



A WIDE APPROACH FOR LOAD EQUILIBRIUM RE-APPRAISAL SUBMISSION IN CLOUD COMPUTING ATMOSPHERE: AN EXTENSIVE OUTLINE

Mrs.Anjali Sharma Research Scholar, School of Computer Science and Applications,
IIMT University, (India) anjali.shail@gmail.com

Dr. Prof. K.K.Sharma Associate Professor, School of Computer Science and Applications,
IIMT University, (India) drkks57@gmail.com

ABSTRACT:

In today's organization frequently used the most powerful expertise to do their work in an efficient mode that technology is called cloud computing, which offer a platform for storing data as pay-per-use and also accessible all time for every person over the internet. In the time of lockdown the use of this technology enhanced day by day so it has more concern related to security, failure rate and most critical load balancing. So this research paper has given an idea in the area of load balancing and recommends a proposal how to overcome this load problem on every node during the work. Cloud computing is having a variety of load such as extra CPU burdens, extra memory burdens, extra network and bandwidth related burdens, through this idea we can minimize the load on nodes when nodes are overburdened with many jobs. By this technique load must be hold and disperse when nodes are overloaded. As we are having two main loads balancing approaches such as static load balancing and dynamic load balancing and this proposal works accordingly as demands in the Cloud Computing technology. This paper offers an idea to overcome the problem of over burdens on nodes by public cloud by doing cloud parts in form of partitions which assist a control mechanism by selecting alternative strategies for different situations.

Keywords: Dynamic algorithms, Static algorithms, Public Cloud.

I INTRODUCTION:

The 'Cloud' word is originated by the telecommunications world when they were using VPN. VPN is a virtual private network which offers services for data communications. The authorized 'National Institute of Standards and Technology' (NIST) explain that cloud computing includes four cloud deployment models these are private, public, community and hybrid clouds [1]. It has given the details for cloud computing that it is on-demand network which access computing resources from shared pool e.g., infrastructure, networks, software, hardware, servers, applications and services that can be used and released as required the services by the cloud computing provider. The cloud computing technology is an on-demand network which worked by internet distribute resources on the based as pay-as-you-go which called as PAYG plan [2]. Cloud Computing plays a vital role in application orientation and also offers service orientation. Through service oriented it reduces the overhead of infrastructure and also provides flexibility and performance to the user.[3]. there are numbers of examples in this technology like Amazon, Microsoft, Google, SAP, Oracle, VMware, Sales force, IBM and others [4, 5]. So we can use this technology without store of any type of data on user system, only they can use, store and retrieve the data on demand by the access of internet.

We divided this research paper into three sections. These are as:

In first section we discuss the BACKGROUND OF LOAD BALANCING which focused on objective of Load balancing, Load Balancing Algorithms types and also various types' clouds.

In second section we discuss the EXISTING AND PROPOSED SYSTEM ARCHITECTURE with Existing System and Proposed Approach of Load Balancing with Implementation for Loaded System with results.

in conclusion, the conclusion present a outline of the result of this research paper.

II BACKGROUND OF LOAD BALANCING

Cloud Computing has been faced various issues in real environment like machine migration virtually, server system unification and load balancing. So we are focusing the main vital problem today's called Load balancing which is main issue of cloud computing environment that is solved by shared load between different machines [6]. So distribution of load in distributed system is the process of Load balancing such as load balancing process is the way to ensuring no node is overloaded, under-loaded or idle [7, 8, 9]. Load balancing is the main utility to balance the load during the heavy burdens on nodes, then this utility will shift the over load to other respective nodes as required in the network without interrupt the running task. Like web application used the hardware based load balancer which is a regular way to balance load by using IP address to entire communications. Example OAD, it is the oldest hardware load balancer which works on web applications frequently. First the user session is established then It starts the balance load on the web applications by connected in the back end web server which may be one or more, for processing at the same time load balancer overcome the load problem by forwarding the packets of data to various web servers for processing, and also distribute the load on each web server .it can easily balance the load on web applications or Large capacity of load easily tackled by it, this is the main advantage of hardware load balancer. Which based on hardware component, also it is exclusive.

So load balancer which is hardware based is really outstanding which occurred by cloud service providers as a service. In its place of that general server which is running on the software applications. Like fig 1.

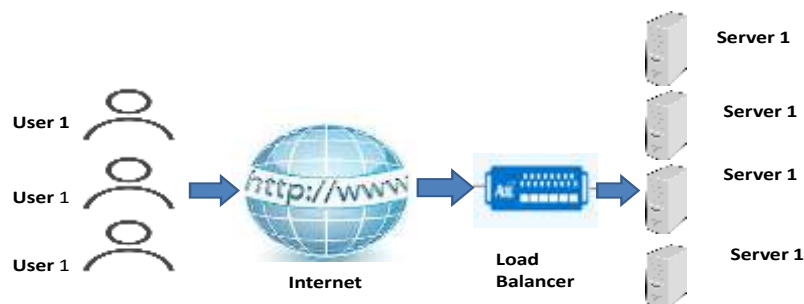


Fig 1 Load Balancing in Cloud Environment

A) Objective of Load Balancing: The objectives of load balancing are as

- When the loads of nodes are balanced then it will give the better results in terms of performance regularly.
- When the data failure during unnecessary heavy load then have a support plan if system fails fairly.
- Sustain the system performance steadiness.
- Provide accommodation for updating in the future system.

B) Load Balancing Algorithms types

1) Static Algorithms

Static algorithms distribute the load equally between servers. These algorithms are sufficient



for that system which is having less variation of loads but it require a details regarding system resources at starting of execution because the main drawback of static algorithms is that when jobs are allocated to nodes then load balancing cannot be possible to shift jobs during its executions to another node. Static algorithms work like a round robin algorithm which shown many problems which improved by weighted round robin algorithms. In this algorithm according weight value every server assign a weight and jobs are distributed to every server with larger capacity weight according to the highest weight value will receive more jobs. When all weights are equal value then traffic will be balanced.

2) Dynamic Algorithms

A dynamic algorithm works on real time dynamically. Such as in the dynamic algorithms lightest server in the system is look for and chosen to balance the traffic. This is the main point that it answer to the real existing system state to making load transfer decisions.

In real time, the processes are allowed to shift the load from one node to another node by Dynamic load balancing decisions. This is the main drawback under the static algorithms.

C) Types of cloud

We are having various types of cloud but here we are going to compare three clouds those used more frequently like Public cloud, Private cloud and hybrid cloud.

Public Cloud	Private Cloud	Hybrid Cloud
Public cloud is shared across organizations via internet.	Private cloud is dedicated privately to any organization.	Combination of public and private clouds.
No cost of maintenance	Dedicated and secure	Policy driven
Provide more scalability and flexibility	Regulate according demands	Provide more scalability and flexibility
Reduce complexity	Customizable	Less risk
Less price	High price	customizable

III EXISTING AND PROPOSED SYSTEM ARCHITECTURE

a) Existing System

If we are talking about the existing cloud customers system in which every data stored with single higher configuration by single storage cloud. So the server required a lot of resources like internal memory,external membory,CPU capacity and processing power,if the load limit exceed then the define limit, it will give poor performance in terms of RAM, hard disk and processing power.

b) Proposed idea of Load Balancing for Loaded System with planned approach

This paper is proposed a idea to balance the over load on public cloud which worked on many nodes with distributed computing resources and every time phase the problem of over burden in many geographic locations So in this proposed proposal *LOAD BALANCING PROPOSAL* The load balancing is used to reduce the load on main node of the system. By Using load balancing algorithm, the load of Server is balanced through transferring the extra loads to other light Servers

Load balancing is the most important techniques to enhance the efficiency of the cloud service provider.

For Example: If we are having 5 Servers (S1, S2, S3, S4, and S5) with same storage capacity, and we have 4 Clients (C1, C2, C3, C4) having a number of Jobs or Tasks as per Table 1.

S.No	Clients	Jobs/ Tasks
1	C1	T1, T2, T3



2	C2	T1, T2, T3, T4, T5
3	C3	T1, T2, T3, T4, T5
4	C4	T1, T2

Table 1

S1	S2	S3	S4	S5
C1- T1	C1-T2	C1- T3		
C2 – T1	C2-T2	C2-T3	C2-T4	C2-T5
C3-T1	C3-T2	C3-T3	C3-T4	C3-T5
C4-T1	C4-T2			
4(Tasks)	4(Tasks)	3 (Tasks)	2 (Tasks)	2 (Tasks)

Table 2

In Table 2, Every Servers of table is having equal load capacity. Load is assigned to these servers randomly by using static load balancing algorithm. In this table 2 each servers get some lumps to execute. We can clearly understand that S1 and S2 are having heavy loads, S3 is having moderate load and S4 and S5 are on light loads.

So, we can conclude that S1 and S2 will take more time to respond in comparison to rest of the servers. Hence, we need to have load balancing algorithm.

S1	S2	S3	S4	S5
C1- T1	C1-T2	C1- T3	C4- T1	C4-T2
C2 – T1	C2-T2	C2-T3	C2-T4	C2-T5
C3-T1	C3-T2	C3-T3	C3-T4	C3-T5
3(Tasks)	3(Tasks)	3(Tasks)	3(Tasks)	3(Tasks)

Table 3

In Table 3, we have demonstrated the load balancing by some algorithm steps like First we find whether a particular server is heavy loaded or light loaded. A server is light loaded if number of tasks is less than the minimum capacity of server and server is heavy loaded if number of tasks are greater than maximum capacity of server. All heavy loaded servers shared its load with light loaded server. For Simulation purpose we will use the cloud SIM which will help in load balancing problems.

SIMULATION

We will be using simulation tools and virtual servers because the cost of installation and preparation of distributed environment is high for testing purpose.

In cloud SIM we will configure the simulation environment. So, we will first design the data centers which are having number of Servers with their capacity.

We will also select the client base with their request size (that is to be measured in terms of task size or processes size).

After that we will select load balancing technique as round robin. Once everything is set, we will run the simulation and get the results.



IV CONCLUSION

Load balancing is major issues today's in front of cloud service providers. The objective of this paper is to propose the idea for load balancing in Cloud Computing environment which is widely faced by the industries now a day. This paper explore the idea for Load balancing as it is vital problem in the system in term of distribute the load in proper way, we can overcome this problem by using load balancing strategy by rebalance algorithm which based on two main states like light load and heavy load. And guaranteed this idea also provide the efficient and fairly manner to distribute the computing recourses. Instead of reducing cost, reducing migration time and improving system performance.

REFERENCES

- [1] Buyya R, Vecchiola C, Selvi ST (2013) Mastering cloud computing: foundations and applications programming. Morgan Kaufmann, USA, 2013
- [2] Bohn RB, Messina J, Liu F, Tong J, Mao J (2011) NIST cloud computing reference architecture. In: Proceedings of IEEE 7th world congress on services (SERVICES'11), Washington, DC, USA, Jul. 2011, pp 594–596
- [3] Anjali Sharma, Dr. Garima Sinha (Aug 2021). "An Efficient Approach on Data Security with Cloud Computing Environment: A Comprehensive Research". e-ISSN 1309-4653
- [4] Pradhan P, Behera PK, Ray BNB (2016) Modified round Robin algorithm for resource allocation in cloud computing. *Proced Comp Sci* 85:878–890
- [5] Mishra SK, Sahoo B, Parida PP (2018) Load balancing in cloud computing: a big picture. *J King Saud Univ Comp Infor Sci*:1–32
- [6] Garg, K. Patidar, G. K. Saxena and M. Jain, "A literature review of various load balancing techniques in cloud computing environment", *Int. J. Enhanced Res. Manag. Comput. Appl.*, vol. 5, no. 2, pp. 11, 2006.
- [7] Achar R, Thilagam PS, Soans N, Vikyath PV, Rao S, Vijeth AM (2013, December) Load balancing in cloud based on live migration of virtual machines. In: 2013 annual IEEE India Conference (INDICON), pp 1–5
- [8]. Magalhães D, Calheiros RN, Buyya R, Gomes DG (2015) Workload modeling for resource usage analysis and simulation in cloud computing. *Comp Elect Eng* 47:69–8
- [9] Y. Zhu and Y. Hu, "Efficient, Proximity-Aware Load Balancing for DHT-based P2P Systems", *IEEE Trans. Parallel and Distributed Systems*, vol. 16(4), pp. 349–361, Apr. 2005.
- [10] Anjali Sharma, Dr. Pankaj Gupta (Aug 2022). "Analytical Study of Load Re-Balancing with Public Cloud Computing Atmosphere: A Broad Outline". ISSN: 0974-5823. <https://kalaharijournals.com/resources/JUNE-99.pdf>.