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BALANCE LOAD ON DIFFERENT VIRTUAL MACHINES ON CLOUD BY USING A LOAD BALANCER

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ABSTRACT

Cloud is pool of heterogeneous resources. It is a network of remote servers hosted on internet and used to store, manage, and process the data in place of local servers or personal computers. The main idea behind the cloud is that you can access all your information without having any detailed knowledge. Cloud computing means storing and accessing data and programs over the internet instead of computer's hardware. Cloud computing is a term which involves virtualization, distributed computing, networking, software and web services. Cloud Computing has been aggregating the two terms that is Cloud and Computing. It is made to handle the resources in and efficient way. Load balancing in the cloud computing environment has an important impact on performance. Good load balancing makes cloud computing more efficient and improves user satisfaction. Cloud load balancing is the process of distributing workloads across multiple computing resources. Load balancing allows enterprises to manage application or workloads and computing resources in cloud computing environment.

Keywords: Cloud Computing, Load balancer, Virtual Machines, Job Schedulers, Round Robin Algorithms.

I. INTRODUCTION

Distributed computing stages give simple gets to a substantial pool of figuring assets through an assortment of assets with virtual asset management [3]. Distributed computing is only a gathering of processing assets and administrations pooled together finished web and is given to the clients on pay-as-required premise. Distributed computing permits everybody to utilize programming and registering administrations on-request at whenever, anyplace and wherever utilizing the web. Distributed computing likewise underpins multi tenure, giving frameworks arranged such that they can be pooled to be shared by numerous associations or people.

Load Balancing is the fundamental issues of cloud organize. Load adjusting is a procedure of reassigning the aggregate load to the individual hubs of the aggregate framework to the encourage systems and assets to enhance the reaction time of the activity with most extreme throughput in the framework [4]. Load adjusting is a strategy that appropriates the workload among different hubs in the given condition with the end goal that it

guarantees no hub in the framework is over stacked or sits sit out of gear for any moment of time [6]. The objective of adjusting the heap of virtual machines is to lessen vitality utilization and give greatest asset use there by diminishing the quantity of employment dismissals. Load adjusting accomplishes a high client fulfillment and asset use. The primary focal point of load adjusting in the cloud area is in designating the heap powerfully among the hubs keeping in mind the end goal to fulfill the client necessities and to give most extreme asset usage by grouping the general accessible load to particular hubs. There are five essential qualities of cloud which incorporate on request registering, wide system get to, asset pooling, quick versatility and estimated benefit. The main trademark guarantees that cloud conveys administrations to the clients at whatever point they request and whatever they request. Expansive system get to implies that cloud administrations can be gotten to from anyplace whenever utilizing either an advanced mobile phone, workstation, work area or tablet. The main thing required is a web association. The cloud merchant's assets are pooled so various clients are served utilizing multi-inhabitant demonstrate.

II. LITERATURE SURVEY

1. International Conference on Information and Communication Technologies (ICICT- 2014) “Load Balancing Techniques In Cloud Computing” research paper:

Proper load balancing aids in minimizing resource consumption, implementing fail-over, enabling scalability, avoiding bottlenecks and over-provisioning etc. It helps in optimal utilization of resources and hence in enhancing the performance of the system. A few existing scheduling algorithms can maintain load balancing and provide better strategies through efficient job scheduling and resource allocation techniques as well. In order to gain maximum profits with optimized load balancing algorithms, it is necessary to utilize resources efficiently. This paper discusses some of the existing load balancing algorithms in cloud computing and also their challenges.

2. International Journal of Computer Science Trends and Technology (I JCST) – Volume 4 Issue 2, Mar - Apr 2016 “Survey of VM Load Balancing Algorithm in Cloud Environment” :

The Virtual machine load balancing algorithm plays a very important role in load balancing of cloud. There are various categories in which we can divide the virtual machine different load balancing algorithm. We are going to discuss these various classifications virtual machine load balancing algorithm in our paper. We divide the paper into various sections and discuss various aspects. This paper presents the study of existing static or dynamic load balancing algorithm. This analysis can further help in the design improved algorithm.

III. NEED OF WORK

Load balancing in cloud provide a mechanism for distributing the excess dynamic local workload evenly across all the nodes. Load balancing reduces the amount of energy consumption by avoiding over heating of nodes or virtual machines due to excessive workload. To increase the performance significantly. To improve future enhancement in the system. To have a backup plan in case the system fails even partially. Load balancing reduces the amount of energy consumption by avoiding over heating of nodes or virtual machines due to excessive workload.

IV. PROBLEM STATEMENT

Now days, there is an increasing load towards the system which causes resources utilization in large amount. It is necessary to divert the load and it is use resource optimally. So that single resource can be used to severe multiple request. To balance the load on different virtual machines on cloud by using a load balancer.

V. SYSTEM ARCHITECTURE

Distributed computing can be partitioned into two segments, the client and the cloud. In many situations, the client is associated with the cloud by means of the web. It is additionally workable for an association to have a private cloud in which a client is associated by means of an intranet. Be that as it may, the two situations are indistinguishable other than the utilization of a private and open system or cloud. The client sends solicitations to the cloud and the cloud gives the administration. Inside the cloud, a focal server is in charge of regulating the framework and from numerous points of view works as the working arrangement of the particular cloud organize. Another name for this is called ―middleware which is the focal server for a specific cloud. Cases incorporate Google App Engine and Amazon EC2.

In the following system architecture, many clients can send requests to job manager. Job manager can receive the jobs and handle it. Job manager creates a queue for jobs and send sequentially to the server by using load balancer. Server creates multiple virtual machines. These virtual machines are used to handle a load.

Load balancer is used to handle a load. Load is balanced by using virtual machine's capability. We designed three types of load capability: low, normal, high. Java language and MySQL database can be used for development and storing backend data. As we know java language, the suitable IDE is NetBeans. NetBeans provide easy facilities like Intelligence, drag-drop, etc. NetBeans is integrated development environment in java. Customer sends a demand to Job Manager. Occupation Manager chooses the need among the demand and makes a grouping of demand for assignment by looking at the need. Load balancer deals with the VMs according to the limit (low, medium, high).

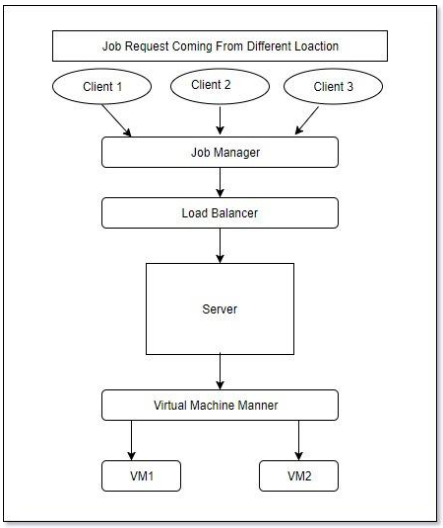

Fig1: System Architecture for load balancer diagram

Round Robin Algorithm:

It is the static load adjusting calculation which utilizes the round robin conspires for dispensing work. It chooses the main hub arbitrarily and after that, distributes the occupations to every other hub in a round robin form. With no kind of needs, the undertakings are doled out to the processors in roundabout request. In view of the non-uniform appropriation of workload, this calculation isn't reasonable for distributed computing a few hubs get vigorously stacked and a few hubs get softly stacked on the grounds that the running time of any procedure isn't known ahead of time. This confinement is overcome in the weighted round-robin calculation. In weighted round-robin calculation some particular weight is allocated to the hub based on task of weight to the hub it would get suitable number of solicitations.

VI. ISSUES IN LOAD BALANCING

While designing a good load balancer issues of cloud computing can summarize as follows:

A. Privacy

Cloud computing utilizes the virtual computing technology, users' personal data may be scattered in various virtual data centers rather than stay in the same physical location, users may leak hidden information when they are accessed cloud computing services. Attackers can analyze the critical task depend on the computing task submitted by the users.

B. Reliability

The cloud servers also experience downtimes and slowdowns as our local server.

C. Compliance

Numerous regulations pertain to the storage and use of data requires regular reporting and audit trails. In addition to the requirements to which customers are subject, the data centers maintained by cloud providers may also be subject to compliance requirements.

D. Load estimation policy for Load-balancing algorithms

Issue in load estimation policy for load balancing algorithms is to decide which method to use to estimate the workload of a particular node.

VII. CHALLENGES OF LOAD BALANCING

Overhead Associated –Decides the measure of overhead included while actualizing a heap adjusting framework. It is made out of overhead because of development of assignments, between process correspondence. Overhead ought to be diminished with the goal that a heap adjusting calculation performs well.

Throughput – It is the number of task executed in the fixed interval of time. To improve the performance of the system, throughput should be high .

Performance – It can be defined as the efficiency of the system. It must be improved

Resource Utilization –It is used test the utilization of resources. It should be maximum for an efficient load balancing system.

Scalability –The nature of administration ought to be same if the quantity of client increments. The more number of hubs can be included without influencing the administration.

Response Time –

It can be characterized as the measure of time taken to respond by a heap adjusting calculation in a conveyed framework. For better execution, this parameter ought

to be diminished.

Fault Tolerance –

In spite of the node failure, the ability of a system to

perform uniform load balancing. The load balancing is the best fault-tolerant technique.

VIII. CONCLUSION AND FUTURE WORK

A load balancing scheme is proposed in this paper, which balance load on virtual machines. Experiments showed that our strategy not only solve the frequent migration problem, but also improved reliability of the data center. In future, we would create connectivity between load balancer and cloud. We would like to explore other issues in this load balancer.

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