

# Resource Accounting In Multitenant Clouds Using Antcolony Optimization

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**Abstract-** In today's modern world, the ability to accurately account overall resource usage among applications is crucial variety of management actions (e.g., capacity planning, dynamic resource reallocation or load balancing). However, in the environments where small number of shared services increases to a large number of distinct entities, resource accounting becomes significantly challenging task. Hence, Multi-tenancy is one of the key features of cloud computing, which provides scalability and economic benefits to the end-users and service providers by sharing the same cloud platform and its underlying with the isolation of shared network and compute resources. The key aspect of local monitoring is that to perform identifying and recording information about resource principal management and scheduling the events of interest. Load balancing is one of the main challenges in multi-tenant architecture which is required to distribute workload evenly among the processors node. It schedules the services which is requested by the users and divides the network load automatically. And then, user wants to login the site for the file to be upload. Only the verified users will be allowed for uploading the contents. After that, for possessing the data security against fraudsters, the Attribute based algorithm (ABE) for encrypting the desired file content in a secured manner. Next, the desired file is to be encrypted and, the file contents should be divided and securely stored on two different clouds (cloud me).Therefore, whenever the user want to decrypt the file contents in ease of secured manner.

## I. INTRODUCTION

It is a process of reassigning the total load to the individual nodes of the collective system to make resource utilization effective and to improve the response time of the job, simultaneously removing a condition in which some of the nodes are over loaded while some others are under loaded[1]. A load balancing algorithm which is dynamic in nature does not consider the previous state or behavior of the system, that is, it depends on the present behavior of the system[3]. The important things to consider while developing such algorithm are : estimation of load, comparison of load, stability of different system, performance of system,

interaction between the nodes, nature of work to be transferred, selecting of nodes and many other ones[2]. This load considered can be in terms of CPU load, amount of memory used, delay or Network load. Load balancing is the process of improving the performance of the system by shifting of workload among the processors. Workload of a machine means the total processing time it requires to execute all the tasks assigned to the machine. Load balancing is done so that every virtual machine in the cloud system does the same amount of work throughout therefore increasing the throughput and minimizing the response time. Load balancing is one of the important factors to heighten the working performance of the cloud service provider. Balancing the load of virtual machines uniformly means that anyone of the available machine is not idle or partially loaded while others are heavily loaded. One of the crucial issue of cloud computing is to divide the workload dynamically[4]. The benefits of distributing the workload includes increased resource utilization ratio which further leads to enhancing the overall performance thereby achieving maximum client satisfaction. Load balancing in cloud computing systems is really a challenge now. Always a distributed solution is required. Because it is not always practically feasible or cost efficient to maintain one or more idle services just as to fulfill the required demands. Jobs can't be assigned to appropriate servers and clients individually for efficient load balancing as cloud is a very complex structure and components are present throughout a wide spread area.

## II. RELATED WORK

In [1], In the modern era accounting of users resources is an important task. As small number of shared services leads to a large number of distinct entities. We focused on overall resource consumption at the shared service is the aggregate of resource consumption of multiple entities. We compare two nonintrusive approaches having different balance between local monitoring

In[2], In cloud platform load balancing is one of the major challenge to distribute load among different nodes as cloud is emerged as a new paradigm for manipulation and

configuration. Load is a measure of amount of work that a computation system performs which can be classified as cpu load , network load , memory and storage capacity .Proper load balancing aids in implementing fail over ,enabling scalability , over provisioning and avoiding bottlenecks etc.This helps in user satisfaction and minimizes resource consumption.

In[3],Multi-tenancy is one of the key features of cloud computing,which provides scalability and economic benefits to the end users and service providers by sharing the cloud platform and its underlying infrastructure with the isolation of shared network and computer resources.Resource accounting in multi-tenant clouds become easy and the overall computing time will be minimized.

In[4], The big data with its dynamically changing traffic patterns and flows might result in degradations of the application performance eventually affecting the network operators' revenue. In this context there is a need for an intelligent and efficient network management system that makes the best use of the available bisection bandwidth abundance to achieve high utilization and performance.

In[5], cloud computing is currently one of the busiest areas of research in IT, because of its flexibility,robustness and ability to significantly reduce the costs of services to users on the internet. Moreover, cloud stores all customer data in data centers scattered around the world. Therefore, security has become a paramount concern that prevents many companies to adopt its services. Users are supposed to store their data, some of which are typically confidential or personal, therefore, we are very attentive to data integrity and confidentiality during transfer to a cloud server. This research paper aims to develop an analysis on the various security risks involved in cloud computing and analyze the numerous unresolved issues threatening the Cloud computing adoption and diffusion affecting the various stake- holders linked to it.

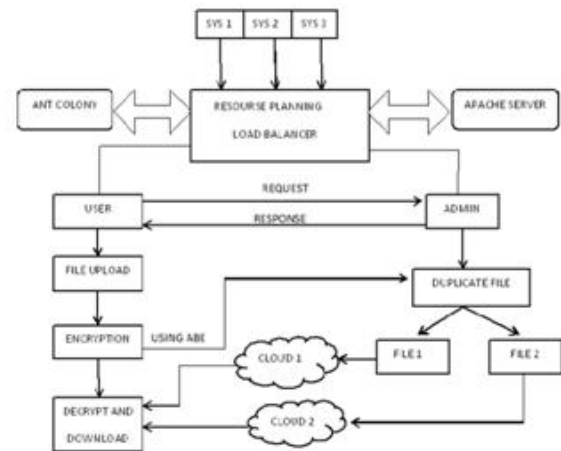


Figure (1) Architecture diagram

### III. PROPOSED SYSTEM

The proposed dynamic algorithm for resource planning is Ant Colony Optimization Based on Load Balancing Algorithm. The proposed resource planning load balancer involves both request monitoring and file access. Also the load balancer will keep track of the virtual machine status i.e, Busy or Ideal, session time, packet size, virtual machine name, type, hostname, port address and bytes read in each virtual machines are been monitored in apache server and based on the status the job is allocated to the virtual machines. Our proposed system will help to analyze the HEAP memory space of the server .The system uses hierarchical load balancing technique. Master or manager can use light weight agent process to get statistics of slave nodes. Hence we have designed and implemented the resource accounting technique, called Rameter. Rameter consists of two parts the first part Keeps track of the distributed requests and the other Keeps an account of the resource usage[1]. For experimental results, we are implementing Apache server as the accounting load balancer. For data secure repository or data recovery in cloud storage we proposed multi-cloud architecture, where the user data is split into two parts and encrypted using attribute based encryption algorithm and stored in Cloud 1 and Cloud 2[5]. During the request our technique will merge the two parts and provide the response to the requested user.

### IV. MODULES DESCRIPTION

#### IV.1) Load balancing process

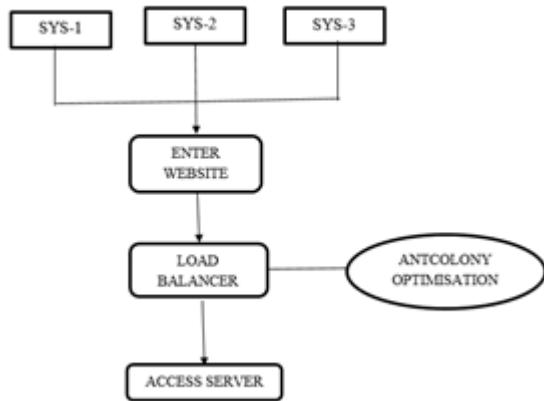


Figure (2) Load balancing process

Load balancing is the process of allocating the excess dynamic load evenly across various nodes..Ant colony optimization is used to balance the load.It finds the shortest path for each of the client and directs it to the nearby server.

**IV.2) Ant colony optimization**

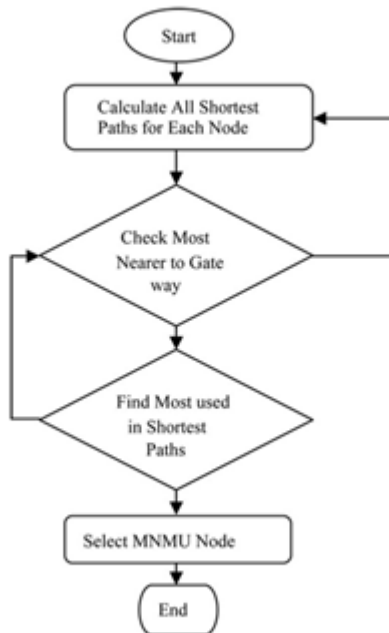
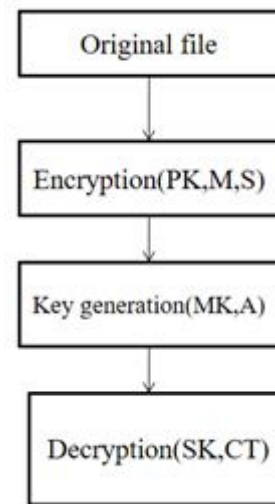


Figure (3) Antcolony optimization

Ant colony optimization is a technique used to access the nearby server by the user so that there will be no network traffic in the server. Most nearby and most used server can be used by the user as like ants which follows the pheromones of the ants to get the food.It is also used for the local monitoring of resources in the site such that the system keeps track of all the records.

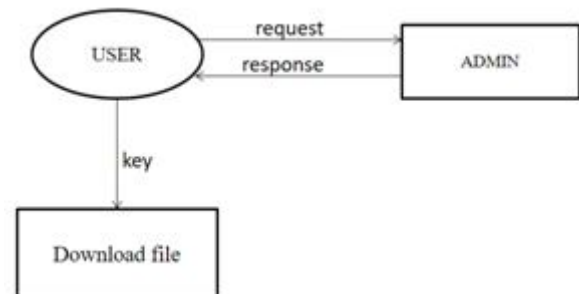
**IV.3) Attribute based encryption**

Attribute based encryption that is also known as ABE is a type of public-key encryption in which the secret key of a user and the cipher text are dependent upon attributes.This module encrypts the user file such that when stored in the cloud nobody can access the file.



Figure(4) Attribute based encryption

**IV.4) Request-response**



Figure(5) Request response module

By a random key generator a six digit random key will be generated such that to prevent fraudulent. The key will be sent to the users mail and the user whenever in need of a original file can download by using the key sent through the mail.The file will be splitted and stored in two different clouds to make a redundant file(i.e. to make a copy).

**V. CONCLUSION**

In this paper the security and the efficient use of the cloud is focused and an cloud accounting for high efficiency is achieved.

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