An Improved Auctioning Technique for Better Resource Utilization in Cloud Computing

[1] Priyanka Solanki, [2] Ketan Modi, [3] Mitesh Thakor
[1] M. Tech Student, [2,3]Assistant Professor,
[1] Department of Computer Engineering, MEC, Basna. India.
[2] Department of Computer Engineering, MEC, Basna. India.
[3]Department of Computer Engineering, SPCE, Visnagar. India.

Abstract : Many users are now migrating towards use of Cloud services due to cheaper cost and power infrastructure availability. Because the request increases, the numbers of resource available are not enough to complete demand of every customer. So Provider acquire a new fundamental called auctioning where based on need, user take part in to auctioning process and provide their prize to purchase the resource for required amount of time. Now based on this request from client it seems difficult for provider to provide resources to the customer who just give prize high coz that might be possible the service or communication cost of the customer to the resources are higher just because of the geographical distance are more. The provider cannot deny this issue because if the service provided is not meet to the expectation of the user may break the trust of customer towards providers and this happen only because of the resource make available to the customer just based considering the prize and not consider other parameters like location of the user. One another issue also arise when the resource available after allocation and user request available. So to solve this both important issue we aim to provide a Framework which efficiently solved issue which becomes obstacle in the auctioning process and provides better service to the users in Cloud environment.

Keywords— Cloud Computing , Auction , Resource Allocation , Quality of Service.

I. INTRODUCTION

Cloud computing refers to a paradigm in which a server distributes Various resources across various clients[6]. Resource management is a major task in cloud computing and in any other computing environments[3]. Cloud providers have to efficiently manage, provide, and allocate these resources to provide services to cloud consumers based on service level agreements (SLAs) which both sides agree to prior to the consumer using the services. Therefore, providers must maintain a reliable allocating mechanism in order to satisfy the cloud users' requirements[6].
Cloud Services provided by the clouds are broadly divided into three categories: Infrastructure-as-a- Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) [6].

Infrastructure as a service (IaaS): In the IaaS model computers are offered as physical or as virtual machines, and other resources.

Platform as a service (PaaS): In the PaaS model, cloud providers offers a computing platform including operating system, programming language execution environment, database, and web server. Without buying and managing hardware and software on a cloud platform.
Software as a service (SaaS): In the SaaS model, cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients.
There are various cloud models and classification systems that determine how the services are provided to the end user[6]:
Public cloud: This service is provided to public users and is open to the end user, but the end user cannot control the infrastructure.
Private cloud: This is any service that is provided exclusively to the end user or to a single organization.
Hybrid cloud: This cloud is composed of two or more different clouds which may be public or private.
Community cloud: In this cloud, the services are provided exclusively to a group of persons or companies who share the same interests.

Auctioning

A Method of selling cloud services or resources in a public forum through competitive bidding is called Auctioning[3]. It have been studied for resource allocation in computing and network systems, which simultaneously target bidding truthfulness and economic efficiency[4]. Some Important Auctioning Techniques[10]:

Technique	Key Feature
Combinatorial auction	Multiple auction commodities, Participants bid for a bundle of resources, High overhead and complexity of computation
English auction	Ascending-bid auctioning
Dutch auction	Descending-bid auctioning
First-price sealed-bid auction	Sealed-bid auction ,Truth-telling mechanism
Vickrey auction	The winner pays the second highest bid, Sealed-bid auction, Truth-telling mechanism
Reverse auction	Bids come from providers
Double auction	Customers and providers both offer bids, Multiple seller send bidders

Table1. Auctioning Techniques

Resource Allocation[6]

Resource provisioning techniques can be categorized into two types as per the requirement of the application.

Static Provisioning:

In this type, Application allocates all resources required for the computation before any jobs are submitted, and releases the resources after all the jobs have finished.

Dynamic Provisioning:

By the system at runtime, resources are allocated. This allows the pool of available resources to grow and shrink according to the changing needs of the application.

II. RELATED WORKS

Authors Vina Prasad , Abhinandan S. Prasad and Shrisha Rao at paper [1] perform experiments for procurement cost and scalability efficiency on the cloud-CABOB algorithm using distribution benchmarks like random, uniform, decay and CATs.

In this paper [2] Authors Lei xu, and Jun Wang, A. Nallanathan, Yaping Li work on double auction. Author propose a double auction based cloud resource allocation and pricing model, which improves the auction efficiency.

Authors Narander Kumar, Swati Saxena at paper [3] perform a demand-based preferential resource allocation technique that designs a market driven auction mechanism to identify users for resource allocation based on their payment capacity and implements a payment strategy based on buyer's service preferences.

Authors Weijie Shi, Linquan Zhang, Chuan Wu, Zongpeng Li, Francis C. M. Lau at Paper [4] work on dynamic resource provisioning in cloud computing. Auction comprises 3 components. First, an intuition driven primal-dual algorithm for translating the online social welfare optimization problem into a series of one-round optimizations. Second, a randomized auction sub-framework that can translate a co-operative approximation algorithm to one round optimization into an auction. Third, a greedy primal-dual algorithm that approximates the one-round social welfare optimization.

In this paper [5] Authors Chunxiao Jiang , Senior Member , Qi Wang and K.J. Ray Liu are focuses on the on-demand mechanism design in the IaaS. A stachastic matching algorithm with Markov Decision Process (MDP) which aims at optimizing long term system efficiency with its online version using Q-learning method to address imperfect model estimation problem. Experiments using google cluster usage traces to verify properties of the proposed mechanism.

III. COMPARISON OF VARIOUS RESEARCH SCHEMES

The table below shows a short comparison about the various schemes proposed by a researcher by taking different parameters. The table gives the description about the basic technique used with the benefits that researcher gets the limitations found in schemes.

Criteria Group →	**Cloud Computing oriented measures**					
Individual Criteria → Providers ↓	**Auction**	**Resource Allocation**	**Reverse Procurement**	**Preferences**	**Quality Of Service**	**Pre-Processing**
[1]						√
[2]						√
[3]						√
[4]						
[5]						

Table 2. Comparison study

IV. PROPOSED METHODOLOGY

Overview of Proposed Work

eve their own fundamental to solVarious researcher providVariousissue susing Various techniques. Some provides solution by proposing the algorithm and models while some Focuses on the just idea. We must say their are n number of direction where every solution proposed can be make better.

Vina Prasad et al. Perform experiments for procurement cost and scalability efficiency on the cloud-CABOB algorithm using distribution benchmarks like random, uniform, decay and CATs. Due to increasing user demand, the resource allocating process has become more challenging and difficult[1].

There are Various problems in the process of resource allocation. If the allocation of resource from provider to requester is not proper may result to improper service allocation and If the pending resources after auctioning not allocated even requester available then its result in wastage of resources. The resource make available to the customer just based considering the prize and not consider other parameters like location of the user.

So, to solve this important issues we aim to provide a Framework which efficiently solved issue which becomes obstacle in the auctioning process and provides better service to the users in Cloud environment.

System Flowchart

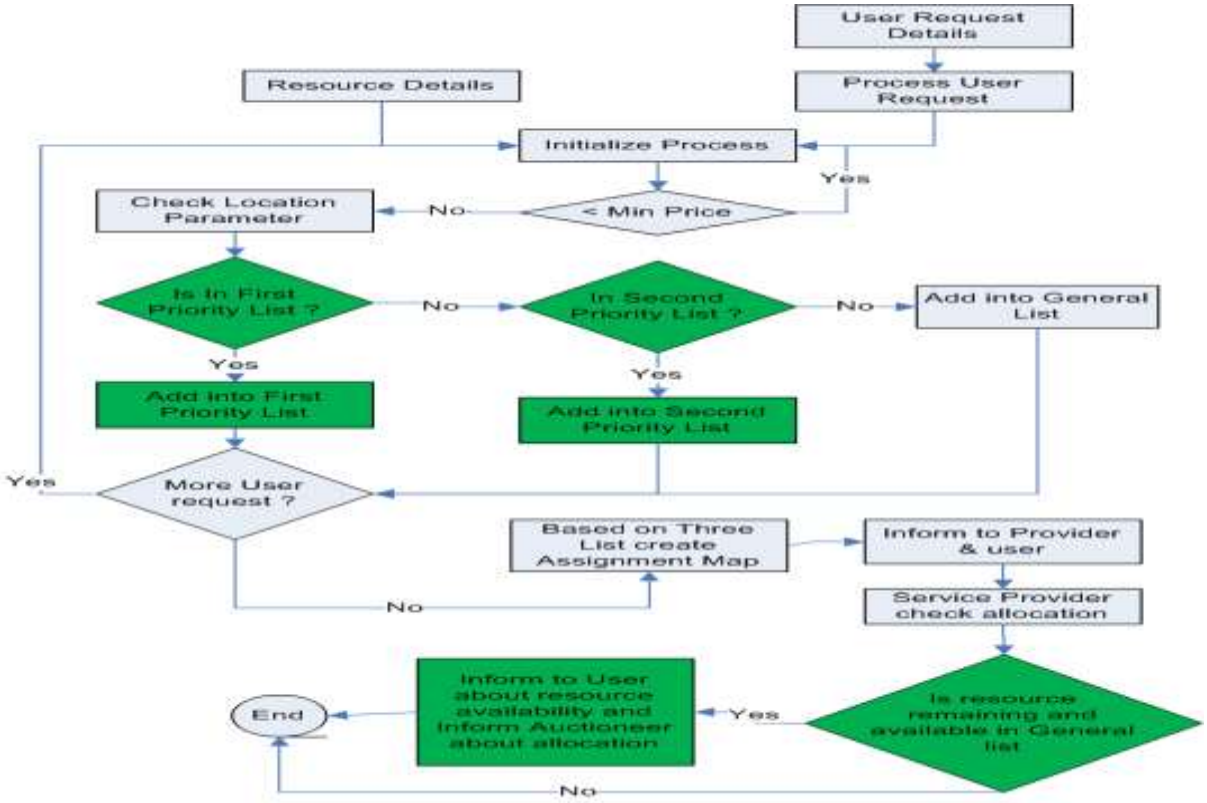

Fig.1 System Flow of Resource Allocation

Algorithm :

Step:1 Start
Step:2 User Request detail
Step:3 If initial price<min price than go to previous step
else check continue
Step:4 check user location
if is in first priority list provided by provider than add into first allocation list and goto step 5
else continue process
Step:5 check if is in second priority list than add into second allocation list and continue
else add into general list and continue
Step:6 if more user request than go to the step 2
else create assignment map based on three list
Step 7: inform to provider & user
Step 8: Provider check if resource remaining and request for the resource available in general list
if available then inform user and auctioneer about allocation
else stop process
Step 9: Stop the process

V. CONCLUSION

In we study how this paper to resolve the resource allocationproblem in cloud computing.Various researcher provide their own fundamental to just idea. the solve this issue using various techniques. Some provides solution by proposing the algorithm and models while some socuses on We must say their are n number of direction where every solution proposed can be make better.

VI. REFERENCES

[1] Vina Prasad , Abhinandan S. Prasad , Shrisha Rao , " A Combinatorial Auction Mechanism For Multiple Resource Procurement In Cloud Computing " in Journel 2168-7161(c)2016 IEEE TRANSACTION ON CLOUD COMPUTING, VOL.4, NO.X, XXXXX2016.

[2] Lei Xu , Jun Wang , A. Nallanathan , Yaping Li , "Resource Allocation Based On Double Auction For Cloud Computing System" on 2016 IEEE 18th INTERNATIONAL CONFERENCE ON HIGH PERFORMANCE COMPUTING AND COMMUNICATIONS, 978-1-5090-4297-5/16$31.00(c)2016.

[3] Narander Kumar , Swati Saxena , "A Preference-Based Resource Allocation In Cloud Computing Systems" in 3rd INTERNATIONAL CONFERENCE ON RECENT TRENDS IN COMPUTING 2015(ICRTC-2015) 1877-0509(c)2015.

[4] Weijie Shi , Linquan Zhang , Chuan Wu , Zongpeng Li , Francis C. M. Lau , "An Online Auction Framework For Dynamic Resource Provisioning In Cloud Computing" IEEE/ACM TRANSACTIONS ON NETWORKING , VOL.24,NO.4,AUGUST2016,1063-6692(c)2015 IEEE.

[5] Chunxiao Jiang , Senior Member , Qi Wang and K.J. Ray Liu , "Data-Driven Auction Mechanism Design In Iaas Cloud Computing" 1939-1374(c)2015 IEEE.

[6] Naela Rizvi, Prashant Pranav, Bibhav Raj, Sanchita Paul, "Auction Model Using RR Approach for SLA Based Resource Provisioning in Multi-Cloud Environment " on INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNOLOGY (IJET),VOL 8 NO 2 Apr-May 2016.

[7] Lujia Wang, Ming Liu, Member, IEEE, and Max Q.-H.Meng, Fellow, IEEE, "A Hierarchical Auction-Based Mechanism for Real-Time Resource Allocation in Cloud Robotic Systems" 2168-2267 (c) 2016 IEEE.

[8] Barrie Sosinsky, "Cloud Computing Bible", copyright (c) 2011 by Wiley Publicing, Inc.,Indianapolis, Indiana.

[9] Xingwei Wang, Jiajia Sun, Min Huang, Chuan Wu, Xueyi Wang, "A Resource Auction Based Allocation Mechanism in The Cloud Computing Environment" on 2012 IEEE International Parallel and Distributed Processing Symposium Workshops & PhD Forum.

[10] Hui Wanga, Huaglory Tianfield and QuentinMair, "Auction based resource allocation in cloud computing", Multiagent and Grid Systems – An International Journal 10 (2014)51–66.