An Ontology System for Ability Optimization & Enhancement in Cloud Broker

Pradeep Kumar
M.Sc. Computer Science (AI) Central University Of Rajasthan

ABSTRACT:
This Paper Presents The Service Providing Ability Optimization Of Cloud Brokers. The Concept Of Service Ability Optimization Provides A Nearest Result Regarding User's Queries And Broker's Optimization System To Optimize The Result. This Concept Is Focusing 0n To Reduce Broker's Decision Making Time And Helps In Improving His Services, Trust, And Feasibility In Users. It Is Specially Designed For Cloud Brokers Who Want To Long Relationship With Users And Being In Existence In Marketplace Successfully. In This Regard Cloud Broker System Works On Improved Ontology Based Cloud Services Discover System (CSDS) And ROSP. The ROSP System Works For Enhancement Of Cloud Brokers With Improved CSDS. The Concept Behind Optimization Is Adding New Type Of Similarity Reasoning In Cloud Services Discover System, Is Called Protocol Similarity Reasoning. The Protocol Similarity Reasoning Divides In Four Parts: - 1) SSL Similarity, 2) Authorization Similarity, 3) Popularity Similarity And 4) Security & Ownership Similarity.

KEYWORDS*: Cloud Computing, Cloud Service, Cloud Service Providers, Ontology, CSDS, Reasoning, Users, ROSP Algorithms, Optimization, Brokers, Cloud Broker System, Enhancement.*

I. INTRODUCTION:

Cloud computing is becoming a well-known services area. Cloud computing provides various type of services like IaaS, PaaS, SaaS, CaaS and DaaS. Many companies are providing services to users and these services criterion will be decide by their performance and usability. The companies are using a new technology is called Ontology based cloud services discover system (CSDS) [1] for providing the best services to users to making profit and ranking high.

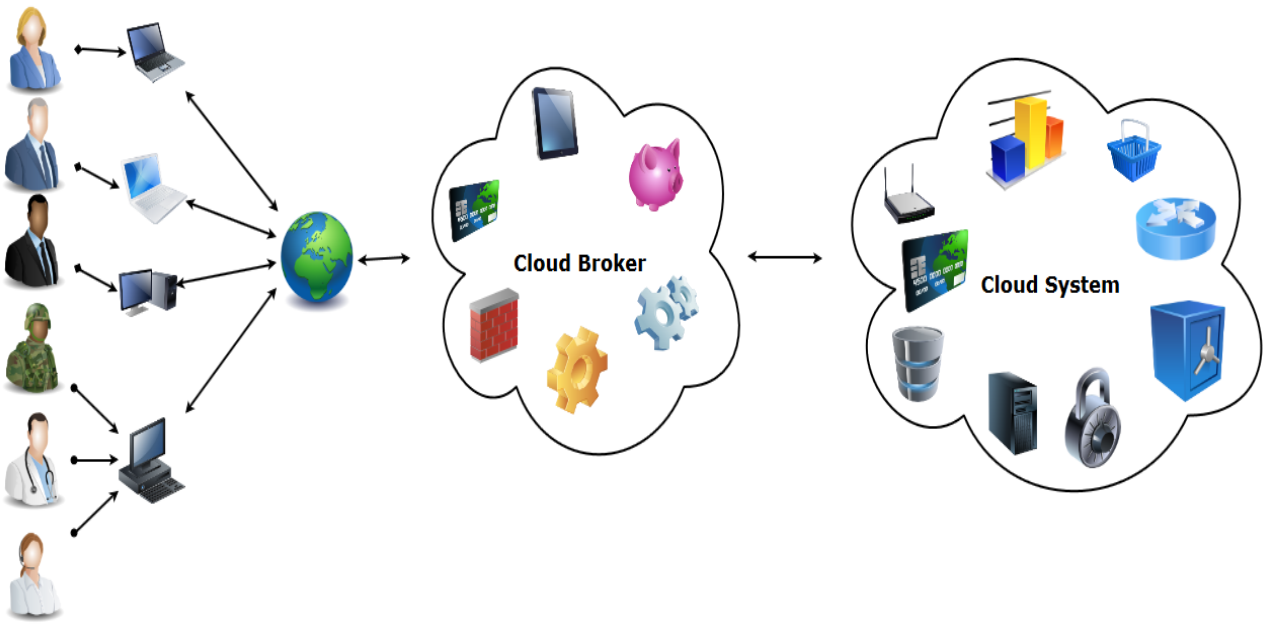

Figure 1(Simple Could System Image)

The cloud brokers deal with user's queries and providing cloud services with feasible cost (The Basic Structure of Cloud broker shown in figure 1). The brokers are using this technology to making more outcomes. The technology works for cloud brokers but not feasible for users every time according to their queries. The ontology based CSDS is using ontology reasoning system.

This reasoning system contains a set of concepts, relationship among concepts and can be applied into information retrieval to deal with users queries. The system applies reasoning to calculate similarity between available objects, concepts and produce output according to similarity. The problem is, how new technology is beneficial for users, brokers and what is further use in cloud computing. An ontology based improved CSDS contains a new protocol similarity reasoning. The reasoning provides strength to CSDS in terms of security & ownership, popularity, authorization and SSL. The previous ontology based cloud services discover system is not the best option for deciding cloud services rating. Hence the improved CSDS is providing optimal result to broker according the users queries and ROSP system more optimize this result to users. Thus improved CSDS system is more beneficial for users and brokers. The British Broadcasting Corporation (BBC) proclaimed that it's shifting to totally tapeless content production and investment in development of their personal cloud system. The advanced technology of the Cloud in terms of web, it is a good issue concerning cloud computing as a result of while not webs it insufferable. However nowadays it is a bottleneck issue within which an outsized quantity of information is send. The handling of users is additionally a good challenge in cloud computing at the time of usage. It is still not resolved by anyone as a result of each user per second area unit increasing as per the population like Republic of India. In this advanced world, Cloud Computing is in its developing stage but as per its level of development it has got its importance .Cloud computing is increasing day by day in the IT markets and becoming more popular in the management system. This is performing its work very fast in the IT Marketing but yet most of people are confused in its activities done or provided by cloud Computing. Some of the concepts related to the cloud computing as per the users need increasing day by day. It has many definitions given by different people for different purposes. The main agenda is to talk about the resource managements in Cloud and the process they are following.

II. ONTOLOGY ABSTRACT:

"Ontology was one primarily theory to explore knowledge characteristics of life and real objects." Ontologies are sets of classes with attributes, relations and instances between each other which allow the elaboration of metadata to quickly identify the objects. "Ontology is a data model that represents a set of concepts within a domain and the relationships among those concepts." Semantic phenomena are context independent. Pragmatic phenomena are context-sensitive. Ontology contains a set of concepts and relationship between concepts, and can be applied into information retrieval to deal with user queries [2]. It provides a shared understanding of a domain of interest to support communication among human and computer agents [3].

Benefits of using Ontology:

In order to provide an environment for automatic searching of services, resources ontology is used. These are some of the areas where Ontology is used in Cloud Computing .Intelligent Ontology based registries are used for dynamic discovery of cloud computing resource across various cloud computing platforms. It can be used to provide intelligent customization framework for SaaS. Easing the design of security system by proving role based access control using ontology. The Ontology layers of Cloud Computing are

1) Firmware/Hardware (HaaS),
2) Software Kernel,
3) Cloud Software Infrastructure,
[1] Computational Resources (IaaS),
[2] Data storage (DaaS),
[3] Communication (CaaS),
4) Cloud Software Environment (PaaS),
5) Cloud application (SaaS).

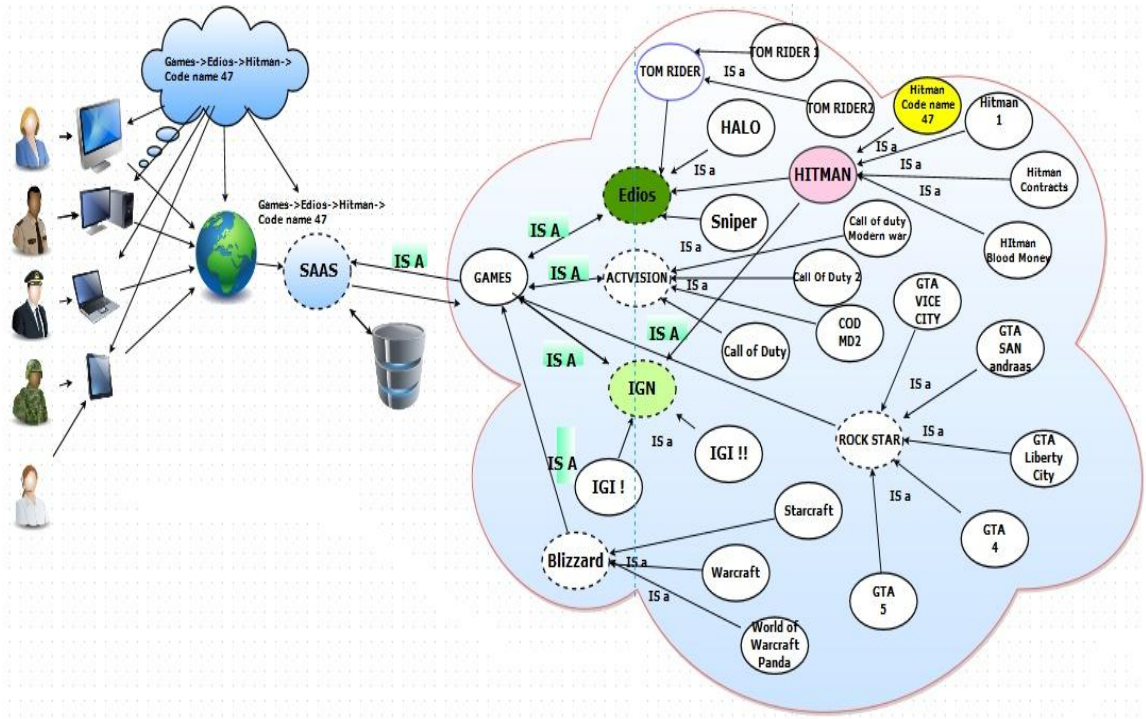

Figure 2 (The Problem Statement Condition)

III. PROBLEM STATEMENTS:

If more than one companies having the same parameter then previous CSDS system produce rating the same for all companies, at this stage the system building complex in finding difference between them and the brokers are confused to decide their function. The broker needs more time to take decision for providing services to users. If the broker does not consider the CSDS result and provide services to users according to CSDS result directly. Then users are also not deciding that which companies are giving good services and convenient. In this situation users are not able to determine difference between provided ratings, because the system providing same data type value for companies and another problem is rise, which is the best rating for services and provider (use upper figure). Example is shown in figure 2, there are two company having same path for one product (one company is owner of product and other company is affiliate or member) and CSDS is calculate equal rating or data lists for this product in result. The result is confusable for users and new brokers. With wrong decision the brokers and users are getting penalties in terms of cost, time and resource. The objective of this paper is providing the best techniques to improve existing ontology reasoning algorithms and concepts.

IV. METHODOLOGY:

A. Methodology for optimization:-

The concept behind optimization is adding new types of similarity reasoning are called protocol similarity. The protocol similarity divides in four parts, 1) SSL similarity: The SSL similarity is calculating verification similarity of services (i.e. IGN Company is having SSL verification by global institute and Polji Company not having a global verification then Polji similarity value is less than IGN, if both are having same level verification then no value is calculating). 2) Authorization similarity: If available verification is same then checking authorization by institute and organization (i.e. IGN company authorize by UNO and other Polji company is authorize or verified by local institute, in this condition Polji get less value, if both company having same level authorization (Same level authorization go to step 4) and ownership then no value is added in similarity).3) Popularity similarity: If available authorization is same then checking popularity similarity of service provider companies (reasoning checking popularity of company and services, it also check global level of company and service).4) Security & Ownership similarity: Checking security similarity in virtualization, OS, hypervisor, rootkits, vendors, ownership for services. Before calculating these similarities, filter results is coming by similarity reasoning previous similarities (concept, object and data similarity reasoning).

Broker Request to Cloud System Parameters

S.No.	Security System	No. User's	Providers Level
1	Password System	85	4
2	Encrypation System	300	6
3	Face-Recognition	900	15
4	Eye-Recognition	50	7
5	Body- Recognition	150	8
6	Bio-metrics	836	30

Figure 3 (Cloud Parameters for example)

- Sim (Edios, IGN) **(It follow step 2)**
- |Super(Edios)|,|Super(IGN)|= 4
- |Super(Edios)| ∩ |Super(IGN)| = 3
- Sim (Edios, IGN) = ¾ =0.75
- **(By using step 1,2,3)**
- Sim(Edios, Hitman)
- |Super(Edios)|=4 ,|Super(Hitman)| = 5
- |Super(Edios)| ∩ |Super(Hitman)| = 4
- Sim(Edios, Hitman) =4/5 = 0.80
- And done other Sim method , get Service Utility for Sim(Edios, Hitman)

Figure 4 (Figure 2 Result Calculating According to Algorithm 1)

Algorithm 1.

Input: Set of Jobs J from the first algorithm and Set of Service Providers S with their associated resource and demand vectors Ri and Cv respectively, set of parameters P. The Cloud Service discovery System (CSDS) is maintained. The values through Ontology (O) process we have calculated the values and put the actual values at mentioned in Matrix 1 and Matrix2.

Output: Web Page Ranking Services.

Method:

For (all filtered results {Ft(1), Ft(2), Ft(3), …, Ft(N)})

{

Similarity reasoning {q (1), q (2), q (3),….. q (n)} --------(Step 1)

Applying Popularity reasoning {qp (1), qp (2), qp (3),….. qp (n-1)}

Request forwarded to Cloud Broker Popularity Query filtering.

Broker Service Availability

{

Bq(1),Bq(2),……Bq(N-n-1)

Broker Checking availabilitythen, ----------(Step 2)

Broker Request to Cloud Service Providers

{

According to Cloud System (all filtered results {Ft(1), Ft(2), Ft(3), …, Ft(N)}) then,

Applying similarity ----------(Step 3)

1. Similarity Reasoning {(1) Concept similarity reasoning; (2) Object property similarity reasoning; (3) Data type propertysimilarity reasoning.}

2. Numerical Reasoning

3. Equivalent Reasoning

4. Protocol similarity (1. SSL similarity 2. Authorization similarity 3. Security & Ownership similarity)

}

}

Aggregate of all the Similarity terms by Steps 1,2,3.

Web page rating on the Basis of Services. The rating Calculations are transferred to cloud broker and Broker applying Algorithm 2.

Figure 5 (Rating Algorithm)

B. Methodology for Enhancement :-

The basic definition of rough set is that sometimes an object neither belongs to positive non negative then it is in the boundary. If the boundary is non-empty then we call it rough. The Rough set Theory is based on the assumption that data and information is associated with every object of the universe. For each attribute ρi the value of

$$\begin{cases} \rho\gamma i \geq 1 & or True \\ 0 & , Otherwise \end{cases}$$

It is interesting to compare definitions of classical sets, fuzzy sets and rough sets. Classical set is a primitive notion and is defined intuitively or axiomatically. Fuzzy sets are defined by employing the fuzzy membership function, which involves advanced mathematical structures, numbers and functions. The value 1 and 0 are presented for the CSP. We have formed on the basis of relevance to users and CSP's. The relevance generates a threshold value for each attribute out of a scale of 10.

$$\mu = \sum_{i=1}^{n} \delta i$$

We have represented the CSP and their attributes in a tabular form called Information System. The rows of the table contain the list of cloud service providers and the columns consist of the attributes of the respective cloud service provider.

Algorithm 2.

Input: Set of Jobs J from the first algorithm and Set of Service providers S with their associated resource and demand vectors Ri and Cv respectively, set of parameters P. The Cloud Service discovery System (CSDS) is maintained. The values through Ontology (O) process we have calculated the values and put the actual values at mentioned in Matrix 1 and Matrix2.

Output: Optimized Value on the Basis of Ontology System.

Method:

```
S' = S
For all q belongs to set of jobs j.
        While (S' ≠ ϕ)
        {
                r'= Select (q, r, S')
                S' = S' - r'
        }
        Select (q, r, S')
        {
                For each r, find max cost(r) from available resources S'
                Rating is provided to the Resource(r) on the basis of Ontology (O).
        }
}
```

Figure 6 (Algorithm 2* that used the data of Algorithm 1)

V. RESULT AND SIMULATION:

As proceeding with our previous ROSP Algorithm and methodology, in our new Simulation we have created some packages in Net Beans and calculated the result of the reasoning formulated by the Ontology based system. The output is shown in the below Figure 7, 8, 9. The result is more beneficial than without ontology system, because the ontology based system is giving best hope to regarding to maximum optimized result.(Example by Figure 2 to 9)

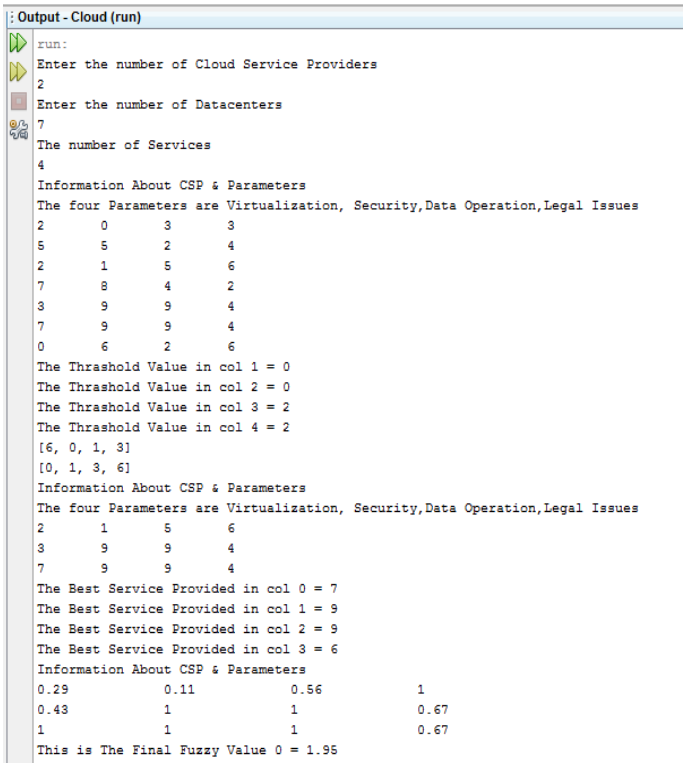

Figure 7 (Example of Figure 3 Calculating as Algorithms 1 data (Limited data))

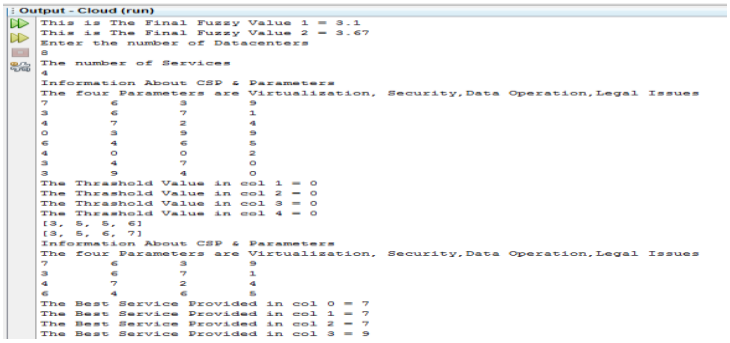

Figure 8

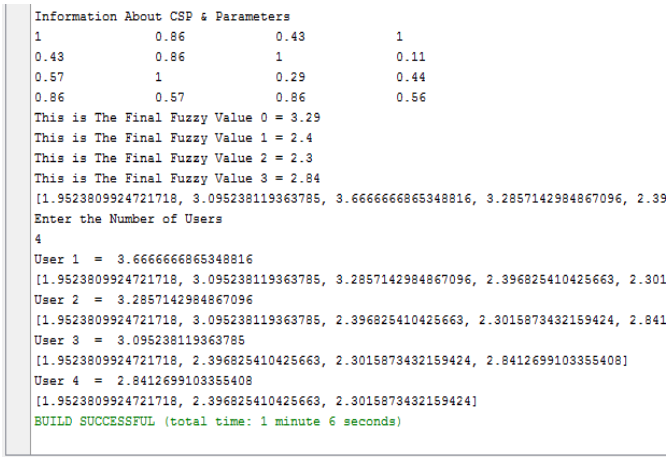

Figure 9

Benefit of using this system: As **proceeding** with our system, the system is using ontology approach that makes it more beneficial for service providers. The system is increasing search power.

VI. CONCLUSION:

The cloud Ontology is introduced for enhancing performance of Cloud Broker system. The broker optimization system is reducing penalties in terms of time, cost and resource. The optimization technique may further use in security of cloud computing and it's also helpful in vulnerability. This paper has presented a Broker services providing ability optimization. It is specially designed for cloud brokers who want long relationship with user and try to provide his excitation in marketplace. The cloud Ontology is also introduced for enhancing performance of Cloud Broker system.

VII. FURTHER WORK:

Converting method project in a real application that will be beneficial for Cloud Broker & Users.

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