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### **RESEARCH ARTICLE**



# An Optimization in Cloud Computing for Job Forecast

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*Abstract-- Cloud computing is a new concept and it is based on fact that reuses the resources of IT and capabilities. This paper gives a brief introduction of cloud computing and also discuss about the challenging issue scheduling in cloud computing and proposed an optimal scheduling algorithm that minimize the cost and completion time of task. Cloud computing is a technology in which user only pay for needed resources. Cloud computing attract many users because they can access computing resources any time anywhere*

*Keywords:- Cloud Computing, SaaS, PaaS, IaaS, Virtualization, Scheduling, cloudsim*

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## I. INTRODUCTION

Today cloud has made it possible to access our data from anywhere, anytime. When compared to a traditional IT setup which requires same location for user and data storage device, in cloud we do not have such limitations. Cloud is very helpful for small & medium businesses which cannot afford bigger hardware and storage space. They can store their information in the cloud, reducing the cost of buying and storing memory devices. Additionally, we only need to buy or pay for only the amount of storage space used; we can increase and decrease the subscription as per the need of business.

To run a cloud computing setup we need to have an internet connection. The benefit of this is that we can access that same document from wherever we are with any device that can access the internet. These electronic devices could be desktop, laptop, tablet, or phone. This can also help our business to function more smoothly because anyone who can connect to the internet and your cloud can work on documents, access software, and store data. Imagine picking up your smartphone and downloading a .pdf document to review instead of stopping by the office for print or upload it to your laptop. This is the freedom that the cloud can provide for you or your organization [1].

## II. CLOUD COMPUTING

In Cloud Computing we use improved capabilities of many previous technologies as a system; the idea behind this is to provide unlimited resources virtually to any demanding organization. In cloud computing, users only pay for resources that they use [2]. We access the cloud services through internet connection and organizations can use computing resources as and when they need it. [3]. This system also improves the business continuity and reduces IT infrastructure cost.

## III. CLOUD DEPLOYMENT MODELS

There are four deployment models of cloud.

1. **Public Cloud:**-Any subscriber can access in public cloud.
2. **Private Cloud:**-The specific organization can access in private cloud.
3. **Community Cloud:**-Two or more organization share the data to make a community and access the community cloud .
4. **Hybrid Cloud:**-Hybrid cloud is integrated model and it is the combination of public and private cloud [4].

## IV. CLOUD COMPUTING SERVICES

The cloud computing services are:-

**Software as a Service:**-In software as a service, an application provide on customer's side. There is no need to software licenses because this application is not installed on physical computer.

**Platform as a Service:**- In platform as a service , a platform to run the services and utilize the resources of cloud is provided.

**Infrastructure as a Service:**-Infrastructure as a Service is a service provide the computing capabilities and storage, networking equipment over the network and it is responsible for its maintenance. customer access this service on-demand.

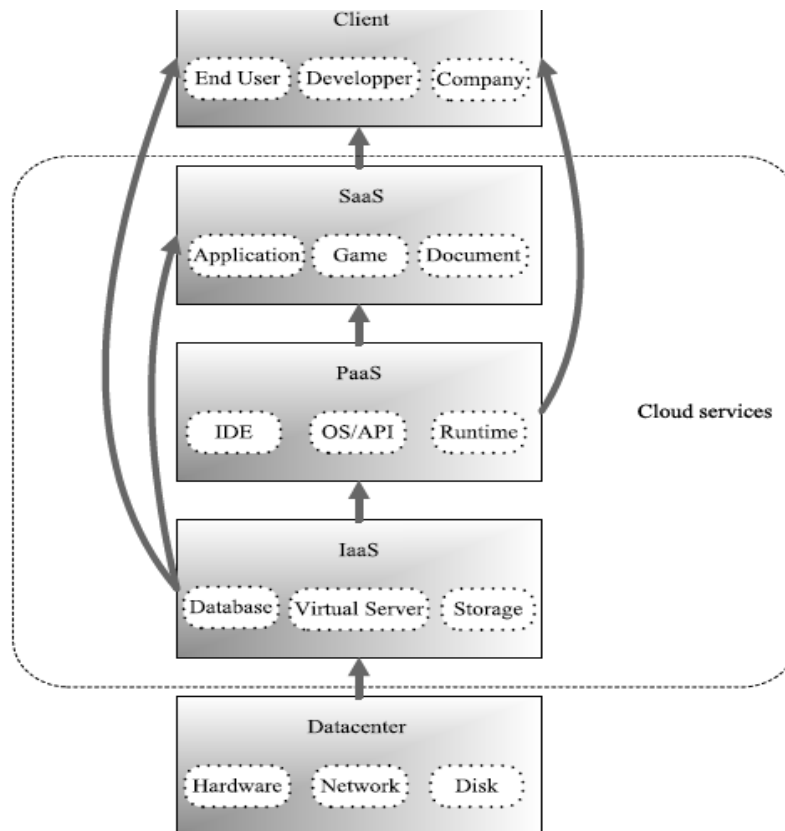


Fig 1. Cloud Services [5]

**CLOUD COMPUTING ARCHITECTURE**

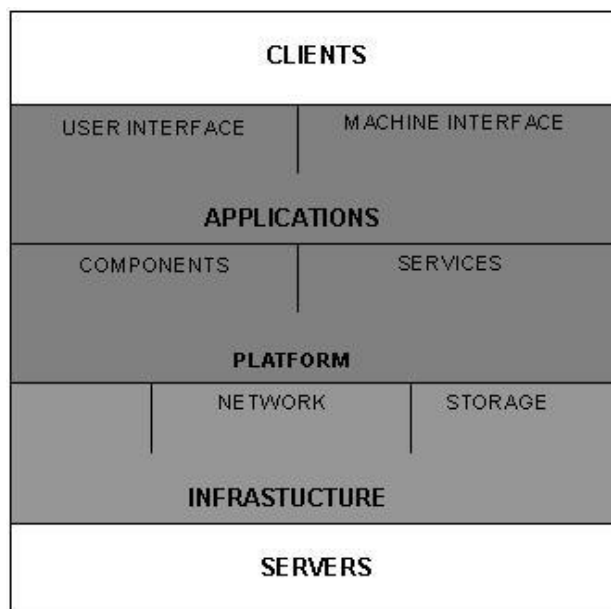


Fig 2. Architecture of cloud [6]

## V. VIRTUALIZATION IN CLOUD COMPUTING

Virtualization means something such as hardware, computer network and storage available virtually rather than actual[7].

Types of Virtualization

- 1) **Full Virtualization:**-In full virtualization a complete services of one machine simulated on another machine.
- 2) **Para Virtualization:**-In para virtualization only software environment simulated and a hardware interface is not present in virtual machine.

## VI. DATA CENTRE

A Data Centre is a centralized repository or a housing of computer systems[8]. Data centre stored the large information about the organization and also manage it. Private data centre is just like a server within the organization. The National Climatic Data Center (NCDC) is the example of data centre. Security issues is also associated with data for cloud[9].

## VII. SCHEDULING

A schedule by which tasks are executed in particular time period is called scheduling. There are some situations where we need the scheduling.

### SCHEDULING IN CLOUD COMPUTING

Scheduling process in cloud computing

- 1) Discover the resource by the datacenter broker in network
- 2) Selection of resource
- 3) Submission of task to selected resource

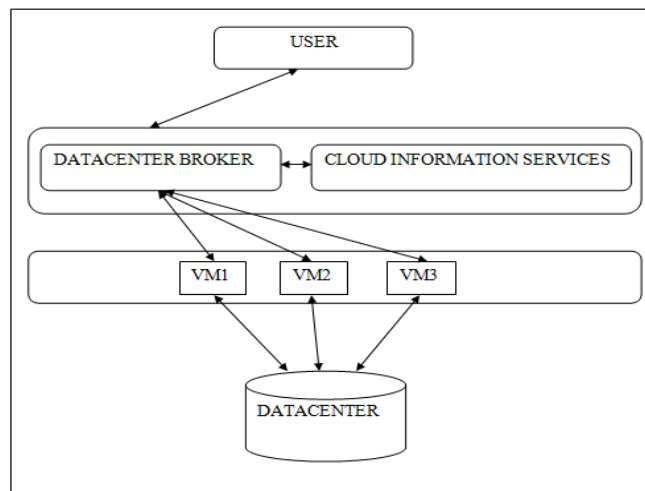


Fig 3 Scheduling in cloud computing

## VIII. GREEDY ALGORITHM

Greedy algorithms is an algorithm make a solution step by step and choose path that give the immediate benefits[10]. And it choose the optimal solution at each step. TSP and minimum spanning tree is the examples of its.

## IX. PROPOSED ALGORITHM

Step1:- Incoming tasks are grouping according of their type in

- o Deadline constrained
- o Min cost requirement

Step2:- Prioritize the tasks

- o Shorter deadline task schedule first
- o And the task similarly the tasks resulting in more profit should be scheduled on lost cost machines

Step3:- (a) **Deadline Based Scheduling**

- i. Calculate turnaround time of task at each resource
- ii. Formula is Turnaround Time = WT + (TL/RPP)
- iii. The minimum turnaround time of resource selected and task are executed at that machine
- iv. Updated the status of resource

(b) **Cost Based Scheduling**

- i. VM selected on the basis of(Resource cost/ Resource base processing power)
- ii. Select resource with minimum cost and schedule the task
- iii. Updated resource status

## X. CLOUDSIM SIMULATOR

Cloud Sim is latest and extensible simulation frame-work which enables smooth modeling, simulation, and experimenting of upcoming infrastructure and applications in cloud. Cloud Sim helps researchers and developers to focus on unique and innovative system design issues for investigation, without getting worried about machine level details related to Cloud based services and hardware. [11].

## XI. CONCLUSION

In cloud computing, the tasks are executed on resources that are geographically distributed then there are need to schedule the tasks for better utilization of resources.

The scheduling of tasks in better way that is beneficial for service provider and user is also a challenge in cloud environment. This paper gives the overview of cloud computing environment and also proposed an algorithm that group the incoming tasks and schedule on basis cost and time.

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