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# Use of Agent based Method to Enhance Intercloud Resource Allocation.

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**ABSTRACT:** As the interaction and resource allocation of inter-cloud environment is complex because inter-cloud resources are distributed and controlled by different clouds. The proposed work uses agent based method to enhance inter-cloud resource allocation. The Agent based method takes care of the construction of agents for bolstering discovery, matching, selection, composition, negotiation, scheduling, workflow, and monitoring of Inter-cloud resources.

The proposed method proves advantages of using an agent paradigm for Inter-cloud resource allocation, reviews representative models of agent-based Inter-cloud resource allocation and also provides a comparison among these models.

The agent based method is also compared with non-agent based approach to show enhancement achieved in inter cloud resource allocation.

**KEYWORDS:** Autonomous agents, cloud computing, cooperative problem solving, distributed artificial intelligence, intelligent agents, Intercloud, resource management.

## I. INTRODUCTION

Cloud computing is a rising computing standard in which assets of the computing framework are given as a service over the Internet. As guaranteeing as it may be, this standard additionally delivers a lot of people new challenges for data security and access control when clients outsource sensitive data for offering on cloud servers, which are not inside the same trusted dominion as data possessors. Numerous services like email, Net banking and so forth are given on the Internet such that customers can utilize them from anyplace at any time. Indeed cloud storage is more adaptable, how the security and protection are accessible for the outsourced data turns into a genuine concern. The three points of this issue are availability, confidentiality and integrity.

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources. One of the essential aspects of cloud computing is creating the illusion that “infinite” computing resources are available on demand. However, the resources held by a single cloud are usually limited and it may not be able to deal with a sudden surge in user demands. An Inter-cloud is an interconnected global “cloud of clouds” that enables cooperation among clouds. In an Inter-cloud, each cloud can tap into resources of other clouds when it does not have sufficient resources to satisfy consumers’ requests. Inter-clouds are classified into federated clouds and multi-clouds. In a federated cloud, providers voluntarily interconnect their infrastructures to enable sharing and exchange of resources among themselves. Federated clouds are classified into centralized (resource allocation performed by a central entity) and peer-to-peer (no central authority) modes. Clouds interconnected at the same layer (e.g., between two or more IaaS providers) is called a horizontal federation and clouds interconnected at different layers (e.g., between a PaaS provider and an IaaS provider) is called a vertical federation. In a multi-cloud, cloud providers do not necessarily volunteer to interconnect and share their infrastructures, and consumers are responsible for managing resources across multiple clouds. In a broker aggregated service multi-cloud, cloud brokers provide resource selection and aggregation services.

## II. LITERATURE REVIEW

1. D. Bernstein et al. proposed the concept of interoperability use cases such as these, certain commonalities amongst clouds must be adopted. With the Internet, interoperability foundations were set with the basics of IP addressing,

DNS, exchange and routing protocols such as BGP, OSPF, and peering conventions using AS numbering. Clearly, analogous areas in Cloud Computing need to be investigated and similar technologies, but for computing, need to be invented.

2. S. Venticinque, L. Tasquier, and B. Di Martino proposed the user is able to discover, allocate, configure and monitor Cloud services at infrastructure level through an approach that is agnostic respect to the specific Cloud vendor or to the Cloud technology.
3. J. O. Gutierrez-Garcia and K. M. Sim, develop the relationship between web services and service providers is modeled using object Petri nets. Both Petri net formalisms are combined to support a design methodology for defining concurrent and parallel service choreographies. This results in the creation of a dynamic agent-based service composition algorithm. The simulation results indicate that service composition is achieved with a linear time complexity despite dealing with interleaving choreographies and synchronization of heterogeneous services.
4. P. Endo et al. this process in the context of distributed clouds, which are seen as systems where application developers can selectively lease geographically distributed resources. This article highlights and categorizes the main challenges inherent to the resource allocation process particular to distributed clouds, offering a stepwise view of this process that covers the initial modeling phase through to the optimization phase.
5. Y. Wei and M. Blake, proposed the authors propose an agent-based framework that provides effective integration of services within clouds. To tackle the dynamism in service operations, an adaptive monitoring algorithm is proposed.
6. S. Son and K. M. Sim, In existing negotiation mechanisms in which a negotiation agent can only make one proposal at a time but brokers in this work are designed to concurrently make multiple proposals in a negotiation round that generate the same aggregated utility, differing only in terms of individual price and time-slot utilities. Another uniqueness of this work is formulating a novel time-slot utility function that characterizes preferences for different time slots.
7. K. M. Sim In this paper, To bolster many-to-many consumer-to-Cloud negotiations, this work devises a novel interaction protocol and a novel negotiation strategy that is characterized by both 1) adaptive concession rate (ACR) and 2) minimally sufficient concession (MSC). Mathematical proofs show that agents adopting the ACR-MSC strategy negotiate optimally because they make minimum amounts of concession and also Mathematical proofs show that these InterCloud coalition formation strategies 1) converge to a subgame perfect equilibrium and 2) result in every Cloud agent in an InterCloud coalition receiving a payoff that is equal to its Shapley value.
8. D. Bernstein, D. Vij, and S. Diamond, we define Cloud Computing as a single logical datacenter which: May be hosted by anyone; an enterprise, a service provider, or a government. Implement a pool of computing resources and services which are shared amongst subscribers. The Intercloud vision, Reference Intercloud topology and elements, Intercloud Trust Management Model This technique is used in cloud.
9. J. Kang and K. M. Sim In this paper, we introduced an enhanced and new cloud ontology which provides more precise similarity reasoning methods. The new and improved cloud ontology consists of a set of cloud concepts, individuals of those concepts, and the relationship among those individuals. It is used for determining the similarity among cloud services with three kinds of reasoning methods consisting of 1 concept similarity reasoning 2 object property similarity reasoning 3 datatype property similarity reasoning.

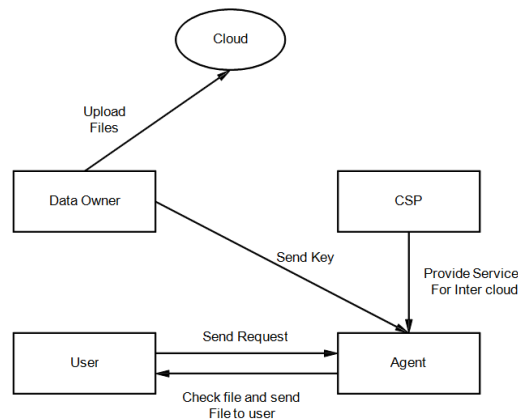
### III. METHODOLOGY

#### Goals and Objective:

The main objective is use of an agent paradigm for Inter-cloud resource allocation. The proposed method used for allocation of resources through Multi cloud environment.

#### Objective of this dissertation are:

- 1) Design and creation of multi cloud environment.
- 2) Design and Implementation of Agent based method for Inter-cloud resource allocation to increased performance.
- 3) Implement security using algorithm.



**Figure 1. System Architecture**

Propose a Use of Agent Based Method to Enhance Intercloud Resource Allocation which aims to provide users to send request for any file to agent.

The agent based system handles user uploaded files, and factors in the following criteria that influence one's privacy settings of files:

1. The impact of social environment and personal characteristics.
2. The role of file content and metadata.

Intercloud infrastructure having following elements:

1. Directory: It is service provider. It contains Metadata. It provides services like establish requirement, Register new user and Store information of User and their data.
2. Consumer Agents(CA), Service Provider Agent(PA), Resource Agent(RA), Broker Agent(BA):  
Each Consumer agent send request to Broker agent. Using similarity reasoning, each BA attempts to match requests to advertisements (similar to allocation by brokers supplemental material). Similarity reasoning determines the degree of similarity between concepts by counting their common properties.  
In matching prices and time slots of PAs and CAs, a BA attempts to match CAs with PAs that
  - 1) can accommodate the time slots specified by CAs and
  - 2) have acceptable prices that do not deviate too much from those of CAs

### AGENT BASED FRAMEWORK

Definition 1. A privacy policy P of user u consists of the following components:

Subject (S): A set of users register in system to u.

Data (D): A set of file items shared by u.

Action (A): A set of actions granted by u to S on D.

Condition (C): A boolean expression which must be satisfied in order to perform the granted actions.

Module 1 : User

The user see the any file and request to the agent to provide this file to user.

Module 2 : Data Owner

Data owner upload the file in the cloud in encrypted format and send the key to agent.

Module 3 :CSP

Cloud service provider is provide the service of inter cloud to the agent.



#### Module 4:Agent

This agent check the file because he has permission for the inter-cloud. And he take the request of the user and validate the user request and provide the files to user.

#### Algorithms:

#### AES Algorithm for Encryption:

##### Introduction:

AES (advanced encryption standard).It is symmetric algorithm. It used to convert plain text into cipher text .The need for coming with this algorithm is weakness in DES. The 56 bit key of des is no longer safe against attacks based on exhaustive key searches and 64-bit block also consider asweak.AES was to be used128-bit block with128-bit keys.

##### Input:

128\_bit /192 bit/256 bit input (0, 1)  
Secret key (128\_bit) +plain text (128\_bit).

##### Output:

Cipher text (128 bit)

#### IV. EXPERIMENTAL RESULTS

To evaluate the performance, the schemes in [1] and Pro-posed system are simulated using the Stanford javax.cipher library. The experiments on these schemes are conducted on a laptop running Windows operation system with the following settings: CPU: Intel core i5 CPU at 2.5GHz; RAM memory: 4 GB

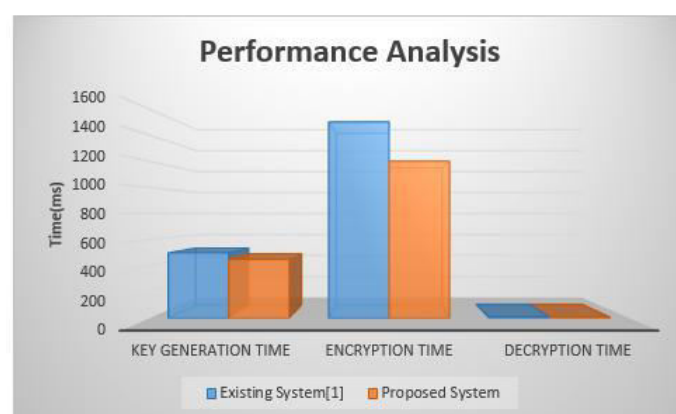


Figure. Graph

	Existing System[1]	Proposed System
Key Generation Time	500ms	450ms
Encryption Time	1500ms	1200ms
Decryption Time	10ms	9ms

## V. CONCLUSION

In this dissertation, we provide agent based method for Intercloud Resource Allocation. We define Multi cloud environment and Agent-based cloud computing. Inter-cloud resource allocation models provides a comparison between agent-based and non-agent-based approaches and our method enhances the resource allocation which is useful for efficient use of cloud resources.

Our method reduces the complexity involve in Intercloud interaction and management, it can be further extended to provide more efficient use of Intercloud features.

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