ABSTRACT:

Cloud Computing:

Cloud computing is the latest generation technology with a high IT infrastructure that provides us a means by which we can use and utilize the applications as utilities via the internet. Cloud computing makes IT infrastructure along with their services available "on-need" basis. The cloud technology includes - a development platform, hard disk, computing power, software application, and database.

As the number of user is increasing day-by-day in cloud environment, load balancing has been become a challenging problem for cloud service provider. To overcome this type of problem, many algorithms have been proposed by researcher, but all the algorithms have their advantages and limitation.

Load balancing in Cloud Computing:

Cloud load balancing is defined as the method of splitting workloads and computing properties in a cloud computing. It enables enterprise to manage workload demands or application demands by distributing resources among numerous computers, networks or servers. Cloud load balancing includes holding the circulation of workload traffic and demands that exist over the Internet.

OBJECTIVES:

Soo the objective is to develop a effective and efficient load balancing technique in cloud computing. Which maintains the system firmness by distributing the load among the servers appropriately and result into better system performance. And also protects the system from the failures like getting overloaded and certain break downs.

RELATED WORK:

Many load balancing approaches were proposed in recent years and each focused on different aspects of algorithms and policies

        Paper 1:

Title: Dynamic Load Balancing in Cloud A Data-Centric Approach

Load Balancing is a key aspect of Cloud Computing. It is the distribution of network or applications traffic across a number of servers. As the volume of data is increasing day by day the organizations will migrate from traditional computer system to the cloud based system. Some of the most commonly used existing load balancing algorithms are weighted least-connection, weighted round-robin, active clustering, and feedback-driven dynamic load balancing. They are classified as either static or dynamic. They say that the existing methods are server-centric, i.e., while distributing load among servers, only server parameters (number of active connections, response time, geographic location, server capability etc.) are taken into consideration. However, statistics on the different types of content present on the internet, their percentage and usage suggest that it can be improved. These covers various topics like: 1. Cloud Computing 2. Load Balancing and its existing algorithms 3. Platform for Cloud Computing . We are

proposing a dynamic load balancing algorithm which will assign load to the servers depending on the type of content it possesses.

Paper 2:

TITLE: Dynamic Distributed Load Balancing Technique in Cloud Computing

For the number of static and dynamic load balancing algorithms are proposed. Here we are proposing a load balancing algorithm based on clusters in which cluster are formed on geographical bases. All cloud servers arranged in distributed manner.

Along with Dynamic distributed load balancing algorithm we have proposed a security algorithm to secure data transmission between client and Cloud service provider. According to this security algorithm client initiates a key generation process to generate encryption and decryption key pairs that will be valid for a particular message. Likewise, a number of key pairs generated. Client can use any key pair for any data encryption/decryption which will be stored on Cloud.

Paper 3:

    TITLE: Dynamic Load Balancing Strategy for Cloud Computing with Ant Colony Optimization

Here they are proposing the load balancing approach on load balancing via ant colony optimization (ACO), for balancing the workload dynamically. And presenting Two strategies, forward-backward ant mechanism and max-min rules, are introduced to quickly find out the candidate nodes for load balancing.

They basically define the moving probability of ants in two ways, that is, whether the forward ant meets the backward ant, or not, in the neighbor node, with the aim of accelerating searching processes. Simulations illustrate that the proposed strategy can not only provide dynamic load balancing for cloud computing with less searching time, but can also get high network performance under medium and heavily loaded contexts.

Paper 4:

TITLE: Dynamic load balancing algorithm for balancing the workload among virtual machine in cloud computing

They propose a load balancing algorithm that minimize the makespan time and enhance the utilization ratio of cloud resources. Computational results shows that develop algorithm decrease the makespan time and enhance the utilization of resource compare to min-min algorithm, fcfs and shortest job first in all condition. Each algorithm work on different parameter like makespan time, execution time, response time, resource utilization, throughput etc. and optimize the parameter based on objective function. And they propose a conventional based approach to balance the load in cloud environment using the task migration approach.

Paper 5:

TITLE: An Efficient Dynamic Load Balancing Algorithm for Virtual Machine in Cloud Computing

The main objective of load balancing is to make the virtual machine balanced which should be not underloaded or overloaded. In this paper, we have proposed a load balancing algorithm by combining two algorithms for balancing the workload over the cloud system. We have used modified honey bee behavior inspired algorithm for priority based tasks and enhanced weighted round-robin algorithm used for non-priority based tasks. They new hybrid effective load balancing method in cloud computing. In this work we used two modules first is a scheduler and second load balancer.

Paper 6:

TITLE: An Ant Colony Based Load Balancing Strategy in Cloud Computing

This paper proposes a novel ant colony based algorithm to balance the load by searching under loaded node. Proposed load balancing strategy has been simulated using the CloudAnalyst. Experimental result for a typical sample application outperformed the traditional approaches like First Come First Serve (FCFS), local search algorithm like Stochastic Hill Climbing (SHC), another soft computing approach Genetic Algorithm (GA) and some existing Ant Colony Based strategy.

Paper 7:

TITLE: Ant colony Optimization: A Solution of Load balancing in Cloud

Many methods to resolve this problem has been came into existence like Particle Swarm Optimization, hash method, genetic algorithms and several scheduling based algorithms are there. They proposing different method based on Ant Colony optimization to resolve the problem of load balancing .They gave description abut different cloud models and components. In this paper, a heuristic algorithm based on ant colony optimization has been proposed to initiate the service load distribution under cloud computing architecture. The pheromone update mechanism has been proved as a efficient and effective tool to balance the load.

Paper 8:

TITLE: A New Approach to Ant Colony to Load Balancing in Cloud Computing Environment

In this paper, it has been tried to suggest a new optimum method using ACO. Many methods to resolve load balancing has been came into existence like PSO, genetic algorithms and other kind of task scheduling. In this Article it has been proposed a method based on Ant Colony optimization to resolve the problem of load balancing in cloud computing. In this article utilize the characteristics of Ant algorithm. In contrast to other SALAB algorithm inherit the basic idea of ACO.The main aim of the proposed algorithm is efficient in finding the overloaded node and load balancing in lowest time. The proposed method associated with concept of ACO promotion in connection with movement of the ant which is in both forward and backward direction. The way ants are created pheromone table that contains the data around all nodes and its corresponding load. The aim is to balance the node with efficiency & maximum utilization

of resource and a better performance is the need of our algorithm. It improves the performance by achieving the best result in terms of throughout, response time.

PAPER 9:

TITLE : Task Scheduling Based on Ant Colony Optimization in Cloud Environment

In order to optimize the task scheduling strategy in cloud environment, we propose a cloud computing task scheduling algorithm based on ant colony algorithm. The main goal of this algorithm is to minimize the makespan and the total cost of the tasks, while making the system load more balanced.

In this paper, we establish the objective function of the makespan and costs of the tasks, define the load balance function.

Meanwhile, we also improve the initialization of the pheromone, the heuristic function and the pheromone update method in the ant colony algorithm. Then, some experiments were carried out on the Cloudsim platform, and the results were compared with algorithms of ACO and Min-Min. The results shows that the algorithm is more efficient than the other two algorithms in makespan, costs and system load balancing.

Paper 10 :

TITLE: Dynamic Load Balancing in Cloud Computing using Swarm Intelligence Algorithms

         This article discusses about the load balancing algorithms especially, swarm intelligence algorithms that can be used to balance load across devices. The algorithms taken into account are-PSO, Ant Colony Optimization, GSO and IWD.A study on advantages and limitations of the algorithm is made in order to realize the advantages of use of each algorithm in load balancing in it's own way. IN this paper they talked about different static and dynamic load balancing algorithm. And also about swarm intelligence and types of its algorithm. the particle swarm optimization algorithm can achieve better optimization and efficiency with the simulated annealing (SA) approach

PROBLEM STATEMENT:

Nowadays maintaining the load is the most challenging issue for a researcher in a cloud environment. users of cloud computing are increasing because every organization, government, and education department are moving toward the use of cloud services. Therefore, when many user requests for cloud resources it will result into overloaded system and possible break downs.

as the distribution attributes become more complex and dynamic. To manage that we use some of these load balancing algorithms could become inefficient and cause more overhead than necessary resulting in an overall degradation and affects the services performance. Which lead to the problems for accessing resources for the users.

Conclusion:

We are trying to developed a dynamic load balancing algorithm, whose objective is to utilize the cloud resource in effective way. There are lots of algorithm exist in cloud environment like heuristic based algorithm, metaheuristic based algorithm, conventional approach based algorithm etc. Each algorithm

work on different parameter like makespan time, execution time, response time, resource utilization, throughput etc. and optimize the parameter based on objective function. We proposed a conventional based approach to balance the load in cloud environment using the ACO approach..

Ant Colony Optimization :

Individual ants are behaviorally much unsophisticated insects. They have a very limited memory and exhibit individual behavior that appears to have a large random component. Acting as a collective however, ants manage to perform a variety of complicated tasks with great reliability and consistency.

Although this is essentially self-organization rather than learning, ants have to cope with a phenomenon that looks very much like overtraining in reinforcement learning techniques. The complex social behaviors of ants have been much studied by science, and computer scientists are now finding that these behavior patterns can provide models for solving difficult combinatorial optimization problems.

The attempt to develop algorithms inspired by one aspect of ant behavior, the ability to find what computer scientists would call shortest paths, has become the field of ant colony optimization (ACO), the most successful and widely recognized algorithmic technique based on ant behavior.