



An Efficient Approach to Find Best Cloud Provider Using Broker

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Abstract— Cloud Computing is a new technology where one can store data in remote system instead of storing in his own local disk. The companies which provide services to customers are called as cloud service providers. Some of the services are storage, network, database etc. It will be really difficult for a customer to choose the best provider among these providers based on his/her requirements. So in this paper, a cloud broker helps the customer to choose the best cloud service providers from available providers list. The cloud broker will have the database of all providers along with its services and cost of those services. The proposed method provides an efficient way to rank cloud providers based on multiple criteria's.

Keywords— Cloud computing, Cloud service provider, broker, response time, QOS

I. INTRODUCTION

Cloud computing is a common term for delivering different services by different providers. These services can be broadly classified into three. They are Platform as a service (PaaS), Infrastructure as a service (IaaS) and Software as a Service (SaaS). Cloud Computing is an emerging technology that uses internet for delivering services. There are many resource allocation mechanisms to allocate services of providers to users. Currently there are many numbers of providers. But choosing the best cloud service provider among the available cloud service providers based on user's requirements is difficult.

Customers need to choose the appropriate cloud provider for fulfilling their requirements. So he needs to spend more time on analysing all available providers. Customers are also bothered about some of the criteria's such as minimum response time, efficiency, accuracy and security. Few customers will have constraints such as budget and deadline. So based on all these types of parameters choosing efficient and appropriate cloud provider is time consuming.

A broker which can act as a middleware between customer and cloud service provider can solve this up to an extent. Broker can get the needed requirements from customer and help the customer by listing out suitable cloud providers. Cloud broker has an important role to find out the best and most cost efficient provider.

Major advantages are cost and time savings and achieving appropriate provider. Plenty of providers are available in market now. As the number grows it will be a hectic task for organizations to find the best cloud service provider. So this makes many of the organizations to depend on broker which will help them to spend more time with cloud rather than searching for the best cloud.

Broker Architecture:

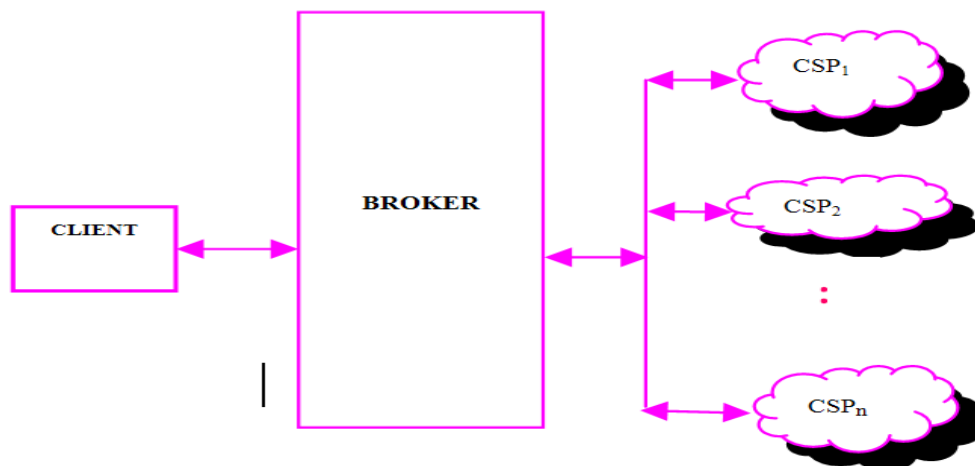


Fig 1. Broker Architecture

A cloud broker plays an intermediary role between customer and provider. Always an active broker helps to keep a relationship between provider and customer. A cloud broker is same like as a land broker who helps to sell land and keeps a healthy relationship between land owner and buyer.

II. RELATED WORK

QOS parameters play an important role in ranking service providers. Customer may require an efficient, cost effective, most suitable provider for his application. Since there are many providers who will provide same kind of services with different cost, it will be difficult for a customer to choose. To avoid the time consumption, this paper proposes a ranking mechanism based on QOS parameters for cloud services.

Collaborative filtering approach [1] rank the items based on similar users preferences. This algorithm aggregates all the items purchased by the users and eliminate those items and ask users to rate the remaining services

Cloud Rank approach [2] proposed greedy algorithm. It gives a method to rank cloud providers based on existing customer's feedback. It ranks component rather than service of providers. But there is no guarantee all explicitly rated items by customers are ranked properly. But similar users will experience the same with same cloud providers so for them this approach will be helpful.

QoS-Aware Web Service by Collaborative Filtering [3] proposed a collaborative approach to rank providers on the basis of its web services. This method is useful for the customers who want to get an appropriate cloud provider which provides suitable web services. This method includes experience of users who used the services already and a hybrid collaborative filtering approach for evaluating web service QOS parameters.

Parveen Dhillon [4] proposed an effective and efficient method to select best cloud service. In order to select the best provider three parameters are considered. But while ranking instead of taking all three together parameters are applied one after other. On the basis of result best provider is selected.

Zibin Zheng[5] proposed an approach for ranking equivalent cloud service providers provides similar kind of services. This will help users to select suitable providers without spending much time for it. This method uses some QOS parameters for predicting best provider

Prof. Deepak Kapgate [6] proposed a predictive broker algorithm based on Weighted Moving Average Forecasting Model (WMAFM).It proposes a new method to balance load on data centers and also minimizes response time. So for end users can get their requested service within few seconds

M.Subha [7] had done a survey on quality of service ranking cloud computing. Here the author considered few qualities of service parameters and ranked providers based on that.

CloudRank1 [8] approach measures and ranks cloud services for the users. It takes the feedback or rating of users who had used the services already.

III. PROPOSED SYSTEM

RankCloud Framework Model:

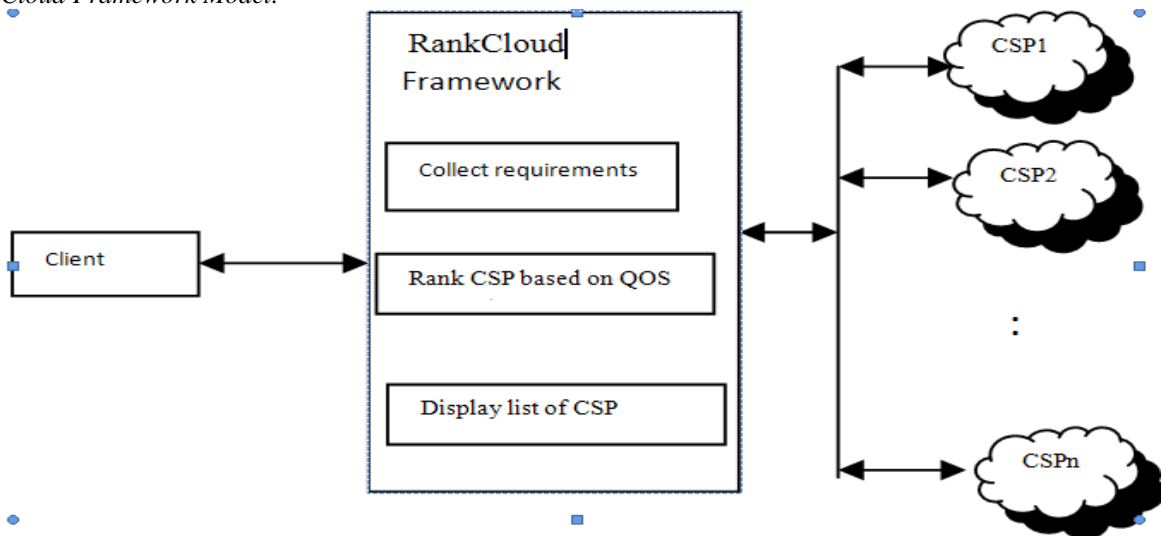


Fig 2.Proposed RankCloud Framework Model

The proposed system develops a cloud broker which will find out best cloud service providers based on its performance. Broker ranks the providers based on some constraints (cost and performance).

i) Enter Requirements:

Customer enters the requirements to broker. It may be infrastructure requirements, platform requirements or software requirements

ii) Rank cloud framework:

All the registered cloud service providers give all the services which they are providing. Cloud contains the history of performance of cloud providers. So once the client gives requirements to broker it checks the provider's performance based on response time and cost of services.

The Rankcloud framework using a broker provides optimal cloud service provider selection from the more number of CSP's. Quality of service parameters provides better selection of CSP among many. The proposed architecture uses response time, suitability, interoperability and cost of services for ranking CSP's.

IV. PROPOSED METRICS FOR RANKING CLOUD

i) Service response time

Performance of cloud provider can be measured in terms of response time. Response time is the time between the user request and time taken by the cloud provider to deliver the service. Always customer will look for a provider who provides services in less time. So in order to get better performance service response time should be less. So that services will be available for end users faster.

For example, if customer requests for storage service to windows azure, then response time is nothing but how much time the azure cloud will take to deliver that service.

Response time depends on many other parameters such as average response time, maximum response time and response time failure

ii) Cost

Cost mentioned here is the cost of cloud services. There are many number of cloud providers which provide the similar kind of services. Example, Amazon cloud offers small vm's at lower cost than rack space. But the amount of data storage, bandwidth etc differs. Based on users requirements the lowest cost and best service provider should be selected based on cost.

iii) Interoperability:

Interoperability is the ability of service to interact with other services offered by same provider or other providers.

iv) Suitability:

It is defined as degree to which customer's requirements are met by provider.

Broker algorithm:

Start

1. Broker gets all service information from registered cloud providers along with its cost.
2. Calculate response time of individual CSP's.

i) Average response time = $\sum T_i/n$

Where T_i is the time taken between the user i request and when service is available and n is the number of user requests.

ii) Maximum response time is the response time which cloud provider promised to customer.

iii) Response time failure: It can be defined as the number of times response time greater than maximum response time. This can be given by;

*Response time failure = $(x/n) * 1000$*

Where x is number of times response time greater than maximum response time and n is number of requests.

3. Calculate interoperability parameter for individual CSP's.

Interoperability = number of platforms offered by cloud service provider / number of platforms needed by the customer.

4. Calculate suitability parameter for individual CSP's

Suitability = number of essential features offered by provider / number of features needed by the provider.

5. Get requirements from client

6. Rank CSP's based on performance, suitability, interoperability and cost.

7. Display the list to client

8. Pull the provider's services, performance, suitability, interoperability and cost of services information from all registered CSP's regularly.

9. Based on the collected information update the database.

10. Repeat steps 2 to 9.

End

V. EXPERIMENTAL ANALYSIS

Proposed brokering method selects some QOS parameters for choosing the best cloud provider among many providers. The parameters are response time, interoperability, suitability, cost of service and customers feedback. The analysis on this proposed approach shows that the ranking of cloud service providers based on QOS parameters is more effective and efficient.

VI. CONCLUSION

Cloud computing became an important technology for many of the organizations to deliver different kinds of services. Cloud customers find very difficulty in choosing the best providers which can satisfy their requirements. Therefore this work proposes an effective and efficient way to find best CSP based on QOS parameters. It is greatly useful for cloud users to identify best cloud provider without any confusion. By evaluating the cloud metrics a broker can effectively choose an efficient provider which satisfies user requirements. Enabling ranking mechanism will help the customers to choose the best provider whose service provides better performance for their application.

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