.
- Loop until a solution is found or there are no new operators left to be applied:
- Select and apply a new operator
- Evaluate the new state:
- goal \rightarrow quit
- better than current state \rightarrow new current state

VII. PROJECT SCREENSHOTS



VIII. CONCLUSION & FUTURE SCOPE

We propose a client satisfaction in resolution optimal configuration drawback with profit maximization. Because the present works don't provides a correct definition and calculation formula for client satisfaction, hence, we initial provides a definition of client satisfaction leveraged from social science and develop a formula for activity client satisfaction in cloud. supported the love of client satisfaction on employment, we tend to analyze the interaction between the market demand and also the client satisfaction, and give the calculation of the particular task arrival rate below different configurations. Additionally, we tend to study

associate optimum configuration drawback of profit maximization.

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