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Enhancement of Load Balancing Algorithm Using Time Allocation Pattern for Public Cloud Environment

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ABSTARCT

Advancement of neural network weights and engineering is an intricate and imperative undertaking in directed learning process. Different authors proposed a strategy for preparing the neural network by swarm advancement. They utilize the likelihood property of molecule swarm algorithm and not adhered in neighbourhood least to enhance the weights got by the neural network. During the time spent preparing weights of a neural network, a particular engineering is normally utilized for the network with a settled number of concealed layers and settled number of neurons in every layer. At that point, preparing procedure of the network weight is started with that engineering and, toward the end; an indistinguishable design from the starting one is accessible. The procedure was again preceded as said in the past area. The best characterization exactness will be acquired, in light of the fact that it is hazy which structure is the best structure for the sought neural network.

Keywords: Cloud Computing, Load Balancing, Graph Theory, GA, PSO.

INTRODUCTION

Computing is being transformed to a model consisting of services that are commoditized and delivered in a manner similar to traditional utilities such as water, electricity, gas, and telephony. In such a model, users access services based on their requirements without regard to where the services are hosted or how they are delivered. Several computing paradigms have promised to deliver this utility computing vision and these include cluster computing, Grid computing, and more recently Cloud computing. The latter term denotes the infrastructure as a ‘‘Cloud’’ from which businesses and users are able to access applications from anywhere in the world on demand. Thus, the computing world is rapidly transforming towards developing software for millions to consume as a service, rather than to run on their individual computers. Providers such as Amazon, Google, Salesforce, IBM, Microsoft, and Sun Microsystems have begun to establish new data centers for hosting Cloud computing applications in various locations around the world to provide redundancy and ensure reliability in case of site failures. Since user requirements for cloud services are varied, service providers have to ensure that they can be flexible in their service delivery while keeping the users isolated from the underlying infrastructure. Recent advances in microprocessor technology and software have led to the increasing ability of commodity hardware to run applications within Virtual Machines (VMs) efficiently. VMs allow both the isolation of applications from the underlying hardware and other VMs, and the customization of the platform to suit the needs of the end-user. Providers can expose applications running within VMs or provide access to VMs themselves as a service (e.g. Amazon Elastic Compute Cloud) thereby allowing consumers to install their own applications. While convenient, the use of VMs gives rise to further challenges such as the intelligent allocation of physical resources for managing competing resource demands of the users.

II. PROPOSED ALGORITHM

In this section discuss the load balancing model using time allocation and graph-based technique. The graph-based technique computes the all capacity of virtual machine for the allocation of time. The total capacity of machine dedicated to the corresponding machine for the processing of balancing. The process of balancing describes here.

1. Find capacity loads of all VMs based on the three conditions define in graph allocation job is under load.
   If $DIJ <= T\alpha$
   Loader is balanced.
   Exit
2. Create the decision node for allocation
   If T > maximum capacity
   Load balancer not working
   Else
   Call allocation process.
3. Share all virtual machine capacity
4. Call decision factor:
   Create node of VMs

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$$supply\ of\ VMS = Maximumm\ Capacity - \frac{Load}{Capacity}$$

Demand of each machine in node is

$$demand\ of\ wi_j = \frac{Load}{Capacity} - Maximumm\ Capacity$$

While Ta $\neq \varphi$ and WIJ $\neq \varphi$

For s=1 to # (Ta) do

Sort all VMs

For each task T in VMs find machine $VM_d \epsilon\ Ta$ such as

$Ta \rightarrow VM_d \mid \min(\sum T) \in VM_d$ and $Load_{VM_d} \leq Capacity_{VM_d}$

If (T is allocated time)

$T_u \rightarrow VM_d \mid \min(\sum T_h) \in VM_d$

$T_o \rightarrow VM_d \mid \min(\sum T_h + \sum T_m) \in VM_d$

$T_i \rightarrow VM_d \mid \min(\sum T) \in VM_d$

$T_l \rightarrow VM_d \mid \min(\sum T) \in VM_d$

The controller of graph controls all load according to their three allocation process according to dedicated time for the termination of job.

III. PROPOSED MODEL

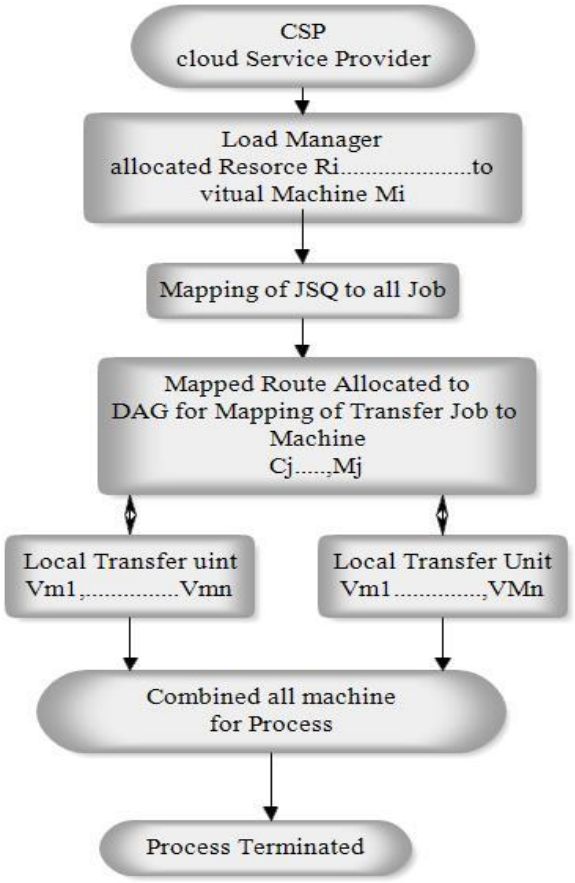

Figure 1: proposed model of cloud load balancing based on JSQ algorithm.

IV. SIMULATION AND RESULT ANALYSIS

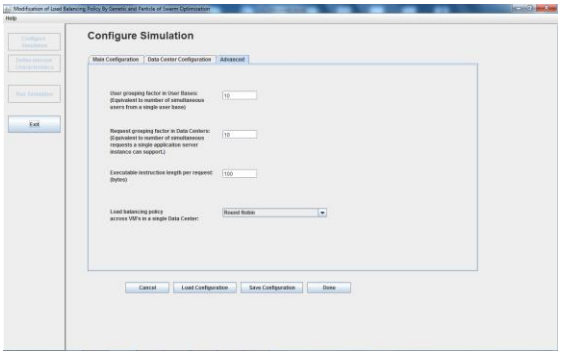

Figure 2: Shows the selection of Method for applying on selected data in Cloud Computing Environment.

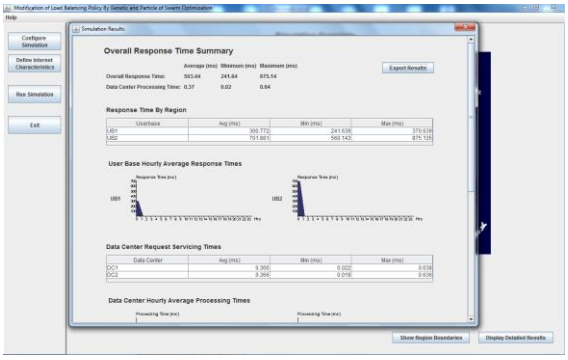

Figure 3: Shows the response time and processing time for Round Robin Method in Cloud Computing Environment.

Data Set	Overall Response Time		Data Center Processing Time	
UB1 DC1	Average	300.772	Average	0.366
	Minimum	241.639	Minimum	0.022
	Maximum	370.639	Maximum	0.638

Table 1: Shows the Response Time and Processing Time analysis for Round Robin Method.

Data Set	Overall Response Time		Data Center Processing Time	
UB1 DC1	Average	300.772	Average	0.366
	Minimum	241.639	Minimum	0.022
	Maximum	370.639	Maximum	0.638

Table 2: Shows the Response Time and Processing Time analysis for GA Method.

Data Set	Overall Response Time		Data Center Processing Time	
UB 1 DC 1	Average	300.769	Average	0.365
	Minimum	241.639	Minimum	0.022
	Maximum	370.639	Maximum	0.638

Table 3: Shows the Response Time and Processing Time analysis for PSO Method.

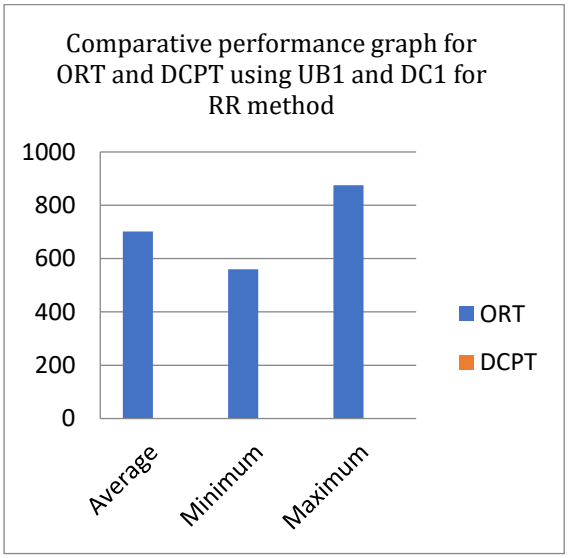

Figure 4: Shows the comparative performance of ORT and DCPT for UB1 and DC1 using Round Robin Method in terms of Average, Minimum and Maximum values in mili seconds.

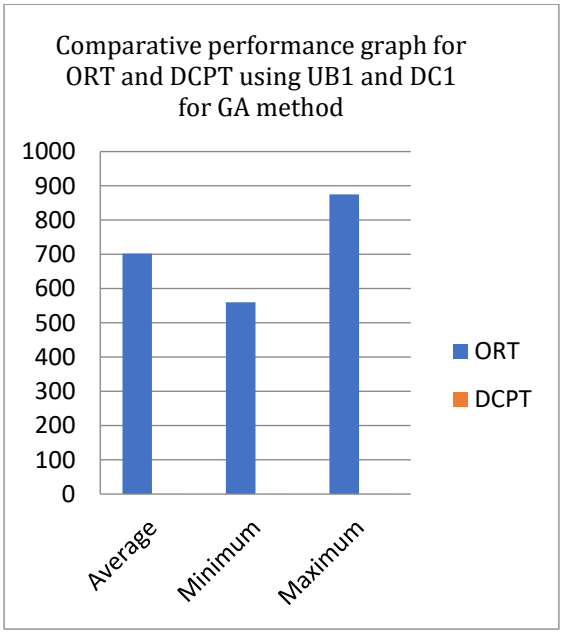

Figure 5: Shows the comparative performance of ORT and DCPT for UB1 and DC1 using GA Method in terms of Average, Minimum and Maximum values in mili seconds.

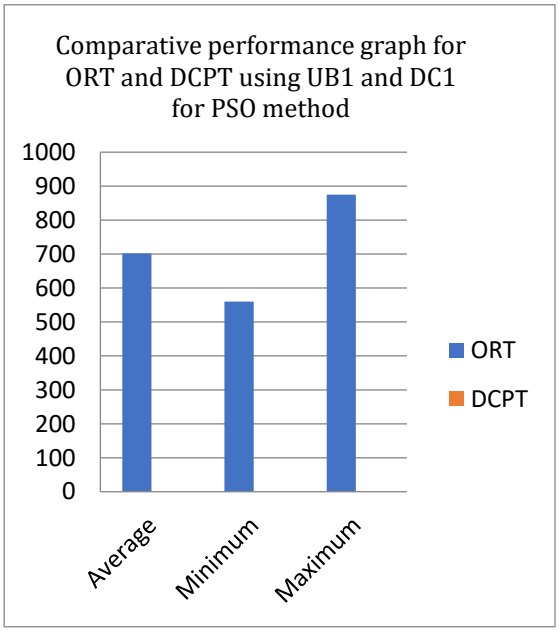

Figure 6: Shows that the comparative performance of ORT and DCPT for UB2 and DC2 using proposed PSO Method which shows the better processing and response time than methods such as round robin and GA in terms of Average, Minimum and Maximum time in mili seconds.

V. CONCLUSIONS AND FUTURE WORK

The load balancer plays a major role in cloud-based services. The cloud-based services interact with user and dedicated cloud infrastructure. The interaction of user and cloud operation request to transfer the load to virtual machine and other resources. For the improvement of load efficiency in cloud computing various researcher and cloud designer used swarm-based job and task scheduling technique. The swarm-based task scheduling technique is very efficient in compassion of old and traditional technique such and FCFS and round robin technique. In this dissertation used JSQ algorithm and DAG allocation for load balancing policy in cloud environments. The IJSQ optimization set the diverse property of virtual machine and request job. The define fitness constraints function partially allocated job for dedicate machine and the distribution of job according to the process job scheduler. For the evaluation of performance used cloud simulator software such is called cloud analyst. The cloud analysis software is bag of composition of cloud environment and load balancing policy. In scenario of policy design two services one is JSQ policy and other is IJSQ based policy. The IJSQ based policy reduces the load effect approx. 5-10% in compression of JSQ

algorithm. The JSQ and DAG based load balancing policy is very efficient for the proper allocation of job according to dedicated virtual machine. The partial allocation of job allocation policy faced problem of minimum time span. The minimum time span factor effects the efficiency factor of proposed policy.

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