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# A Survey Paper on Profit Maximization of Cloud Broker in Cloud Computing

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**ABSTRACT:** Today's world cloud computing becoming so popular because of an effective and efficient way to provide computing resources and services to customers on demand. Cloud computing being an information technology paradigm enables access to shared pools of configurable system resources and higher-level services often over the Internet. The objective of providers is to maximize profits by their price schemes, while the main purpose of clients is to have quality of services for a reasonable price. Thus the vital aim is to maximize the profit for service providers & get quality of service at best price for the client. In this we are going to allocate resources to the users dynamically, so that free space is also used by the broker. In this way also profit of our broker is also get maximized. Because of cloud computing development, choosing cloud services can be complicated & time-consuming for customers. To facilitate cloud service delivery, the authors propose a cloud service broker who provides automated selection of suitable cloud services, & assure the best performance, reliability, & cost efficiency.

**KEYWORDS:** Cloud Computing, Cloud Broker, Quality of Service, Resource Allocation, Efficiency, Reliability, Profit Maximization.

## I. INTRODUCTION

There is no universal definition of cloud computing. However as far as our research is concerned, the most apt definition of cloud computing can be quoted as: "computing as a utility". In our day to day life the most common utilities are electricity, water, gas, heat, postpaid mobile services etc. Similarly in cloud computing, computing resources (like CPU, memory, storage, network domains, virtual desktop) are rented to users based on their demand. From user's viewpoint, it eliminates the need of an upfront investment as an user can pay based on the amount of resources it has used. This is termed as "pay-per-use" or "pay-as-you-go" model. Therefore, resource scaling is the most fundamental aspect of cloud computing and hence extensive amount of effort has been channeled to explore this area. Cloud Service Providers (or CSP's), like Amazon, Elastic Host etc, rent computing resource to the users in form of Virtual Machines (also called instances) or VMs. In recent years, cloud computing has received rapidly increasing attention. Subsequently, various cloud service providers (CSPs), which provide plentiful cloud services to assist customers to conduct their work, have been founded, including Amazon Web Services, Google App Engine, and Microsoft Azure. However, owing to the diversity of CSPs, customers need to take the time to analyze all available CSPs to find the proper one. Thus, the complicated and time-consuming process of cloud service delivery puts too much pressure on customers. Moreover, the inefficient usage of cloud services is another challenge.

A Cloud is a type of parallel and distributed system consisting of a collection of interconnected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resource based on Service Level Agreements (SLA) established through negotiation between the service provider and consumers. Cloud computing is an internet-based computing in which large groups of remote servers are networked to allow sharing of data-processing tasks, centralized data storage, and an online access to computer services or resources. It relies on sharing of resources to achieve coherence and economies of scale, similar to a utility (like the electricity grid) over a network. Cloud computing also focuses on maximizing the effectiveness of the shared resources. Cloud resources are not only shared by multiple users but are also dynamically re-allocated on demand. The main enabling technology is

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virtualization. Virtualization software allows a physical computing device to be electronically separated into one or more "virtual" devices, each of which can be easily used and managed to compute tasks. Virtualization provides the agility required to speed up IT operations, and reduces cost by increasing infrastructure utilization. Scheduling is an important of any operating system. CPU scheduling deals with problem of deciding which of the processes in the ready queue is to be allocated CPU time. When a job is submitted to a resource manager, the job waits in a queue until it is scheduled and executed. The time spent in the queue, or wait time, depends on several factors including job priority, load on the system, and availability of requested resources. Turnaround time represents the elapsed time between when the job is submitted and when the job is completed. It includes the wait time as well as the jobs actual execution time. Response time represents how fast a user receives a response from the system after the job is submitted. Resource utilization during the lifetime of the job represents the actual useful work that has been performed. System throughput is defined as the number of jobs completed per unit time. Mean response time is an important performance metric for users, who expect minimal response time.

The cloud service broker, which simplifies, consults on, and accelerates the adoption of cloud services, represents the middleware between customers and CSPs. As a third party, the cloud service broker needs to purchase cloud services from multiple CSPs and then resell them to customers on the basis of the customers' requirements. Therefore, the cloud service broker assists customers in the selection of cloud services by helping them to evaluate, select, and compare cloud service solutions. With the employment of a cloud service broker, customers no longer need to pick among multiple CSPs. Instead, they just exposure their demand information to the cloud service broker, and the cloud service broker provides the most suitable approach for each customer. Hence, customers and CSPs do not have to contact each other directly, and the cloud service broker can be used to manage the efficient work of multiple clouds.

### 1.1 Motivation

- Minimizing the cost for the customer.
- Maximizing the profit for the cloud broker.
- Allocate resources to each and every client dynamically.
- To get best service as per customer's requirements.

### 1.2 Problem Statement

In the existing system, the problem is that if many customers request a large number of cloud services simultaneously, the cloud service broker cannot purchase sufficient cloud services from CSPs to satisfy the demand of all the customers. Then, a peak-demand problem arises in which customers cannot complete their work. Hence, dynamic conditions not only could result in economic problems but also could have a negative impact on the work of customers.

## II. RELATED WORK

Literature survey is the most important step in any kind of research. Before start developing we need to study the previous papers of our domain which we are working and on the basis of study we can predict or generate the drawback and start working with the reference of previous papers.
In this section, we briefly review the related work on Profit maximization of cloud broker and their different techniques.

This paper shows what cloud computing is, the various cloud models, and the architecture of cloud computing. This research will define the security risk and challenges occurred in these technologies. Various issues defined in this projects like: Platform Management, Data Encryption, Interoperability, Cloud Data Management and security, SLA (Service Level Agreement) and so on. Limitation: Security is one of the major issues which hamper the growth of cloud.[1]

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This paper presents a review on the cloud computing concepts as well as security issues inherent within the context of cloud computing and cloud infrastructure. Location transparency is one of the prominent flexibilities for cloud computing, which is a security threat at the same time – without knowing the specific location of data storage, the provision of data protection act for some region might be severely affected and violated. Trust is another problem which raises security concerns to use cloud service for the reason that it is directly related to the credibility and authenticity of the cloud service providers.[2]

The paper aims to provide an overview of CSB research status, and give suggestions on how CSB research should proceed. This paper provides two key contributions to the research community. First, it provides an overview of the CSB research community on how they are evolving. Second, it highlights areas that future research contributions in the CSB are required.CSB is complex software system, in Computer Science and Information Systems, such as economics (e.g. profit maximization), and law (e.g., service level agreement are required. [3]

This paper presents that, various users shift their sensitive data on the cloud. To get a cloud service, they have to contact cloud service provider. Now, huge number of providers are available in the market. To locate a perfect provider who can fulfill their need is a skillful job. This job can be accomplished by cloud service broker. The selection of Quality based Cloud service provider is a complicated task in this paper. [4]

In this paper, cloud computing allowed multiple providers to offer basic computational resources to consumers as a digital service with the benefits of 'on-demand' and 'pay-per-use' characteristics of cloud. Cloud services offer a range of economic benefits to their users and to the economy as a whole. This paper summarizes how the cost estimation occurs in the cloud computing environment. Here estimating cost is a biggest challenge for software developers, when the application has quality of service requirements.[5]

This paper, aims to achieve the minimum response time through considering the communication channel bandwidth, latency and the size of the job. The proposed service broker policy can also reduce the overloading of the data centers by redirecting the user requests to the next data center that yields better response and processing time. Improving the financial cost and power consumption is still to be researched and improved if possible.[6]

This paper has proposed a novel Double Quality Guaranteed renting scheme for service providers. This scheme combines both short term renting and long term renting, which can reduce the resource waste greatly and adapt to the dynamical demand of computing capacity. Further, we improving the user interface, by having graphs for profit and time taken for handling service request. Profit maximization problem is a heterogeneous cloud environment. [7]

In this paper, the authors suggests & propose a Cloud Brokering Framework that supports all the brokering steps along with proposed profit optimization consideration. The simulation scenario is carefully generated to show the effectiveness of algorithm. As a future scope of work, the framework can be extended with more effective policies at each level of lifecycle. The work can be extended for evaluation of Service Level Agreements (SLAs). [8]

In this paper, the author presented a revenue management framework to tackle the problem of optimal capacity control for allocating resources to customers. The main challenge is that the provider must find an optimal capacity to admit demands from the reservation market such that the expected revenue is maximized. The future direction of this work involves the extension of the revenue management framework with overbooking strategies.[9]

In this paper, the author consider the case of a single cloud provider & address the question how to best match customer demand in terms of both supply and price in order to maximize the providers revenue and customer satisfactions while minimizing energy cost. To model this problem as a constrained discrete-time optimal control problem, used Model Predictive Control to find its solution, proposed solution achieves better net income and minimizes the average request waiting time. Further, we are also interested in conducting more extensive experiments using workload datasets that contain price information. [10]

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## III. PROPOSED METHOD

In the proposed system main focus on guaranteed the service quality of all requests, reduce the resource wastage, provide more security and optimize profit maximization. All jobs are scheduled by the job scheduler and assigned to different VMs in a centralized way. In this system we also allocate the resource dynamically by using the skewness algorithm and also providing the security to our data by applying AES algorithm. 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 request, the SLA, the rental cost of services, and so forth. In the proposed work we are going to use different algorithms for providing security to our data and for allocation of the resource and to maximize the profit of the cloud broker. This technique provides basis of decision making about the resources needed to provide a service.

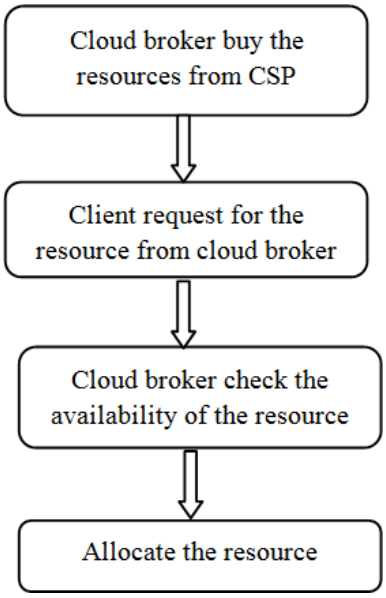


**Fig.1 Flow diagram**

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## IV. SYSTEM ARCHITECTURE

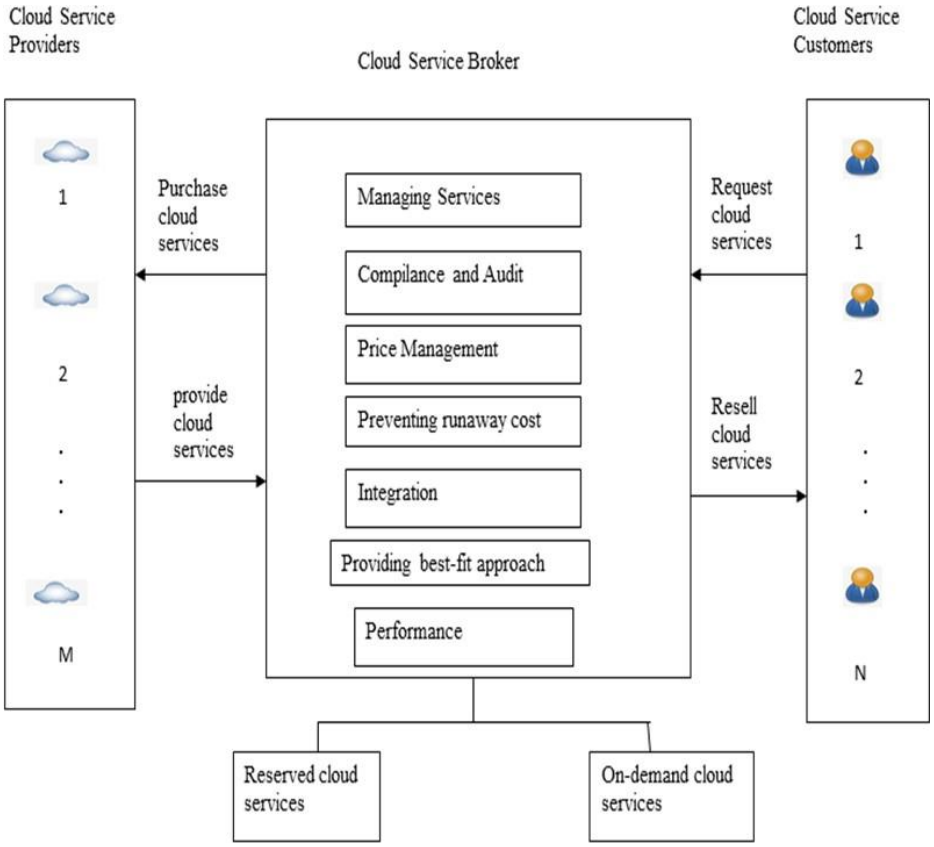


**Fig.2 System Architecture**

## V. CONCLUSION

In this paper, we focus on the profit maximization problem of cloud brokers. A cloud broker is an intermediary entity between cloud service providers and customers, which buys reserved instances from cloud providers for long periods of time and outsources them as on-demand VMs for a lower price with respect to what the cloud service providers charge for the same VMs. Due to the lower service price compared with the public clouds, the cloud broker can save much cost for customers. This paper tries to guide cloud brokers on how to configure the virtual resource platform and how to price their service such that they can obtain the maximal profit, and also how to allocate the resources dynamically to clients so that the space did not get wasted .Develop a robust track and trace mechanism to help the distributors the retail pharmacist and the patient. This mechanism should be easy to implement by all manufacturers.

## REFERENCES

1. MohsinNazir, “Cloud Computing: Overview & Current Research Challenges”, IOSR Journal of Computer Engineering,2012.
2. Patel, Z., Senjaliya, N., & Tejani, A. (2019). AI-enhanced optimization of heat pump sizing and design for specific applications. International Journal of Mechanical Engineering and Technology (IJMET), 10(11), 447-460.

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3. Monjur Ahmed, Mohammad Ashraf Hossain, "Cloud Computing And Security Issues In The Cloud", International Journal Of Network Security & Its Applications, 2014.
4. Victoria Paulsson, Vincent C. Emeakaroha, John Morrison, Theo Lynn "Cloud Service Brokerage: A systematic literature review using a software development lifecycle", 22nd Americas Conference on Information Systems (AMCIS 2016).
5. Ravi Khurana, Rajesh Kumar Baw, "Quality Based Cloud Service Broker for Optimal Cloud Service Provider Selection", International Journal of Applied Engineering Research,2017.
6. J.Sasidevi, R.Sugumar, Fuzzy C-means Clustering and Elliptic Curve Cryptography using privacy preserving in cloud, International Journal of Business Intelligence and Data Mining, Volume 15, Issue 3, pp.273-287, July 2019
7. Rajesh Pal1, Samaresh Mishra and PrasantKu.Patnaik, "Study on Cost Estimation of Service Delivery in Cloud Computing Environment", International Journal of Information and Computation Technology, 2014.
8. Ahmad M. Manasrah, Tariq Smadi, and AmmarAlmomani. "A variable service broker routing policy for data center selection in cloud analyst", Journal of King Saud University Computer and Information Sciences, 2016.
9. Srinivasan.A, Kalaimani R, "Profit maximization scheme with guaranteed quality of service in cloud computing", International Journal of Pure and Applied Mathematics Volume No. 14, 2018.
10. AnandMotwani, RakhiChaturvedi, AnuragShrivastava, "Profit Based Data Center Service Broker Policy for Cloud Resource Provisioning", International Journal of Electrical, Electronics Computer Engineering 2016.
11. Adel NadjaranToosi, Kurt Vanmechelen,,KotagiriRamamohanarao, RajkumarBuyya, "Revenue Maximization with Optimal Capacity Control in Infrastructure as a Service Cloud Markets", IEEE Transaction on Cloud Computing Volume: 3 , Issue:3 , Sept. 2015.
12. S.Jagadish, R.Sugumar, Optimal Knowledge Extraction technique based on hybridization of improved artificial bee colony algorithm and cuckoo search algorithm, International Journal of Business Intelligence and Data Mining, Volume 11, Issue 4, pp.221-232, November 2017
13. Qi Zhang, Quanyan Zhu, RaoufBoutaba, "Dynamic Resource Allocation for Spot Markets in Cloud Computing Environments", 2011 Fourth IEEE International Conference on Utility and Cloud Computing.