**Multidisciplinary Journal of Research in Engineering and Technology**

# IMPROVING RESOURCE UTILIZATION IN INFRASTRUCTURAL CLOUD

Abhinav Awasthi[1], Rohan Patil[2], Magzina Pinto[3], Vikram Sagadevan[4]

Department of Computer Engineering, University of Pune
Imperial College Of Engineering and Research
Pune, India
[1]abhinav51093@gmail.com,[2]prohan260793@gmail.com,
[3]magzinafpinto@gmail.com,[4]vikram.sag88@gmail.com

**Abstract-** *In this paper, an introspective overview is made on the design aspects of (Software as Service) Cloud system by improving infrastructure utilization integrating different lease and scheduling techniques for user and resources to implement On-demand allocation of resources to the user. The primary aim of Cloud Computing is to provide mobility development of web-based application by means of early accessible tools and interfaces by using and manipulating infrastructure. Cloud-based services integrate global scattered resource, which offer its users different types of services without the difficulties and complications. In this paper main focus is on resource allocation (HDD) to users, both on-demand and Opportunistic with more priority to on-demand managing their effective utilization and providing security from data alteration and modification. Its main purpose is to improve utilization of infrastructure Cloud by providing On-demand availability of the resources to the users by reducing the expenses. Application are network based so that the business user free to use the services from anywhere that they choose using virtually any type of electronic device. Each application is pay-per-service, allowing the business owners to predict their budget for the usage of number of application according to business need.*

**Keywords**- *Encryption and Decryption, cloud, Reverse Circle Cipher, Upper Bound.*

## 1. INTRODUCTION

Assume that we are in the world where the users of today's internet world need not run, install or store their application or data on their personal computers, imagine the world where every piece of your information or data would be provided on the Cloud (Internet). We are hosting our project on cloud. Cloud computing provides dynamically scalable and often virtualized resources are provided as a service over the internet. Cloud Computing is basically sharing of resources over the network. It aims to cut costs, and help the users focus on their core business instead of being impeded by IT obstacles. Cloud computing

M24-2-2-4-2015

provides the tools and technologies to compute intensive parallel applications with much more affordable prices compared to traditional parallel computing techniques.

## 2. LITERATURE SURVEY

In paper [1], Paul Marshall et al., Department of Computer Science University of Colorado at Boulder. Has proposed a cloud infrastructure that combines on-demand allocation of resources with opportunistic provisioning of cycles from idle cloud nodes to other processes by deploying backfill Virtual Machines (VMs).

In paper [2], Authors Amir Vahid Dastjerdi et al. has proposed a system that contributes in the area of the encryption to make sure that the data does not fall in wrong hands at the cloud data centre.

In paper [3], Paul Marshall et al. has proposed System architecture along with the issues involved with elastic provisioning such as security, privacy and various logistical considerations.

In paper [4], Dr. Rao Mikkilineni et al. has proposed a System that utilizes dynamic provisioning of computing, network and storage resources made possible by virtualization technologies.

Thus the purpose of all above papers was to provide on demand provisioning that allows users to elastically expand and contract the resource base available to them based on an immediate need – a pattern that enables a quick turnaround time when dealing with emergencies, working towards deadlines or growing an institutional resource base. But due to space limitations the performance data of SAGA-Map Reduce with different data-set sizes and varying workers numbers became complex. Also they failed to monitor the allocation of services and handle the memory requirement.

## 3. DESCRIPTION OF TECHNOLOGIES USED

### 3.1 Encryption and Decryption

Encryption is the process of encoding messages or information in such a way of authorized user can read it. This message is called plaintext and encrypted message is called cipher text. Whereas on the other hand Decryption is the process of decoding data that has been encrypted back into plaintext. This process requires a secret key or a password.

### 3.2 Reverse Circle Cipher

The Reverse Circle Cipher uses Circular Substitution and Reversal Transposition to exploit the benefits of both confusion and diffusion. It has a variable key length which is almost equal to the plaintext. This method can be best utilized for standalone systems providing personal data security.

### 3.3 Upper Bound

This technique allows us to preserve the privacy of intermediate datasets while transmission from one server to the other. It helps to identify which intermediate data sets need to be encrypted and which should be avoided, so that the cost of privacy-preserving can be reduced while the privacy requirements of data holders can still be satisfied.

## 4. PROPOSED ARCHITECTURE

### 4.1 Theory

This system focuses on Cloud System by improving infrastructure utilization integrating different lease and scheduling techniques for user and resources to implement on-demand and opportunistic allocation of resources to the user with fraud detection.
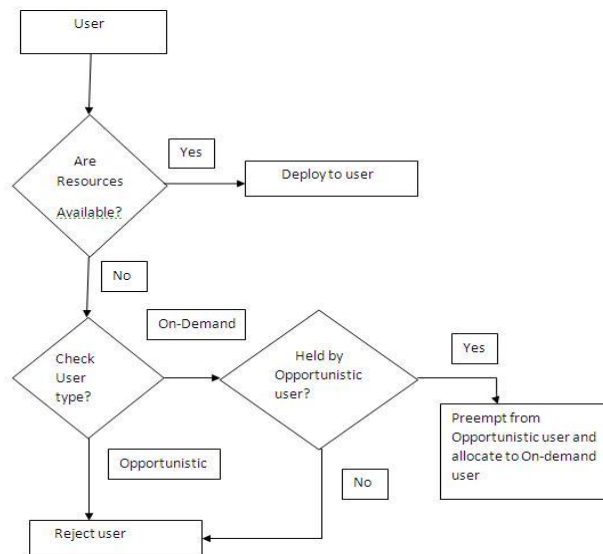


*Fig.1: Block Diagram*

A compute infrastructure cloud operates by allowing a user to make leases against a number of resources that means it makes resources available to the user based on set of lease terms defining the availability, capacity and general conditions of leases:

**4.1.1. On-demand User:** On-demand, non-pre-emptible and flexible leases give a user access to a resource within interactive time of making the request and make the resource available for an agreed-upon period of time.

**4.1.2. Opportunistic User:** Opportunistic, pre-emptible and pre-set leases give a user access to a resource at an indeterminate time and make the resource available to the user for an in determinate amount of time. Then, this resource is reset for the user by the cloud server, that means the user cannot provide his own VM.

**4.1.3. Fraud Detection service:** The main purpose of this service is to detect which data has been leaked from the admin database, and then if possible find out the culprit. In such a case Perturbation technique can be used which allows the data to be modified and make it "less sensitive" before delivering to agents. We provide unobtrusive techniques for identifying leakage of a set of objects or records.

## 5. MINIMUM REQUIREMENT OF THE SYSTEM

Following are the minimum requirement of the system to work with full efficiency:

1. A constant Internet Connection with minimum 256kbps uninterrupted line.
2. It may slow down if the reception speed is low but it will not degrade in the efficiency.
3. The main advantage of the system is that irrespective of the minimum requirement it is less expensive platform and infrastructure solutions to improve the efficiency and elasticity of IT operations.

## 6. CONCLUSION

Thus we proposed a system that combines on-demand allocation of resources with opportunistic provision of resources to the user. For security of the user data we have also provided a fraud detection system which gives notifications of any modification of the data by unauthorized user to the administrator or to the authority to which data belongs.

## ACKNOWLEDGMENT

## REFERENCES

[1] *Improving Resource Utilization of Infrastructure Clouds by Paul Marshall, Department of Computer Science University of Colorado at Boulder.*

[2] *Amir VahidDastjerdi, SayedGholam Hassan Tabatabaei and RajkumarBuyya."An Effective Architecture for Automated Appliance Management System Applying Ontology-Based Cloud Discovery"*

[3] *Paul Marshall,Kate Keaheyand and Tim Freeman: Using Cloud to Elastically Extend Site Resources.*

[4] *Dr. RaoMikkilineni and Vijay Sarathy Kawa Objects Inc: Cloud Computing and the Lessions from the Past.*

[5] *Programming Abstractions for Data Intensive Computing on Clouds and Grids by Chris Miceli, Michael Miceli, ShantenuJha, Hartmut Kaiser and Andr*