A Cloud Migration Policy Using Current Resource Utilization & Timed Factor over Cloud Architecture

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Abstract— Cloud computing environment provides a high end service to the user which helps enabling the efficient data packet processing. An advance architecture help processing the execution with commutative components. Data center, virtual machine and Host configuration in a connected architecture help building solution for the data packet processing. Cloud computing use efficient scheduling and migration approach for their component utilization economically. Energy optimization & cost optimizations are the primary factor for any of the end service user. Challenges monitored with the given algorithms by authors in dynamic allocation and statistic monitoring. The resources covered by the utilization and its monitoring exhibit an important scenario which need to be dynamic for acquiring proper utilization of all the resources. In this research work an adaptive resource monitoring, times factor for request completion and their utilization is considered. A cost computation of utilized resource and finding an energy optimal solution from the given resources is proposed in the given research. The simulation is performed over cloudsim API with given workload. A cloud configuration setup of multiple VM and policy implementation is performed. The outcome observed shows the efficiency of proposed algorithm over the tradition policy allocation technique for cloud migration. The outcome research results are improved up to 9% while comparing with previous solution.

Index Terms— Allocation, CloudSim API, Virtual Machine, Data Center, Host Configuration, Task Cloud Computing Environment, Cloud Migration, Energy Optimization, Cost Optimization, Dynamic Analysis, Component Utilization.

1 INTRODUCTION

The Cloud Computing is a dynamic term, which provides dispute free data outsourcing facility which prevent the user from burdens of local storage issues. However, security is perceived as a biggest issue and poses new challenges related to providing secure and reliable data archive over unreliable service providers.

Cloud computing is the name stated to the latter trend in computing service provision. With this trend the way of computing has gone for a sea change. Cloud computing is an emerging paradigm.

Distributed computing is turned out to be prominent as a result of above say administrations offered to clients. Every one of the administrations proffered by servers to clients are given via cloud specialist co-op (csp) that's functioning same as the ISP(Internet Specialist Organization) within the web figuring. Inside the web innovation, a few imaginative advancement in virtualization and dispersed figuring and getting to the high-speed connect to minimal effort draw in the focus of clients regarding the present technology. That innovation is designed using the new idea of administrations afford to clients without obtaining of the particular administrations as a consequence put away in their nearby memory.

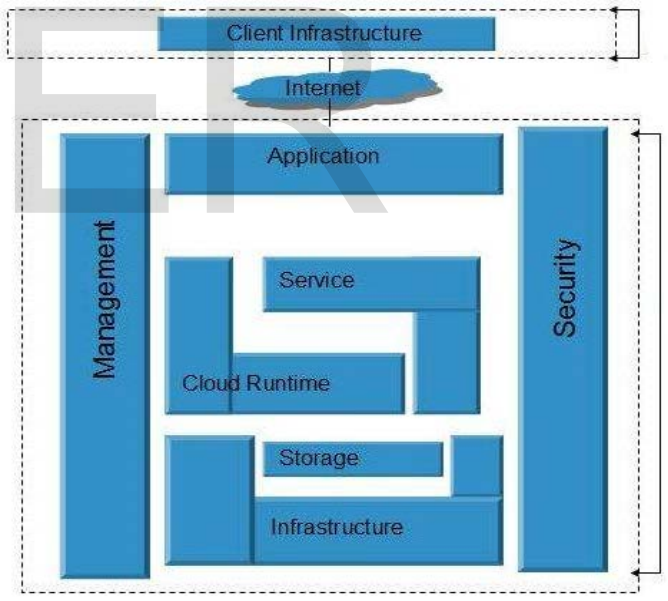


Figure 1.1: Cloud Architecture.

CLOUD SERVICE MODELS

The administrations gave by powerful distributed computing are separated via three all around acknowledged classes those are Infrastructure-as-a-Service [2] (IAAS), Platform-as-a-Service (PAAS) and Software-as-a-Service(SAAS). Fundamentally, these three administration models are complementary to one another and planned 3-levels engineering.

1. INFRASTRUCTURE-AS-A-SERVICE (IAAS)

This is often a first and base layer of the3-level design. It is utilized to give a network to interfacing clients and servers and

further more gives virtual machines to begin, stop, get to as well as arrange virtual servers and capacity squares. Pay-per-utilize benefit is actualized at the present layer of the 3-level engineering. Cases of IaaS are Amazon EC2, Windows Azure, Rack Space, Google Compute Engine etc.

2. PLATFORM-AS-A-SERVICE (PAAS)

This is asecondor center layer of the 3-level design. In view of this model, a stage is given to clients who normally incorporates an operating framework, programming dialects, execution conditions, databases, lines as well as web servers. Illustrations are AWS Elastic Beanstalk, Heroku, Force.com and Google App Engine.

3. SOFTWARE-AS-A-SERVICE (SAAS)

This is often a third or uppermost layer of the 3-level engineering. The present model gives "on-request software's" to clients without establishment setup as well as running of the applications. Clients need in order to pay and utilize it through a few customer. Illustrations are Google Apps and Microsoft Office365.

2 Related Work

Cong Wang, Member, IEEE, Shermans.m.chow, Qian Wang-FEB 2013, IEEE

They proposed a work TPA to carry out surveys in order to get various customers at the same time and successfully they performed bunch assessing support where various records might be verify without learning of data to the TPA including cloud. Expansive security as well as execution examination exhibit the suggested plans are provably secure as well as exceedingly successful. They have been able an extraneous analyst to survey customer's cloud data without taking in the data composition, various substituted assessing errands originating at the various customers could be accomplished in the mean time through the TPA within a security. Sparing way, MAC based setup has been accomplished along with hashing computation is used in order to proceed assessing even though in them time managing the data.

S. Frey and w. Hasselbring, the cloudmig method: version-based totally absolutely migration of software structures to cloud-optimized applications

In this paper author explains about The significant advantage based on movement which permits the supplier (SaaS supplier) which recycles characteristic segments for framework is good in several conditions as opposed to building programming applications starting with no outside help. Notwithstanding, there are various differing essential obstructions that hinder the movement of utilizations. Current methodologies don't bolster programmed movement for the cloud condition and are extremely constrained to specific cloud situations.

R. N. Calheiros, r. Ranjan, a. Beloglazov, c. A. F. De rose, and r. Buyya, cloudsim: an tool compartment for showing and growth of cloud getting prepared conditions and assessment of desired angle provisioning figurings

They talk about upgrades of the CloudSim device to help cloud movement from the cloud clients' perspective. The delivered improvements are relevant and precise contrasted with the arrangement of the Amazon Elastic Compute Cloud (EC2) as for expenses and execution. Along these lines show an apparatus based approach known as CDOSIM for reproducing expense and execution regarding the reaction time of cloud sending choices to help programming framework relocation.

Abdelmaboud, d. N. A. Jawawi, i. Ghani, a. Elsafi, and b. Kitchenham, nature of affiliation procedures in cloud getting ready.

In this paper author clarifies about the Architecture-based approach an engineering based approach should be versatile amid change runtime relocation with a specific end goal to help the move of utilizations or programming frameworks to cloud situations. Be that as it may, extremely restricted design based methodologies have been proposed in the writing significant to cloud movement improvement. Author proposes a structure that can be utilized to set up a plan of framework, work process and sending, and improvements. The proposed arrangement enhances the adaptability of organization in view of client level virtualization by separating a programming.

Zhifeng Xiao and Yang Xiao,IEEE June 2013 conference – "Security and Privacy in Cloud Computing"

They have managed distinctive property order, uprightness, openness, duty, and insurance preservability and played out the diverse security concern issues in viewpoints, makers have methodicallly analyzed the security and assurance issues in disseminated registering in light of a quality driven framework, we've recognized the most illustrative security/security attributes (e.g., mystery, dependability, availability, obligation, and insurance preservability), and likewise deliberating the vulnerabilities, that could be manhandled through adversaries remembering the ultimate objective to perform distinctive ambushes.

3 PROBLEM IDENTIFICATION

The current algorithm have worked with limited or single phase of resource utilization. The working of multiple resources monitoring and energy optimization while cloud migration is not performed over the traditional approaches.

There are many limitation were monitored which is understand by the literature and hence they are recommended to work for further extension. Here some limitation discuss is performed. Problem execution part in circulating data among the given virtual machine and other components.

1. Current Approaches either worked with Utilization of CPU or current process over the cloud environment.

2. Bandwidth, focusing on the number of VM, host participation and number of dynamic allocation and cloud migration is not performed.

3. Current algorithms only focused while migration and exchanging its position from one host to another.

4. No pre-information regarding the available resources and their usage such as virtual machine use, cpu usage and cloud data center usage at the time of data upload. Such scenario keep avoiding in processing data.

5. No computation of specific service capacity is performed, which keep avoiding the heavy burden on specific machine.

6. It takes long computation time which is further need to minimize in multiple tenancy system.

7. Virtual Machineskeeps updating and usage for the past log based, thus a proper and updated log dependency is need to work.In this section previous approach limitations are discussed which is further need to investigate and update in future approach.

4 PROPOSED WORK

An Algorithm proposed Dynamic RACMU (Resource Aware Cloud Migration & Utilization analysis) is given, which enable processing and monitoring of multiple available component and compute a cost value associate with each incoming request and possible energy utilization of an request. Thus the analysis help in understanding of current statistics and finding outcome of proposed scenario with cloud migration on requirement. Dynamic resource utilization always provide an effective and current stats of cloud to out perform required migration.

PROPOSED ALGORITHM

The proposed algorithm is described below:

1. Initialize the component. Setup with Vm, Host, Data center and cloud environment with request size and Vm policy.

2. Selection of the Migration policy for cloud and its component. Depends on simulation requirement, the solution has been assigned to current simulation.

3. Perform the particular algorithm as per selected by the user for further execution such as existing or proposed.

4. Perform resource monitoring and energy effectiveness over the current packet transmission. Running the migration as per request and cloud algorithm execution.

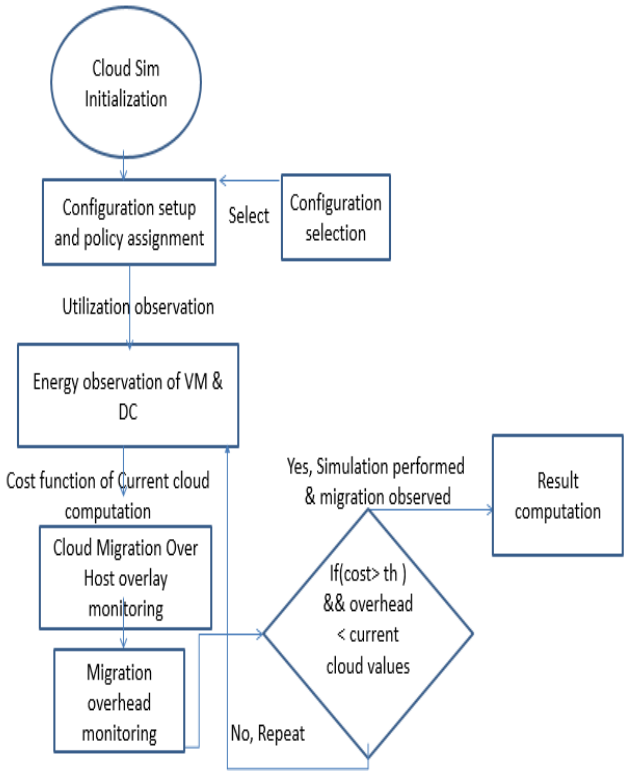
5. Performing migration over the VM, DC and host over the observed analysis using cloudsim API.

6. Perform model and match operation if cloud migration cost function value matched performed by the system.

7. Obtaining parameter wise data for the other model.

8. Observing the values and thus it effect computation time, energy and efficiency for the complete scenario.

9. Exit.



Complete flow performed. Scenario and Simulation

The above flow chart explains about the work of the proposed algorithm which consists of the initialization of the cloudsim after this configuration setup take place, then the flow move towards the energy observation also cloud migration over host overlay monitoringwill process again repeat the hidden process either it will go to the compute usage, then the computing of the parameters will happen.

5 Experimental Setup & Result Analysis

CloudSim is a system for displaying and simulating the cloud computing infrastructures as well as administrations. Initially first made at the Cloud Computing and Distributed Systems (CLOUDS) Laboratory, The University of Melbourne, Australia, CloudSim has turned out to be a standout amongst the most prominent open source cloud test systems in the examination and the scholarly community. CloudSim is totally composed in Java.

CloudSim Cloud Analyst component which provides a comprehensive GUI. Following steps are involved during set up a simulation:

1) Define User Bases: This parameter shows the users of any application, their geographic distribution and other properties like number of users and pattern of usage.

2) Define Data Centers: This parameter define the data centers and all machine, drive components of the data centers.

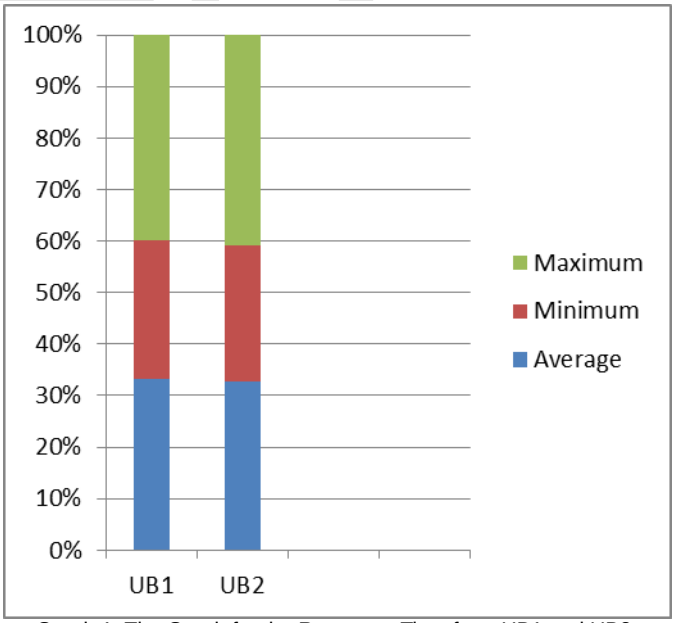
3) Allocate Other available configuration Machines in Data Centers: Other available configuration machines are assign to data centers after creating it. Firstly data center define as in step 2 and then it is allocated when modeler wants to use them. Modeler can assign multiple other available configuration machine in a single data center.

RESULT ANALYSIS

Table 1: Calculate Response Time from UB1 and UB2.

UserBase	Average	Minimum	Maximum
UB1	300.774	241.639	360.14
UB2	300.866	240.143	375.135

In the above table 1 the difference between time for response has been calculated.



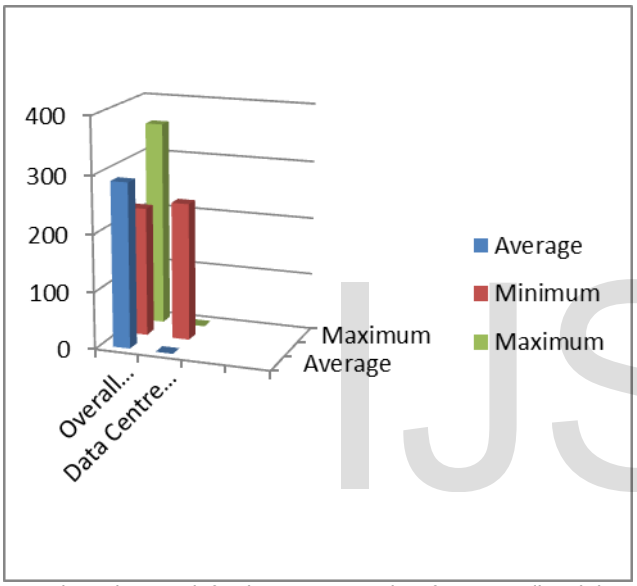
Graph 1: The Graph for the Response Time from UB1 and UB2.

In the above graph 1 the response time which is based on the UB1 and UB2 is shown.

Table 2: Calculate Response Time from overall and data center processing time.

	Average	Minimum	Maximum
Overall Response Time	288.27	225.27	357.34
Data Centre Processing Time	0.02	240.143	0.54

In the above table 2 the difference between overall response times and data centre processing time for response has been calculated.



Graph 2: The Graph for the Response Time from overall and data center processing time.

In the above graph 2 the response time which is taken from the overall response time and the data centre processing time is shown.

4 Conclusion & Future Work

Data clustering help in detective multiple levels of data availability and their impact. Clustering can help in finding undetermined or un-detected data from the human techniques. Machine learning help in creating data cluster from the input resources and analysis. In this paper a survey of the available technique for data mining clustering is performed. Data usage approach over the large input data processing, finding centroid for cluster detection is performed. Our further work is going to find an optimized solution for the mention limitation and overcome by our proposed enhance solution for data cluster finding approach and their application.

In view of the outcomes our association retail keen store chose to embrace parcel of devotion programs for brilliant store clients. The further work on division (bunching) utilizing more definite social information and opportunity distinguishing proof utilizing affiliation calculations inside the portions found. Other conceivable future works are relationship of items and client divisions for strategically pitching (offering new items) and up (offering a greater amount of what clients at present purchase).

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