LOAD BALANCING IN CLOUD COMPUTING BY HYBRID APPROACH USING STATIC AND DYNAMIC LOAD MANAGEMENT ALGORITHM

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ABSTRACT : *Cloud Computing is further generation technology for IT enterprise. Cloud processing has turned out to be basic popular expression in the Information Technology and is a next stage in the advancement of Internet, The Load adjusting issue of cloud processing is a vital issue and basic segment for satisfactory operations in distributed computing framework and it can likewise keep the fast improvement of distributed computing. Numerous customers from all around the globe are requesting the different administrations at quick rate in the current time. Albeit different load adjusting calculations have been outlined that are productive in ask designation by the choice of right virtual machines. In this proposed work, a hybrid load administration calculation has been proposed for circulation of the whole approaching solicitation among the virtual machines viably. Both Static and Dynamic load is to be mixed and this algorithm improved sufficiently and incorporating the paradigm of parallel and high performance computing response time and utilization of VMs further optimized.*

Keywords— Cloud computing; virtual machine; Load balancing; static – dynamic load

1.INTRODUCTION

Cloud Computing has become an emerging and fastest technology in the world. Cloud Computing is one of the most talked about technologies and due to the various opportunities offered by it has got lots of attention from media and analysts. Cloud computing is an on demand service[1] in which shared resources[1], information services, software and other services are given to specific users according to the need at exact time.

Cloud Computing system are heavily rely on term virtualization that improves the power efficiency of datacenters and enables virtual machines to single physical server All services through the internet are distributed whenever user demands, such as operating system, network, storage, software, hardware and resources. These are three types of services that are divided into these types: Infrastructure as a Service (IaaS) [1], Platform as a Service [1] (PaaS) and Software as a Service (SaaS).

Cloud Computing has become one of the popular technology adopted by both industry academia providing a flexible and efficient way to store and retrieve files [2]. The major problem is scheduling of the incoming request so minimum response time is obtained, efficient resourse utilization. Cloud computing system[3] are heavily rely on term virtualization[2] that improves the power efficiency of data centers and enable virtual machines to single physical server. Many algorithms FCFS, honeybee based load balancing technique, Round Robin, Active clustering, Active monitoring load balancer, Throttled load balancer, Random

sampling have been designed to carry out the client's request towards the cloud nodes but to ensure effective utilization of resources and response time minimum the term load balancing comes into effect. The paper included some algorithms of load balancing algorithms in cloud computing which is analyzed on a specific environment of virtual machine.

In this paper, we proposed a Dynamic and Static Load Management algorithm which will hybrid the load at the servers by considering the current status of all the available virtual machines intelligently and later response time of this algorithm is

compared with the existing VM-Assign Algorithm and Round Robin algorithm.

2. LITERATURE REVIEW

➢ Reena Panwar , Prof. Dr. Bhawna Mallick, proposed a "Load Balancing in Cloud Computing Using Dynamic Load Management Algorithm" describe the response time of virtual machine improved efficiently but everytime algorithm is consider all the virtual machine to check the availability of assigning new load. which is published on 2015 of International Conference on Green Computing and Internet of Things - IEEE [1]

➢ Shikha Garg, Dr. D.V. Gupta, Dr. Rakesh Kumar Dwivedi, proposed a "Enhanced Active Monitoring Load
Balancing Algorithm For Virtual Machines in Cloud

Computing" describe the algorithm is improve the response time better than round robin and active monitoring. Which is published on 5th International Conference on System Modeling & Advancement in Research Trends – 2016 [2]

➢ Navtej Singh Ghumman, Rajwinder Kaur, proposed a "Dynamic Combination of Improved Max-Min and Ant Colony Algorithm for load balancing In Cloud System" describe Improved Max-Min and Ant Colony Optimization Algorithm which is improve both resource utilization and job response time. It is published on 6th ICCCNT – IEEE 2015 [3]

➢ Umang Thakkar, Prof. Indr jeet Rajput, proposed a "A

Novel approach for Dynamic Selection of Load Balancing Algorithm in Cloud computing" describe load balancing improved min-min algorithm which is increase response time. It is published on International Conference on Global Trends in Signal Processing, Information Computing and Communication 2016[4]

3.PROPOSED WROK

Here in our system we take Dynamic load management and Round robin algorithm where load is managed by the server by considering the present status of present VMs for request assignment sharply. Seed block diagram is good for VMs. Our system architecture is shown in bellow fig. 1.
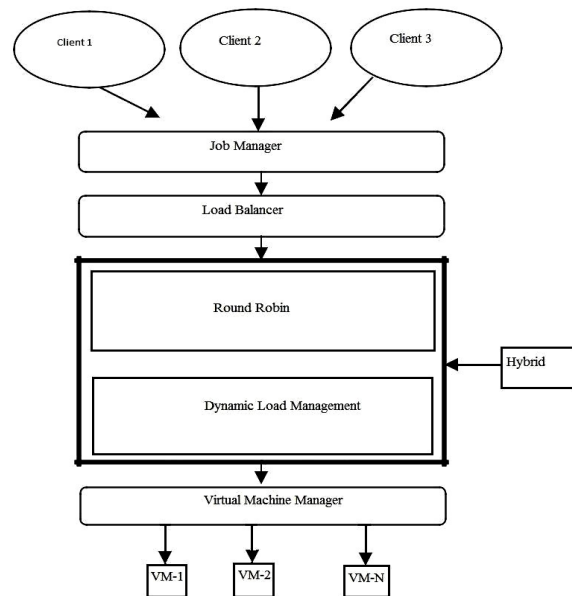

Fig. 1. System Architecture

A. *Algorithm: Dynamic Load Management Algorithm* **Input**: Number of incoming jobs is il, i2 . . . . in Available VM jl, j2··· . . . . . . jn

Output: All coming task ii, i2 . . . in are assigned to virtual machines which are having minimum load WIth the present J l, j2········ jn.

1. VmLoad Balancer manages symbol table of all the present VMs and the status of VM (i.e. BUSY/AV AILABLE). All VM's are free in starting.
2. A new query has been received by the Datacenter Controller.
3. A query is received by VmLoad Balancer through datacenter Controller for the next allotment.
4. Allocation table has been parsed by VmLoad Balancer from top to bottom till the time when first and free available VM is found.
5. Here then to check that present allocation total is less than that of maximum limit of VM list.
6. Active load has been counted for all VM.
7. Then return id of least loaded VM. And then a request is assigned by VM Load Balancer to present VM.

8. A few task will be assigned to VM which is least loaded if sometimes VM i.e. overloaded for equal allotment of load to every VM. If VM not found,

VmLoadBalancer returns -1 then DataCenterController queue up the incoming request.

9. When VM end with taking the query and the Datacenter Controller get the response of cloudlet it alerts the VmLoadBalancer of the particular VM deallocation.

10. The Data Center Controller focuses on checking if any requests that are in their waiting queue, it will continue from start of step 3.

11. Continue from step 2.

The VM-Assign [1] load balancer mainly target on the effective usage of the resources VM [2]. In proposed algorithm employs that Dynamic Load Management takes the set of available virtual machines in an available group or block. When a new request comes we check for best suited virtual machine. Once the request is bound with the virtual machine, we remove this VM index from the group of available virtual machines so it will not be considered for any future request until it finish its assigned workload and becomes available again by setting its status to be free. If the next upcoming task is received then it checks for the table of VM if it is overloaded then a request will be assigned to and returns the id of that particular VM to the Data Center, else -1 is obtained. When Vm completes its work, the Data Center Controller receives the reply of Datacenter, it notifies the Modified Throttled Load Balancer of the VM deallocation.

B. Round Robin

It is the simplest algorithm that uses the concept of time quantum or slices Here the time is divided into multiple slices and each node is given a particular time quantum or time interval and in this quantum the node will perform its operations. The resources are assigned to the customer by the service provider on the basis of this time quantum. In Round Robin Scheduling the time quantum plays a very important role for scheduling, since if time quantum is extremely large then Round Robin Scheduling Algorithm is same as the FCFS Scheduling. If the time quantum is too small then Round Robin Scheduling is called as Processor Sharing Algorithm and number of context switches is very high. It selects the load on random basis and leads to the situation where some nodes are heavily loaded and some are evenly loaded. However the algorithm is extremely simple but there is an additional load on the scheduler to decide the size of quantum [6] and it has longer average waiting time, elevated context switches higher turnaround time and low throughput

4.CONCLUSION

In this paper, we reviewed both dynamic and static load is to be mixed then the hybrid of Dynamic load management algorithm and Round robin algorithm can be improved sufficiently and also by incorporating the paradigms of parallel and high performance computing response time and utilization of VMs optimized. Here these paper focus to response time of VMs.

5.REFERENCES

[1] Reena Panwar , Prof. Dr. Bhawna Mallick, "Load Balancing in Cloud Computing Using Dynamic Load Management Algorithm", 2015 International Conference on Green Computing and Internet of Things (ICGCloT)

[2] Shikha Garg, Dr. D.V. Gupta, Dr. Rakesh Kumar Dwivedi" Enhanced Active Monitoring Load Balancing Algorithm For Virtual Machines in Cloud Computing",on 5th International Conference on System Modeling & Advancement in Research Trends, 2016 IEEE

[3] Navtej Singh Ghumman, Rajwinder Kaur, "Dynamic Combination of Improved Max-Min and Ant Colony Algorithm for load balancing In Cloud System",2015-6th ICCCNT

[4] Umang Thakkar, Prof. Indr jeet Rajput, "A Novel Approach for Dynamic Selection of Load balancing algorithm in Cloud computing" on International Conference on Global Trends in Signal Processing, Information Computing and Communication, 2016 IEEE

[5] Linlin Tang, Jeng-Shyang Pan, Yuanyuan Hu, Pingfei Ren, Yu Tian and Hongnan Zhao by using A Novel Load Balance Algorithm for Cloud Computing, 2015

[6] Shreenath Acharya, Demian Antony D'Mello,"Enhanced Load balancing algorithm for resource provisioning in cloud computing"2016IEEE

[7] Vishwas Bagwaiya, Sandeep k. Raghuwanshi," Hybrid approach using Throttled and ESCE Load balancing algorithm in cloud computing", 2014-IEEE