

A Reliable Agent System for Cloud Service Discovery using MFA Technique

S. Dhanasekaran, B. S. Murugan, V. Vasudevan

Abstract: *Reliable Agent system for discovering suitable cloud services are very interesting and challenging process. In this research work, the proposed reliable agents' authentication is enforced to provide security for cloud data's. In this proposed method the agent client requires service with specific functional and technical requirements. For privacy concern, we provide authentication for each agent in cloud by using Multifactor authentication process. By using authentication id agents discover the cloud service based on service engine. In our system, we enhance the privacy of the cloud search engine by introducing new authentication technique. The authentication process is done by the use of multi factors such the secret key which is generated based on AES algorithm, biometric of user and the user's password credentials. Focused Selection Contract Net Protocol is performed to find the relevant cloud service and it plays multiple roles in cloud service discovery. The similarity between the agent's request and cloud service is computed based on service specifications and consumer service using Cloud ontology. Each legitimate agent provides reliable cloud services for agent clients (users). Service capability Table records the list of cloud service and their corresponding ID and services for reliable cloud discovery.*

Key word: *Agent, Focused Selection Contract Net Protocol, Cloud ontology, cloud discovery, MFA, Cloud Service Capability Table.*

I. INTRODUCTION

Cloud computing has been formed by interconnecting lot of virtual machine and networks. Cloud computing defined by NIST, such as cloud computing is a paper use model for enabling available, suitable, and need based access of network for a shared collection of configurable computing resources (Examples: Networks, servers, storage, application, service) that can be rapidly provisioned and release with minimal management effect (or) service provided interaction. The characteristics of cloud computing are on-demand service, pay-per-use model, elastic capacity, self-service interface, resources are abstracted [1,2]. The Cloud computing roots are Hardware virtualization, internet technologies, distributed computing, system management.

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Open virtualization format is providing some standards there are so many Virtual Machine Monitoring Systems in which every one of them have supported the various Virtual Machine images design & these designs are included to another designs. It's not similar to and not comparable with other design. And also developing a system to avoid the problem of interoperability for facilitating a distribution of software packages which will be runs on the VM. Some of the cloud provider such as Mirosoft, VMware, IBM, Dell, HP and CISCO. These are include the OVF - open virtualization format for effective distribution. And also they are related to open source, secured, enable portability, efficient and support extensibility.

Service Capability Table records all the agent service competence & the agent's circumstances in the environment. The states of the agents are changed dynamically, when it interacted with other agents. The state of the agent is addressed as available, unreachable, failed and busy. Each Consumer Agent (CA) maintains the SCT of Broker Agent (BA) [5,6]. This is due to the request acceptance by broker agent from consumer agent then the BA subcontracts the service request to other BA. Each broker agent maintains the SCT of other BA with its state and location and also maintains the SCT of Service Provider Agent. Service agent provider preserve the 2 tables of service such as, table of service for cloud service providers agent & the SCT of resource agent under its administration. In existing method, *CLOUDLE* have developed as cloud service search engine based on multiple agents to support and extract necessary. If the multi agents requested for cloud service to cloud service provider, the similarity between the agent and service provider is compute using cloud ontology by using service specification and consumer service [3,4]. If the service is not available in the provider leads to loss of information. In our proposed method, we provide authentication for each agent in cloud by using Elliptic Curve Cryptography (ECC). By using authentication id agents the cloud system extract the suitable web pages based on user query. The relevant cloud service is finding by the multiple role performance of the agreement of the cloud service vendors. The similarity between the agent's request and cloud service is computed based on service specifications and consumer service using Cloud ontology. Service Capability Table is used for records the cloud service information such as list of cloud agents, service provided by cloud agent and their corresponding ID[7]. Each legitimate agent provides reliable cloud services for agent clients (users).

II. PROBLEM DEFINITION

Normally agents are requesting database for extracting relevant cloud services for doing computation. In cloud service discovery, an agent requested for cloud service to cloud service provider, the similarity between the agent and service provider is compute using cloud ontology by using service specification and consumer service. If the service is not available in the provider leads to loss of information. It leads to lack of security in the cloud service system and take more time for discovering the cloud service.

III. PROPOSED METHOD

A Reliable Agent System for Cloud Service Discovery Using MFA Technique our proposed method, in this approach the authentication has been provided in cloud environment by using Multi-factor authentication process. In this process, we have consider the multi factors such as secret key of AES technique, biometric of the user and user password. We have proposed the multi-factor authentication which reduces the possibilities of the unauthorized access. By using biometric, our system only allows the authorized customers are able to find the cloud service on the service engine. By using authentication id agents cloud services to be extracted in the cloud service database system. The secret key is generated by using efficient cryptography technique named AES algorithm which improves the secrecy of the system. The relevant cloud service is finding by the multiple role performance of the agreement based extraction. The similarity between the agent’s request and cloud service is computed based on service specifications and consumer service using Cloud ontology. Service Capability Table is used for records the cloud service information such as list of cloud agents, service provided by cloud agent and their corresponding ID. Each legitimate agent provides reliable cloud services for agent clients (users).

IV. MODULES DESCRIPTION

A. Multi-Factor Authentication

Multi-Factor Authentication techniques perform efficient cloud service validation and verification of all agents. This techniques have considered multi factor for efficient authentication process such as Secret key, biometric and password. In this process, the secret key is generated based on the AES cryptography process. The biometric of the user is considered during the time of authentication. When the biometric of the user is matched with already registered bio metric, the user is considered as authorized user and our system allows that user to access the system otherwise the access is denied it included the password credentials of the users which also involved for enhancing the privacy of the cloud service searching process [8].

B. Contract Net Protocol for Focused Selection

Contract Net Protocol for Focused Selection is performed for satisfying consumer service requirements by choosing & subordinate contract of cloud computing resource. FSCNP is performed by identifying cloud service and interacting with agents who provide relevant services to the requirement service by playing multiple roles such as contractor and manager.

C. Service Capability Table

The cloud environment has include the Service Capability table in the cloud service system records the ability of cloud service of client agents on the cloud service automated system & the cloud multi agents states such as busy state, availability, unreachable & failure state. In multiple agents cloud based environment the provider agent, customer agents have been changed their state dynamically based on client buying behavior. And also they exchange their data with other for new updation while conversation.

D. Cloud Ontology

The ontology of cloud service computing environment normally involved to find the similarities between Cloud service requirement of cloud customer’s & specification of cloud vendors. After that huge database is created this is called as Cloud Ontology which include all cloud services and its specification. This ontology maintain collection of service concept that is its deals with various cloud service criteria and constraints. Service Discovery Agents consults the cloud ontology and collect the information regarding identical information, matching information & relevant numerical information about cloud services. In our research work, service reasoning is determined by cloud ontology. The identical feature of cloud services are measured among y and z from which the perception can be analyzed as per the following calculation,

$$Similarity(y, z) = \left| \frac{\alpha(y) \cap \alpha(z)}{\alpha(y)} \right| - 1$$

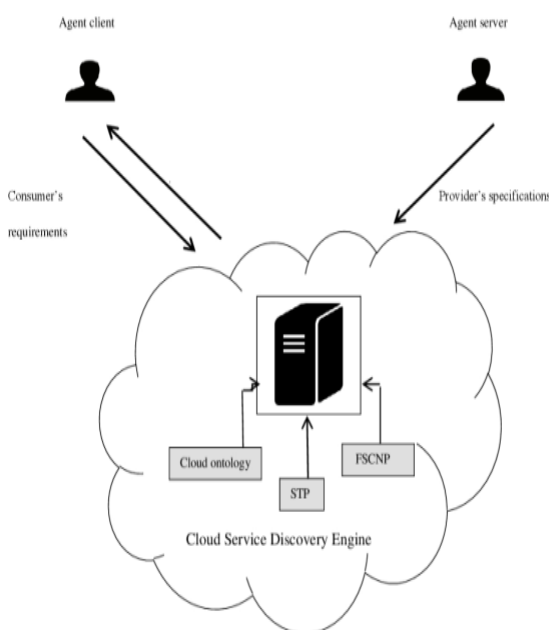


Fig.1.Cloud Search Engine Architecture

The similarity of common feature information has been calculated from y and z from which the perception is analyzed as per the following calculation.

$$Similarity(y, z) = \left| \frac{\alpha(y) \cap \alpha(z)}{\alpha(z)} \right| \quad - 2$$

V. RESULT

The following section shows the various results of experiment. This shows the home page of our cloud search engine

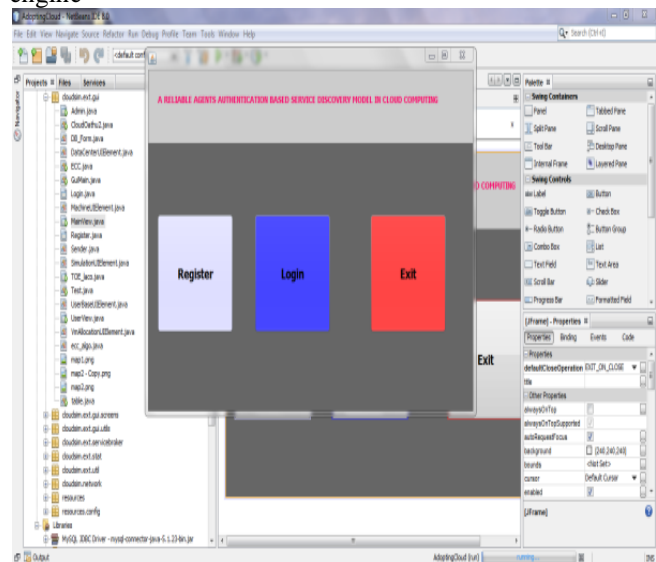


Fig.2.Home page

This shows bio registration such as eyerish to avoid unauthorized users

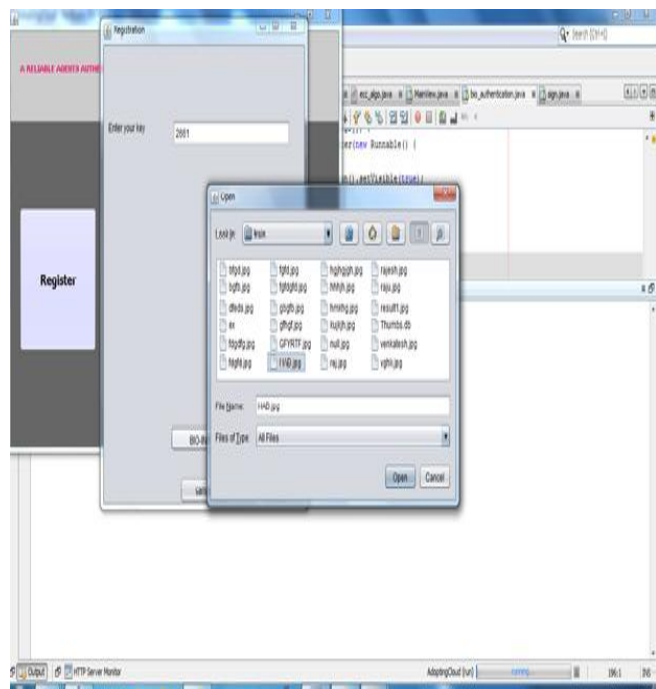


Fig.3.Bio Registration

To import your eyerish login to the cloud search engine.

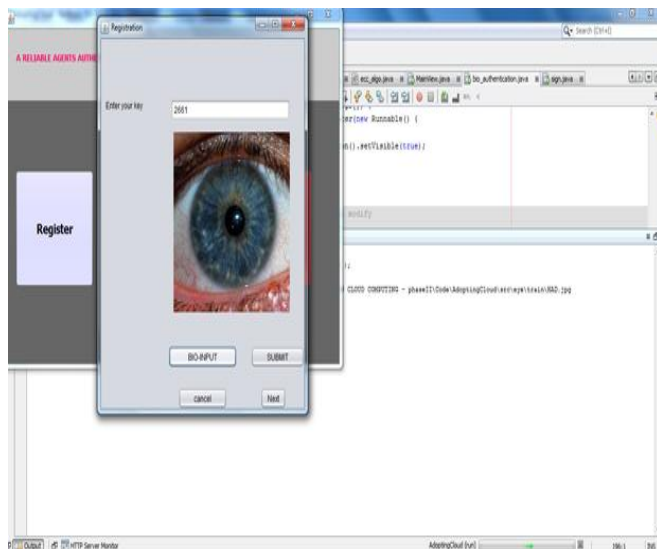


Fig.4.Eyerish Registration

After the authentication process ,it shows the service capability table with contains the cloud agent details.

ID	algorithm	Service	Rate
119	sdhpa	Colaboring	2031
117	sdhpa	Colaboring	3640
116	sdhpa	Colaboring	3540
115	sdhpa	Colaboring	3750
114	sdhpa	Colaboring	3750
113	sdhpa	Colaboring	3750
112	sdhpa	Colaboring	3750
111	sdhpa	Colaboring	3750
110	sdhpa	Colaboring	3110
109	sdhpa	Colaboring	3110
108	sdhpa	Colaboring	3110
107	sdhpa	Colaboring	3110
106	sdhpa	Colaboring	3110
105	sdhpa	Colaboring	3110
104	sdhpa	Colaboring	3110
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8	sdhpa	Colaboring	3110
7	sdhpa	Colaboring	3110
6	sdhpa	Colaboring	3110
5	sdhpa	Colaboring	3110
4	sdhpa	Colaboring	3110
3	sdhpa	Colaboring	3110
2	sdhpa	Colaboring	3110
1	sdhpa	Colaboring	3110

Fig.5.Service Capability Table

Then the cloud services are created by using cloud search engine. Here we select the services we need.

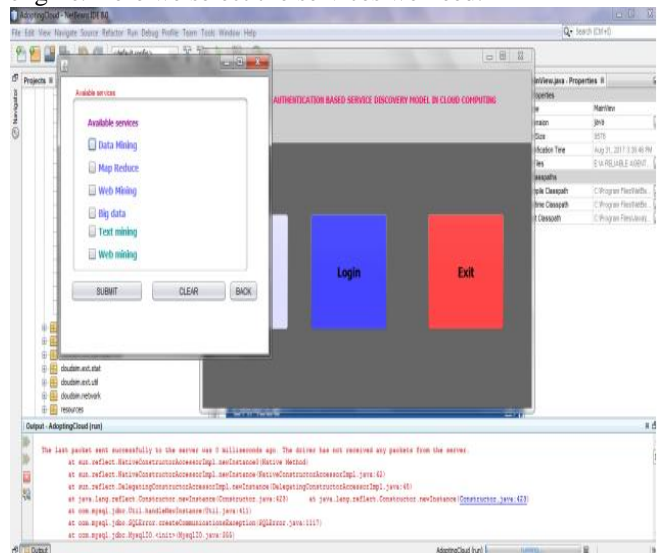


Fig.6.Cloud Search Engine

Before the simulation we click the configure simulation

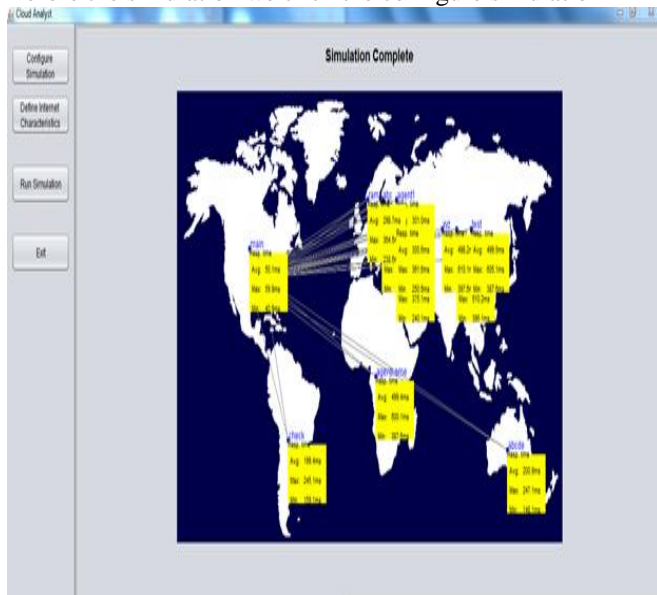


Fig.7.Configure Simulation

VI. CONCLUSION AND FUTURE WORK

A Reliable Agent System for Cloud Service Discovery Using MFA Technique have implemented for fulfilling the cloud consumer requirements. In cloud environment, each client needs the cloud service for satisfies their requirements. In this way, in the proposed system cloud service discovery with improved security is implemented by using Multi- Factor Authentication which enhances the privacy of the cloud search engine process. In this techniques , each agents send cloud service requirements to cloud server. Focused Selection Contract Net Protocol is used to find the relevant capacity agent for consumer requirements. Cloud ontology measures the similarity among the requirement of cloud customer's & cloud vendor's specification. Capability of cloud service Table stores all necessary details about cloud computing services. Eventually, the cloud service is discovered by agent client using cloud service engine.

In future, this technique will be implemented by increasing the Privacy of all agents in the environment. This technique will improve the authentication strategy by providing individual token. Also planned to increase the accessing speed of cloud service discovery.

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