A SURVEY ON RECENT IMPROVED LOAD BALANCING ALGORITHMS IN CLOUD ENVIRONMENT

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A mass virtualized evolving data center or server for worldwide to share any type of the resources with using internet. The enormous system of the load balancing is best optimizing technology in cloud. The cloud computing consists several aspects just like virtualization, recovery, storage and backups, capacity and more on. Cloud is comfortable for the users because their cost and flexibility. As the cloud computing premise is best vast technology in the researchers to improve their innovative idea for enhancing cloud environment. The essential distributing the data we need of load balancing for in entire world based on the user requirement. The cloud computing mainly provide for rendering their services, high volume of storage area, and software environment all are in virtually. The load balancing performs at many places like, IT Industries, academicians and social networks to performing their tasks. To handling a social network is a very critical task while day by day raising their users to sharing the data someone. This paper we presented a survey work to bring the impression of load balancing and comparative study of recent innovative algorithm with using the standing algorithm based on the parameter like throughput,
Maintenances, Reliability ,Efficiency, scalability and performance.

Keywords: **Cloud Computing, Load Balancing (LB), Virtualization, Enhancing Load Balancing Algorithm, Processing time, Bandwidth.**

1. INTRODUCTION

Cloud computing is a rendering service for accessing the multiple user requirements. The cloud computing system involved in three components like as one is Cloud Services, Second one is Cloud Deployment models, another one is Characteristics on cloud. These components are fulfilling the user requirements and expand the performance of data centers.

The cloud computing technology delivers for their customers in multiple services. One is Software as a Service (SaaS), next one is Platform as a Service (PaaS), and last one is Infrastructure as Services (IaaS). The NIST refer some characteristics on cloud computing as, broad network, on demand self-service, resource combining, rabid elasticity, and pay per use. The cloud deployment models are specifically Public, Private, Community and Hybrid cloud respectively. Private cloud delivers the facility on single union to access; Public cloud delivers the facility on each person to access; Community cloud to share by countless organization to access their facility. Hybrid cloud can access for grouping of two or more clouds.

The cloud technology incoming at initial level IT industries only utilize the cloud services and its functionalities with giving some amount of cosIn recent decade many peoples work and Public cloud
Hybrid cloud
Community cloud
Private cloud
Cloud Computing
IAAS
PAAS
SAAS
operate the cloud services. Now a day it is agreed by most industries, academia and social media because it provides high storage area and also security for including strong authentication. We can easily access the cloud services through any

portable devices for instance mobile, laptop, tablet and personal computer with containing an internet capacity.

2. LITERATURE SURVEY

Feilong et al. [2], presented two Open Flow Architectures namely Fully Populated Network (FPN) and Fat Tree Network (FTN). The networks are used to dynamically load balanced scheduling across the virtual nodes. This author discussing results on adapting for cloud environment in Dynamical networks and during the data transmission the task can split for according their situation. SrinivasSethi et al. [3], proposed novel load balancing algorithm with exhausting fuzzy logic. To get computable enhancements of resource utilization and availability of cloud host infrastructure. Enhancing the round robin is namely Fuzzy Round Robin (FRR) providing the results on maximizing the processor speed and load scheduling in dynamically.

L.D. Dhinesh et al. [4] suggested honey bee foraging scheme stimulated load balancing tasks. This algorithm demonstrates not only a load balancing and also priority of task in virtual machine queue. The
authors conclude their results growth on total throughput of the handling time and priorities. JianyingLue et al. [5] introduced a hybrid approach for spatio-temporal load balancing based on the temporal load balancing and also spatial load balancing. To mainly obtain for reduce the energy charge optimization in distributed Internet Data Centers (IDC). This paper delivering results for low computational density and accuracy of electricity price estimation.

Ariharan v et al. [6] describes a Neighbour Aware Random Sampling Algorithm (NARS) for reducing a work from large loaded node to lightly loaded node. This paper conclude to the neighbor node are selecting in random walk method to finding a lightly loaded node in cloud environment for assign the task. Lei Yu et al. [7] introduced a stochastic load balancing algorithm for avoiding resource overloading in virtual node. Their results are to reduce the migration cost and maximizing worst presentation of the hotspot migration. Er.Pooja et al. [8] proposed an Enhanced Genetic Algorithm via the genetic algorithm. To calculate the fitness of machines for better performance and allocation cost. The authors experimental results are show that scheduling multiple workloads or multiple virtual machines with minimum execution of interval.

Anurag Jain et al. [9] presented two level approach for effective load balancing namely Join Idle and Join Shortest Queue approach. To considering about the outcomes are minimizing data processing time, cost and response time. MotthiasSommer et al. [10] proposed an Algorithm on Proactive VM Migration the Utilisation Fore-casts (PRUF). The authors' findings use of forecasts of the future utilization of virtual machines in beneficial for the load balancing problem. Their enhancing results are lowest VM Migration and Highest host.

shutdowns.Shibina T et al. [11] introduced a new swarm based optimization algorithm on Intelligent Water Drops Algorithm (IWD) for load balancing. To work based on water in river split in to several paths in randomly. It consisting better performance for minimizing response time as well as cost. GeetindarKaur et al.[12] proposed for hyper heuristic scheduling Approach in schedule cloudlets and resource. Then consider about discovery operators on transmission cost and calculation time. Improved Hyper Heuristic Scheduling Algorithm is reducing the total makespan time of job and rise the overall performance. The Resource Aware Scheduling algorithm used for maximizes the accuracy and efficiency of resource utilization.

3. ANALYSIS OF LOAD BALANCING

3.1.Load balancing

The Load Balancing is a distributing the heavy workloads with among the empty virtual machine or lightly loaded virtual machine for improving instant reaction of the system as well as task. The cloud load balancing needs to split the workloads in dynamically to enhancing their performance [1]. Load Balancing mainly used to maximizing throughput result, minimize response time and avoid overloads any single resource. This technique of load balancing construct among the different author perspective on system performance, utilization of resource, priority of task, task

completion time and responding time for the user request[2,5].

The emerging worldwide customers are used lot of portable device for entering everywhere, at any time because the cloud servers are very critical and difficult to manage, that situation escaping we are handling load balancing method using some effective algorithm. Virtualization is very important role in cloud computing. It only handles number of virtual machine through the physical host.

3.2.Types

Basically load balancing classified in two kinds namely static and dynamic.

Static: The tasks are assigned in all nodes in evenly because some light weight nodes are free for after execution. It may be possible for affecting better performance.

Dynamic: The current state of the system is used to make any decision for load balancing (heterogeneous). While assigning tasks to the nodes it will check the state and behavior of the node in previous tasks.The dynamic load balancing algorithm implemented in two forms distributed and non-distributed. Distributed dynamic load balancing: All the nodes in the system will interact with each other and the task is distributed among the nodes. This type of approach is fully suitable for cloud environment. Non-Distributed Dynamic or centralized dynamic algorithm load balancing: All the nodes work independently for achieving the tasks.

3.3.**Aspects of Load Balancing Algorithm**

The metrics are used for improving their better results in different author's perspective.

Throughput: The aggregating process time for it execution in specific volume of time. **Makespan:** A complete processing time when will the job arriving and destroying. **Response Time:** The task taken time for its arriving in the system. **Resource Utilization:** The proper way of assigning in the resource for performing. **Overhead:** Interlink between the different neighborhoods nodes on its task movement. **Fault Tolerant:** Avoid task replication in any other device and find disconnected node. **Migration Time:** The seeking time for moving one node to another node. **Performance:** The finite execution result for the system efficiency. **Scalability:** Technique including with any fixed processors and machines. **Waiting Time:** How much of time task will wait in the queue for arriving.

3.4.Stages of load balancing Algorithms

Sender Started: The client sends request pending a receiver is allocated to him to receive his capacity. **Receiver Started:** The receiver sends a request to knowledge a sender who is ready to share workload. **Symmetric:** It is a mixture of both sender and receiver initiated category of load balancing algorithms.

3.5.Rule of Load Balancing Algorithm

Information Rule: when this information is collected via the servers. **Triggering Rule**: The Time period when the operation is starting and to manage that is in-between time of beginning and finishing. . **Resource Type Rule**: Analyze all the types of resources which are ready to during the load balancing. **Location Rule**: It uses all the results of the resource type policy and finding a partner for a server or receiver. **Selection Rule:** To find the task which one transfer from overloaded node to free node [1].

4. ANALYSIS OF RECENT IMPROVED

LOAD BALANCING ALGORITHMS

The algorithm implemented for existing popular algorithm like Round Robin (RR), Throttled, Genetic algorithm, Opportunistic Load Balancing algorithm (OLB), etc. Authors	Name of the method	Algorithm	Merits	Remarks
Feilong Tang, et.al,[2]	A Dynamical and Load- Balanced Flow Scheduling Approach for Big Data Centers in Clouds	Heuristic Scheduling algorithm based on (FPN) &(FTN)	Optimize network throughput Dynamically Migrating flows Congested link and lightest link	Consider only a Big Data Centers
SrinivasSethi, et.al,[3]	Efficient Load Balancing in Cloud Computing using Fuzzy logic	Fuzzy Based Round Robin[FRR]	Minimizes processing time response time	Dynamic approach improving the round robin Algorithm
L.D. Dhinesh et al. [4]	Honey Bee Behavior Inspired Load Balancing of tasks in Cloud Computing	Honey Bee Behavior Load Balancing [HBB-LB]	Balance the load in Virtual Machine. To find a high priority tasks	The Technique is satisfied only a heterogeneous Environment