Enriched Profit Maximization Service Based Scheme for Multi- Cloud Platform

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Abstract- *An effective and efficient way to provide computing resources and services to clients on demand, cloud computing has become more and more popular. From cloud service providers' perspective, profit is the most important consideration along with user-friendly quality services, and it is mainly determined by the configuration of a cloud service platform under given market demand. 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. In this project, a double resource renting scheme is designed firstly in which short-term renting and long-term renting are combined aiming at the existing issues. This double renting scheme can effectively guarantee the quality of service of all requests and reduce the resource waste greatly. The results show that our scheme can not only guarantee the service quality of all requests, but also obtain more profit than the latter. To enhance the quality services to the client, a tool is to be developed that will track the data usage and storage spaces of all the users and provide flexibility in the renting to the client.*

Keywords- Cloud Computing, Guaranteed Service Quality, Multi Server System, Service Level Agreement, Queuing Models, Scheduling Models, Resource Management

I. INTRODUCTION

Cloud computing is a kind of Internet based enlisting that gives shared PC getting ready resources and data to PCs and diverse contraptions on request. In a distributed computing condition, there are always three levels, i.e., establishment providers, organizations providers, and customers. An establishment provider keeps up the fundamental equipment and programming workplaces. A specialist organization rents assets from the foundation suppliers and administrations to clients. 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 a cloud environment, we can dynamically configure a large pool of virtualized resources to adjust to a variable load and thus optimize resource utilization. Achieving a fair, reasonable, and effective allocation of resources among service providers and users is a primary challenge[3]. The goal of Cloud computing is to provide end users with a considerable processing power and computing resources that allow them to run the applications and other computing user's requirements. In general, Cloud Computing depends on the power and resources of computer networks. With this architecture, clients have access to the resources provided by the cloud provider as described in their Service Level Agreement (SLA). Often traditional scheduling techniques and allocation strategies cannot be used in cloud computing, in which the number of end users requests increases and decreases over time in an unpredictable way. This leads to difficulties of analysis and discover of information from incoming requests to distribute the available resources according to user requirements and constraints of cloud provider [2]. Similarly, unpredictable requests due to the increased costs of server load, maximum the total execution time of the task and the difficulty of making an optimal decision in the whole group of tasks. The most important problem is how to build a model that can maximize server utilization and minimize waiting time in queuing models. Therefore, a mathematical model is proposed to deal with multiple tasks and resources based on the basis of maximizing the benefit of the cloud provider and decrease the response time of the system [1].

In this project, we aim at researching the multiserver configuration of a service provider such that its profit is maximized. The main objective of this project is to improve the performance of cloud system using queuing models such as M/M/m+D model .There are various strategies used to optimize the resources by cloud service provider. All methodology is focusing on the allocation of resource by considering the numerous parameters i.e. price, reliability, efficiency, utility, satisfaction of customer, scalability and quality of service (QOS)[4].

II. LITERATURE SURVEY

A. A Profit Maximization Scheme with Guaranteed Quality of Service in Cloud Computing, Jing Mei, Kenli Li, Aijia

Ouyang, Keqin Li, Vol. no. 64, 06 February 2015 [Citation information: DOI 10.1109/TC.2015.2401021, IEEE Transactions on Computers]

As an effective and efficient way to provide computing resources and services to customers on demand, cloud computing has become more and more popular. From cloud specialist organizations' point of view, benefit is a standout amongst the most critical contemplations, and it is primarily controlled by the setup of a cloud benefit stage under given market request. In any case, a single long-term renting scheme is regularly grasped to outline a cloud arrange, which can't guarantee the organization quality yet prompts veritable resource misuse. In this paper, a double resource renting scheme is composed right off the bat in which short-term renting and long-term renting are combined aiming going for the current issues. This double renting scheme can successfully ensure the nature of administration of all solicitations and diminish the asset squander incredibly. Besides, an administration framework is considered as a M/M/m+D queuing model and the execution markers that influence the benefit of our double renting scheme are broke down, e.g., the average charge, the proportion of solicitations that need brief servers, and so on. Thirdly, a benefit augmentation issue is detailed for the double renting scheme and the improved setup of a cloud stage is gotten by taking care of the benefit amplification issue. Finally, a movement of estimations are directed to consider the advantage of our proposed scheme with that of the single renting scheme. The outcomes demonstrate that our scheme can not just ensure the administration nature of all solicitations, yet in addition acquire more benefit than the last mentioned.

B. Enhancing Cloud Computing Scheduling based on Queuing Models, Mohamed Eisa, E. I. Esedimy, M. Z. Rashad, Volume 85 – No 2, January 2014.

In recent years, cloud computing has matured from an early-stage solution to a mainstream operational model for enterprise applications. However, the decent variety of advancements utilized as a part of cloud systems makes it hard to break down their QoS and, from the supplier point of view, to offer administration level assurances. We have studied current methodologies in workload and system modeling and early applications to cloud QoS administration. This paper aims at supporting research in this area by providing a survey of the state of the art of QoS modeling approaches suitable for cloud systems. We also review and classify their early application to some decision-making problems arising in cloud QoS management. The most important problem is how to build a model that can maximize server utilization and minimize waiting time in queuing models. Therefore, a mathematical model is proposed to deal with multiple tasks and resources based on the basis of maximizing the benefit of the cloud provider and decrease the response time of the system. The main objective of this paper is to improve the performance of cloud system using queuing models as a tool. Furthermore, proposed model verified experimentally in several models that achieve higher utilization and response times compared to other models. Finally, scheduling algorithm that compute the lower and upper waiting time for all jobs at the waiting queues is introduced.

C. Resource allocation strategies used in cloud computing: A critical analysis, Neeraj Kumar Pandey, Sumit Chaudhary, N.K. Joshi, 978-1-5090-3210-5/16/$31.00 © 2016 IEEE

In this paper the proposed system comes under the Iaas which provides memory and processor as a resource. Each client needed to get the administrations of cloud as they present the activity quickly. In this circumstance the designation of asset at constant is a testing issue. Cloud administrations are productively and ideally dispensed to fulfill the prerequisites of client. The concentration of this paper is definite and relative investigation on various resource allocation strategies by safeguarding the service level agreement (SLA). The paper brief the calculations utilized by the cloud specialist co-op to assign assets when the numerous clients touch base with various burst time and diverse asset prerequisite. As cloud computing is a new trending technology, there are a various new challenges faced by various researchers in optimization of resource allocation strategies. which is a major issue along with security and power. In this paper a detailed analysis on literature of various cloud resource allocation algorithms their results proposed by researchers are discussed. The critical analysis section includes advantages, methodology used to optimize the existing performance and their outcomes. The paper also focuses on the scope of improvement in every strategy followed in regard with resource allocation methodologies in cloud environment. The resource allocation mechanism is changing on every layer of cloud with different parameter of evaluation. So every technique has some features and some demerits when measured on the basis of some parameter. Every strategy performs well in the particular situations/conditions, thus no any single strategy is said to be perfect for resource allocation in cloud environment because of having limited performance.

D. A cloud computing resource allocation model based on combinatorial double auction, Jun Xu, DOI 10.1109/ICISCE.2016.12.

In this paper we know that users and providers have different requirements and objectives in an investment market. Users will pay the lowest price possible with certain guaranteed levels of service at a minimum and providers would follow the strategy of achieving the highest return on their investment. As the rate of information growth intensifies, so has the study of cloud resource management because cloud computing can generate powerful online resource convergence. This paper presents a new cloud computing resource allocation model based on combinatorial double auction mechanism (CDA-CCRA) for more effective resource utilization. The CDA-CCRA model can simultaneously satisfy the requirements of users.

III. SYSTEM ARCHITECTURE

A system architecture is the theoretical model that characterizes the structure, conduct, and more perspectives of a framework. A system architecture can contain framework parts and subcomponents, the grow frameworks built up, that will cooperate to execute the general framework. A design portrayal is a formal depiction and portrayal of a framework, sorted out in a way that backings thinking about the structures and practices of the system. There have been endeavors to formalize dialects to portray system architecture, on the whole these are called architecture description languages (ADLs). A systems architecture makes utilization of components of both programming and equipment and is utilized to empower plan of such a composite framework. A decent design might be seen as an 'apportioning plan,' or calculation, which segments the majority of the framework's available and predictable prerequisites into a workable arrangement of neatly limited subsystems with nothing left finished. That is, it's a partitioning scheme which is selective, comprehensive, and thorough. A noteworthy reason for the apportioning is to orchestrate the components in the sub frameworks so that there is at least interdependencies required among them. In both software and hardware, a great sub framework has a tendency to be believed to be an important "object". In addition, a great design accommodates a simple mapping to the client's prerequisites and the approval trial of the client's necessities. Ideally, a mapping also exists from every least element to every requirement and test.

A. The system architecture consists of following modules:

1) Client:

The client will send request to providers for different services. The client will have to pay to provider for particular services he/she request for.

2) BSP:

A Business Services Provider (BSP) is a sort of specialist organization that rents outsider programming applications to organizations.

3) ISP:

An Infrastructure as a Service Provider (ISP) is taking the physical hardware and going totally virtual (e.g. all servers, systems, storage, and system administration all current in the cloud).

When all is said in done, a specialist co-op rents a specific number of servers from the foundation suppliers and fabricates distinctive multi-server frameworks for various application spaces. Each multiserver framework is to execute an exceptional kind of administration solicitations and applications. Thus, the renting cost is corresponding to the quantity of servers in a multiserver system[1].

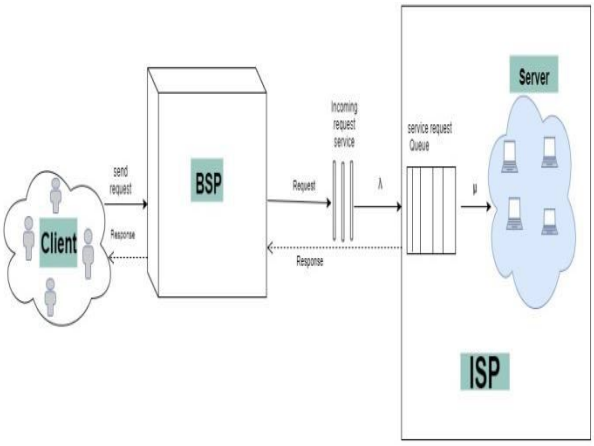

Fig. 1: System Architecture

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[3]. The revenue of a service provider is related to the amount of service and the quality of service. To abridge, the benefit of a specialist provider is mostly controlled by the arrangement of its administration stage. To arrange a cloud benefit stage, a specialist co-op more often than not receives a single renting schene. That is to state, the servers in the administration framework 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 [4] .

A. Disadvantages of Existing System:

- The resources are wasted.
- The waiting time of the service requests is too long [1].
- Sharp increase of the renting cost or the electricity cost. Such increased cost may counter weight the gain from penalty reduction. In conclusion, the single renting scheme is not a good scheme for service providers [1].
- Scheduling speed become less because of 'n' number of user request.

V. PROPOSED SYSTEM

In this paper, we propose a novel renting scheme for specialist co-ops, which can fulfill nature of-benefit prerequisites, as well as can get more benefit [1] . A novel double renting scheme is proposed for specialist organizations. [1] It joins long term renting with short term renting, which can not just fulfill nature of-benefit necessities under the shifting framework workload, yet in addition decrease the asset squander enormously [1] .A multiserver framework received in our paper is displayed as a M/M/m+D queuing model and the execution pointers are broke down, for example, the normal administration charge, the proportion of solicitations that need short term servers, and so forth [2] . 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 [2] . A series of comparisons 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 [3] .

A. Advantages of Proposed System:

- Since the requests with waiting time D 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 [1] .
- Increase in the quality of service requests and maximize the profit of service providers [2] .
- This plot joins short-term renting with long-term renting, which can lessen the asset squander extraordinarily and adjust to the dynamical request of processing limit [1]

VI. CONCLUSION AND FUTURE SCOPE

In this project a new approach called Double Quality Guaranteed renting method for service providers is proposed to ensure the quality of service demands as well as to enhance the profit. To minimize the wastage of resources, this method includes both the short term renting method as well as long term renting method. To vary the system sizes, a queuing model is implemented for multi-server system. The data hosting algorithm is implemented before the DQG method, to make the suitable choice of cloud as well as to enhance the profit of service provider. After that, an issue of optimal configuration of profit increasing is defined in that several aspects are determined. This proposed double renting strategy is implemented to heterogeneous cloud environment. we use double renting system in order to increase the profit of provider. This project also focuses on the scope of improvement in every strategy followed in regard with resource allocation methodologies in cloud environment. To enhance the quality services to the client, a tool is to be developed that will track the data usage and storage spaces of all the users and provide flexibility in the renting to the client.

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