CHAPTER 7

CONCLUSION AND SCOPE FOR FUTURE WORK

7.1 OVERVIEW

The work presents an attempt to fine tune the job scheduling performance metrics in the highly dynamic experimental platform called cloud computing. Most of the job scheduling challenges in cloud computing converge to performance issues. The challenges related to cloud computing are endless and this chapter provides the conclusion for work done. More work can be done for unresolved issues regarding to produce effective job scheduling algorithm which are recognized as future scope this work and in all.

7.2 CONCLUSION

The work of this thesis intended to highlight the basic issues with job scheduling in the cloud environment as the environment is a distributed paradigm spread over the large scale which is provides the on demand services so optimal scheduling of submitted cloud user jobs is a biggest challenge. The contribution made in this thesis is explained below:

The Chapter 1 provided the deep study about the cloud computing environment covering its economic and technical advantages, market demand for cloud computing service delivery model for cloud computing, cloud computing entities, cloud computing development models and challenges exist in the domain of cloud computing environment.

Cloud computing is setup in a very dynamic environment where users from all around the world can just plug-in and use computing resources so an excellent job scheduling algorithm is a must generate profit for the cloud service provider and offer flexibility for the execution of various users jobs. So Chapter 2 presented review of research contributions by numerous authors carried out in the field of cloud computing, job scheduling and its approaches, heuristic based job scheduling and energy saving in

cloud computing. By analyzing the work of different researches gives a way to formulate an advanced job scheduling energy efficient approach that works well by optimal job allocation and job execution so as to boost cloud performance.

An insight study about the field of job scheduling in cloud computing is done in Chapter 3 highlighting the need of scheduling in clouds, aim of job scheduling, job scheduling model and its features in cloud data centers, job scheduling parameters, different types of job scheduling and job scheduling criterias.Then a detailed elaboration about the traditional and heuristic job scheduling algorithms is carried out describing their working, features, advantages and disadvantages. The insight study of job scheduling algorithms, given us way to choose and implemented two heuristic base job scheduling algorithms i.e. Efficient Multi Queue Scheduling Algorithm and ACO (Ant Colony Optimization) algorithms in cloud environment. The performance of both algorithms are then compared and measured in the term of energy consumption and time consumption. From the numeral results it is concluded the dominance of the Efficient Multi Queue Scheduling Algorithm over the ACO Algorithm.

The Chapter 4 explains the concept of heuristic algorithm which aims to give faster and optimal outcome so as to provide the better energy efficient scheduling in cloud environment. Heuristic based proposed algorithm proposed in this thesis, inspired by the concept of multi queue scheduling comes out with the new concept of using two queues and forming optimal job allocation strategy for the users' job execution. The inefficient utilization of cloud resources for processing jobs results in very high energy consumption. So, an energy efficient heuristic approach is desired by cloud network.

The key idea of our work has been to gain the maximum profit for the cloud provider while reducing the energy consumption and execution time to an extent by using effective job scheduling algorithms. To achieve this objective , in Chapter 5 based upon the concept of multi queue a advanced job scheduling algorithm SMQS (Smarter Multi-Queue Scheduling) is presented covering its features, components, working and strengths. The said proposed strategy of a Smarter MQS have divided the user jobs in two jobs queues instead of three (as done in Efficient MQS algorithm) and then proposed algorithm consolidated the jobs from various queues so as to form a merge

pattern. It then, distributes the merge pattern of these jobs to various virtual systems in the cloud for an optimized execution so as to enhance the performance in cloud environment.

As cloud environment is a distributed paradigm spread over the large scale which is providing the on demand services in a successful manner; so further in Chapter 6; the pseudo code for proposed SMQS (Smarter Multi-Queue Scheduling) algorithm is is presented and when implemented it was able to handle the job scheduling issue in the cloud environment in a productive manner. Through the experiments, the smarter MQS algorithm showed that it has an ability to intensify performance while reducing the energy consumption. The comparative simulations and the numeral results of both the strategies i.e. Efficient MQS and Smarter MQS algorithms, on different amounts of user jobs indicate that our recommended approach i.e. Smarter MQS is much more able and oriented to save energy consumption and naturally to an extent also reduces job completion time. The proposed algorithm will achieve better job scheduling in the cloud computing environment. Hence SMQS algorithm is capable of accommodating challenges of job scheduling in cloud network.

7.3 SCOPE FOR FUTURE WORK

Our work in this thesis has successfully employed the Smarter Multi Queue Scheduling paradigm to handle a job scheduling problem in cloud environment. The distribution strategy for executing cloud users jobs proposed by this technique helps to reduce energy consumption, overall cost and execution time. With such improvements, the proposed Smarter MQS algorithm should be merged in the existing cloud infrastructures in order to improve their performance in terms of energy consumption and time. Future developments can be done on improving aspects of the cloud computing simulation by adding new parameters and also an strategy can be devise which can work on optimize the merge pattern of user tasks for allocation to virtual system in order to get more superior results.