International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue III, March 2018- Available at www.ijraset.com

Profit Maximization for Clients by Optimized Resource usage in Cloud Computing

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Abstract: ***The vast increase in the usage of cloud storage has led to problem solving techniques for the efficient use the cloud system. The methods so far utilized have not brought a solution to pay for what a user consumes, rather is purchased on a non-statistical and non-analyzed manner. The proposed paper contributes an idea by providing options of short term and long term renting schemes for the cloud storage, through which the consumer pays for the data that is actually uploaded, and need not acquire on an earlier estimated data. This process is much efficient on both the consumer and the server side, as it conserves the rental payment, as well as the data space in the cloud.***
Keywords: Short Term Renting, Long term Renting.

I. INTRODUCTION

For the best utilization for the provided resources, we go on with the idea of Guaranteed Quality of Service with the Short and long term renting scheme bringing out a difference in the effective
usage. Here a service system is considered a queuing model and the performance.
This model not only conserves on the resources, but is also efficient on the consumer side. There is less part on his role as he does not need an earlier calculation of what amount of cloud space needs to be purchased to fit in for all his data. Rather, providing the proposed model he can purchase the storage of only what is required. The other part of the advantage is that once the usage period is over, the space can be reused for other purpose. This is a far better implementation than many other service providers who do not limit the time period and there is a wastage of resources. The project proposed mainly concentrates on the saving up of space, investment and no analytics needed. The scheduling choices makes the client to choose the best suitable.

II. LITERATURE SURVEY

The authors Junwei Cao, Kai Hwang, Keqin Li and Albert Y. Zomaya conveys the necessity understanding the business cost and service charges to increase the profit for the service provider[1]. They have followed an approach to treat a multiserver system as an M/M/m queueing model. The pricing model formulated considers factors like amount of 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 cost of renting, energy consumption, the penalty for low quality of service and service providers margin and profit.
The authors Hadi Goudarzi and Massoud Pedram proposed a system to counter the problems in the Service Level Agreements and the profit of the clients [2].In this paper a multi-dimensional SLA-based resource allocation in the cloud computing system is considered in which the problems are studied.The processing, data storage and the communication resources are the dimensions in which optimizations are performed. The resulting algorithm was found to be robust and the solutions that are derived are very near to the optimum.
The authors Michele Mazzucco, Dmytro Dyachuk and Ralph Deters analysed the cloud service providers who lease storage to users and found that they consume very high electricity which not only reflects in the carbon footprint but also increase the cost for running a cloud data center[3]. They conducted numerous experiments and simulations to decrease the energy consumption without affecting the user experience. They made sure that these experiments and simulations were done under different traffic conditions and successfully completed the experiments and later foumd out they could even increase the user experience and decreasing the energy consumption. The Authors Merve Unuvar, Stefania Tosi, Yurdaer N. Doganata, Malgorzata Steinder and Asser N. Tantawi proposed a way to select the best available zone that contains the business applications from the zones that contain the same worldwide [4]. Since each zone offers different quality of service it is essential to select the zone which has good QoS that would satisfy the user requirements. A predictive approach in which contains predictive models that are built from historical usage data for each availability zone and and updated simultaneously as the nature of the zone and request change. The simulation results showed

that this method could predict and differentiate unpublished zones from the zones that provide high level of user satisfaction and provide good quality of service. The authors Qin Zheng and Bharadwaj Veeravalli provide a system for integrating load balancing with pricing that can provide profitable for the clients and the service providers without decreasing the user satisfaction and experience, either way it is a win-win situation for resource owners and users[5]. Pricing for different load scenarios with varying load arrival time from multiple users. Considering the two primary objectives time and cost, an optimal price theory is thus formed in relation to the load arrival from various experiments.

III. EXISTING SYSTEM

A. Purchasing cloud storage of fixed size

The storage value needed can be purchased in advance based on the requirement of the company or the particular user. This space can be an estimated value, which is a result of rough calculation, or may also be of a historic data of the same kind. Anyways, if the file exceeds the original purchased space, the additional space is to be bought in a fixed size, who full space may not be required.

B. Request processing

In existing system, 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. The revenue of a service provider is related to the amount of service and the quality of service. To configure a cloud service platform, a service provider usually adopts a single renting scheme. That's to say, the servers in the service system are all long-term rented. 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.

C. Disadvantages

1) The waiting time of the service requests is too long.
2) Sharp increase of the renting cost or the electricity cost. Such increased cost may counterweight the gain from penalty reduction. In conclusion, the single renting scheme is not a good scheme for service providers.
3) Earlier analysis that of the to be storage, which might not result in the right conclusion and may lead to wastage in space and investment.

IV. PROPOSED SYSTEM

The main objective of the model proposed is that the long and short term renting schemes, which not only produce a strong Quality of service, but also brings forth a method to reduce the waste in resource generated. The optimal configuration problem of service providers for profit maximization is formulated and two kinds of optimal solutions, i.e., the ideal solutions and the actual solutions, are obtained respectively. A series of comparison are given to verify the performance of our scheme. The results show that the proposed Double-Quality-Guaranteed (DQG) renting scheme can achieve more profit than the compared Single-Quality-Unguaranteed (SQU) renting scheme in the premise of guaranteeing the service quality completely.

A. Techniques Used

1) Short and Long term Renting Scheme
2) Balance Updation
3) Cloud Based Renting.
4) Client and Server Communication

1) *Short And Long Term Renting:* The short and the long term renting scheme helps the user to have a choice of the purchase of storage. The short term storage allows the users who use the cloud in a small scale environment for a short period of time. This model helps them to spend less on their expense, as they pay for what they use
2) *Balance updation:* Balance updation process is where the user tops up his account with a certain amount. With this, he can be able to transfer the money to the account of the cloud server. This is done through a bank transfer, which is demonstrated as a broker in the proposed project. The broker forwards it to the server account, and is notified about the new user account and the amount that is left in balance.
3) *Cloud based renting:* Unlike many other systems and products that provide a permanent allocation of cloud storage, the proposed project is only a rent based scheme. The user at first place is registered and has his balance updated. Now he is to

make a choice between the schemes that his data needs to be uploaded at. Once the scheme is chosen, the server offers a price for the chosen scheme. The user can send a cloud request of the selected scheme. Now that the user has selected the scheme, and requested for the cloud, the server is notified in the message queue model.

4) *Client and server communication:* The client and server communication deals with the request and response based, here response refers to the acceptance. Once the message request for the cloud storage is set to the cloud, the server admin looks for the other data such as the scheme of the file. Once the request is accepted, the message request is removed from the queue.

The user can now upload his files, and will also be able to check the balance amount he has, to purchase any additional storage. Thus, with a strong communication, and easy access, the model is much efficient and implementable that the earlier used models.

B. *Proposed Architecture*

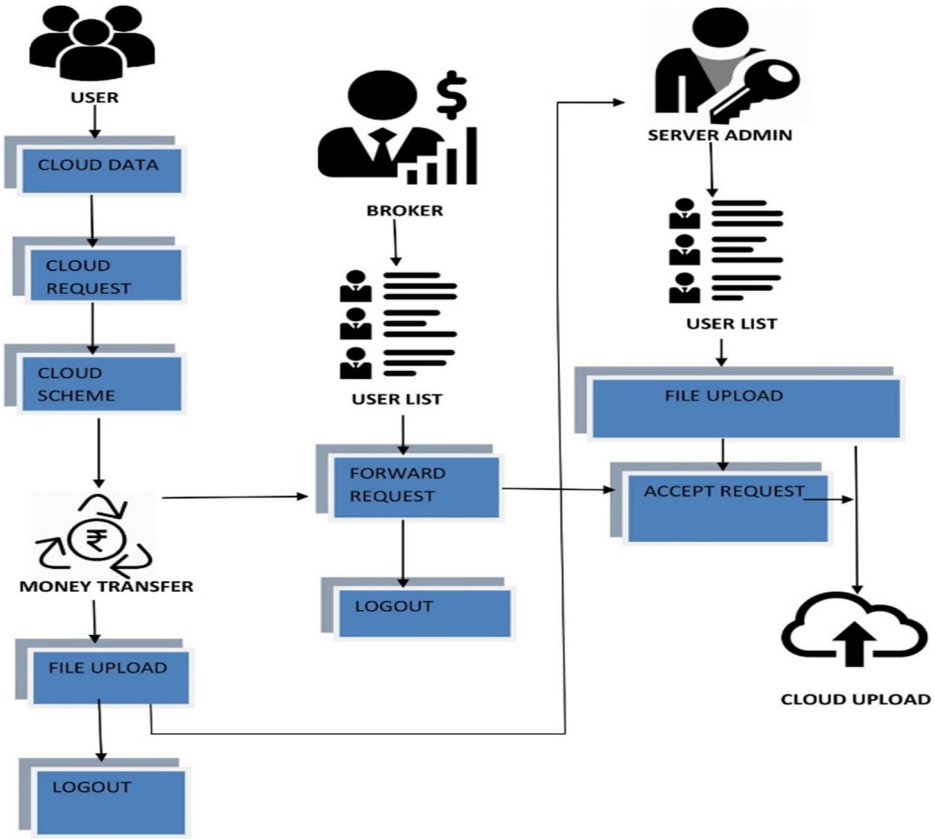

Fig 4: Proposed architecture diagram

The proposed architecture diagram shows the flow of messages among the user, server and the service provider. Here the service provider is the company that holds the proposed project, and the authentication to the cloud servers belong in here. Only when this connection is established, a third party user can request for a storage medium.

V. MODULES OVERVIEW

A. *Registration of the user.*

As of any product that is to be distributed to among the consumers on a real time, the storage system is first to be registered. This enabled to maintain authentication and confidentiality between the user and the server. Once the user is registered, the communication is smooth and can be even done through alternative forms. Hence, this enables a strong bond between the client and the service provider.

B. *Money Transfer And Forward*

Every client who wishes to have access to the cloud storage, is now registered to the service provider end. The next step is to update the account with the amount of money needed. This is done by the user in order to rent the storage space.

C. Cloud Request

Once there is sufficient balance in the user account, he is now allowed to select the renting scheme (based upon the size of his file he wants to upload) and request for the cloud space.

D. Accept Of Request

The notification is received by the service provider in a message queueing model, and is accepted on a space existing model, manually. This request provides the information about the user such as the email id, scheme and other details. Therefore, it is easily for the provider to identify the applicable one.

E. Upload Files

Upon the acceptance of the request, the notification that the cloud storage space is granted, is received. The user can now upload the desired files that fit into the size of the cloud space which can be downloaded at any time thereafter. The number of files that can be uploaded depends upon the scheme that s chosen by the user. Thus the cloud based storage system is successfully implemented by the user.

F. Advantages

1) Since the requests with waiting time are all assigned to temporary servers, 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.

2) Increase in the quality of service requests and maximize the profit of service providers.

3) This scheme combines short-term renting with long-term renting, which can reduce the resource waste greatly and adapt to the dynamical demand of computing capacity.

VI. CONCLUSION

In this work, we combines short-term renting with long-term renting, which can reduce the resource waste greatly and adapt to the dynamical demand of computing capacity. A queueing model is built for our multiserver system with varying system size. And then, an optimal configuration problem of profit maximization is formulated in which many factors are taken into considerations, such as the market demand, the workload of requests, the server-level agreement, the rental cost of servers, the cost of energy consumption, and so forth.

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