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Survey on a Profitable Service in Cloud Computing

Shaikh Md. Arshad

Dr. BAMU University Aurangabad (M.S), Everest College of Engineering & Technology, Jatwada Road, Aurangabad 431001, India

Abstract: ***Cloud computing is very popular now a day because it provide service on demand, like bank transaction, updating face book status, what's-up application on android phone are the best example of cloud computing services ,so it is very important to know how the cloud computing services or which type of service architecture will help to increase the profit .Basically there are three main sector in cloud computing where we can earn the maximum profit 1) Infrastructure providers 2) Services providers, and 3) Customers .Infrastructure providers provide Hard-ware and software facility, service provider take the facility provided by Infrastructure providers on rent pay the rent to it make number of service that run on that and make available to customer on demand of service, customer pay to the services providers for particular service. In survey paper we found that service provider make multiserver configuration of a service to maximize the profit. Generally 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 paper, 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. Secondly, a service system is considered as an M/M/m+D queuing model and the performance indicators that affect the profit of our double renting scheme are analyzed, e.g., the average charge, the ratio of requests that need temporary servers, and so forth. Thirdly, a profit maximization problem is formulated for the double renting scheme and the optimized configuration of a cloud platform is obtained by solving the profit maximization problem.***

Keywords: Cloud computing, trusted quality of service, profit Maximization, Service Charge, service-level agreement, multi-server system, Queuing Model

1. Introduction

Cloud computing is rapidly turning into a successful and effective method for figuring assets. By brought together administration of assets and administrations, Cloud computing conveys facilitated administrations over the Internet. Cloud computing can give the most practical and vitality effective method for processing assets administration. Cloud computing transform's data innovation into common wares and utilities by utilizing the pay-per-use evaluating model. An administration supplier rents assets from the foundation sellers, constructs suitable multi server frameworks, and gives different administrations to clients. A buyer presents an administration solicitation to an administration supplier, gets the sought result from the administration supplier with certain administration level assertion. At that point pays for the administration in view of the measure of the administration and the nature of the administration. An administration supplier can assemble distinctive multi server frameworks for various application areas, such that administration solicitations of various nature are sent to various multi server frameworks. Attributable to repetition of PC framework systems and capacity framework cloud may not be solid for information, the security score is concerned. In Cloud computing security is enormously enhanced due to a prevalent innovation security framework, which is currently effortlessly accessible and reasonable. Applications no more keep running on the desktop Personal Computer yet keep running in the cloud. This implies the PC does not require the preparing power or hard plate space as requested by customary desktop programming. Effective servers and so forth are no more required. The registering force of the cloud can be utilized to supplant or supplement inward figuring assets. Associations no more need to buy processing assets to handle the limit crests. Cloud computing is rapidly turning into a viable and productive method for figuring assets. By brought together administration of assets and administrations, Cloud computing conveys facilitated administrations over the Internet. Cloud computing can give the most financially savvy and vitality effective method for registering assets administration. Cloud computing transform's data innovation into conventional items and utilities by utilizing the pay-per-use estimating model. An administration supplier rents assets from the framework sellers, fabricates suitable multi server frameworks, and gives different administrations to clients. A purchaser presents an administration solicitation to an administration supplier, gets the coveted result from the administration supplier with certain administration level assertion. At that point pays for the administration taking into account the measure of the administration and the nature of the administration. An administration supplier can assemble diverse multi server frameworks for various application spaces, such that administration solicitations of various nature are sent to various multi server frameworks. Inferable from excess of PC framework systems and capacity framework cloud may not be solid for information, the security score is concerned. In Cloud computing security is enormously enhanced in view of a prevalent innovation security framework, which is presently effectively accessible and moderate. Applications no more keep running on the desktop Personal Computer however keep running in the cloud. This implies the PC does not require the preparing power or hard circle space as requested by conventional desktop programming. Effective servers and so forth are no more required. The figuring force of the cloud can be utilized to supplant or supplement interior registering assets. Associations no more need to buy registering assets to handle the limit crests.

2. Related Work

Existing clouds focus on the provision of web services targeted to developers, such as Amazon Elastic Compute Cloud (EC2) or the deployment of servers, such as Go Grid Emerging clouds such as the Amazon Simple DB and Simple Storage Service offer data management services. Optimal pricing of cached structures is central to maximizing profit for a cloud that offers data services. Cloud businesses may offer their services for free, such as Google Apps and Microsoft Azure or based on a pricing scheme. Amazon Web Service (AWS) clouds include separate prices for infrastructure elements, i.e. disk space, CPU, I/O and bandwidth. Pricing schemes are static, and give the option for pay as-you-go. Static pricing cannot guarantee cloud profit maximization. The cloud caching service can maximize its profit using an optimal pricing scheme. This work proposes a pricing scheme along the insight that it is sufficient to use a simplified price-demand model which can be re-evaluated in order to adapt to model mismatches, external disturbances and errors, employing feedback from the real system behavior and performing refinement of the optimization procedure. Overall, optimal pricing necessitates an appropriately simplified price-demand model that incorporates the correlations of structures in the cache services.

[1]This paper explain why a firm may prefer static pricing over dynamic pricing when consumers are strategic and decide whether to consider to purchase based on the firm‟s chosen pricing strategy. By charging a static price a firm imposes a rationing risk on consumers whereas a firm that changes prices dynamically imposes a price risk on consumers. Imposing a rationing risk on consumers can dominate, especially when consumer‟s valuations for the product are highly variable and the advantage of static pricing over dynamic pricing can be substantially larger than the advantage of dynamic pricing over static pricing. Offering availability guarantees to compensate consumers for stock-outs or allowing reservations may serve to benefit static pricing even further. We find that the problem with dynamic pricing is that the firm may charge a high price that leaves consumers with zero surplus, so the firm can improve its revenues by implementing a pricing strategy which leaves consumers with a positive surplus in all states of demand. Overall, we conclude that even though dynamic pricing responds better to demand conditions, charging a static price can be the preferable pricing strategy when consumers are strategic and even better can be a pricing strategy in which the firm charges a base price (which is lower than the highest valuation) and it commits not to raise it, but can potentially decrease it.

[2]This paper proposed a pricing model for cloud computing which takes many factors into considerations, such as the requirement of a service, the workload λ of an application environment, the configuration (m and s) of a multiserver system, the service level agreement c, the satisfaction (r and s0) of a consumer, the quality (W and T) of a service, the penalty d of a low-quality service, the cost (β and m) of renting, the cost (α,ϒ,P*, and P) of energy Consumption, and a service provider‟s margin and profit a. By using an M/M/ m queuing model, we formulated and solved the problem of optimal multiserver configuration for profit maximization in a cloud computing environment. Our discussion can be easily extended to other service charge functions. Our methodology can be applied to other pricing models.

[3] This research work show that Cloud computing democratizes access to “supercomputer-class” capability
– All you need is a credit card

- Puts students, academia on more level playing field to have high impact in industry
- The next Google, eBay, Amazon, etc. can come from a small team of entrepreneurs even without heavy dose of $$ up front

[4]Cloud computing is a new and promising paradigm delivering IT services as computing utilities. As Clouds are designed to provide services to external users, providers need to be compensated for sharing their resources and capabilities. In this paper, we have proposed architecture for market-oriented allocation of resources within Clouds. We have also presented a vision for the creation of global Cloud exchange for trading services. Moreover, we have discussed some representative platforms for Cloud computing covering the state-of-the-art. In particular, we have presented various Cloud efforts in practice from the market-oriented perspective to reveal its emerging potential for the creation of third-party services to enable the successful adoption of Cloud computing, such as meta-negotiation infrastructure for global Cloud exchanges and provide high performance content delivery via „Storage Clouds‟.

The state-of-the-art Cloud technologies have limited support for market-oriented resource management and they need to be extended to support: negotiation of QoS between users and providers to establish SLAs; mechanisms and algorithms for allocation of VM resources to meet SLAs; and manage risks associated with the violation of SLAs. Furthermore, interaction protocols needs to be extended to support interoperability between different Cloud service providers. In addition, we need programming environments and tools that allow rapid creation of Cloud applications.

[6] In this paper, we investigated the service provisioning problem at business service level in the cloud. Using utility theory leveraged from economics, we developed a utility model for measuring customer satisfaction. Based on the utility model, we gave a new type of SLAs between a business service provider and its customers. Our study revealed that the marginal rates of substitution of customers have a significant impact on a service provider‟s profit. We characterized the relationship between the profit of a service provider and customers‟ satisfaction based on the utility model. We proposed two scheduling algorithms for a service provider to make tradeoffs between its profit and customer satisfaction. By using flexible satisfaction targets (or unit profit bounds), our algorithms enable service providers to dynamically optimize their profit (or customer satisfaction) according to workload changes and resource price fluctuations. This work provided a practical method for

supporting utility based SLAs in the cloud. Our extensive simulation based on Amazon EC2 data showed the effectiveness of the method.

[8] In this paper he contribution of leakage current to the total energy consumption is expected to increase. Depending on the amount of slack that remains before the deadline, the amount of parallelism, and the granularity of the application, voltage scaling as well as shutting down processors can be used to reduce the energy significantly. At the same time, it is important not to employ too many processors.

[11] In Cloud Computing, Resource provisioning means the selection, deployment, and run-time management of software (e.g., database servers, load balancers etc.) and hardware resources (e.g., CPU, storage, network etc.) for ensuring guaranteed performance for applications. These techniques are used to improve response time, performance, save energy, QoS, SLA. The ultimate goal of resource provisioning is to maximize profit from the Cloud Service Provider"s Perspective and from the Cloud User"s Perspective to reduce cost.

There are many challenges in the existing resource provisioning strategies. A mechanism that overcomes the challenges of the existing techniques has to be used. Architecture has to be proposed so that it works for Data intensive-HPC applications and also for real workload. Mechanisms have to be proposed to efficiently make of cloud resources so that QoS is met and SLA violation in minimized in hybrid clouds when dynamically provisioned. Also these provisioning mechanisms must be used for both SaaS and IaaS users.

Cloud computing is the technology of the next generation which unifies everything into one. It is an on demand service because it offers dynamic flexible resource allocation for reliable and guaranteed services in pay as you- use manner to users. The review shows that SaaS is very important layer in cloud computing because all the allocation of resources to the application is done by SaaS providers. This paper focused on the review of customer requests for SaaS providers with the explicit aim of cost minimization or to increase the profit with dynamic demands handling. An effective strategy is required for achieving user satisfaction and maximizing the profit for cloud service providers. This paper discusses just about the review of SaaS layer in cloud computing based on the QoS parameter and SLA.

[12]A pricing model is developed for cloud computing which takes many factors into considerations, such as the requirement r of a service, the workload of an application environment, the configuration (m and s) of a multiserver system, the service level agreement c, the satisfaction (r ands0) of a consumer, the quality (Wand T) of a service, the penalty d of a low-quality service, the cost of renting, the cost of energy consumption, and a service provider"s margin and profit. And this will schedules the job according to optimization of speed and size of the input hereby maximizing the profit

[13] Keeping in mind the end goal to ensure the nature of administration demands and boost the benefit of administration providers, this paper has proposed a novel Double-Quality-Guaranteed (DQG) leasing plan for administration suppliers. This plan joins fleeting leasing with long haul leasing, which can lessen the asset squander significantly and adjust to the dynamical interest of processing capacity. An M/M/m+Dqueueing model is work for our multiserver framework with changing system size. And after that, an ideal setup issue of benefit amplification is detailed in which numerous elements are taken into contemplations, for example, the business sector request, the workload of demands, the server-level understanding, the rental expense of servers, the expense of vitality consumption, et cetera. The ideal arrangements are tackled for two unique circumstances, which are the perfect ideal arrangements and the real ideal arrangements. What's more, a progression of calculations are directed to think about the benefit got by the DQG leasing plan with the Single-Quality-Unguaranteed (SQU) leasing plan. The results demonstrate that our plan outperforms the SQU plan as far as both of administration quality and benefit.

[14]In order to guarantee the quality of service requests and maximize the profit of service providers, this paper has proposed a novel Double-Quality-Guaranteed (DQG) renting scheme for service providers. 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. An M/M/m+D queueing model is build 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. The optimal solutions are solved for two different situations, which are the ideal optimal solutions and the actual optimal solutions. 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. The results show that our scheme outperforms the SQU scheme in terms of both of service quality and profit.

This paper propose double renting scheme is proposed for service providers. It combines long-term renting with short-term renting, which can not only satisfy quality-of-service requirements under the varying system workload, but also reduce the resource waste greatly. A multiserver system adopted in this paper modeled as an M\M\m+D queuing model and the performance indicators are analyzed such as the average service charge, the ratio of requests that need short-term servers, and so forth. 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 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. In this paper, we only consider

the profit maximization problem in a homogeneous cloud environment, because the analysis of a heterogeneous environment is much more complicated than that of a homogenous environment. However, we will extend our study to a heterogeneous environment in the future

The revenue model is determined by the pricing strategy and the server-level agreement (SLA). In this paper, the usage-based pricing strategy is adopted, since cloud computing provides services to customers and charges them on demand. The SLA is a negotiation between service providers and customers on the service quality and the price. Because of the limited servers, the service requests that cannot be handled immediately after entering the system must wait in the queue until any server is available. However, to satisfy the quality-of-service requirements, the waiting time of each service request should be limited within a certain range which is determined by the SLA. The SLA is widely used by many types of businesses, and it adopts a price compensation mechanism to guarantee service quality and customer satisfaction.

3. Survey Table

Sr.No.	*Paper*	*Technique*	*Advantage*	*Disadvantage*	*Result*
1	Dynamic versus Static Pricing in the Presence of Strategic Consumers	a firm may prefer static pricing over dynamic pricing when consumers are strategic and decide whether to consider to purchase based on the firm"s chosen pricing strategy	Dynamic Pricing responds better to demand conditions	-	dynamic pricing responds better to demand conditions, charging a static price can be the preferable pricing strategy when consumers are strategies
2	Optimal Multi-server configuration for profit maximization in cloud computing	optimal multi-server configuration for profit maximization in a cloud computing environment	Optimization problem are solved effectively. Can obtain optimal server size		optimization problem are formulated and solved analytically
3	Above the Clouds: A Berkeley View of Cloud Computing	provide simple formulas to quantify comparisons between of cloud and conventional Computing	Provides great efficiency		Data is protected and saved without any loss of content
4	Market-Oriented Cloud Computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities	Internetworking them to create a market oriented global Cloud exchange for trading services	Data is safe and has great efficiency	need to address regulatory and legal issues	market-oriented allocation of resources within Clouds
5	The NIST Definition of Cloud Computing	Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources	Provides great efficiency		Data is protected and saved without any loss of content
6	Tradeoffs between Profit and Customer Satisfaction for Service Provisioning in the Cloud	developed a util-ity model for measuring customer satisfaction	Enable service providers to dynamically optimize their profit.		Investigated the service provisioning problem at business service level in the cloud.
7	temporal workload analysis and its application to power-aware scheduling	They introduce temporal workload of a system which specifies how much busy its CPU is to complete the tasks at current time.	reduces the energy consumption		Power-aware scheduling reduces CPU energy consumption in hard real-time systems
8	Leakage-Aware Multiprocessor Scheduling	leakage-aware scheduling heuristics are presented that determine the best trade-off	reduces the total energy consumption		Dynamic Voltage Scaling (DVS) can be utilized to decrease the

		between these three techniques			dynamic force utilization of inserted multiprocessors
9	Scheduling Parallel Application on Utility Grids: Time and Cost Trade –off.	simplest Earliest Deadline First Scheduler Operates two modes a)Capped b)NonCapped	Resource allocation in cloud environment can be performed automatically and dynamically. Cost stays under the budget. The model can be trained on one system and then applied on different system effectively	Problem with dynamic approach is high runtime overhead. Only on-demand pricing model is user Consumers only get profit	Scheduling Parallel Application on Utility Grids to reduce the time and cost
10	Scheduling Workflows with Budget Constrains	Meta scheduling Min-Min cost time tradeoff Max-max cost time tradeoff	Minimize the cost Tradeoff factor indicating level of cost for users	-User get benefit not for service provider. -Power consumption is not considered Based only on pay on demand pricing model. -Other pricing model is not considered	Beneficial for User and also reduce the power consumption
11	Resource provisioning with Budget Constrains for Adaptive Application in Cloud Computing	Loss and Gain Approach	-Budget constraints are Satisfied. -Simple to execute Better make span is build	-Only considering the time and cost -OS and other parameters are not considering. -Loss approach takes more time	Resource provisioning with Budget Constrains for Adaptive Application in Cloud Computing
12	Prediction of Job Resource Requirements for Deadline Schedulers to Manage High- level SLAs on Cloud	a)Self adjusting predictor b)Analytical predictor	-It contains two predictors. If SAP is not trained, Analytical predictor schedules. -It will be executed before the deadline. -Predict the CPU for jobs	-Cost is not considering. -Considering only the execution time. -Other parameters are not considering.	Prediction of Job Resource Requirements for Deadline Schedulers to Manage High- level SLAs on Cloud Very nicely
13	BAG- of –Tasks Scheduling under Budget Constraints.	Budget constrained scheduler	does not exceed the budget user can determine the budget	-Quality of service is not considered. -User only get benefit	Very good for Budget Constraint Scheduling
14	A Profit Maximization Scheme with Guaranteed Quality of Service in Cloud Computing	Double renting scheme	Profit Maximize with help of Double renting scheme	Focus on only Service Provider Profit	Double renting scheme increases profit in cloud computing

4. Conclusion

In order to guarantee the quality of service requests and Increase the profit of service providers Survey is done on a novel Double-Quality-Guaranteed (DQG) renting scheme for service providers. 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. An M\M\m+D queuing model will be created for our multi-server system with varying system size. And then, an optimal configuration problem of profit maximization is formulated in which many factors are taken into considerations

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