Task Scheduling Technique in Cloud based on Optimized Virtual Machine Tree

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***Abstract*— Cloud computing stands for of Internet based computing. It provides computer processing resources which are shared in nature and data to computers and other devices. To efficiently use the resources available through cloud computing, virtualization is used. Service Oriented Architecture (SOA) is adapted because of the increasing demand of efficient computing resources. A Virtual Machine Tree (VMT) contains N nodes. Each node in the VMT Indicates a Virtual Machine. These virtual machines contain MIPS and Virtual Machine Id.**

***Keywords*— Cloud computing, Virtualization, Virtual Machine Tree**

I.INTRODUCTION

Cloud computing delivers computer resources through a Web service interface. Cloud organizes underlying physical infrastructure. User can view the resources as being in the cloud. The cloud computing platform guarantees customers that it sticks to the service level agreement (SLA) .Cloud guarantees service level agreements by providing resources as service. In cloud computing resources are shared. A resource management mechanism manages the resources, which can handle requests, assign tasks, manage the data availability, re-compute the responses returned by the processing units etc. In task scheduling if load is not managed properly it can lead to large delays in processes.

II. RELATED WORKS

Genetic simulated annealing algorithm[3] is used to schedules the tasks. It schedules the task based on the quality of service requirements such as time, reliability, cost, and bandwidth. (ABC) [4] assigns priority levels and uses cost drivers. It measures cost of the object and performances of activities. At a time a cloud must provide services to many users. different users may have different QoS requirements. Multi-Workflows (MQMW)[5] Scheduling strategy is developed for multiple workflows with different QoS requirements. Utility accrual scheduling algorithm solves an open real-time scheduling problem using two time utility function (TUF). Two time utility functions are Profit TUF and a penalty. Our work is based on Virtual machine tree algorithm using k-way tree.

III. PROPOSED METHEDOLOGY

The cloud consist many virtual machines with different processing capacity. Cloudlets execution takes place according to the following steps. First step is sorting. Here virtual machines and cloudlets are sorted from higher to lower. Next step is Pre-processing. Pre-processing is the process of giving priority to the large cloudlets over the small one. The third step is to create virtual machine tree. To create the tree selects the virtual machines from the list. Then add them to the tree one by one from left to right. This process continues further. This algorithm is designed for K-way trees. Variable TOTAL_CLOUDLETS represents total number of cloudlets. Variable LEAFS represents number of leaf nodes. Cloudlets then divided into groups where size of the groups can be expressed as GROUP_SIZE. We can find out group size using the following formula

GROUP_SIZE = ⌊TOTAL_CLOUDLETS / LEAFS⌋

TOTAL_CLOUDLETS can be divided into number of groups which is equal to

NUM_GROUPS = LEAFS + 1

Last step is the allocation of cloudlets to the virtual machines sequentially, i.e first group to first leaf path, second group to second leaf path and so on. Elements of each group will be submitted to each virtual machine located in each path. These submission procedures follow round robin fashion. This process is repeated further. But the last group will not follow this process. Instead of that last group follows sequential breadth first method for allocation. Once the cloudlets are allocated to virtual machines execution is takes place in the cloud. Higher capability virtual machine will get more number of tasks. Those Cloudlets are executed on the host. After execution results are stored in terms of data enter id and host id. Observe the execution start time and finish time of the cloudlets. Calculate the final execution time, average time and average execution time for each cloudlet.

IV. RESULTS

Proposed algorithm and FCFS algorithm are compared with each other. In FCFS algorithm cloudlets are allocated to VM's. Both cloudlets and virtual machines are in unsorted manner. We are taking binary and ternary tree to see the effect of increasing the number of children in our methodology.

Experiments were conducted on the different sets of examples. We considered different MIPS values and different sizes of cloudlet for experiments. The cloudlets instruction lengths were different for each experiment. Then we will be looking the variation effect of the virtual machine set over the K-way tree implementation. For this we kept constant system computation power till the end and varying virtual machine set. These virtual machine set is working on same set of cloudlets.

V. CONCLUSION

Using a tree like structure we can fairly distribute the cloudlets on the virtual machines. Cloudlets are executed in these virtual machines. To see the effect of variation of virtual machine capabilities we use unary, binary and ternary trees. For this we kept the system computation power constant and using same cloudlet set in the system. We found that value of standard deviation is directly proportional to the work of proposed system. K-way system can be used over the conventional system when the variance of the system increases and the value of K in K-way also increase as the standard deviation of the virtual machine set increases.

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