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INCREASING PROFIT WITH QUALITY OF SERVICE USING RESOURCE SHARING ALGORITHM IN CLOUD COMPUTING

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Abstract--- **As a successful and proficient approach to give figuring assets and administrations to clients on interest, cloud computing has turned out to be more mainstreams. From cloud administration suppliers point of view, profit is a standout among the most critical contemplation, and it is chiefly controlled by the arrangement of a cloud administration stage under given business sectors request. Double Quality Guaranteed Scheme is outlined firstly and it can be splitted in to short term and long term renting and are consolidated for the current issues. This double renting plan can guarantee the quality of service and it can be considered as a queuing model and the resource waste can be reduced. But this guaranteed scheme does not provide security. In this paper RSA algorithm can be used which can provide security. Suppose any other user wants to access the other user uploaded file details, user has to send the request to the server to access the files. Resource sharing algorithm can be used for allocating the resources to the requested user. Each user uploading file details is separated by a block wise thereby a server can allocate the policy terms to users more quickly.**

Keywords*— *Cloud computing, guaranteed service quality, Resource sharing algorithm, profit maximization, Queuing model, service-level agreement.

I.INTRODUCTION

As an effective and efficient way to consolidate computing resources and computing services, clouding computing has become more and more popular. Cloud computing centralizes management of resources and services, and delivers hosted services over the Internet. The hardware, software, databases, information, and all resources are concentrated and provided to consumers on-demand [1]. Cloud computing turns information technology into ordinary commodities and utilities by the pay-per-use pricing model. In a cloud computing environment, there are always three tiers, i.e., infrastructure providers, service providers, and customers. An infrastructure provider maintains the basic hardware and software facilities [10]. A service provider rents resources from the infrastructure providers and provide services to customers. A customer submits its request to a service provider and pays for it based on the amount and the quality of the provided service. In this paper, we aim at researching the multiserver configuration of a service provider such that its profit is maximized. Like all business, the profit of a service provider in cloud computing is related to two parts, which are the cost and the revenue [12]. For a service provider, the cost is the renting cost paid to the infrastructure providers plus the electricity cost caused by energy consumption, and the revenue is the service charge to customers. In general, a service provider rents a certain number of servers from the infrastructure providers and builds different multi server systems for different application domains. Each multi server system is to execute a special type of service requests and applications. Hence, the renting cost is proportional to the number of servers in a multiserver system [1]. The power consumption of a multi server system is linearly proportional to the number of servers and the server utilization, and to the square of execution speed. The revenue of a service provider is related to the amount of service and the quality of service. To summarize, the profit of a service provider is mainly determined by the configuration of its service platform.

II. RELATED WORKS

a)Cao .J, Hwang .K, Li .K, and Zomaya A.Y, "Optimal multiserver configuration for profit maximization in cloud computing," As cloud computing becomes more and more popular, understanding the economics of cloud computing becomes critically important. To maximize the profit, a service provider should understand both service charges and business costs, and how they are determined by the characteristics of the applications and the configuration of a multiserver system. The problem of optimal multi server

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configuration for profit maximization in a cloud computing environment is studied. Our pricing model takes such factors into considerations as the amount of a service, the workload of an application environment, the configuration of a multiserver system, the service level agreement, the satisfaction of a consumer, the quality of a service, the penalty of a low quality service, the cost of renting, the cost of energy consumption, and a service provider's margin and profit. Our approach is to treat a multiserver system as an M/M/m queuing model, such that our optimization problem can be formulated and solved analytically. Two server speed and power consumption models are considered, namely, the idle-speed model and the constant speed model. The probability density function of the waiting time of a newly arrived service request is derived. The expected service charge to a service request is calculated. The expected net business gain in one unit of time is obtained. Numerical calculations of the optimal server size and the optimal server speed are demonstrated.

b) Chen .J, Wang .C, Zhou .B, Sun .L, Lee .Y.C, and Zomaya A.Y, "Tradeoffs between profit and customer satisfaction for service provisioning in the cloud," The recent cloud computing paradigm represents a trend of moving business applications to platforms run by parties located in different administrative domains. A cloud platform is often highly scalable and cost-effective through its pay-as-you-go pricing model. However, being shared by a large number of users, the running of applications in the platform faces higher performance uncertainty compared to a dedicated platform. Existing Service Level Agreements (SLAs) cannot sufficiently address the performance variation issue. In this paper, we use utility theory leveraged from economics and develop a new utility model for measuring customer satisfaction in the cloud. Based on the utility model, we design a mechanism to support utility-based SLAs in order to balance the performance of applications and the cost of running them. We consider an infrastructure-as-a-service type cloud platform (e.g., Amazon EC2), where a business service provider leases virtual machine (VM) instances with spot prices from the cloud and gains revenue by serving its customers. Particularly, we investigate the interaction of service profit and customer satisfaction. In addition, we present two scheduling algorithms that can effectively bid for different types of VM instances to make tradeoffs between profit and customer satisfaction. We conduct extensive simulations based on the performance data of different types of Amazon EC2 instances and their price history. Our experimental results demonstrate that the algorithms perform well across the metrics of profit, customer satisfaction and instance utilization.

c) Pinheiro .E, Bianchini .R, Carrera .E.V, and Heath .T, "Dynamic cluster reconfiguration for power and performance," Here we address power conservation for clusters of workstations or PCs. Our approach is to develop systems that dynamically turn cluster nodes on - to be able to handle the load imposed on the system efficiently - and off - to save power under lighter load. The key component of our systems is an algorithm that makes cluster reconfiguration decisions by considering the total load imposed on the system and the power and performance implications of changing the current configuration. The algorithm is implemented in two common cluster-based systems: a network server and an operating system for clustered cycle servers. Our experimental results are very favorable, showing that our systems conserve both power and energy in comparison to traditional systems.

III. THEORETICAL ANALYSIS

A. Project Scope

Profit is the important consideration for service provider and have to give quality of service for users .To maximize the profit double quality guaranteed scheme can be used and it can be splitted in to short term renting and long term renting. An infrastructure provider maintains the basic hardware and software facilities. A service provider rents resources from the infrastructure providers and provide services to customers. A customer submits its request to a service provider and pays for it based on the amount and the quality of the provided service. Thereby resources cannot be wasted and provide in an efficient way. Dynamic pricing can be used here. With dynamic pricing a service provider delays the pricing decision until after the customer demand is revealed, so that the service provider can adjust prices accordingly. Here policy terms can be allocated according to the user request and also the security can be improved.

B. Existing System

We review recent works relevant to the profit of cloud service providers. Here single quality unguaranteed scheme can be used. Service providers naturally wish to set a higher price to get a higher profit margin but doing so would decrease the customer satisfaction, which leads to a risk of

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discouraging demand in the future. Hence, selecting a reasonable pricing strategy is important for service providers [3]. In general, a service provider rents a certain number of servers from the infrastructure providers and builds different multi-server systems for different application domains. Each multiserver system [1] is to execute a special type of service requests and applications. The power consumption of a multiserver system is linearly proportional to the number of servers and the server utilization, and to the square of execution speed. The revenue of a service provider is related to the amount of service and the quality of service. To summarize, the profit of a service provider is mainly determined by the configuration of its service platform. To configure a cloud service platform, a service provider usually adopts a single renting scheme. Because of the limited number of servers, some of the incoming service requests cannot be processed immediately. So they are first inserted into a queue until they can handle by any available server [13]. All uploaded files are maintained in the single server .Because of this to allocate the policy terms is very much difficult for the server Static pricing means that the price of a service request is fixed and known in advance, and it does not change with the conditions. the price of a service request is proportional to the service time and task execution requirement respectively. However, a single long-term renting scheme is usually adopted to configure a cloud platform, which cannot guarantee the service quality but leads to serious resource waste.

C. Proposed System

Double Quality Guaranteed resource renting scheme which combines long-term renting with short-term renting. The main computing capacity is provided by the long-term rented servers due to their low price. The proposed DQG scheme adopts the traditional FCFS queuing discipline. For each service request entering the system, the system records its waiting time. The requests are assigned and executed on the long-term rented servers in the order of arrival times. Once the waiting time of a request reaches D, a temporary server is rented from infrastructure providers to process the request. If the waiting time exceeds the tolerable waiting time, they lose patience and leave the system. In our scheme, the impatient requests do not leave the system but are assigned to temporary rented servers. Since the requests with waiting time D are all assigned to temporary servers [5], it is apparent that all service requests can guarantee their deadline and are charged based on the workload according to the SLA. Hence, the revenue of the service provider increases. However, the cost increases as well due to the temporarily rented servers. Moreover, the amount of cost spent in renting temporary servers is determined by the computing capacity of the long-term rented multiserver system. Since the revenue has been maximized using our scheme, minimizing the cost is the key issue for profit maximization. RSA algorithm can be used which can provide security. Suppose any other user wants to access the other user uploaded file details, user has to send the request to the server to access the files. Resource sharing algorithm can be used for allocating the resources [8] to the requested user. Each user uploading file details is separated by a block wise thereby a server can allocate the policy terms to users more quickly**.**

Advantages

- Allocate the policy terms more quickly.
- Not more time consuming.

IV IMPLEMENTATION TECHNOLOGIES

a) Double Quality Guaranteed Scheme Algorithm

1. A multiserver system with *m* servers is running and waiting for the events as follows
2. A queue *Q* is initialized as empty
3. Event – A service request arrives
4. Search if any server is available
5. if true then
6. Assign the service request to one available server
7. else
8. Put it at the end of queue *Q* and record its waiting time
9. end if
10. End Event
11. Event – A server becomes idle
12. Search if the queue *Q* is empty
13. if true then
14. Wait for a new service request
15. else
16.Take the first service request from queue *Q* and assign it to the idle server
17.end if

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18.End Event
19. Event – The deadline of a request is achieved
20.Rent a temporary server to execute the request and release the temporary server when the request is completed
21. End Event

b)Resource Sharing Algorithm

Cloud computing is an on-demand service because it offers dynamic flexible resource allocation for reliable and guaranteed services in pay as-you-use manner. Due to the ever increasing demands of the users for services or resources, it becomes difficult to allocate resources accurately to the user demands in order to satisfy their requests and also to take care of the Service Level Agreements (SLA) provided by the service providers. Each user uploading file details is separated by a block wise thereby a server can allocate the policy terms to users more quickly. The M/M/m queuing model is the only model that accommodates an analytical and closed form expression of the probability density function of the waiting time of a newly arrived service request. Let $\mu = 1 / \bar{x} = s / \bar{r}$ be the average service rate, i.e., the average number of service requests that can be finished by a server of S in one unit of time. The server utilization is $\rho = \lambda / m\mu$, which is the average percentage of time that a server of S is busy. Let Pk denote the probability that there are k service requests (waiting or being processed) in the M/M/m queuing system for S. The probability of queuing (i.e., the probability that a newly submitted service request must wait because all servers are busy) is

$$P_q = \sum_{k=m}^{\infty} Pk = \frac{Pm}{1-\rho} = P_0 \frac{m\rho}{m!}$$

The profit of a service provider in one unit of time is obtained as

Profit = Revenue- C long –C short

V. SIMULATION SYSTEM DESIGN

A. Architectural Diagram

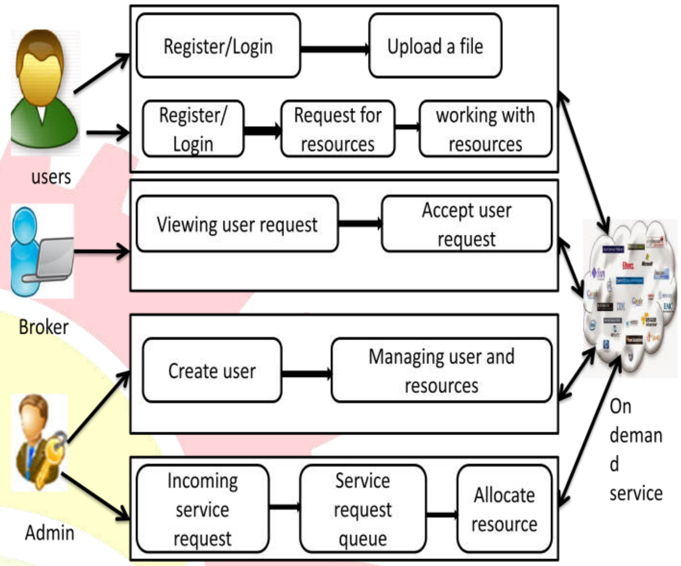

Fig 1. Multiserver System model

First user should register their identity or if already registered then existing user can login into cloud by their username and password. After login, cloud user can upload a file and it can be converted into encrypted format. If any other user wants to access the uploaded file then the user request for particular resources from cloud provider. Cloud provider allocates the requested resources to particular users what they request. Also user can upload their files into cloud. The main aim of this project is to increase the profit of the service provider and quality of service for users. So the user has the ability to gather the resources with they are not used longer and send request to admin. The role of admin is to manage user account and files which are stored in the cloud. Allocate requested resources to users and monitor the user account and remove the unused resource of users which they are no longer needed. Thus the cloud provides flexibility to users those who have account with this cloud.

VI.CONCLUSION

In this paper, main aim of this project is to increase the profit of the service provider and quality of service for users. User can upload their files into cloud. It can be retrieved by another user after getting permission from the server. So the user has the ability to gather the resources with they are not used longer and send request to admin. The role of admin is to manage user account and files which are stored in the cloud.

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Allocate requested resources to users. The requests are assigned and executed on the long-term rented servers in the order of arrival times and it does not consume more time.

VII.RESULTS

A service provider rents resources from infrastructure providers and prepares a set of services in the form of virtual machine (VM). Infrastructure providers provide two kinds of resource renting schemes, e.g., long-term renting and short-term renting. In general, the rental price of long-term renting is much cheaper than that of short-term renting. A customer submits a service request to a service provider which delivers services on demand. The customer receives the desired result from the service provider with certain service-level agreement, and pays for the service based on the amount of the service and the service quality. Service providers pay infrastructure providers for renting their physical resources, and charge customers for processing their service requests, which generates cost and revenue, respectively. The profit is generated from the gap between the revenue and the cost.

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