

# PROPOSED LOAD BALANCING ALGORITHM TO REDUCE RESPONSE TIME AND PROCESSING TIME ON CLOUD COMPUTING

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**Abstract**— Cloud computing is a new technology that brings new challenges to all organizations around the world. Improving response time for user requests on cloud computing is a critical issue to combat bottlenecks. As for cloud computing, bandwidth to from cloud service providers is a bottleneck. With the rapid development of the scale and number of applications, this access is often threatened by overload. Therefore, this paper our proposed Throttled Modified Algorithm (TMA) for improving the response time of VMs on cloud computing to improve performance for end-user. We have simulated the proposed algorithm with the Cloud Analysts simulation tool and this algorithm has improved response times and processing time of the cloud data center.

**Keywords**— Load balancing; response time; cloud computing (key words)

## I. INTRODUCTION

The cloud computing is one of the hot topic now-a-days. Lots of research is going on in this field. There are many issues in the area which are being discussed currently. One such issue is of load balancing in cloud computing. Load Balancing is used for minimizing the total waiting time of the user. In cloud computing load balancing are used for balancing the load on virtual machine and cloud resources. When request generated by users are received by cloud hosting environment, the load balancer (load balancing algorithm) distribute the load over various cloud server so that all server should be utilized efficiently (no server is under loaded or over loaded).

The term "cloud" here refers to the Internet (based on its layout in the computer network topology) and complexity level of the infrastructure contained within it. In this computing model, all possibilities related to information technology are provided in the form of "services", which allow users to access technology services from a certain provider "in the cloud" without the knowledge and experience of that technology, nor should it consider the infrastructure that serves that technology.

Now with the explosive growth of the Internet, the exchange of data of organizations and businesses is a timely issue. Cloud computing allows applications to be less dependent on network infrastructure, saving users money when not investing more in hardware. All data will be uploaded to the cloud, users will only be able to access

and use it anywhere, anytime.

On that basis, cloud computing technology has emerged and increasingly developed, the problem of exchange, processing, data security and especially load balancing in cloud computing is Challenges are set for researchers as well as cloud service providers.

## II. RELATED WORK

Syed Hamid Hussain Madni et.al. has studied and evaluated the resource allocation techniques in the cloud environment. The article studied and pointed out the parameters to improve the performance of the cloud system. This article also outlines the importance of allocating resources in the cloud, requiring resource allocation policies, strategies, and algorithms to distribute and migrate resources to best support both suppliers and users[1].

Shubham Sidana et al. has present NBST algorithm for load balance on cloud based on the resource sort in the speed of VMs and will allocation of resources the request to the users. In this algorithm, authored to try to be load balancing by sort speed of VMs and sort the length of the cloud. The VMs list and Cloudlet list is sent to Broker for the allocation.

The list of VMs and cloudlets is then sent to the broker for allocation. Broker allocates through the middle point algorithm, this algorithm divides the VM list and cloudlet list until it have maximum of one cloudlet or one virtual machine in the list and then allocate the resource to be executed. This algorithm allocates resources in a way that requires less processing work than allocated to high capacity machines and vice versa[2].

Feilong Tang et al. proposed an algorithm is DLBS-dynamical load balanced scheduling for the cloud environment proposed by. The author proposes a new method of dynamic load balancing (DLBS) to maximize throughput. Based on the development of a set of heuristic scheduling algorithms, the DLBS algorithm is effective for the Open Flow network model, in which the data stream is balanced through time slots. Initially experimental results showed that the hypothesis was more

efficient than the Round Robin and Lobus algorithms [3]. Sambit Kumar Mishra present a novel load balancing approach to organizing the virtualized resources of the data center efficiently. In this approach, the load to a VM

scales up and down according to the resource capacity of the VM. The proposed scheme minimizes the make span of the system, maximizes resource utilization and reduces the

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overall energy consumption. The proposed approach balances the load at VM-level to avoid overloading VM node. A task with a high priority gets service first to maximize the profit of Cloud Services Provider. The proposed algorithm has compared with the FCFS and RR algorithm and simulation in CloudSim environment. The result is reduces the waiting time and optimized the make span of the cloud data center[4].

Sobhan Omranian-Khorasani et al. presented a heuristic algorithm for scheduling deadline- constrained workflows is DCLB (Deadline Constrained Level Based). The algorithm used Level Load Balancing to refine deadline distribution as well as attaining lower communication cost in order to reach the algorithm's goals. Experimental results (based on Amazon EC2) demonstrate that DCLB compared to existing algorithms achieves higher cost efficiencies when workflow deadline is met[5].

### III. PROPOSED ARCHITECTURE

To improve the response time for the user (UserBase) and processing time of data center. Our proposed Throttled Modified Algorithm (TMA) by effective reallocation the tasks, it had deployment at the VmLoad Balancer in Datacenter Controller, it was improved based on Throttled Algorithm.

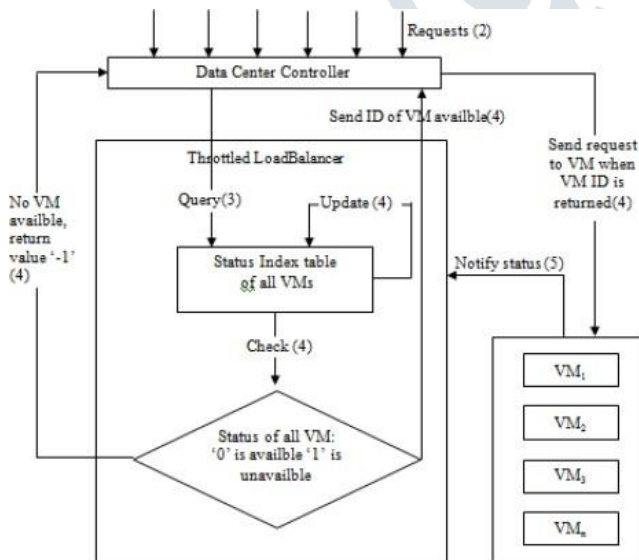


FIGURE 1: THROTTLED ALGORITHM OPERATION DIAGRAM

The sequence of steps:

4. Throttled Load Balancer will be checked VM on the top table, determined the first VM is available.
5. As for the VM, after processing the request and the Data Center Controller receives a response, it will notify to Throttled Load Balancer is stopped.
6. If there are multiple requests, the Data Center Controller repeats Step 3 with the next index and the process is repeated until the index table size is empty.
7. This algorithm optimizes the response time than the Round Robin algorithm.
8. But the limitation is to detect the VM is ready '0' with the index table size out.

### IV. CONCLUSION

This paper focuses on the popular load balancing algorithms in today's cloud environment, analyzing and proposing an improved algorithm based on an algorithm already in place to improve improved load balancing over older algorithm. we can limiting the number of requests queued for delivery, improving processing time and response time of hubs cloud compared to two old algorithms. This also means that with the proposed algorithm, the performance of cloud computing will improved compared to the two algorithms Round Robin and Throttled.

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1. Throttled Load Balancer execution load balancing by update and maintain an index table contains the status information (available '0' or not available '1') of all VMs. At start, all VM at the status is available '0'.
2. Data Center Controller received a new request.
3. Data Center Controller query to Throttled

Load Balancer for the new task.

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