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RESEARCH ARTICLE

IMPLEMENTING JOINT IDLE QUEUE ALGORITHM IN CLOUD ENVIRONMENT

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ABSTRACT

Cloud computing is an emerging computing paradigm which involves virtualization, distributed computing, networking, software and web services. Cloud computing stores the data and disseminated resource in open environment. Load balancing is one of the main challenges in cloud environment which aims in optimizing resource use, maximize throughput and avoid overload. It requires distribution of the dynamic workload across multiple nodes to ensure that no single node is overwhelmed. A SQ(d) scheduling algorithms can maintain load balancing and provide minimum job scheduling and resource allocation. In order to gain maximum profits with optimized load balancing algorithms, it is necessary to utilize resources efficiently. So the proposed work address JIQ algorithm which provides efficient performance in load balancing. It effectively reduces the system load, communication overhead at job arrivals and maintains actual response time.

***Index Terms**: Cloud Computing; Load balancing; processer scheduling*

1. INTRODUCTION

Load balancing is the mechanism of distributing the load among various nodes of a distributed system to improve both resource utilization and job response time, also avoiding a situation where some of the nodes are heavily loaded while other nodes remain idle or doing very little work. It also ensures that all the processor in the system or every node in the network does approximately the equal amount of work at any instant of time.

CLOUD COMPUTING

Cloud computing refers to the delivery of computing and storage capacity as an examination to a diverse community of end-recipients. Cloud computing is an internet technology that makes use of both central remote servers and internet, to manage the data and applications. Many businesses and users use the data and application without an installation through the technology. Users and businesses can access the information from any computer system which has an internet connection. Cloud computing supplies more effect by centralized memory, processing, storage and bandwidth.

Types of cloud

Based on the domain or environment in which clouds are used, clouds can be divided into 3 categories:

Public Clouds

It is type of cloud which can be access from anywhere in the world and can be accessed by anyone. Examples of this cloud are Amazon's or Google's cloud which are open to all after specific SLA between user and provider.

Private Clouds

In this type of cloud the specific organization's employee can only get access and it will be accessible only within organization's location and by authenticating each and every user, it is not open to all.

Hybrid Clouds (combination of both private and public clouds)

In this types of cloud are combination of both public as well as private cloud. Most of the commercial use is influenced by this type of cloud. There are three different kinds of services provide by cloud computing, where different services are being provided for the user, such as servers or storage.

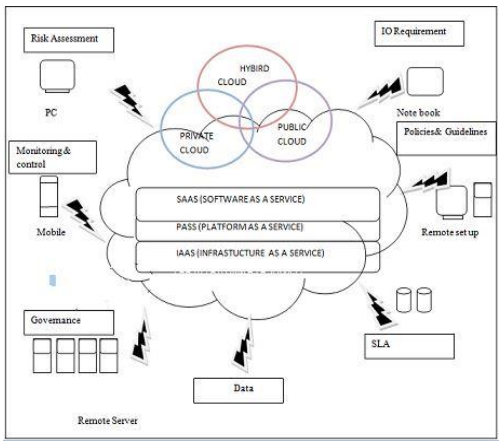

Fig no 1.1Type of cloud

LOAD BALANCING

Load Balancing is a technique in which the workload on the resources of a node is shifts to respective resources on the other node in a network and without disturbing the running task.

Goals of Load balancing

As given in the goals of load balancing are:

- To improve the performance significantly.
- To preserve stability of the system.

- To maintain future modification in the system.

Static Algorithms: Static algorithms divide the traffic equivalently between servers. By this approach the traffic on the servers will be disdained easily and consequently it will make the situation more imperfectly.

Dynamic Algorithms: Dynamic Algorithms provides decisions on load balancing are based on current state of the system. No prior knowledge is needed. So it is better than static approach.

2. RELATED WORKS

Dynamic scheduling and consolidation mechanism were used which allocate sources based on the load of Virtual Machines (VMs) on Infrastructure as a service (IaaS). Develop an effective load balancing algorithm using Virtual Machine Monitoring to verify different concert parameters for the Clouds of different sizes [1]. Many algorithms are available for load balancing like Static load balancing and Dynamic load balancing. Analysis different type of the algorithm which are in pervious method they differentiate various type method used in the existing system [2]. A new VM load balancing algorithm has been proposed and implemented for an IaaS framework in simulated cloud computing environment, 'Weighted Active Monitoring Load Balancing Algorithm' using CloudSim tools [3]. Introducing a different type of innovative algorithms for deciding when a physical host should migrate part of its load, which part of the load must be moved, and where should be moved. The difficulty of answering to these questions is also due to the observation that the performance measures referring to cloud system resources are characterized by spikes and extreme variability to the event that it is impossible to identify stable states if not for short periods [4]. Establish a cloud using two nodes and monitoring resources and also by using the load balancing algorithm design a system that automatically balances the load and shifts the control to another node in the cluster [5].Analysis of different type of algorithms which were in the previous system and evaluating each algorithm and classifying based on their performance [6]. Classified the algorithm based on their through put, Scalability, Resource Utilization, Performance [7].

3. PROPOSED WORK

In this system, load balancing in cloud computing is done by JIQ algorithm. The JIQ is classified into two type Primary load balancing and Secondary load balancing .It is mainly used for reducing the system load effectively, and there is no communication overhead at job arrivals. The main advantage does not increase actual response times.

$\text{Lim}_{n \to \infty} \lambda 0$; JSQ $= \lambda 1 - \lambda = \lambda + \lambda 2 + \lambda 3 + \ldots$

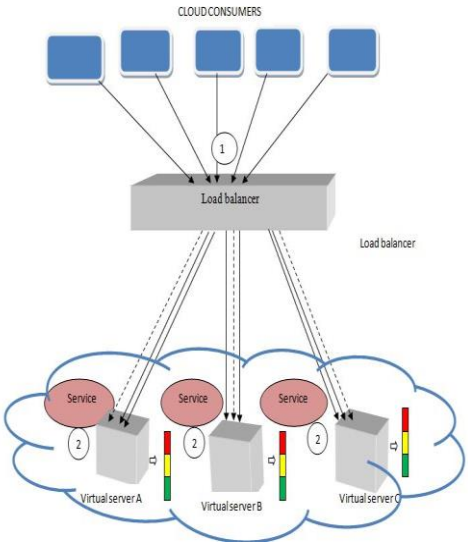

Fig no 3.1 Architecture Diagram

4. EXPERIMENTAL RESULTS AND ANALYSIS

Here load balancing perform as assigning ideal processor to the dispatcher that takes place in reverse direction which reduces average queue length at each processor. After Completion of the initial distribution, it allocates packets to the ideal processor to avoid congestion.

5. CONCLUSION

Load balancing is one of the main challenges in cloud computing. It is required to distribute the dynamic local workload evenly across all the nodes to achieve a high user satisfaction and re-source utilization ratio by making sure that every computing resource is distributed efficiently and fairly. Load balancing techniques that have been discussed mainly focus on reducing associated overhead, service response time and improving performance etc. but none of the techniques has considered the energy consumption and solution. There is a need to develop an energy-efficient load balancing technique that can improve the performance of cloud computing by balancing the workload across all the nodes in the cloud along with maximum resource utilization, in turn reducing energy consumption and increase the throughput.

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