An Enhanced Quality of Service Based He-DQG Algorithm for Heterogeneous Cloud Environment

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Abstract- *A secure and efficient way to provide computing services to users on cloud computing has become more and more popular. Cloud computing in a heterogeneous environment offers a rapidly and on-demand wide range of services to the end users. Previously single long-term renting scheme is usually adopted to configure a cloud platform. Profit is regarded as most important factor obtained from the point of view of cloud service providers' and it is especially determined by the configuration for a cloud service platform under the given market demand. Novel double quality guaranteed renting scheme is proposed that guarantee the QOS for the customers and also it maximizes the profit of the service providers. Heterogeneous Double-Quality- Guaranteed (He-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. Usually, a long-term renting with short-term renting, is used for configuring a cloud platform that cannot guarantee the quality of service requirements under the varying system workload, but also reduce the resource waste greatly. In this paper, firstly a double resource renting scheme is designed in which short-term renting and long-term renting were combined by aiming at the issues of existing one.*

Keywords- *Cloud computing, Heterogeneous Double-Quality-Guaranteed (He-DQG), Single-Quality-Unguaranteed (SQU, virtual machine (VM)***.**

I. INTRODUCTION

Cloud computing is quickly turning into a successful and also effective method for figuring assets. By combining administration of assets and administrations together, Cloud computing will convey facilitated administrations across the Internet. It leads the new IT revolution in recent years [1]. Such outsourcing to cloud also provides security to the data stored in the cloud rather than storing it in the private computer systems [2]. Many authorized users from the organizations can remotely access the data stored in the cloud across different geographic locations. The main thrust of cloud computing has become a highly on-demand services, high performance, scalability, accessibility as well as availability. So we implement a renting scheme in a Hybrid renting way to improve the profit of service providers. In that point, the pays for the administration takes into consideration the measure of the administration and the nature of the administration.

An administration supplier is capable of assembling diverse multi server frameworks for several application spaces, so that administration solicitations for various nature were sent to different multi server frameworks. The Inferable from excess of PC framework systems and also capacity framework may not be solid for information as per the security score is concerned. In case of Cloud computing security is enormously enhanced in view of a prevalent innovation security framework, presently it is effectively accessible and moderate. The Applications will no more keep running on the desktop Personal Computer however they keep running in the cloud. This implies that the PC will not require the preparing power or hard circle space as it is requested by conventional desktop programming. The Effective servers and so forth were no more required. The figuring force for the cloud may be utilized to supplant or supplement interior registering assets. The Associations will no more require buying registering assets for handle the limit crests.

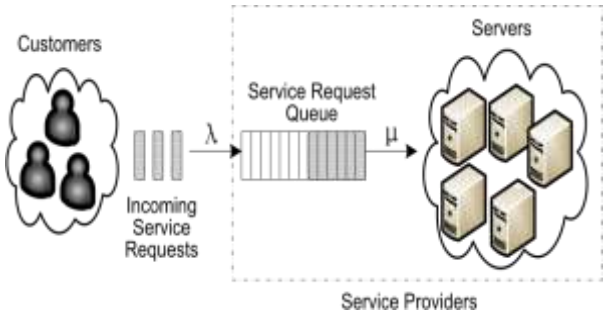


Fig. 1. Cloud Computing Service Queuing Model

II. CLOUD RENTING PHASES

In this paper various provable cloud renting phasing are discussed.

A. Cloud Subscription

First phase of cloud service outsourcing process is Cloud Subscription. Cloud computing define by a type of outsourcing services. In which the search the information in a server. It allowing users to access technology-enabled services from the Internet in the cloud without knowledge of, or control over the technologies behind these servers. This Cloud subscriptions required to the user for storage and process. And user subscribe cloud service based on the requirements.

B. Double-Quality-Guaranteed (DQG)

In this phase, Heterogeneous double-Quality-Guaranteed (DQG) resource renting scheme which combine-s long-term with short-term renting. The main computing capacity is provided by the long-term rented servers because of their low price. The short-term rented servers will provide the extra capacity in peak period. The proposed DQG scheme adopts the traditional queuing discipline. For each service request entering by the system, and the system records its waiting time. The requests are assigned by the executed on the long-term rented servers in the order of arrival times. And the profit maximization problem in a homogeneous cloud environment.

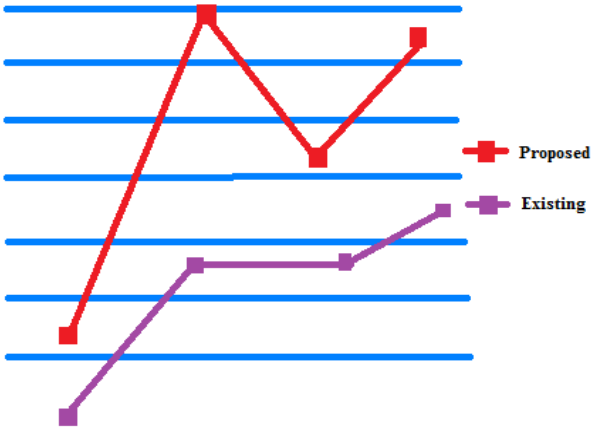


Fig. 2. DQG Renting Scheme of Throughput Analysis

C. DQG in heterogeneous

In this phase, DQG is implemented in heterogeneous environment. In order to guarantee the QOS requests and maximize the profit of service providers, this paper has proposed a novel Double-Quality-Guaranteed (DQG) renting scheme for service providers. In addition, series of calculations are conducted to compare the profit obtained by the DQG renting scheme with the Single-Quality-Unguaranteed (SQU) renting scheme. The results show that outperforms the SQU scheme in terms of both service quality and profit. The analysis of a heterogeneous environment is much more complicated in the cloud process. So heterogeneous in Double-Quality-Guaranteed (DQG) is provide the Maximization Scheme with Guaranteed Quality of Service in Cloud Computing.

D. Predict Efficient QOS Service Provider in client

In this phase the service providers considered as cloud brokers because they can play an important role in between cloud customers and infrastructure providers. QOS is predict the efficient cloud service to the client. In QOS provides the basic hardware and software facilities. The cloud service provider rents resources from the infrastructure providers. The cloud provide resources for job and set of services in the form of virtual machine (VM). The infrastructure service providers for profit maximization is formulated and two kinds of resource renting schemes, e.g., long-term renting scheme, short-term renting scheme. In general, the rental price of long-term renting scheme is much cheaper than that of short-term renting scheme.

III. QUALITY-GUARANTEED SCHEME

The custom single resource renting scheme cannot guarantee the quality of all requests but wastes a great amount of resources due to their uncertainty of system workload. To overcome the weakness, we propose a double renting scheme as follows, which cannot guarantee the quality of service completely but also can reduce the resource waste greatly.

A. Proposed Scheme

In this section, first we propose the double-Quality-Guaranteed (DQG) resource renting scheme which combines long-term with short-term renting. The main computing capacity is provided by the long-term rented servers because of their low price. The short-term rented servers will provide the extra capacity in peak period. Since the requests with waiting time are all assigned to temporary services, it is apparent all temporary services are rented for all requests whose waiting time are equal to the deadline and are charged based on the workload according to the SLA [9]. Hence, the cost and revenue of the service provider will be increases. However, the cost increases as well as due to the temporarily rented services. Moreover, the amount of renting cost spent in temporary services is determined by the computing capacity of the long-term rented multi-server system. The maximizing the profit first should understand the cost and revenue using our scheme. Since minimizing the cost is the key issue for profit maximization. Next, the tradeoff between the long- term rental cost and short-term rental cost is considered.optimal problem is formulated in the following to get the, long-term optimal configuration such that the profit is maximized.

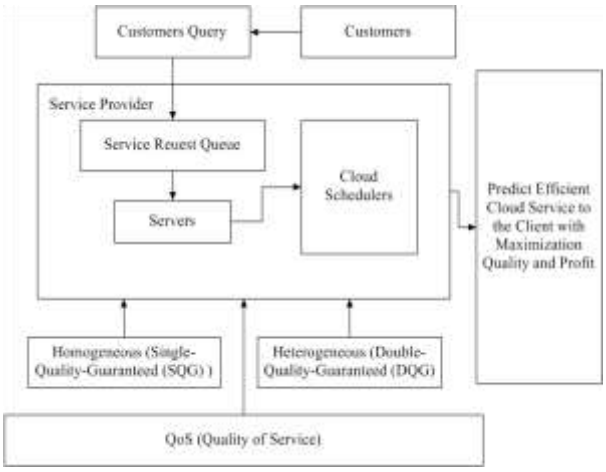
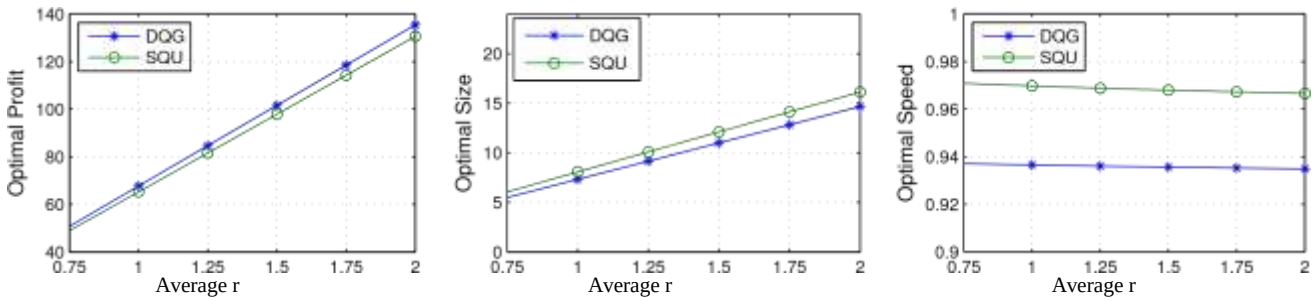


Fig. 3. Architecture

B. Performance Comparison

Using our resource renting scheme, temporary services are rented for all requests whose waiting time are equal to the deadline. Which can guarantee that all requests are served with better service quality. Hence, our scheme is superior to the traditional resource renting scheme in the terms of service quality. Performance comparison graph between optimal profit and average r has been drawn and shown in Fig 4. Next, we conduct a series of calculations to compare the profit obtained by the DQG renting scheme with the SQU renting scheme. In proposed system we are using the Double-Quality-Guaranteed (called DQG) renting scheme that can achieve more profit compared to the compared Single-Quality-Unguaranteed (called SQU) renting scheme in the premise of completely guaranteeing the service quality.



(a) Comparison of Profit. (b) Comparison of Server Size. (c) Comparison of Server Speed.

Fig. 4. Comparison between our schemes with that in [1].

IV. CONCLUSION

The demand for outsourcing the data to the cloud is tremendously increasing. A novel double quality guaranteed renting scheme is proposed that guarantee the QOS for the customers and also it maximizes the profit of the service providers. Usually, a long-term renting with short-term renting scheme that cannot guarantee the quality of service requirements, but also reduce the resource waste greatly .In this paper studied the profit maximization problem for cloud service providers using a dynamic pricing model. In case of dynamic pricing mechanism, Taking full advantage of the temporal price differences between delay tolerances of the task, this paper presents a dynamic virtual resource renting approach. The experimental result shows that the proposed approach can reduce rental costs and maximize profits of cloud service providers, In addition, a series of calculations are conducted to compare the profit obtained by the DQG renting scheme with the Single-Quality-Unguaranteed (SQU) renting scheme.

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The Part of this paper has regarded in [1]. This new version contains giant revision with new algorithm designs, evaluation, proofs, and simulation effects.

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