

A Profit Maximization Scheme with Ensuring Quality of Service for Customer Satisfaction in Cloud Computing

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ABSTRACT

As a viable and productive approach to give computing assets and services to clients on interest, cloud computing has turned out to be better known. From cloud service provider's point of view, profit is a standout amongst the most essential contemplations, and it is predominantly dictated by the design of a cloud administration stage under given business sector request. Be that as it may, a single long haul renting plan is normally received to design a cloud stage, which can't promise the administration quality however prompts genuine asset waste. In this paper, a double asset renting plan is outlined firstly in which fleeting renting and long haul renting are joined going for the current issues. This double renting plan can viably ensure the nature of administration of all solicitations what's more, lessen the asset squander enormously. Also, an administration framework is considered as a M/M/m+D lining model and the execution pointers that influence the profit of our double renting plan are dissected, e.g., the normal charge, the proportion of solicitations that need makeshift servers, et cetera. Thirdly, a profit amplification issue is planned for the double renting plan and the streamlined arrangement of a cloud stage is gotten by taking care of the profit boost issue. At long last, a progression of computations directed to analyse the profit of our proposed plan with that of the single renting plan. The outcomes demonstrate that our plan cannot just ensure the administration nature of all solicitations, additionally get more profit than the last.

General Terms

Double-Quality-Guaranteed

Keywords

Cloud Computing, Guaranteed Service Quality, Profit Maximization, Queuing Model, Service-Level Agreement, Waiting Time.

1. INTRODUCTION

AS a compelling and proficient approach to combine processing assets and processing services, cloud computing has turned out to be more prevalent . Cloud computing brings together administration of resources and services, furthermore, conveys facilitated services over the Internet. The equipment, programming, databases, data, and all resources are focused and gave to shoppers on-interest . Cloud computing transforms data innovation into normal things and utilities by the pay-per-use valuing model. In a cloud computing environment, there are constantly three levels, i.e., framework suppliers, service provider, and clients. A

framework supplier keeps up the essential equipment and programming offices. An service provider rents resources from the framework suppliers and gives services to clients. A client presents its solicitation to a service provider and pays for it taking into account the sum and the nature of the gave service. In this paper, we go for examining the multiserver arrangement of an service provider such that its profit is maximized.

Like all business, the profit of an service provider in cloud figuring is identified with two sections, which are the cost and the revenue. For an service provider, the expense is the leasing cost paid to the infrastructure providers in addition to the power taken a toll brought on by vitality utilization, and the income is the service charge to clients. When all is said in done, an service provider rents a specific number of servers from the infrastructure provider and constructs distinctive multiserver frameworks for various application spaces. Each multiserver framework is to execute an uncommon kind of service solicitations and applications. Subsequently, the leasing expense is relative to the quantity of servers in a multi server framework. The force utilization of a multiserver framework is straightly corresponding to the number of servers and the server use, and to the square of execution speed. The income of an service provider is identified with the measure of service and the nature of service. To condense, the profit of an service provider is for the most part dictated by the design of its service platform.

2. LITERATURE SURVEY

Cloud Computing and Emerging IT Platforms this paper, author characterize Cloud computing and give the structural planning to making Clouds with business sector arranged

resource allocation by utilizing advancements, for example, Virtual Machines (VMs). Authors additionally give bits of knowledge on market-based resource administration systems that incorporate both client driven service management and computational risk administration to manage Service Level Agreement (SLA)- arranged resource distribution. What's more, authors uncover our initial musings on interconnecting Clouds for progressively making worldwide Cloud trades and markets. At that point, we display some illustrative Cloud stages, particularly those created in commercial enterprises alongside our present work towards acknowledging market-situated resource portion of Clouds as acknowledged in Aneka venture Cloud innovation. Besides, author highlight the distinction between High Performance Computing (HPC) workload furthermore, Internet-based service workload. We likewise depict a meta-arrangement foundation to build up

worldwide Cloud trades and advertise, and show a contextual analysis of outfitting 'Storage Clouds' for superior substance conveyance. At last, author finish up with the requirement for joining of contending IT ideal models to convey our 21st century vision [1].

Tradeoffs between Profit and Customer Satisfaction for Service Provisioning in the cloud this paper, authors utilize utility hypothesis utilized from financial matters also, build up another utility model for measuring client fulfillment in the cloud. In light of the utility model, authors plan an instrument to bolster utility-based SLAs all together to adjust the execution of uses and the expense of running them. We consider a infrastructure-as-a-service sort cloud stage (e.g., Amazon EC2), where a business service provider leases virtual machine (VM) occasions with spot costs from the cloud and picks up income by serving its clients. Especially, authors examine the connection of service benefit and consumer loyalty. Furthermore, authors present two booking calculations that can adequately offer for various sorts of VM occasions to make tradeoffs in the middle of benefit and consumer loyalty. Authors lead broad reenactments taking into account the execution information of various sorts of Amazon EC2 occasions and their value history. Authors trial results exhibit that the calculations perform well over the measurements of benefit, consumer loyalty furthermore, occasion use [2].

Leakage-Aware Multiprocessor Scheduling this paper, leakage-aware planning heuristics are introduced that decide the best exchange off between these three methods: DVS, processor shutdown, and finding the ideal number of processors. Exploratory results got utilizing a public benchmark set of assignment charts and genuine parallel applications demonstrate that our methodology lessens the aggregate vitality utilization by up to 46% for tight due dates and by up to 73% for free due dates thought about to a methodology that just utilizes DVS. Author likewise think about the vitality devoured by our booking calculations to two supreme lower limits, one for the situation where all processors ceaselessly keep running at the same recurrence, and one for the situation where the processors can keep running at diverse frequencies and these frequencies might change after some time. The outcomes demonstrate that the vitality decrease accomplished by our best approach is near these hypothetical limits [3].

Profit-drive schedule for cloud services with data access awareness this paper, authors address the compromise of these scheduling so as to clash targets service demands with the element production of service examples. In particular, author booking calculations endeavor to expand benefit inside the agreeable level of service quality indicated by the service buyer. Authors commitments incorporate (1) the improvement of an evaluating model utilizing processor-sharing for cloud, (2) the use of this estimating model to composite services with reliance thought, (3) the advancement of two arrangements of service solicitation booking calculations, and (4) the advancement of a prioritization arrangement for data service planning to amplify the benefit of data service [4].

Energy and Performance Management of Green Data Centers this paper, author try to handle this deficiency by proposing a precise way to deal with amplify green server farm's benefit, i.e., income short cost. In such manner, authors unequivocally consider reasonable service level agreement (SLAs) that as of now exist between informing focuses and their clients. this model additionally fuses different elements, for example, accessibility of neighborhood renewable force era at server

farms and the stochastic way of server farms' workload. Moreover, authors propose a novel advancement based benefit expansion procedure for server farms for two diverse cases, without and with behind-the-meter renewable generators. Authors demonstrate that the figured advancement issues in both cases are arched projects; in this manner, they are tractable and fitting for down to earth execution. Utilizing different test information what's more, by means of PC reproductions, authors evaluate the execution of the proposed advancement based benefit expansion methodology and demonstrate that it fundamentally outflanks two practically identical vitality and execution administration calculations that are as of late proposed in the writing [5].

3. PROPOSED SYSTEM

In this paper, a double resource renting plan is designed firstly in which short term renting and long term renting are joined going for the current issues. This double renting plan can viably ensure the nature of administration of all solicitations what's more, lessen the resource squander enormously. Also, an service framework is considered as a M/M/m+D lining model and the execution pointers that influence the profit of our double renting plan are dissected, e.g., the normal charge, the proportion of solicitations that need makeshift servers, et cetera. Thirdly, a profit amplification issue is planned for the double renting plan and the streamlined arrangement of a cloud stage is gotten by taking care of the profit boost issue.

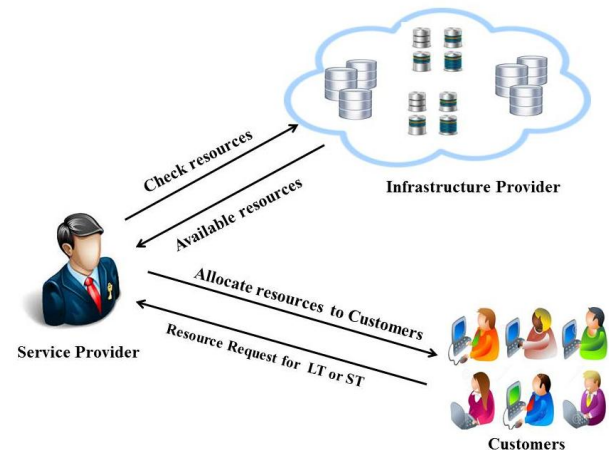


Figure 1. Architecture of QoS of Cloud Computing

4. IMPLEMENTATION MODULES

A. Queuing model:

We consider the cloud service platform as a multi-server system with a service request queue. The clouds provide resources for jobs in the form of virtual machine (VM). In addition, the users submit their jobs to the cloud in which a job queuing system such as SGE, PBS, or Condor is used. All jobs are scheduled by the job scheduler and assigned to different VMs in a centralized way. Hence, we can consider it as a service request queue. For example, Condor is a specialized workload management system for compute intensive jobs and it provides a job queueing mechanism, scheduling policy, priority scheme, resource monitoring, and resource management. Users submit their jobs to Condor, and Condor places them into a queue, chooses when and where to run they based upon a policy. An M/M/m+D queuing model is build 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, 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.

B. Business Service Providers Module

Service providers pay infrastructure providers for renting their physical resources, and charge customers for processing their service requests, which generates cost and revenue, respectively. The profit is generated from the gap between the revenue and the cost. In this module the service providers considered as cloud brokers because they can play an important role in between cloud customers and infrastructure providers, and he can establish an indirect connection between cloud customer and infrastructure providers.

C. Cloud Customers

A customer submits a service request to a service provider which delivers services on demand. The customer receives the desired result from the service provider with certain service-level agreement, and pays for the service based on the amount of the service and the service quality.

D. Infrastructure Service Provider Module:

In the three-tier structure, an infrastructure provider the basic hardware and software facilities. A service provider rents resources from infrastructure providers and prepares a set of services in the form of virtual machine (VM). Infrastructure providers provide two kinds of resource renting schemes, e.g., long-term renting and short-term renting. In general, the rental price of long-term renting is much cheaper than that of short-term renting.

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6. CONCLUSION

With a specific end goal to ensure the nature of administration demands and augment the profit of administration suppliers, this paper has proposed a novel Double-Quality-Guaranteed (DQG) renting plan for administration suppliers. This plan consolidates fleeting renting with long haul renting, which can lessen the asset squander extraordinarily and adjust to the dynamical interest of computing limit. A M/M/m+D lining model is manufactured for our multi-server framework with

shifting framework size. And after that, an ideal configuration issue of profit augmentation is planned in which numerous elements are taken into contemplations, for example, the business sector request, the workload of solicitations, the server-level assertion, the rental expense of servers, the expense of vitality utilization, et cetera. The ideal arrangements are unraveled for two unique circumstances, which are the perfect ideal arrangements and the genuine ideal arrangements. What's more, a progression of counts led to look at the profit acquired by the DQG renting plan with the Single-Quality-Unguaranteed (SQU) renting plan. The outcomes demonstrate that our plan beats the SQU plan as far as both of administration quality and profit.

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