Dynamic Resource Scheduling & Revenue Management In Cloud

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Abstract **-Cloud computing gives the flexible delivery of services to the customer according to their pay. It helps customers to easily their cloud infrastructure to save total operation cost.Cloud providers get profit only if customers get satisfied with the service performance. Instantaneous access to cloud and provide flexible scaling and offering competitive price is the important challenge for the cloud providers. The more service to remain available in long run only the business give stable revenue to the customer and provider. To avoid or overcome these challenges here use policy based models which aim at increasing the revenue.Based on the policy to overcome the FCFS policy in a significant way, by showing the Dynamic Pricing polcy is efficient way to increasing the revenue.**

1.Introduction

Cloud computing providers provides the service to the cutomer as per their pay.Now a days the cloud computing provide consolidated paradigm service to the customer on demand provisioning of virtualized resources.This paradigm with the support of some companies like microsoft, amazon and IBM.Now customers can use the service from providers through the companies in the pay as you go manner any where at any time.Cloud providers provide different services.It provide Infrastructere ass a Service(IaaS) in the form of Virtual Machines.The motivations for IaaS cloud provider is possible of making profit by influence of their available data is the center of resources to serve thousands of customers.So,the cloud users accept the new requests with the main objective of profit maximization .They must gurantee the Quality of Service which is based on the agreed service level agreement with customers.Achieving those goals by the providers which needs efficient resource management techniques.

The resource management stratigies used by the providers hinder the market strength by limiting the resources allocated to the request.So, QoS met in conventional way.The providers may relax because of QoS related resource, the physical servers can use more than available and serve many request simaltaneously.Able to offer QoS guarantee to the servers without limitation of the requested to be accepted.Providers should increases the available resources dynamically to serve the requests of the user.The only one possible source

for additional resources is idiling the resource from various providers.In order to enable such scenario, coordination between providers has to be achieved, possibly through establishment of a Cloud federation.

The cloud federation allow the cloud providers to trade the resources via the federation regulation.In the paradigm the cloud providers that aim to overcome their resources limitation for users in the local infrastructures,which is results in the request rejection of the customer which by outsourcing the customers request to the other federations.The cloud federation allow their under utilized providers to contract their part of their some resources to the other members of the federation,commonly at cheaper prices to avoid the wasting of nonstorable resources of the computer.Both cases gives improved in profit and provide elasticity to the providers.,if and only if the oppourtunity is properly used.For the efficiency the providers should take the intelligent decision upon the federation to use this oppurtunity to maximize the profit depending on different conditions.

The problem to providers occur when they provide their part of their capacity in spot Virtual Machine form.Spot VMs are type of VMs it terminated by the providers when the current price for running the process exceeds the price that client paid for utilising such resource in Amazon EC2 spot.These resources are provided to users only on low cost than the on demand VMs which is usuall in the spot market,the work is mainly based on supply by providers and demand of resources.The existence of the spot VMs mostly benefits fot IaaS cloud providers, because that help providers in making the profit by using of data while waiting for the upcoming on demand requests.The federated cloud providers recieves the on demand request and no idle resource in data center,it decide that to increasing the price or terminate the VMs or outsource the request to other federation providers.

Increassing the revenue of the users that providers use the real time decision making techniques to dynaicaly allocate the resource to users.The technique to maximizing the revenue of the user and to allocate resource dynamicaly are proposed in this paper to overcome the strtegy that followed in the existiong system.

2.Related Work

In paper [2] proposed that resource allocation for SaaS providers to minimize the cost of infrastructure and violation in service level agreement.In this proposed algorithms ensures that SaaS providers can able to manage the requests dynamicaly and mapping request to infrastructure level agreements.This is to improve the profit of the providers by reducing the electricity cost. In paper [3] proposed that the cloud providers like amazon provide datacenters and storage capacity for contract to pay customers.To maximize the profit of cloud providers by trimming their electricity cost. This policy is fully aimed at the conflict goals to increasing the cloud users revenue while the amount of consumed electricity is minimum.In[5] proposed that the recent cloud providers enabled that the users to process their task in public cloud.This type of providers use costing scheme in incurred consumption.In this they give a example that amazon EC2 provides the virtual machine with core of single CPU in cost of $0.095.By studying these cloud providers that different type of application are deployed like storage backup,e-commerce and high

performance computing.In the existing system they use the mathematical approach I.e they use the policy First Come First Serve policy to allocate the resource.It perform the jobs which are accepted by the cloud providers remaining request from the cloud users are rejected and request them to resend the request.

3.Existing System

The existing system is the mathematical approach to maximize the revenue in the cloud federation environment.This system to analyze revenue management in cloud server is not flexible to deliver the computing service.It doesn't allow the customers to scale their infrastructure in easy manner and to save on the total operation cost.The service of the cloud providers had profit only if the customers are satisfied with their performance.The instataneous access and flexible scaling in maintaing the levels of service and providing competitive price to customer are challenging to the cloud computing data access.The furthermore services available only the business generates a stable revenue stream.The cloud administration couldn't revise their pay only based on requisition of the user.

The drawbacks in the existing system are it cannot provide service to fix the tariff in real time, it does not make decision in real time.This system only provide limited information or no information for the future demanded jobs by the customer.This is non probabilistic uncertainity of the required resources.The can't able to accept the service delivery in best effort base, there is no gurantee for that job to execute.It provide resistance to the strategic behaviour.The jobs may be resulted in loss, it leads to the loss business.

The prototype of the existing system shows the data integrity and the privacy against the unauthorized parties.This model reduce the burden to the providers in checking the data integrity sstored in storage of cloud by utilizing the third party,checking integrity service and applying the security that ensure privacy and confidentiality of the data stored inn cloud

This system propose that an architecture based on the model provides verification in data integrity and preserving privacy of data in cloud computing.

4.Proposed System:

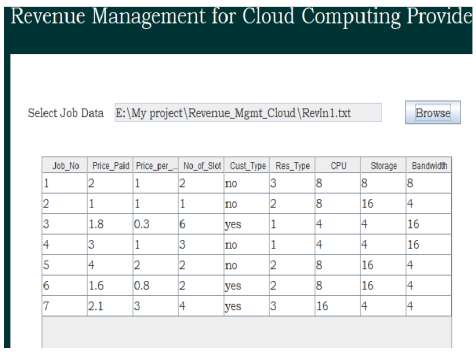
The probles in the existing system is overcome by the model proposed in this paper introduce novel policy based service in admission control models by efficient dynamic pricing policy for accessing the data in cloud to maximizing the revenue of the cloud while taking the uncertainity in resource requirements into the cloud account.In proposed syatem explains three types of policies based approaches to out perform the challenges in the existing system.Based on these three policy the revenue of the cloud providers can be maximize by allocationg resource according to policy.These olicies are helped to outperform the searches in statisticaly and significantly.These give more results for insights to overcome negative impact on revenue.

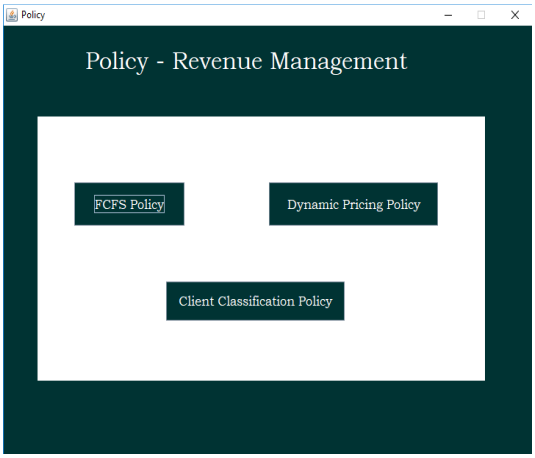
The proposed system is implemented using **"cloudsim librarary functions"**.The input will be in text format, cloud sim functions incoke the value and allocate the resource according to the policy choosen.The result will be in form of digital graph, it shows the performance chart.The graph will be displayed using**" jfreechart"** function.Which invokes the processed value based on that it produce the resultant graph.The

resultant graph will change according to the input given and policy to be choosen.It helps us to choose the efficient policy to allocate the resource to the customer.Finally we said that Enhanced Dynamic Pricing policy is efficient policy to allocate resource and fix pricing to the users.It increase the revenue of all type customers such as gold, bronze and silver customer.The customers are classified based on their pay.This system is implemented in three modulesFirst Come First Serve Policy,Client Classification Policy and Enhanced Dynamic Pricing Policy

Job_No	Price_Paid	Price_per_Slot	No_of_Slot	Cust_Type	Res_Type	CPU	Storage	Bandwidth
1	2	1	2	no	3	16	8	8
2	1	1	1	no	2	8	16	4
3	1.8	0.3	6	yes	1	4	4	16
4	3	1	3	no	1	4	4	16
5	4	2	2	no	2	8	16	4
6	1.6	0.8	2	yes	2	8	16	4
7	2.1	3	4	yes	3	16	4	4

Sample Data Set





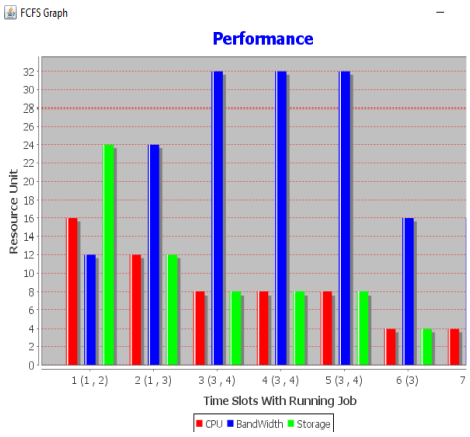
4.1.First Come First Policy Module:

FCFS policy is based on capacity constrints.The jobs are accepted only enough capacity is available to accept the jobs,if job requestes more than the available capacity,the remaining jobs are rejected.That rejected jobs are accepted only the customer resend their request with their required adoptable time slot and with resource requirements to be adoptable.In this policy jobs which are resubmitted by the customer are treated as new request.This will apply to all policies.

The function of this policy is to serve all the incoming jobs if required resource to sreve jobs are available.In this policy that is not sure all the upcoming or future jobs are accepted,it consired only the set of submitted jobs.This function is shared by all models to implement the main assumption of real time decisions,to represent the constraints there is no more extra capactiy is allocated to resources whch are available.The resources are CPU,bandwith and storage.This objective of fcfs policy is also used for all policies.

In this policy the jobs 1,2 and 3 only accepted, remaining jobs are rejected.Because the available resources are only able to accept these

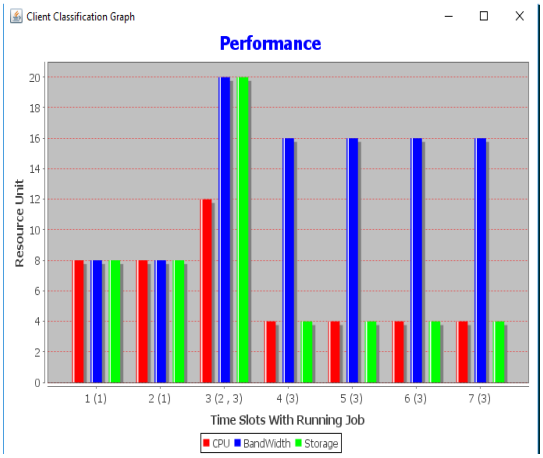
jobs so, the remaining jobs are rejected..The resources CPU,Storage and Bandwith are available to accept only three jobs.The remaining jobs are acceptred and process only the customer or user resubmit the request to the providers within pariticular time.These request are consider as a new request and process seperately.It gives the overall revenue of 7.8.



4.2 Client Classification Module:

The customer is classified int three category based on their pay and utilisation level.The categories are gold,silver and bronze.Customer who pay high are called gold customer,medium are silver customer and who pay less are called bronze customer.Based on this classification the service will be provided by the user.The policy is implemented mainly based on the priority to improve the customer satisfaction.The point is that job is accepted only it is requested by important customer,i.e gold customer or the utilization level of resources not exceed fixed level.The provider classify the customer before the job request are submitted.The classification of the customer is standard for short period of time but it may be changed based on the service level .

In the above data set,the customers who are gold customer their job request only accepted, because this policy is mainly follow the priority and utilization level of customer.It gives the overall revenue of 4.8

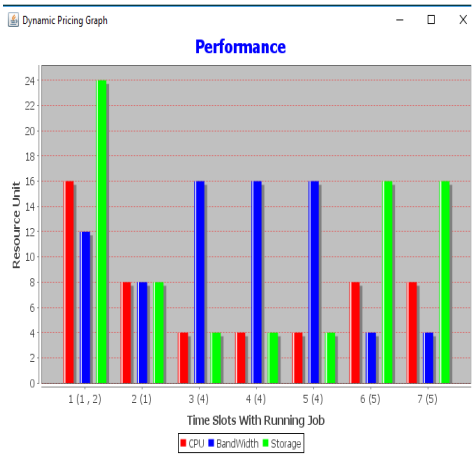


4.3 Enhanced Dynamic Pricing Policy:

The utilization levels and the reservation prices are set by the Cloud provider and remain constant during short-term revenue management. They can be derived based on the provider's cost of resources and the degree of depreciation depending on the utilization level. If in a time slotthe utilization level of a resource exceeds level, then the provider requires toget at least the reservation price for respective resources , it distinguish different utilization levels for different resources ,it do not provide for resource-specific reservation prices.

The level of utilization of resources and the reservation price are only set by the provider and it will be constant for small period to manage revenue.If the job requested exceeds the level then provider can get least reservation price and the resource to the users are allocated in different levels.

Dynamic pricng policy is the efficient policy than other two policies.It has overall revenue efficiency of 10.



5.Conclusion:

In a stylized revenue maximization problem for a provider of cloud computing services, where the service provider (SP) operates an infinite capacity system CC,FCFS,DPP in a market with heterogeneous customers with respect to their valuation and congestion sensitivity. The SP offers two service options: one with guaranteed service availability, and one where users bid for resource availability and only the "winning" bids at any point in time get access to the service. We show that even though capacity is unlimited, in several settings, depending on the relation between valuation and congestion sensitivity, the revenue maximizing service provider will choose to make the spot service option stochastically unavailable. This form of intentional service degradation is optimal in settings where user valuation per unit time increases sub-linearly with respect to their congestion sensitivity (i.e., their disutility per unit time when the service is unavailable) – this is a form of "damaged goods." We provide some data evidence based on the analysis of price traces from the biggest cloud service provider, Amazon Web Services.FInally Dynamic Pricing policy was the efficient way of allocating resource to any type of customers.

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