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### **RESEARCH ARTICLE**



# An Effective Cloud Allocation Scheme under Multi-Parametric Cloud Assessment

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*Abstract— As a cloud system provides the distributed environment to a client to access the cloud services. In this environment, there can exist multiple cloud servers that provide the similar kind of required services. These servers can differ based on server characteristics in terms of security, reliability and efficiency. In this work, an effective cloud assessment scheme is defined in which a user can select the optimal cloud service. The work has presented a fuzzy based weighted mechanism to compare the user requirements with available cloud features. Based on these features match, the selection of cloud server is done. The obtained results show the optimal allocation of cloud server to the client.*

*Keywords: Cloud Server, Service Allocation, Security, Reliability, Distributed Environment*

## I. INTRODUCTION

A Cloud Network is defined as the distributed public environment in which multiple clients are integrated with multiple cloud servers in an open environment. In this environment, the cloud services are available openly to all cloud users. User can submit request and after satisfying the server side constraints, user can get the benefit of these services. A cloud system is having the vast collection of available services and resources. There also exist multiple clouds that provide number of similar

services so that the clients can opt the best services. These all cloud servers different under the security, integrity and efficiency parameters.

According to the type of distributed environment, the cloud system can be public cloud, private cloud or the hybrid cloud. These cloud system are able to share the resources, applications, softwares and the hardwares. This sharing over the communication system also defined under the speed and price parameters. A cloud environment provides the effective fast communication as compare to the traditional internet data communication. Other then the speed, the cloud system also provides the features such as security, efficiency etc. Here figure 1 is showing the cloud system architecture.

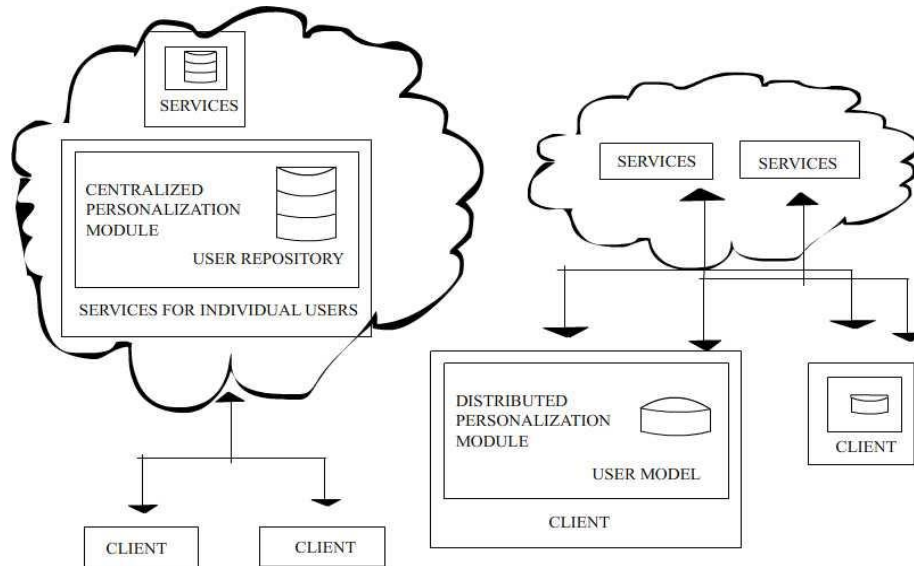


Figure 1 : Cloud System Architecture

Cloud computing is defined as the integration model between the end users and the service provider. Each user expect the service in one-to-one relationship. As the cloud system provides same service architecture. The cloud system is accessible to all users using the internet. It provides custom middle layer architecture to the user, where user can select the services. A web server basically provides many-to-one architecture and the integrated database model. One of the other architectural form of cloud computing is many-to many architecture, In which multiple host can get the services from multiple servers in an integrated environment. User can also select the particular cloud server by analyzing the available and provided services. These services are available in the form PC based application as well as internet based applications. The need of the services owned by users is defined using this middle layer. The cloud computing architecture is complex than simple web architecture. This service architecture follows the industry trends and the user behaviors.

Cloud Architecture basically is mainly based on the service availability over the web and these services are based on the data distribution or data storage over cloud. Data is presented in the form information available to all user based on which user requirement and the services are decided. Data plays the most complex and essential business component so that cloud server integration with data center is required. Cloud based architecture is having the importance to fulfill the data needs of users. The data driven models are effective if some information can be derived from it. Data representation under business process model is effective so that the equalized distribution of data can be performed. Cloud service system gives the options to maintain the data in the form of storage cloud as well its distribution to cloud users so that the effective data distribution over the cloud will be obtained.

In this paper, one of the common challenges of cloud system is explored called cloud service allocation. When there are number of cloud servers that provide similar services that user requires a cost effective service allocation. In this paper, fuzzy based cloud assessment scheme is defined for effective server allocation. In this section, an exploration to the cloud system is defined along with architectural specification. In section II, the work defined by the earlier researchers is defined. In section III, the proposed work is defined and explored. In section IV, the conclusion derived from the work is presented.

## II. EXISTING WORK

Cloud computing and cloud server allocation is the one the favourite area of researchers in distributed environment. Lot of work is already defined by the researchers in this area. Some of work defined by earlier researchers is discussed in this section. SiFan Liu[1] defines Risk assessment scheme for virtual machine in the cloud environment. Cloud Computing is having the major issue in the form of security respective to the cloud customers. To provide the cloud security in the form of data center in virtual cloud environment, the risk analysis is required. These systems suffer from different security threats. Author defined discussion on these risk points and perform the risk analysis in resource management in cloud environment. Author defined stack based analysis approach to perform the resource management in cloud environment. Swetha Reddy Lenkala and Sachin Shetty[2] has defined a work on secure risk assessment in cloud carrier. Author defined a work in cloud service environment so that the effective end user communication will be established over the cloud system. Author performed a analysis on cloud security features and security models to perform the risk assessment and cloud service assessment. Author defined a cloud security agreement to analyze the system under security risk. Author performed the selection of quality security services over the cloud system so that the security metric information will be transferred over the system. Author defined a service level agreement so that the web service allotment will be performed. Author performed the security risk analysis significantly and allow the distribution of services over the cloud.

Adil M. Hammadi[3] defined a service layer architecture to achieve the assure communication over cloud. Author defined a real time QoS so that the service assessment under different can be done. Author defined a monitoring framework under the reputation assessment analysis. Author defined the transaction risk analysis for SLA analysis. This third layer architecture was provided by risk assessment so that certainty analysis. Author defined a service provider based analysis approach under real time environment. Charles Lim[4] presented a Comparative analysis based study on different risk analysis approaches. Author defined an evaluation approach on risk in cloud service environment. Author defined the system under the control mechanism to perform the risk reduction in cloud environment. Author presented the assessment on the results under different threats under the increased level of awareness. Author defined a cloud service analysis approach under the business infrastructure. David Munoz Sanchez[5] performed a work, "Comparison between security solutions in Cloud and Grid Computing". Author provided the administration level issues and responsibilities in cloud and grid environment. Author provides the clear specification of security issues related to cloud system so that the security methods will be improved and effective security measure will be applied over the system.

Feng Xie[6] presented a Risk management and assessment framework .Author discussed the system under different security issues and presented the test under different vectors such as scalability, efficiency and cost etc. Author defined the system as a management framework approach under 5 key points called user requirement analysis, service analysis, risk analysis, third party review and the desktop assessment. Author provided the system review under the trust and reliability models. Jijun Zhang[7]presented another work on risk analysis .Author performed the parametric analysis under the security risk. Author defined a security analysis and indicator system that perform the assessment under different security vectors under forward assessment approach. Maneesha Sharma[8]performed a work, "Cloud Computing: Different Approach & Security Challenge". Author provides a study on different security aspects and relative challenges. Author defined the cloud security as the main factor while selecting the cloud server or the services. Different cloud service issues are integrated to the system so that the effective tracking is done. Sheng Jen Jian[9] author defined a cloud based decision support system under the risk analysis under heart disease assessment. Author presented a fuzzy expert system. Author defined the analysis under ANOVA vector. Author defined a risk factor based cloud analysis under the system tune-up mechanism. Author defined the system for public environment under different impact factors. Sneha Prabha Chandran[10] performed a work on the risk analysis in cloud system environment. Author defined different risk factors along with relative issues and the integration. Author provided the risk assessment and measure so that the risk relative to the data integrity is reduced and resolved upto an extent. Author provided an analysis on different risk measure so that the security decision can be taken at earlier stage.

## III. RESEARCH METHODOLOGY

When the communication is performed publicly one of the major challenges is the reliability of the communication. When this communication is performed on a cloud like distributed system where all services, products and infrastructure is available publicly with personal access capabilities, the reliability factor becomes more critical. The reliability itself is a complex form of measurement that includes the security, efficiency and the satisfaction level for the customer. In this presented work, a secure and reliable access over the cloud is been presented where different degree of reliability can be

achieved by the customer. The presented work is a middle layer architecture where multiple clients are connected with reliability layer as the middle layer to access the multiple clouds.

At the time of registration, user can opt the degree of reliability required by selecting the access degree. Based on this requirement, the security level and the cost of the cloud access will be decided. The presented work is the dynamic security structure specification in which all the reliability vectors are divided under 10 reliability features. These features include three main aspects called authenticity, control and availability. The authenticity is here been opted in form of single password authentication, generic authentication, code based authentication. The control is here defined in terms of public key secure data communication, private key secured communication, and tunnel based communication. The availability vector basically defines the authentication required for restricted area access, session based access or all page access. Each vector will be assigned by different cost and weightage vectors. Once the weight age and the cost will be assigned to the system, the fuzzy based analysis will be performed to identify the cost and risk vector over the system in a nominal form. Once a user is register to the system, he has to select the degree of reliability based on which the security level and the cost of security will be decided for the users.

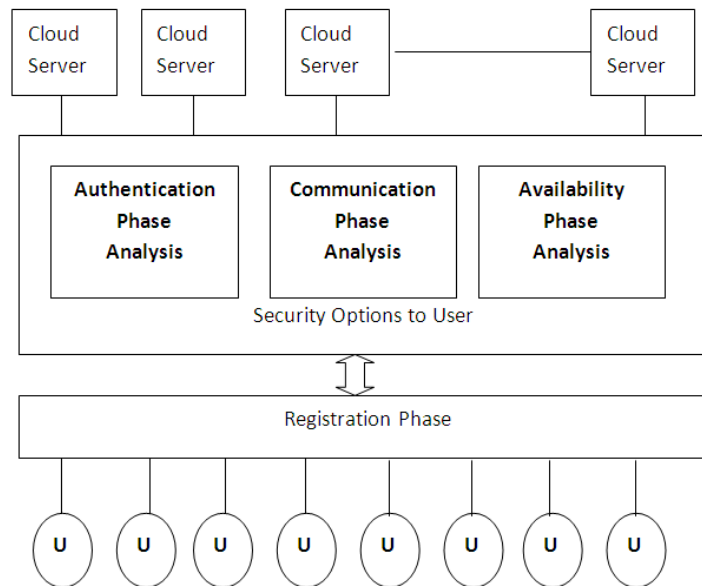


Figure 2 : Proposed Architecture

In this work, user security and access reliability are decided based on the security features opted by the users. Based on these security and reliability specification, the cost decision will be taken that user has to pay to the service provider. In this work, a two level weighted cost analysis approach is been defined. The first level of cost specification is been done on the security and reliability vector decided by the user.

On the basis of these three vectors over all system cost will be decided. The second and innermost analysis of the cloud system cost and security is based on the individual security components of all three phases.

#### A) Fuzzy System

Fuzzy logic is the soft computing approach defined with the help of fuzzy set of theory that defined the mathematical concept under the mathematical reasoning under the approximate or nominal value specification of precise value. This kind of theory is defined under the expert system with complex problem definition and formulation. Degree of truth identification is the major probabilistic analysis provided by the proposed approach. This system is conceptually distinct so that the fuzzy truth representation along with membership definition is required. Fuzzy logic is been defined to formulate some control application to define the reason based specification and analysis so that the probabilistic decision will be taken by the engineers under the mathematical uncertainty. The ordinary set theory and membership function are analyzed conventionally in such systems. Fuzzy logic can be used in household applications and appliances to set the basic characteristics under the user specification such as size, load, timer etc.

#### IV. CONCLUSION

In this paper, an effective cloud assessment model is presented using fuzzy logic. The work is about to perform the effective cloud server selection based on efficiency, reliability and security vectors. The paper has presented the work for the presented approach.

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