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ELASTIC PROVISIONING OF RESOURCES IN CLOUD ENVIROMENT

Abdul bari.T[1] , Srinivasan.O.G[2], Mrs.Sivapriya.S[3]

Student, Dept. of Information Technology, Mohamed Sathak AJ College of Engineering,India.[1,2]

Asst.professor, Dept. of Information Technology, Mohamed Sathak AJ College of Engineering, India.[3]

abari02@yahoo.com[1], srinivgajendran@gmail.com[2], snsivapriya@gmail.com[3]

ABSTRACT— *With the booming cloud computing industry, computational resources are readily and elastically available to the customers. In order to attract customers with various demands, most Infrastructure-as-a-service (IaaS) cloud service providers offer several pricing strategies such as pay as you go, pay less per unit when you use more (so called volume discount), and pay even less when you reserve. The diverse pricing schemes among different IaaS service providers or even in the same provider form a complex economic landscape that nurtures the market of cloud brokers. By strategically scheduling multiple customers' resource requests, a cloud broker can fully take advantage of the discounts offered by cloud service providers. In this paper, we focus on how a broker can help a group of customers to fully utilize the volume discount pricing strategy offered by cloud service providers through cost-efficient online resource scheduling. We present a randomized online stack-centric scheduling algorithm (ROSA) and theoretically prove the lower bound of its competitive ratio. Three special cases of the offline concave cost scheduling problem and the corresponding optimal algorithms are introduced. Our simulation shows that ROSA achieves a competitive ratio close to the theoretical lower bound under the special cases. Trace-driven simulation using Google cluster data demonstrates that ROSA is superior to the conventional online scheduling algorithms in terms of cost saving.*

Keywords— authentication, allocation, scheduling, payment, discount,ROSA Algorithm,Job scheduling.

I. INTRODUCTON

In the past few years, we have witnessed the tremendous development of cloud computing, with more and more cloud service providers jumping on the cloud bandwagon. Along with the stable growth of large scale public cloud providers like Amazon EC2, Windows Azure and Rackspace, small scale cloud providers such as ReadySpace and GoGrid have vigorously emerged. Despite the hype about cloud computing, however, the actual adoption rate of cloud computing is still behind expectation, especially outside the United States. Clearly, to the entire cloud industry, it is crucial to stimulate end users 'participation in cloud computing. From an individual cloud service provider's perspective, it is important to keep its competitiveness among peer cloud service providers. As analyzed in, the only way to cloud computing success is to develop adequate pricing techniques. In an Infrastructure-as-a-Service (IaaS) cloud, the cloud provider dynamically segments the physical machines, using virtualization technologies, to accommodate various virtual machine (VM) requests from its customers.

II. PROBLEM IDENTIFICATION

The problem which is formulated is the concave cost job scheduling problem. It analyze the properties that an optimal schedule should possess and we study three special cases of the concave cost scheduling problem, scheduling under a linear function with a fixed activation cost, laminar-structured job requests, and unit job requests with agreeable deadlines, respectively. We propose and study a randomized online algorithm, ROSA, which achieves low competitive ratio with a linear complexity presents our experimental results using Google cluster data.

III. EXISTING METHOD

Existing schemes can the lack of convexity in the cost function invalidates all existing solutions such those in. Note that linear programming (LP) with rounding approximation is commonly used for constrained optimal job scheduling problems. It demonstrates that by proving properties of optimal solutions, elegant scheduling algorithm can be found when finding an appropriate LP solution is hard.

3.1 Related works

In Cloud Computing Pricing Models, Cloud computing is emerging as a promising field offering a variety of computing services to end users. These services are offered at different prices using various pricing schemes and techniques.

In FlexPRICE-Flexible Provisioning of Resources in a Cloud Environment, Cloud computing aims to give users virtually unlimited pay-per-use computing resources without the burden of managing the underlying infrastructure. The cloud finds different schedules to execute the job and presents a set of quotes to the user in terms of price and duration for the execution.

In Optimal speed scaling under arbitrary power functions, it investigates the performance of online dynamic speed scaling algorithms for the objective of minimizing a linear combination of energy and response time.This uses Shortest Remaining Processing Time scheduling and processes at speed such that the power used is equal to the queue length.

3.2 Linear programming (LP)

Linear programming (LP) with rounding approximation is commonly used for constrained optimal job scheduling problems. Formulate the concave cost job scheduling problem. At any time instance, the number of scheduled jobs is limited by a constant. Any time instant, to reflect the case that the execution of a task cannot be further accelerated given additional resource

IV. PROPOSED METHOD

Proposed system an efficient online scheduling algorithm with a positive and concave cost function to stack the processing times of multiple jobs whenever possible and run the jobs with the maximum possible resource in order to reduce the total cost. We prove the lower bound for the competitive ratio. Although continuous concave cost functions and piece-wise linear cost functions are used to conduct the evaluation, the properties proved and the online algorithm proposed apply to all piecewise concave cost functions.

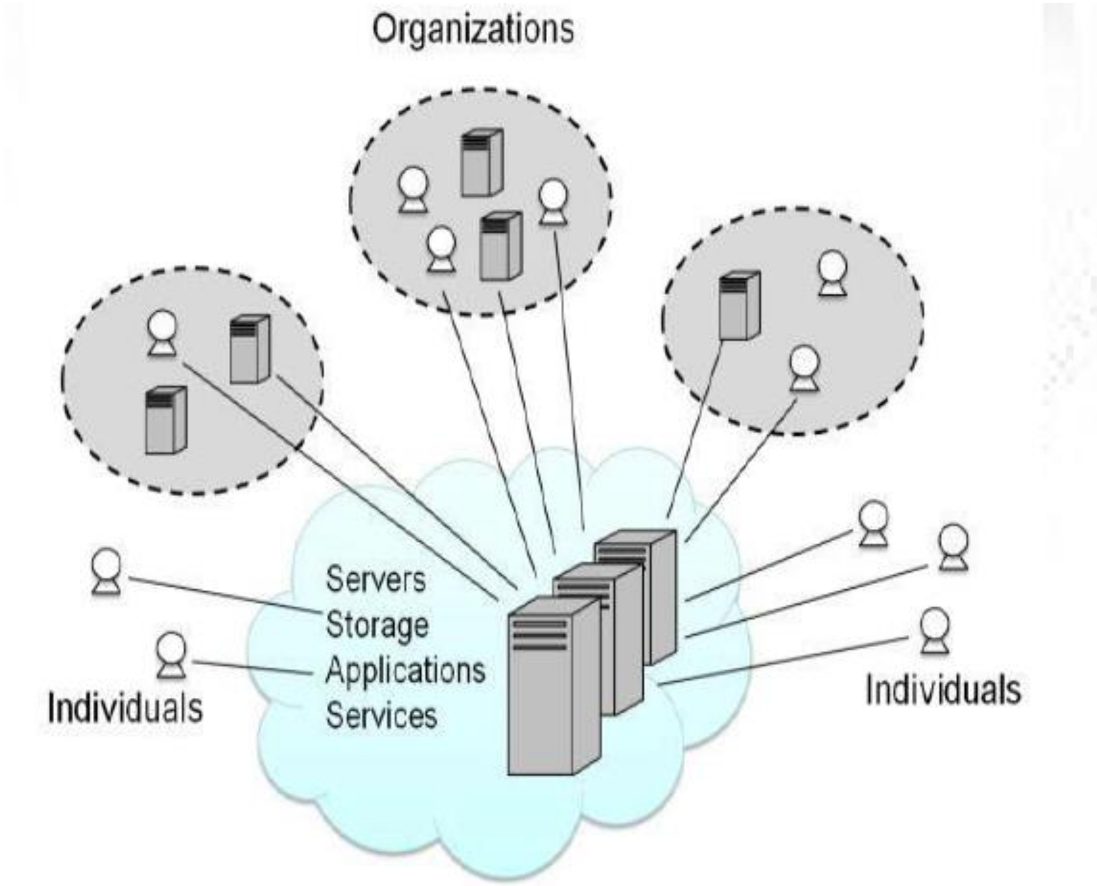

Fig. 4.1 Resource Allocation in Cloud Environment

4.1 ONLINE SCHEDULING ALGORITHM

1 Input: S_J, the set of all jobs; Output: A, cost optimal job schedule

2 While S_J != ρ;do

3 Calculate L_i for all J_i € S_J using Definition 1;

4 t = $\min_i L_i$;

5 t^d_{max} =0

6 for J_i€ S_J do

7 if Li = t then

8 Schedule J_i in [t, t^d_i] in A;

9 $S_J = S_J - \{ J_i \}$;

10 $t^d_{max} = max(t^d_{max} , t^d_i)$;

11 end

12 end

13 for $J_i € S_J$ do

14 if $t < t^d_i$ then

15 Schedule the remaining workload of Ji

16 Update w_i as the amount of the unscheduled workload of J_i;

17 if $w_i = 0$ then

18 $S_J = S_J - \{ J_i \}$;

19 end

20 end

21 end

22 end

V. IMPLEMENTATION

5.1. CLOUD SERVICE PROVIDER :

The user need to enter exact Username and password which is given in the registration, if login success means it will take up to main page else it will remain in the login page itself. If it is a new user then it will move to the registration page.Cloud service provider have a huge amount of cloud in that cloud space he will allocate the particular space for sale that space can be buy by Brokers. Admin Can Fix the rate to some huge amount of cloud space that amount is convenient to buy for Cloud brokers and they can use that cloud space to sell with some convenient cost.The Rate Fixed Cloud Space can get a discount value from the cloud provider that discount value attracts more broker to get a cloud space from the cloud service providers.

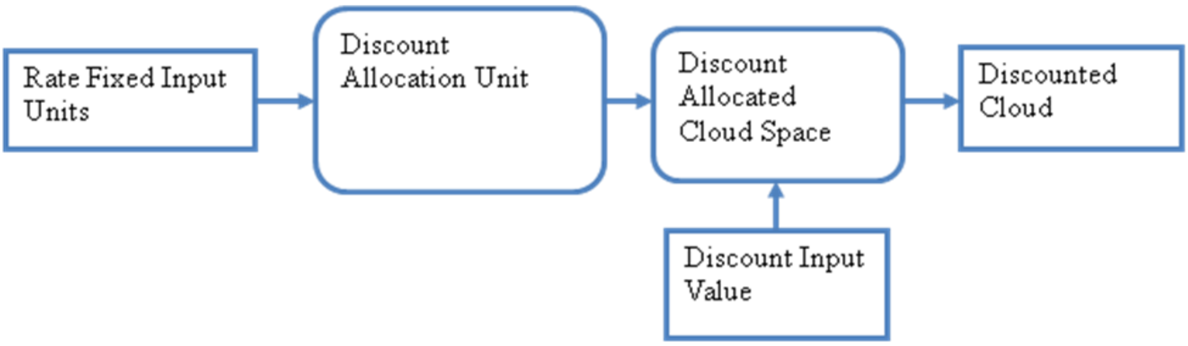

Fig.5.1 Discount Allocation

5.2 CLOUD BROKER

The user need to enter exact Username and password which is given in the registration, if login success means it will take up to main page else it will remain in the login page itself. If it is a new user then it will move to the registration page. Cloud Brokers Continuously check the cloud service if there any discount is available if there any discount avail then it will intimate the cloud brokers about that discount price.

5.2.1 CLOUD SPLITTING AND FIXING AMOUNT

Broker get cloud space is splatter and fixing particular rate to that cloud space that makes convenient to normal users to buy cloud space with lesser cost.

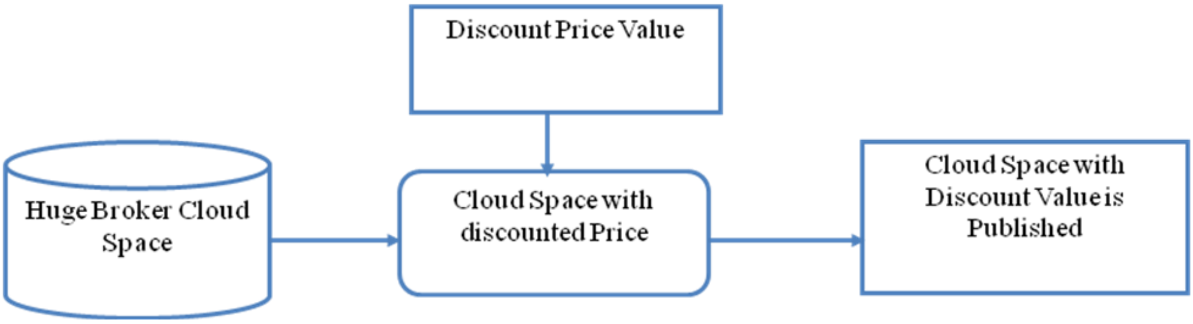

Fig.5.2 Cloud Splitting and Fixing Amount

5.3 CLIENT CLOUD SPACE

The user need to enter exact Username and password which is given in the registration, if login success means it will take up to main page else it will remain in the login page itself. If it is a new user then it will move to the registration page. Client can get cloud space from the brokers throw online payment according to their usage they buy the cloud space from different clod providing brokers and used for their general purpose. Users upload their data into cloud environment which they buy it from the broker that helps users to view data at any time from the cloud space.

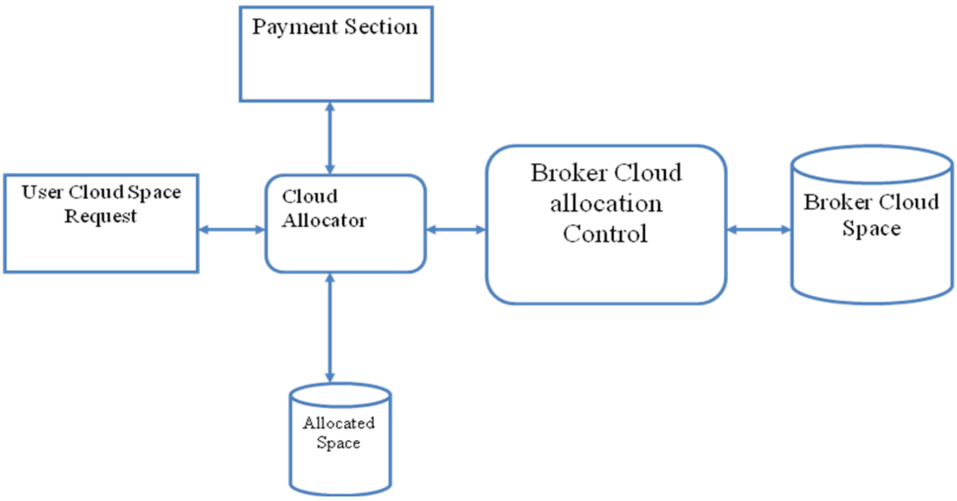

Fig. 5.3 Client Cloud Space

VII. CONCLUSION:

Cloud is an emerging computing market where cloud providers, brokers, and users share, ediate, and consume computing resource. With the evolution of cloud computing, Pay-as-you-go pricing model has been diversified with volume discounts to stimulate the users' adoption of cloud computing. This paper studies how a broker can schedule the jobs of users to leverage the pricing model with volume discounts so that the maximum cost saving can be achieved for its customers. We have analyzed the properties that an optimal solution should have and studied three special cases of the concave cost scheduling problem. We developed an online scheduling algorithm and derived its competitive ratio. Simulation results on a Google data trace have shown that the proposed online scheduling algorithm outperforms other conventional scheduling algorithms. Although continuous concave cost functions and piece-wise linear cost functions are used to conduct the evaluation, the properties proved and the online algorithm proposed apply to all piecewise concave cost functions.

VIII. FUTURE WORK

Future system in broker can schedule the jobs of users to leverage the pricing model with volume discounts so that the maximum cost saving can be achieved for its customers behaviors and strategies of cloud service providers, brokers, and end users when offering or facing a pricing model with volume discounts. It opens a door for many interesting problems along the line. Although continuous concave cost functions and piece-wise linear cost functions are used to conduct the evaluation, the properties proved and the online algorithm proposed apply to all piecewise concave cost functions.

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BIOGRAPHY

Abdul Bari T pursuing his B.Tech in IT department in Mohamed Sathak A.J College of Engineering, Anna University in Chennai, India, in May 2017.

Srinivasan O.G pursuing his B.Tech in IT department in Mohamed Sathak A.J College of Engineering, Anna University in Chennai, India, in May 2017.

Sivapriya.S received her B.Tech in Information Technology Department from P.S.N.A College of Engineering and Technology, Dindigul, India in May 2009 and got M.E in CSE from Anna University of Technology, Madurai,India in June 2014. She is currently working as an assistant professor in the Department of Information Technology in Mohamed Sathak A.J College of Engineering, Chennai