



Review on Cloud Different Scheduling Algorithms for the Energy Performance

Pardeep Kaur , Er. Lovedeep Kaur

Research scholar, Dept. of CSE, Guru Kashi University, Talwandi Sabo, Bathinda, Punjab, India

Assistant Professor, Dept. of CSE, Guru Kashi University, Talwandi Sabo, Bathinda, Punjab, India

ABSTRACT: Cloud is the efficient way for the provision of the shared services. It is accessed by the various types of users for the shared services. These will be on the basis of pay per use. It helps in providing the cost effective services to the client. User can access and share the services on the basis of demand. People can increase and decrease the demand for the resources on the basis of the requirements. This sometimes pressurized the resources. Under such circumstances the time for the services will be increased. There requires various corrective scheduling schemes which can schedule the resources amongst the users. So that the response time, waiting time and the total turnaround time can be reduced. Various researchers has suggested various scheduling techniques for the scheduling of the resources. These techniques are based on soft computing. Where optimal resource is identified. Which is most suitable for the given request by the user.

KEYWORDS: Cloud, Scheduling, Load Balancing, QOS.

I.INTRODUCTION

In current time the usage of the cloud for the different applications for different organizations is growing. Because it provides the cost effective and efficient solutions. As the number of the users grows the demand for the resources available at the cloud is also growing. This increases the pressure on the resources. Under such pressure the requirement for the energy and the other system resources will increase. This also downgrades the performance of the cloud in terms of energy requirement. Various researchers has researched on this issue for the scheduling for the various resources for the optimality of the utilization. There are various scheduling techniques for the tasks for the optimal utilization of the resources.

- a. First come first server: as the tasks are arrived at the cloud for the completion by utilizing the processing and data storage resources. Each tasks are collected at the virtual machine into the buffer. Each task has different arrival time at the cloud. Based on the arrival time first come first serve criteria will be adopted. Which will give priority to the process which will arrive first at the cloud. But sometimes some important tasks has to wait for long for the completion of the tasks arrived before them.
- b. Round robin scheduling: It is the technique helps in reducing the response time. Each process in the queue will be kept in the such way that a fixed time of the execution will be allotted. At its turn the process will starts execution and will stops immediately as the process time slot will be completed. It will increases the in between waiting time for the two sub sequent executions.
- c. Min-Min algorithm: It is currently prevailing scheduling technique for various real cloud environment. It identifies the tasks and there required time of the execution from the cloud. It arrange them in the increasing order of the requirements. At the top there is a process with minimum requirements. It identifies the resources which has minimum speed for the execution of the task. This task at the top will be allocated to the resource with minimum performance.
- d. Max-Min algorithm: It is another scheme for the performance enhancement. It identifies the tasks with maximum requirement for the execution of the resources. This task will be allocated to the resource with minimum performance. This works opposite to the Min-Min algorithm approach.
- e. Soft computing approach: It is the scheduling technique based on genetic approach. Where the optimal resource for the task is identified based on the optimality criteria. This will identifies the optimal resources under different circumstances for the optimal utilization.

1.1 Resources for Cloud

There are various types of the resources for which cloud resource scheduling works. These resources pool will be generated. This pool includes various resources like printer, scanner, storage, processing etc.

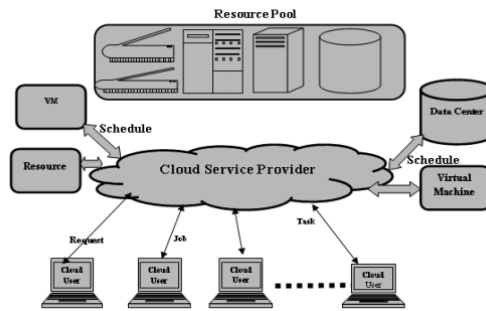


Fig. 1 Cloud scheduling architecture[1]

In fig. 1 various types of the schedulers are required at the different levels for the scheduling purpose. While user submit the task to the cloud it will be allocated to the allocated to the resource using a efficient scheduler. Which will optimize the resource utilization.

II. LITERATURE SURVEY

[1] Vignesh V et al: Author in this paper has researched on various scheduling techniques. These techniques are under the environment when the resources are fixed and the tasks are dynamic in nature. The number of tasks grows or shrink based on the users requirement from the cloud environment. Author in this paper has researched various techniques like first in first out, round robin scheduling technique, Min-Min scheduling algorithm, Max-Min scheduling algorithm etc. each technique of the scheduling dynamism for the different conditions has been studied. Max-Min is the best suitable technique has been declared by the research.

[2] Li Mao et. al: author in this paper has studied on various energy efficient and the upgrading performance. Various previous researches are focus on the issue of energy efficiency by compromising the performance. Few researchers has researched on the issue of the performance by compromising the energy. But the author in this paper has generated a hybrid technique which focus on the two issues simultaneously. User can set the parameter based on the requirement on run time. The technique has been named as tradeoff multi resource cloud task scheduling algorithm. This generates the tradeoff between the energy and the time. One of the parameter value can be set at the run time.

[3] Long Thai et. al: author in this paper has proposed a technique for the scheduling on the multiple tasks collected into the buffer. Various tasks are being scheduled with having various hard constraints. In this research paper author has considered two hard constraints for the task scheduling. One constraint is the budget and second constraint is for the time. Any task has to executed with in the set budget and time. This will helps in creating the tradeoff between the cost and the performance for the task execution.

[4] S.Thamarai Selvi et. al: author in this paper has studied the various issues and the challenges in the cloud computing. First issue is the resource allocation issue. As when the process is ready for the execution there requires various resources. Which resource should be allocated at first and then another resource depending upon the resource availability. Another issue is the job scheduling. Which job should be executed first and which job will be allocated second. Based on the characteristics of the job. Third issue is the load balancing. Where the load amongst the processes should be taken care off. So that optimal load balancing on the various virtual machines can be taken place. This will automatically increases the resources utilization.

[5] Youssef Fahim et. al: Author in this research paper has proposed a technique based on the hybrid algorithm. In the previous researches there is always a static load balancing process. Where request by the user will be allocated to the virtual machine where the load on the virtual machine is less. But the dynamic hybrid approach uses the information of the current load on the virtual machine for the specific datacenter and the status of the task during the execution. This will definitely improve the performance of the cloud by increasing the cloud availability.



III. COMPARATIVE ANALYSIS

Author	Year	Technique	Constraints
M. Rana	2014	This paper has proposed a technique based in PSO based load balancing for the cloud computing environment	There is a requirement for the better cloud load balancing technique. There requires better technique which can reduce the time required for the load balancing for the cloud.
H. Su	2013	This is another research based on the transferring the available load using chaos cloud PSO based technique.	,in the future there requires more power full particle value in the power system for the cloud.
V. Shah	2015	This paper has proposed a technique based on distributed dynamic and customized load balancing technique.	In future there requires various types of centralized load balancers which can balance the load at the central level.
M.Sridha	2015	This paper has proposed a technique based on the hybrid particle swarm optimization algorithm.	In future there requires considering various other factors for the system load balancing system.
M. Pantazoglou	2015	This paper has proposed a technique based on balancing by using energy efficient way.	There requires further parameters which can be considered for the energy measurement for the system optimization.

IV. CONCLUSION

Based on the review of various techniques for the cloud environment scheduling and load balancing is clear that the large amount of the researches has been performed till now. Still various energy efficiency for the system is required further. Which can increase the quality of the cloud services and also decreases the cost for the cloud usage. As we are going forward there is a requirement for the allocation of the resources for the user request based on some optimality principle. In current time cloud services are being overloaded because of the increase of the number of the users. There requires various types of scheduling techniques for the cloud efficient utilization of the resources. Various traditional techniques like round robin, first come first serve based scheduling mechanism are also still in use. But the better level of the optimality is required for the system performance improvement. There requires various automatic and soft computing based techniques.

IV. FUTURE WORK

In current time various genetic based techniques for the optimal resource identification is in use. The fitness function is either based on the current load or the system processor execution. In future the level of the parameter selection for the optimal resource identification is required which can identify even best resource with different dynamic fitness function.

REFERENCES

1. Vignesh V, Sendhil Kumar KS, Jaisankar N, "Resource Management and Scheduling in Cloud Environment", International Journal of Scientific and Research Publications, Vol. 3, Issue 6, 2013.
2. Li Mao , Yin Li , Gaofeng Peng , Xiyao Xu , Weiwei Lin, " A multi-resource task scheduling algorithm for energy-performance tradeoffs in green clouds", Sustainable Computing: Informatics and Systems, issue 19,pp:233-241,2018.
3. Long Thai, Blesson Varghese ,Adam Barker, "Task Scheduling on the Cloud with Hard Constraints", IEEE, 2015.



4. S.Thamarai Selvi, C. Valliyammai and V. Neelaya Dhatchayani,” Resource Allocation Issues and Challenges in Cloud Computing”, International Conference on Recent Trends in Information Technolog,2014.
5. Youssef Fahim, Elhabib Ben Lahmar,”The load balancing improvement of a data center by a hybrid algorithm in cloud computing,2014.
6. Madhurima Rana, Saurabh Bilgaiyan, Utsav Kar,” A Study on Load Balancing in Cloud Computing Environment Using Evolutionary and Swarm Based Algorithms”, ICCICCT,2014.
7. Hongsheng Su, Ying Qi, Xi Song,” The Available Transfer Capability Based on a Chaos Cloud Particle Swarm Algorithm”, International Conference on Natural Computation,2013.
8. Vedang Shah, Harshal Trivedi,” A Distributed Dynamic and Customized Load Balancing Algorithm for Virtual Instances”, Nirma University International Conference on Engineering,2015.
9. Dr. M.Sridhar, Dr. G. Rama Mohan Babu,” Hybrid Particle Swarm Optimization Scheduling for Cloud Computing”,IEEE,2015.
10. Ahmed, M., & Hossain, M. A., “Cloud computing and security issues in the cloud”, International Journal of Network Security & Its Applications (IJNSA), vol. 6(1), pp. 25-36, 2014.
11. Kim, W., “Cloud Computing: Today and Tomorrow”, Journal of object technology, vol. 8(1), pp. 65-72, 2009.
12. Srinivasa Rao, V., & Nageswara Rao, N. K., E Kusuma Kumari, “Cloud Computing: An Overview”, Journal of Theoretical and Applied Information Technology, vol. 9(1), 2009.
13. Selvarani, S., & Sadhasivam, G. S., “Improved cost-based algorithm for task scheduling in cloud computing”, IEEE International conference on In Computational Intelligence and Computing Research (ICCIC-2010), pp. 1-5, 2010.
14. Parsa, S., & Entezari-Maleki, R., “RASA: A new task scheduling algorithm in grid environment”, In World Applied sciences journal, vol. 7, pp. 152-160, 2009.
15. Xu, M., Cui, L., Wang, H., & Bi, Y,“A multiple QoS constrained scheduling strategy of multiple workflows for cloud computing”, IEEE International Symposium on In Parallel and Distributed Processing with Applications, pp. 629-634, 2009.
16. Weise, T., “Global optimization algorithms-theory and application”, Self-Published, 2009.
17. Rana, M. S., Ks, S. K., & Jaisankar, N., “Comparison of Probabilistic Optimization Algorithms for Resource Scheduling in Cloud Computing Environment”, International Journal of Engineering, vol. 5(2), pp. 1419- 1427, 2013.