

Chapter 7

Research Review on Task Scheduling Algorithm for Green Cloud Computing

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ABSTRACT

In green cloud computing, task scheduling entails assigning tasks to virtual machines in an approach that minimizes energy use whilst still reaching the performance targets. Green cloud computing is an evolving field that lowers the energy and carbon footprint of systems for using the cloud. In green cloud computing, task planning is a crucial problem because it determines how computational resources are allotted to workloads in order to decrease energy consumption and increase efficiency. Different task-scheduling techniques have been put forth in recent years for green cloud computing. The authors look at some current studies on task scheduling

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methods for green cloud computing in this overview of the literature.

I. INTRODUCTION

Task scheduling is an essential component of cloud computing that enables efficient use of resources and reduces energy consumption. Task scheduling algorithms play a critical role in ensuring efficient and effective utilization of computing resources in cloud computing. With the increasing demand for environmentally friendly computing, green cloud computing has become an emerging research area, and task scheduling algorithms for green cloud computing are being developed.

The heuristic approach is one of the methods for job scheduling that are frequently employed in green cloud computing. Optimization problems are frequently solved using heuristic methods like genetic algorithms (GA), ant colony optimization (ACO), and particle swarm optimization (PSO). It has been demonstrated that these algorithms are efficient at resolving challenging optimization issues because they closely resemble the behavior of natural systems. For instance, GA was employed in a study by V. Baskaran et al. to optimize the work scheduling issue in a cloud setting. When compared to a conventional round-robin scheduling method, the authors' research indicated that GA was able to lower energy consumption by 29.4%.

Machine learning algorithms are yet another method for work scheduling in green cloud computing. Numerous fields have used machine learning techniques to solve optimization issues, including Decision Trees (DT), Support Vector Machines (SVM), Artificial Neural Networks (ANN), Machine learning techniques have been utilized in cloud computing to forecast the energy usage of various task scheduling algorithms. For example, in a study by K. Parandhaman et al., SVM was used to predict the energy consumption of different scheduling algorithms. The authors showed that SVM was able to predict energy consumption with an accuracy of 94%.

In addition to heuristic and machine learning approaches, some researchers have proposed hybrid approaches that combine multiple techniques. For example, in a study by R. Ranjan et al., a hybrid algorithm that combined GA and Tabu Search (TS) was proposed for task scheduling in green cloud computing. The researchers demonstrated that when compared to a conventional round-robin scheduling method, the hybrid approach was able to lower utilization of energy by 38%.

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