

# A Literature review paper of Task scheduling algorithm in Cloud Computing Environment

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## Abstract

Cloud Computing is the most popular computing model that support on demand services. Cloud computing technology is based on pay-per-use model. It is a computing paradigm where data, services, applications and bandwidth are provided over the internet. The main aim of service provider in cloud is to efficient use of resources and minimum execution time and maximum profit. So scheduling of resources is the most challenging issue in cloud computing environment. Scheduling is the way of assigning and managing of resources in between different tasks. In This paper various types of scheduling algorithms that provide efficient cloud services have been studied and analyzed. Based on the study of different algorithms, a comparison between them are presented on the basis of different perspective.

**Keywords:** Cloud computing, Scheduling, Scheduling algorithms

## Introduction:

The Subject of Cloud computing has grown very rapidly and gained considerable attention because it provides flexibility and scalability to organizations. Cloud computing is a large scale

distributed system which offers a pool of computing resources to cloud consumers through the internet. Amazon, Google Engine, IBM, and Microsoft these are the various cloud service providers which provided cloud computing environment. They provide services and resources to users on the basis of pay per use at anytime from anywhere

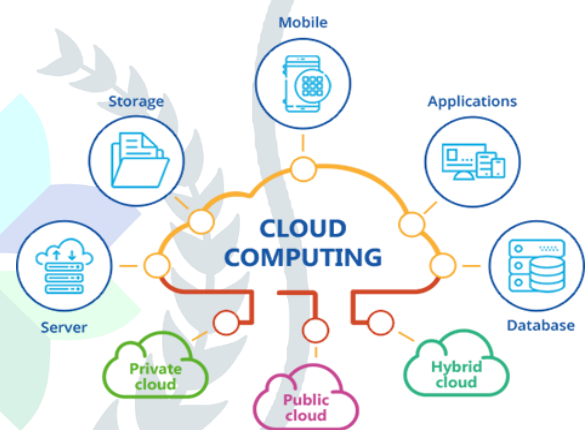


Fig 1: cloud computing Environment

Cloud computing offers three main delivery models which are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

In Software as a Service (SaaS), Applications and access management tools are provided to users. Platform as a Service (PaaS) provides tools such as operating systems, databases, and network so consumers can install and develop their own software and applications. Infrastructure as a Service (IaaS) provides access to physical devices such as hardware and network so consumers can

install and develop their own operating systems and applications .

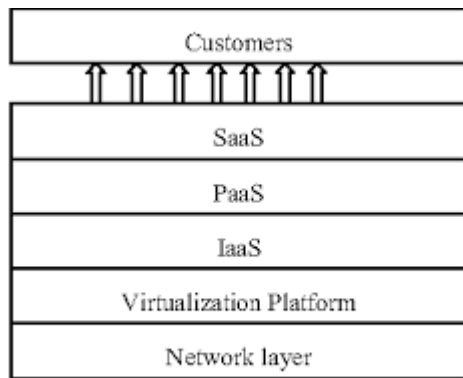


Fig 2:Models Of Cloud Computing Environment.

### Deployment modes of cloud computing

Basically, there are 4 modes of deployment in cloud computing, or 4 kinds of cloud, the private cloud, the community cloud, the public cloud and the hybrid could.

1) Private cloud: The cloud infrastructure is built separately for a customer, and provide the most effective control of the data, the safety and quality of service. Private cloud can be deployed in the enterprise data center, also can be deployed on a hosting site, by a single organization owned or leased.

2) community cloud: Infrastructure is shared by several organizations, and is a common concern of community service (such as task, security requirements, policies and compliance considerations).

3) public cloud: Infrastructure is a sales of cloud computing services organizations have, the organization will cloud computing services to the general public or to a large industry group, often

in public cloud apart from customer where a building hosting, and by providing a like enterprise infrastructure of flexible even temporary extension, provides a method to reduce the risk and cost of the customers

4) hybrid cloud: Infrastructure is composed of 2 or more than 2 kinds of cloud (private, community and public), each cloud still remain independent, but combine them with the standard or proprietary technology, with data and the portability of applications (for example, can be used to treatment of sudden load), hybrid cloud helps to provide on-demand and external supply expansion.

### Literature Review

In the Paper of “task scheduling in Cloud Computing” Aakansha Sharma and Sanjay Tyagi found that in task scheduling not only execution time, cost, response time, flow time, throughput, and average resource utilization, e but also improvement is required in some areas like make span, Time/space complexity & execution cost. They observed that Optimization based task scheduling may be further considered for achieving more effective task scheduling.

In this paper of “Review paper on various scheduling techniques in cloud environment” They taken , existing scheduling algorithm are considered and they all are compared by using different parameters as well as tools. Mostly they all are work on to minimize the execution time, faster response time and maximum utilization of

resources. They found that Existing scheduling algorithms does not consider the load balancing, availability and reliability. Therefore, there is a need to implement such scheduling algorithm that can improve the reliability, availability and load balancing in cloud computing environment. In future, algorithm based on migration of task from one machine to another can also be introduced.

In the paper of “Research of cloud computing task scheduling algorithm based on improved genetic algorithm “GE Junwei and YUAN Yongsheng presents a the genetic algorithm (MGA) which comprehensive consideration of the total task completion time, average task completion time and cost constraints, it can obtained not only total task completion time and average task completion time is short, but also the required costs is low. The result of this task scheduling is ideal.

“Review on Multiobjective Task Scheduling in Cloud Computing using Nature Inspired Algorithms “ in this paper, various task scheduling algorithms using nature inspired algorithm in cloud computing environment have been reviewed. The Nature Inspired techniques are usually slower than deterministic algorithms and the generated solutions may not be optimal. Thus most of the research done is toward improving the convergence speed and quality of the solution.

In the paper of “Research on Improvement of Task Scheduling Algorithm in Cloud Computing”

Wu Mingxin suggested that Under the Map/Reduce programming model, to carry out many of the sub tasks scheduling at the same time is a complicated problem. He suggested some made improvements on the genetic algorithm, adds a fitness, two fitness to selected populations, namely double fitness genetic algorithm (DFGA) algorithm in that firstly Chromosome encoding and decoding then Generation of initial population, the Fitness function and lastly genetic Manipulation this sepes are added for the improvement of genetic algorithm .and after comparing DFGA with AGA he found that the total task completion time by AGA is less than that obtained by DFGA but in total task completion time, it turns out to resulting in the loss of some potential genes by AGA. In DFGA not only the average completion time is less than AGA, and completed the time is less than AGA in the total task finishing time.

In the paper of ,” DIFFERENT SCHEDULING ALGORITHMS IN DIFFERENT CLOUD ENVIRONMENT” Er. Shimpy and Mr. Jagandeep Sidhu discussed different types of scheduling algorithms. They found that Most appropriate technique for scheduling is the heuristic technique. They noticed that disk space management is vital issue in virtual atmosphere.

In the Paper of “A Brief Review of Scheduling Algorithms in Cloud Computing “Mohd Rahul suggested that Scheduling is one of the major issues in the management of application execution in cloud environment. He Surveyed That The heuristic based strategy is used to schedule

EMAN, a bio-imaging workflow application. It results into 1.5 to 2.2 time better optimization of make span and load balance. And the Genetic algorithm was used to find the schedule for workflow application that meet up the user defined budget and deadline. Multi-objective MGrid resource service composition and optimal-selection (MO-MRSCOS) problem is resolved by PSO. It minimizes execution time, cost, and maximize the reliability. PSO algorithm that assigned Cloud resources to workflow application. It consider both computation cost and data transmission cost when finding schedule. PSO attained 3 times cost saving as compared with BRS (Best Resource Selection. Existing scheduling algorithms does not believe reliability and availability. Therefore there is a need to implement a scheduling algorithm that can advance the availability and reliability in cloud environment

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