CLOUD LOAD BALANCING AND DATA SHARING APPROACH OVER MULTIPLE VIRTUAL MACHINE

Tripti Shrivastava[1], Raj Kumar Paul[2]
[1]P G Student Vedica Institute of Technology, [2]Assistant professor
Bhopal (M.P.)
tripti88.karwi@gmail.com

ABSTRACT : Cloud Environment is work on internet based computing environment. Variety of users, use this environment as per their requirements. Cloud computing and data store provide the mechanism to understand and accessibility to third party storage system. Enterprises utilize the environment of the cloud in various provided service model such as SaaS, PaaS, and IaaS and cloud available usable models (private, Public, hybrid, and community). Cloud data security and its usage over the different component, its accessibility, its sharing over the components make use of data center, third party access and other provided components. There are often components which make use of security concept, data workload sharing & balancing approach over the given paradigm. There are data workload sharing & balancing approach is also given which make use of resources in proper manner. Data workload sharing & balancing technique make use of existing resources in such a way that it takes distribution accordingly. Current provided and working dissertation works on the comparison of the performance of existing Round Robin and Throttle data workload sharing & balancing with proposed load sharing given algorithm. To optimize and measure over the performance of any algorithm in virtual environment comparison parameters which are like throughput, response computation time and waiting time are considered.

Keywords: Load balancing, cloud computing, data sharing, Throughput, computation analysis.

INTRODUCTION

These equipment's, available on-demand IT usable entitiess, are created and disposed of efficiently, are auto completing using the different variable available programmatic data UI and billing is according to its working and measurable component usage. In a traditional hosted environment, usable entitiess are allocated based on peak load requirements [3]. As Cloud environment data store & its Computation is emerging as a good means to leverage available remote usable entitiess in a flexible, cost effective manner with its scaling way thanks to a usage-based available here a cost model, one option from the available critical concerns that directly impact the adoption working rate of the scenario Cloud paradigm is security [4].

Technologies like system virtualization have become initially and over widely adopted to offer computing usable entitiess as a service, allowing the dynamic spawn from the given virtual machine and in the datacenter's connected nodes and its communicationing infrastructure [1]. One service model of cloud is designated as software as a service (SaaS) when offered by a provider into the group of set users, has caught the attention of attackers which try to exploit on their working vulnerabilities [5].

RELATED WORK

In Cloud Approach and its computation scenario various on-demand usable components are provided to the user to execute their operations. But scheduling mechanism is necessary to provide proper allocation of the usable components. There are various data workload sharing & balancing Approach are used to manage load in Cloud Approach and its computation scenario usable components. Approachs like ACO (Ant Colony Optimization), Genetic Algorithm, etc. are used to provide optimal solution for the resource allocation problems. A brief review over the Approachs which used to conduct the data workload sharing & balancing operation in Cloud Approach and its computation scenario.

Proposed Cloud load balancing energy balancing for Cloud

Proposed CLBEB load balancing is a non-pre-emptive discipline, in which clustering of cloudlets and virtual machines is done on some criteria like cloudlets size and available resources of virtual machine. And then cloudlets are mapped to appropriate virtual machine for their execution which prevents unbalancing of cloud load and cloudlet lost. This algorithm is mainly focused on the proper distribution of cloudlets among the available virtual machines in such a way maximum performance can be achieved. This algorithm basically works in four steps. In first step the creation of virtual machine and cloudlets are perform and second it finds the virtual machine for the deployment. In third step cloudlets distribution is perform in a proposed manner. And in case of ambiguity of virtual machine when all having same number of cloudlets randomly assign one of them for Cloudlets if the storage capacity is available otherwise create new virtual machine from the container.

CLBEB Design Architecture

The algorithmic form of the proposed CLBEB for cloud computing is shown below where input parameters for the CLBEB algorithm is Vm, CLi and Ubi represents virtual machine, cloudlet and userbase respectively. Output parameters of the algorithm is total cost, overall response time and virtual machine statistics which is shown as output of CloudAnalyst simulator tool.
It explained the working of proposed algorithm in cloud environment and the design architecture of the CLBEB algorithm for cloud computing.

ALGORITHM PSEUDO CODE (CLEBE)

Input: VMi-n, DC i-n, Allocation policy , Th value

Output: Load sharing, computation time, cost.

Process:

Begin-

CLBEB() {

foreach(Vm i-n)

Load all the data process;

Loading all current energy volume;

Initialize energy data ;

If(Energy Data> Th)

{

Process allocation;

Process Execution;

Compute parameter;

Re-compute current data and set status;

}

Return time t and cost c;

} End;

The above Pseudo code demonstrate the detail process over the computation component, the processing of data over Vm and Dc is shown.

A threshold value is used to compute the allocation verification on existing virtual machine node. Thus the decision based on the current machine is taken and forwarded to best fit virtual machine.

Flow Chart:

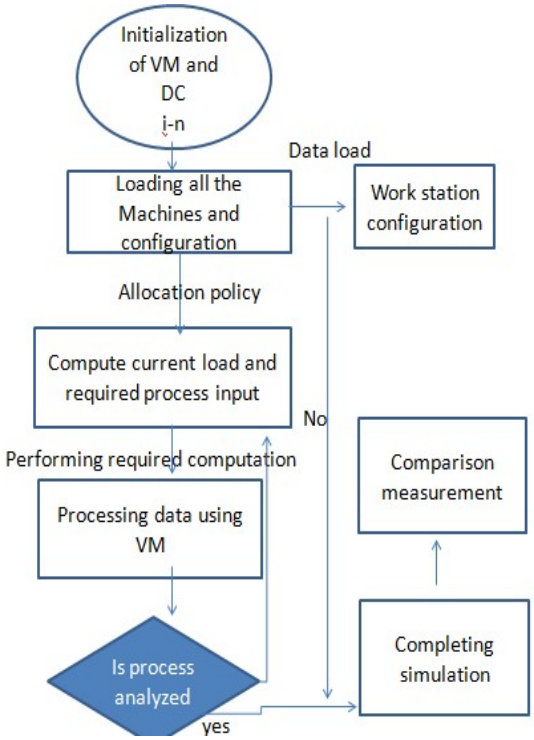

Figure 1: Flow diagram of execution process

In the figure 1 above, a complete execution process is shown above.

EXPERIMENT AND RESULT COMPARISON ANALYSIS

An experiment using the cloudanalyst environment on configuring the existing and proposed algorithm is used by us. A system configuration over the multiple unit of virtual machine is monitored and further result analysis with proposed approach is computed.

After executing the considered algorithms, result are obtain by using various number of virtual machine (25, 50, 75, 100 respectively) in cloud scenario. And a comparison analysis among these algorithms is performed on the basis of task completion time and cost. These comparison is explained in tabular form as following:

- **Comparison among algorithm on the basis of time:**

VIRTUAL MACHINE	PROPOSED ALGORITHM TIME (ms)	ROUND ROBIN TIME (ms)	THROTTLE TIME (ms)
VM25	65.43	71.34	73
VM50	111.32	117.6	121.67
VM75	221.5	291.47	290
VM100	289.8	294.6	291.3

Table 1Time Comparisonamong Algorithms

Table 1 shows the comparison among different considered algorithms with respect to completion time.

Comparison among algorithm on the basis of cost:

VIRTUAL MACHINE	PROPOSED ALGORITHM COST(in $)	ROUND ROBIN COST (in $)	THROTTLE COST (in $)
VM25	13.32	14.54	14.76
VM50	23.67	25.9	25.2
VM75	54.32	57.61	58.32
VM100	65.54	67.3	69.2

Table 2 Cost Comparison among Algorithms

Table 2 shows comparison among different considered algorithms with respect to cost.

Results

- **Time based comparison:**

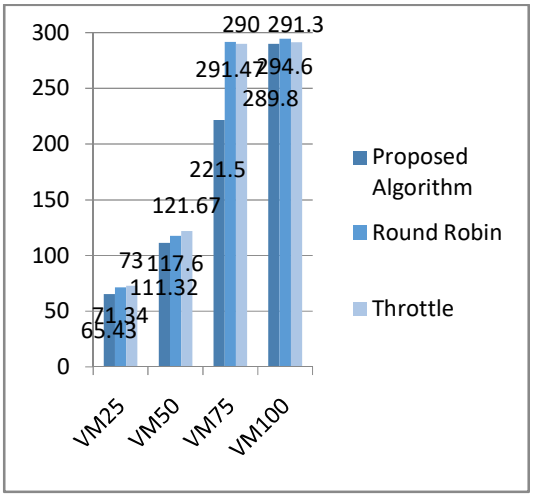

Figure 2 Time based comparison among LB algorithms

In the Figure 2 shows the graph among proposed, RR and throttle load balancing algorithm with respect to time for varying number of virtual machines.

Here overall comparison between proposed and existing two algorithms Round Robin and Throttle in cloud environment. It also represent the graph of proposed algorithm, RR and Throttle with respect to time and cost.

CONCLUSION The proposed algorithm used enhanced version of SVM for load balancing approach over the cloud data centre and its component. SVM used its rule optimization and processing technique through which data observation , process optimization and process navigation can be perform easily. The proposed technique analyse the comparison performance with round robin and throttle approach of load balancing over cloud component. Thus it is observed that the proposed Enhance SVM utilize

its process for efficient load balancing technique.In work a cloud load balancing mechanism is proposed by us using which a efficient resource utilisation with proper management is performed. Effective comparison parameters were monitored and through which it is observed the efficiency of our algorithm . Our work found best while comparing with existing mechanism in same work flow manner. An approach is performed on CPU i5 with 4 GB of RAM and 1 TB of hard disk to execute the environment with different algorithm. This is the approach which proven as best with different available environment. Thus the approach can be used with real time provider such as Amazon AWS cloud, Microsoft Azure over which different data centre can maintain load balancing over distributed architecture. An deployment on realtime server is kept for the further future studies.

REFERENCES

[1]. Tinghuai Ma, Ya Chu, Licheng Zhao & Otgonbayar Ankhbayar, "Resource Allocation and Scheduling in Cloud Computing: Policy and Algorithm"IETE Technical review Volume 31, Issue 1, January 2014, pages 4-16

[2]. B. P. Rima, E. Choi, and I. Lumb, "A Taxonomy and Survey of Cloud Computing Systems", Proceedings of 5th IEEE International Joint Conference on INC, IMS and IDC, Seoul, Korea, August 2009, pages 44-5l.

[3]. Nidhi Jain Kansal, Inderveer Chana, "Cloud Load Balancing Techniques: A Step Towards Green Computing", IJCSI, Vol. 9, Issue 1, January 2012.

[4]. Hitesh Bheda, Hiren Bhatt," An Overview of Load balancing Techniques in Cloud Computing Environments",Research gate JANUARY 2015.

[5]. Sukhvir Kaur, Supriya Kinger "Review on Load Balancing Techniques in Cloud Computing Environment", International Journal of Science and Research (IJSR) 2015.

[6]. Dr. Amit Agarwal, Saloni Jain "Efficient optimal algorithm of task scheduling in cloud computing environment" International Journal of computer Trends and Technology (IJCTT).

[7]. J. M. Galloway, K. L. Smith, and S. S. Vrbsky, "Power aware load balancing for cloud computing," in Proceedings of the World Congress on Engineering and Computer Science, vol. 1, pp. 19–21, 2011.

[8]. S. Sethi, A. Sahu, and S. K. Jena, "Efficient load balancing in cloud computing using fuzzy logic,"IOSR Journal of Engineering, vol. 2, no. 7, pp. 65–71, 2012.

[9]. T. Kokilavani J.J. College of Engineering & Technology and Research Scholar, Bharathiar University, Tamil Nadu, India, "Load Balanced Min-Min Algorithm for Static Meta-Task Scheduling in Grid Computing"International Journal of Computer Applications (0975 – 8887) Volume 20– No.2, April 2011.

[10]. Zenon Chaczko, Venkatesh Mahadevan, Shahrzad Aslanzadeh, Christopher Mcdermid (2011),"Availabity and Load Balancing in Cloud Computing" International Conference on Computer and Software Modeling IPCSIT vol.14 IACSIT Press,Singapore 2011.

[11]. S. Wang, K. Van, W. Liao, and S. Wang, "Towards a Load Balancing in a Three-level Cloud Computing Network", Proceedings of the 3rd IEEE International Conference on Computer Science and Information Technology (ICC SIT), Chengdu, China, September 2010, pages 108-113.

[12]. Ms.Nitika, Ms.Shaveta, Mr. Gaurav Raj; "Comparative Analysis of Load Balancing Algorithms in Cloud Computing", International Journal of Advanced Research in Computer Engineering & Technology Volume 1, Issue 3, May 2012.

[13]. YashpalsinhJadeja, KiritModi, 2012 "Cloud Computing Concepts, Architecture and Challenges"International Conference on Computing, Electronics and Electrical Technologies, IEEE, pp: 4112.

Tripti Shrivastava is a post graduate student in computer science of engineering department of Vedica Institute of Technology Bhopal, India. She received his bachelor in computer science and engineering from the RKDF Bhopal, India. Her research interests include localization in Cloud Computing.

Raj Kumar Paul is working as Assistant professor in CSE department at Vedica Institute of Technology, RKDF University, Bhopal, India. His areas of research interest include localization, data aggregation in wireless sensor networks.