

Load Balancing In Cloud Computing Using Task Scheduling

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ABSTRACT

In recent times and has got lots of attention from media as well as analysts because of the inter-connected and virtualized computers that are provisioned Cloud computing is an idea that allows user to access applications that actually at a remote location other than user's computer or other internet-connected device/s. It has become one of the most talked about technologies opportunities it offers .Cloud computing is a large-scale distributed computing model, which depends on the economic size of the operator of cloud that is abstract, virtualized and dynamic. Virtualization greatly helps in effective utilization of resources and build an effective system. There is no exact definition of cloud but we can define cloud in various ways and by considering various means. According to R. Buy that defines the cloud as Cloud is a parallel and distributed computing system which basically consist of a collection of dynamically and presented as one or more than one unique computing resources based on private cloud establish through negotiation between the service providers of cloud and users .A large number of resources, platforms for computation, data centers, data storages, networks, firewalls and software in form of services are provided by cloud. One of the main features of cloud is virtualization[2]

Keywords : Arduino, Wi-Fi (ESP 8266), Load cell, Database System

I. INTRODUCTION

In recent times and has got lots of attention from media as well as analysts because of the inter-connected and virtualized computers that are provisioned Cloud computing is an idea that allows user to access applications that actually at a remote location other than user's computer or other internet-connected device/s. It has become one of the most talked about technologies opportunities it offers .Cloud computing is a large-scale distributed computing model, which depends on the economic size of the operator of cloud that is abstract, virtualized and dynamic. Virtualization greatly helps in effective utilization of resources and build an effective system. There is no exact definition of cloud but we can define cloud in various ways and by considering various means. According to R. Buy that defines the cloud as Cloud is a parallel and distributed computing system which basically consist of a collection of dynamically and presented as one or more than one unique computing resources based on private cloud establish through negotiation between the service providers of cloud and users .A large number of resources, platforms for computation, data centers, data storages, networks, firewalls and software in form of

services are provided by cloud. One of the main features of cloud is virtualization[2]

1.1. Task Scheduling

Task scheduling is a crucial task in cloud environment. In cloud computing, job scheduling problem is a biggest and challenging issue. Maintaining the efficiency and fairness among the jobs and reduce the execution cost and at the same time improve the performance and quality of service is the main aim of job scheduling algorithm. An efficient job Scheduling strategy must aim to yield less response time so that the execution of submitted jobs takes place within a possible minimum time.[6] There are various scheduling strategies which should take care of all these things. But no such strategy exists which is concerned with both the users point of view as well as service providers point of view.

Cloud consists of a number of resources that are different with one other via some means and cost of performing tasks in cloud using resources of cloud is different so scheduling of tasks in cloud is different from the traditional methods of scheduling and so

scheduling of tasks in cloud need better attention to be paid because services of cloud depends on them. Task scheduling plays a key role to improve flexibility and reliability of systems in cloud. Scheduling is nothing but the mapping of tasks and resources in accordance with some certain principles for achieving the desired goal [5].The scheduling of tasks in cloud means use the best suitable resource available for execution of tasks to allocate computer machines to tasks in such a manner that the completion time is minimized as possible[4]

1.3.Literature Survey

1)“Load Balancing Task Scheduling based on Genetic Algorithm in Cloud Computing”- This paper mention d regarding the scheduling and load balancing. To solve the matter, considering the new characteristics of cloud computing and original adaptive genetic algorithmic program (AGA) a brand new scheduling algorithm supported double-fitness adaptive algorithm-job spanning time and load balancing genetic algorithm (JLGA) is established. Then compare the performance of JLGA with AGA through simulations[14]

2) “Hybrid Job Scheduling Algorithm for Cloud Computing Environment”- In this paper with the assistance of genetic formula and fuzzy theory, describe a hybrid job planning approach, that take under consideration the load feat of the system and reduces total execution time and execution value. the main goal of the analysis is to assign the roles to the resources with considering the VM unit of measuring and time-span of jobs. The results of the experiments shows the potency of the planned approach in term of finishing time, execution value and average degree of inequity

3)“Host Scheduling Algorithm using Genetic Algorithm in Cloud Computing Environment”- This paper represents that cloud computing may be a paradigm within which IT (information technology) application offer as a service. Cloud computing permits users to utilize the computation, storage, knowledge and services from round the world in commercialize manner. In cloud atmosphere, scheduling is that the major issue. scheduling is responsible economical utilization of the resources. during this paper, a

scheduling model based on minimum network delay using Suffrages Heuristic coupled Genetic algorithm for scheduling sets of freelance jobs algorithm is projected, the target is to reduce the makespan.

1.4. Description of Cloud System,Load Balancing

i. Cloud System

Mainly, cloud computing means storing and accessing data and programs over the internet as an alternative of the computer’s hard drive[10].The cloud is just a comparison for the Internet. It goes back to the days of flowcharts and presentations that would represent the gigantic server-farm infrastructure of the Internet as unknown but a puffy, white cumulonimbus cloud, accepting connections and doling out info as it floats. [7][9]

Cloud computing characterizes a real model shift in the way in which systems are arranged. The gigantic scale of cloud computing organizations was enabled by the popularization of the Internet and the enlargement of some large service companies. Cloud computing makes the long-held dream of utility computing possible with a pay-as-you-go, SLA type infinitely scalable, universally available system.[8] With cloud computing, anybody can start very small and become big very fast. That's why cloud computing is radical, even if the technology it is constructed on is evolutionary.[3]

II. SYSTEM ARCHITECTURE

Load Balancing is firstly distributed by cost. Because Cloud computing is costly. When someone pays, then the scheduling System gives high priority to the most paid user. [13]

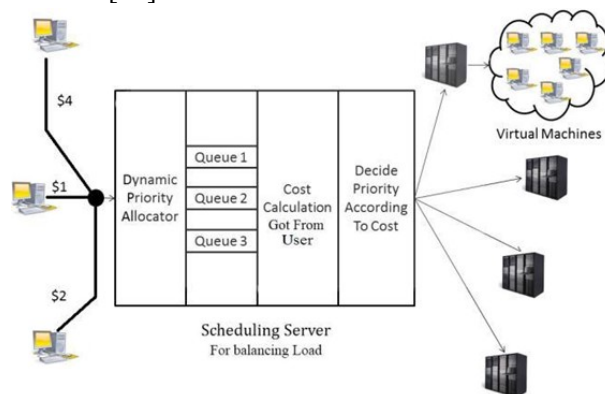


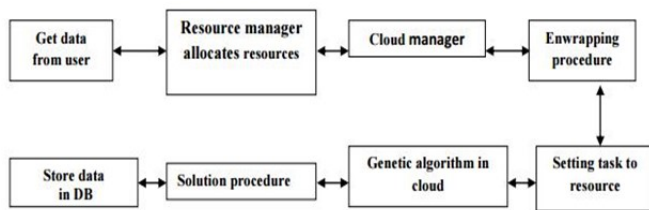
Figure 1. Scheduling server for balancing load in cloud computing.

We are referring this architecture in our paper. In that architecture we are divided task by using file size . In this they are divided the task at the server side as per cost . Who pays high cost that gives high priority. For the dynamic allocator using FCFS or RR algorithm.

III. EXISTING SYSTEM

As single server cannot handle the load of various clients, also IP spoofing takes place and client sends multiple requests unnecessarily to the server which increases the load on server. So this system allocate clients limit i.e. the particular client can send requests limited times to the particular server reducing the load of server.

- IP spoofing attack increases
- More time required



1. Login the user for authentication to begin the load balancing system.
2. Check the authorization
3. choose the load balancing algorithm program to keep the load
4. provide the amount of nodes to process the iterations.
5. Calculate fitness for every and each individual.
6. Apply mutation with possibility and mutation rate.
7. stop

Existing Algorithm

i) Efficient Task Scheduling Algorithm [11]

In this paper describe as the efficient algorithms like Static scheduling algorithms resend that all tasks arrive at the same time and they are autonomous of the system supply is states and their access location. The static heuristics include the basic simple scheduling approaches like First Come First Serve and Round Robin methods. FCFS methods assembles the tasks and queues them until resources are presented and once

they become available the tasks are allocated to them based on their arrival time. It is less complex in nature but does not consider any other criteria for scheduling the tasks to machines.

ii) Agent Based Task Scheduling [12]

Derived Min-Min and Max-Min Algorithms are two other heuristic methods used for task scheduling. Min-min heuristic selects the lowest task first from all the available tasks and gives it to a machine which gives the minimum completion time for that task. It growths the total completion time of all the tasks and hence increases the make span. But it does not consider load of the machines before scheduling as simply conveying smaller tasks on faster machines. Here the predictable completion time and completing time for a task are considered to be almost same values or close values. The long tasks have to wait for finalizing the execution of smaller ones. But the method improves the system's overall quantity.

IV. PROPOSED SYSTEM

Disadvantages

In this system single server is divided into different servers and o Increase the load of server they are connected to the processing unit. The client requests are first sent to the processing unit which processes the requests and uses the task scheduling algorithm to checks the load on each server; similarly it sends the request to the server which is free or has less number of requests. Due to this the load is balanced and requests are also processed.

Advantages

Load server decreases
 Less time required
 No software required
 Increased data reliability

V. RESULTS AND DISCUSSION

Let us analyze the average load on a server when above approach of randomly picking server is used.

Let there be k request (or jobs) J_1, J_2, \dots, J_k Let there be n servers be S_1, S_2, \dots, S_k .

Let time taken by i'th job be T_i
 Let R_{ij} be load on server S_i from Job J_j .
 R_{ij} is T_j if j'th job (or J_j) is assigned to S_i , otherwise 0.
 Therefore, value of R_{ij} is T_j with probability $1/n$ and value is 0 with probability $(1-1/n)$
 Let R_i be load on i'th server

Average Load on i'th server 'Ex(R_i)'
[Applying Linearity of Expectation]
$= \sum_{j=1}^k Ex[R_{ij}]$
$= \sum_{j=1}^k T_j/n$
$= (\text{Total Load})/n$

So average load on a server is total load divided by n which is a perfect result.

What is the possibility of deviation from average

The average load from above random assignment approach looks good, but there may be possibility that a particular server becomes too loaded (even if the average is ok). It turns out that the probability of deviation from average is also very low. Readers can refer below reference links for proves of deviations. For example, if there are 2500 requests per unit time and there are 10 servers, then the probability that any particular server gets 10% more load is at most 1/16000.

VI. CONCLUSION

Cloud computing system is used to scale the application by maximizing the concurrency and using the resources efficiently. The approach takes time utilization and resource utilization into consideration and hence results in high signification. This paper can do better load balancing algorithm as compared to other load balancing algorithm.

VII. REFERENCES

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