

# CLOUD CHALLENGES OF LOAD BALANCING AND SECURITY ISSUES USING ICLoS ALGORITHM

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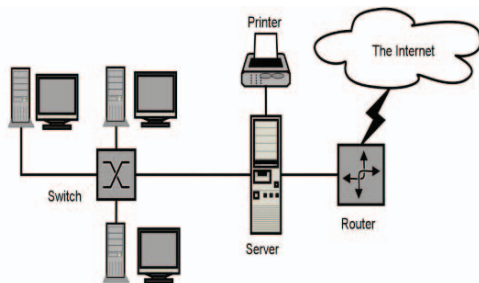
## Abstract

Cloud computing is an emerging technology in today's world. The services provided by the cloud is like freeware. Resources in cloud will be in shared pool. If any resources wanted in dynamic basis they are requested to shared pool and particular resources will be provided to users. Resources are will be in form of clusters. From these group cluster or master nodes are selected using Advanced Ant colony optimization algorithm. Here each node will be communicating using heart beat messages reporting their individual status to nearby node and master node. The application or data will be requested from the servers. Upon the requested services they will be provided in secure manner by DMZ(De-militarized zone) techniques. They provide three layer of security to the data requestition. They provide security to data leakage in 3 layers with various algorithm.

**Keywords:** cloud computing, resource pool, AACO, DMZ.

## I.INTRODUCTION

Cloud computing is an internet based technology that provide services to existing users. Here the resources are in shared pool[1]. Upon user requisition these resources are provided to users. The storage capacity, elasticity and rapid changes in dynamic environment. They provide good amount of storage capacity. The data stored in pool are in vast amount. The users can be requested any amount of data.



Cloud computing provides four types of cloud infrastructures. They are as follows.

- 1.Private cloud
- 2.Public cloud
- 3.Hybrid cloud
- 4.Community cloud.

Private cloud: They provide services such as security, availability of resources etc. They provide authentication and privileges to particular private organizations.

Public cloud: They provides certain services that are access to public group and services will be provided to all. The main drawback of this public cloud is that security will be at minimum amount.

Hybrid cloud: The hybrid cloud provide internal control using private cloud and migrate the application from public cloud to private cloud as needed. The security access to these services are open to all.

Community cloud: As name suggests, the services are provided to only particular group of members. These cloud is rarely used.

Based upon the services provided by them, they are categorized into 3 types[2], namely

### 1.SaaS(Software as a Service):

The services are provided and registered managed by service providers. People always just refer to software they don not worry about the underlying techniques how these software's are managed. Here the software is the main resources where they get shared among[9] cloud users.

### 2.PaaS(Platform as a Service):

They provide need for services(platform) that manage the underlying platforms like hardware and software's which allows user to deploy and maintain the underlying applications.

### 3.IaaS(Infrastructure as a Service):

They provide the fundamental building block of cloud IT. They provide access to networking features[3], this provide high level of control and flexibility to cloud IT.

## II. CLOUD LOAD BALANCING

Since the storage space is higher in cloud environment the load of higher priority nodes get shared among all nodes in a networks[4]. These loads are shared for an efficient usage of a nodes in networks. There are mainly two types of algorithm for an efficient load balancers. They are

1. Static load balancing algorithm
2. Dynamic load balancing algorithm.

### Static algorithm:

In static environment all the nodes are in static state. Each and every node communicate among them using messages and report their status[5]. This status of every node is reported at beginning of communication. The current state of the node is not taken into consideration. Based on prior knowledge of the system status in advance.

### Dynamic algorithm:

In dynamic environment, all nodes in cloud environment will be communicating each other at regular time interval. Each node send the status report of particular node to the neighbor node. The neighbor node maintain a table knowing the current status of each node and their loads. By knowing the workload and status of every node in cloud we can easily balance the load among all nodes[6]. All the nodes in cloud will be movable ie dynamic in nature. The main criteria we have to look in resources and nodes starvations. Mainly no nodes should undergo starvations. This lead to lifetime expiry of resources.

In general, static and dynamic algorithm comparatively dynamic is best suited for today's technology.

## III. EXISTING LOAD BALANCING ALGORITHM

The loads in nodes are shared using various algorithm We can just see the overview of algorithms.

The main usage of this algorithm is in dynamic environment Initially the node will be selecting the node head among all nodes in cloud

based on certain criteria. By selecting the master or head node the report or status of each node. By selecting node head the workload of every node is known in advance[7]. Each and every node will be transmitting messages to neighbor and head node for status report. The main criteria should be noted here is communication overhead. The communication overhead of cloud environment should be in negligible amount.

### (i) Ant Colony Optimization Algorithm:

It is a probabilistic techniques used to solve computational problems. The ants will be searching the food and find shortest path to get the food material as needed[8]. As wise the ACO provide the optimum solution to get the shortest path in search of food.

### (ii) AACO Description:

In advanced ant colony algorithm, the nodes are initially grouped based on similar task. The node initially register with their individual nodes to near by node along with their capacity of load they can handle. These communication can be done among all nodes by "heart beat messages". These messages takes the node ID and their load capacity to nearby nodes.

Based on this information report the threshold level is set to the deployment environment. The node having higher loads will be chosen as master node. All the information about the node will be deposited in master node and movement will be updated in its node and nearby node. The set will be updated based on optimum route.

If any one of the node in cloud fails then the next priority node will be taking the responsibilities of failed node. These priority nodes will be selected based on initial registration of workload. Even if the head node fails. Next priority nodes will be taken into account. The loads will be shared among all nodes by using this techniques.

### (iii) ICLOS ALGORITHM

This algorithm depicts the status of every node to each and individual nodes. By the way the

share the loads. These can be achieved using the “heart bat messages”. When the user request for particular services from the head server, the data will be provided in secure manner.

The range of three layer security is provided around the master server, where all the data are resides. These three layer security provides the greater security to the data. They form the Demilitarized zone (DMZ) around the cloud. Each layer is implemented with special security algorithm.

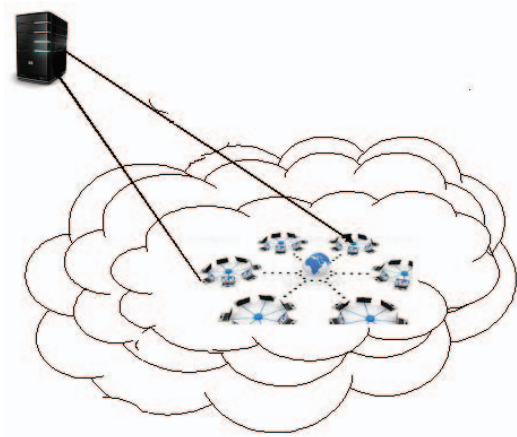


Fig 1.2 Communication between client and server using ICLoS technique.

#### IV. CONCLUSION

Thus the optimum solution to balance the load along with the security purpose using DMZ zone. By providing load balancing and security to cloud environment they provide the better efficiency than other. Thus by providing ICLoS algorithm the efficiency can be very much improved.

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