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Allocation Of Resourses Migration In Cloud Network Architecture

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Abstract: ***Cloud computing is generally termed as just pay for what you use .It divided into three categories they are SAAS, PAAS, IAAS. It provide Information Technology as a service over the Internet(or)dedicated network with delivery on demand and payment based on usage. It ranges from full applications and development platforms, servers, storage and virtual desktops. In the previous system, improper use of Virtual Machine leads to the imbalance load distribution and increasing operation cost. Now we proposed, Paper speaks about each Virtual Machine as a two-state Markov chain to capture burstiness, then we design a resource reservation strategy for each physical machine based on stationary distribution of a mark chain. This migration of Virtual Machine provides a method to distribute physical resource more reasonably without stopping service, so that energy is consumed and operation cost is reduced. After the modification is our implementation process. We deploy two types of systems, Hot Machines can handle the current job, Warm Machines are kept idle state until job is assigned. We deploy three Virtual servers for every machine. 1st Job is assigned to the Hot machine 1st Virtual machine and same way following jobs are assigned to other Virtual Machines. Now jobs are assigned to the Warm machines once all the Virtual Machines of Hot category have occupied with the jobs. Automatic migration of job is implemented, so as to transfer the load to the Hot Virtual Machine from Warm Virtual Machine once it has completed the job. We also implemented cache mechanism.***

Keywords: ***cloud computing, virtualization, migration, green computing.***

I. INTRODUCTION

CLOUD computing has been gaining more and more traction in the past few years, and it is changing the way we access and retrieve information. The recent emergence of virtual desktop has further elevated the importance of computing clouds.

As a crucial technique in modern computing clouds, virtualization enables one physical machine (PM) to host many performance-isolated virtual machines (VMs). It greatly benefits a computing cloud where VMs running various applications are aggregated together to improve resource utilization.

It has been shown in previous work that, the cost of energy consumption, e.g., power supply, and cooling, occupies a significant fraction of the total operating costs in a cloud. Therefore, making optimal utilization of underlying resources to reduce the energy consumption is becoming an important issue.

To cut back the energy consumption in clouds, server consolidation is proposed to tightly pack VMs to reduce the number of running PMs; however, VMs' performance may be seriously affected if VMs are not appropriately placed, especially in a highly consolidated cloud. We observed that the variability and burstiness of VM workload widely exists in modern computing clouds, as evidenced in prior studies. Take a typical web server for example, burstiness may be caused by flash crowed with bursty incoming requests.

We all know that VMs should be provisioned with resources commensurate with their workload requirements, which becomes more complex when considering workload variation. As two kinds of resource provisioning strategies are commonly used to deal with workload burstines provisioning for peak workload and provisioning for normal workload. Provisioning for peak workload is favourable to VM performance guarantee, but it undermines the advantage of elasticity from virtualization and may lead to low resource utilization. In contrast, provisioning for normal workload makes use of elasticity in cloud computing. In this case, to meet the dynamic resource requirements of VMs, local resizing and live migration are the two pervasively-used methods. Local resizing adaptively adjusts VM configuration according to the real-time resource requirement with negligible time and computing overheads.

On the other hand, live migration moves some VM(s) to a relatively idle PM, when local resizing is not able to allocate enough resources. However, in a highly consolidated computing cloud where resource contention is generally prominent among VMs, live migration may cause significant service downtime; furthermore, it also incurs noticeable CPU usage on the host PM, which probably degrades the co-located VMs' performance. In this paper, we propose to reserve some extra resources on each PM to accommodate bursty workload. In doing so, when a resource spike occurs, VMs can be quickly reconfigured to the new level of resource requirement through local resizing with minimal overheads, instead of being migrated to some other PMs.

Hence, the number of live migrations could be reduced considerably and the overall performance of a computing cloud could be improved. Specifically, we investigate the problem of minimizing the amount of extra resources reserved on each PM during server consolidation while the overall performance is probabilistically guaranteed. By "probabilistically guaranteed", we mean that, the fraction of time within which the aggregated workloads of a PM exceed its physical capacity is not larger than a threshold.

Imposing such a threshold rather than conducting live migration upon PM's capacity overflow is a way to tolerate minor fluctuations of resource usage (like the case of CPU usage) and to break the tradeoff between utilization and performance. Then, our problem can be formulated as an optimization, wherein the goal is to minimize the amount of resource reserved on each PM, and the constraint is that the capacity violation ratio of every PM is not larger than a predetermined threshold.

II. CLOUD COMPUTING

Cloud computing is not a new concept. We have been using Cloud Computing for ages, in one form or other. In simple words, you can presume Cloud to be a very large server on which different services and data are stored and you access all those for your work. The software and data that you access for your work doesn't exist on your computer instead it's on the server. This concept of using services not stored on your system is called Cloud Computing.

2.1 CLOUD COMPUTING SERVICE CATEGORIES:

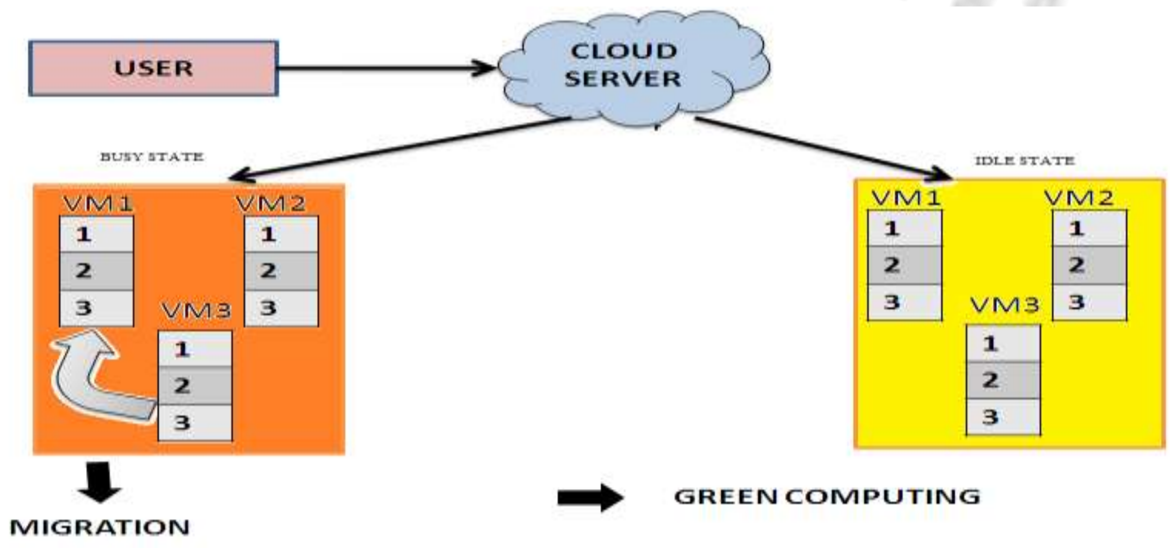
Although the cloud computing has changed overtime ,it has divided into three services categories: Infrastructure as a service(IAAS), Platform as a service(PAAS),Software as a service(SAAS).

a) IAAS provider, such as AWS, supply a virtual service instance and storage, as well as application program interface(API) that user migrate workload to a virtual machines . user have a allocated storage capacity and can start ,stop access and configure the VM and storage as desired. IAAS provides offer small, medium, large, extra- large and memory or compute-optimized instance ,in addition to customized instance, for various workload needs.

b) PAAS model, provider host development tools an their infrastructure user accept these tools over the internet using API,s web portals or gateway software. PAAS is used for general software development, and many PAAS provider will host the software after it's develops. Common PAAS provider includes sales force.com Force.com, AWS Elastic Beanstalk and Google App Engine.

c) SAAS is a distribution model that delivers software applications over the internet; these applications are often called websites Microsoft office 365 is a SAAS offering for productivity software and email services users can access SAAS applications and services from any location using a computes (or) mobile devices that has internet access.

III. NETWORK ARCHITECTURE



IV. CURRENT WORKING ALGORITHMS USED IN GREEN COMPUTING

Cloud computing supports several algorithms to design the green computing techniques that specifically described challenges on the below algorithms. Through the process have functioned by different authors say about their opinion and ideas to overcome by the techniques. Moreover the different versions to enroll the projects are computed if it is assuming contributed algorithms are participated. This is analysed by green computing permits to clarified that we suppose using algorithms to migrate the allocation process which better way and it possible to construct the project is satisfied with help of some algorithms are shown in the table.

V. DEVELOPING APPLICATIONS

S.NO	AUTHOUR	ALGORITHM
1	Moreno Marzolla, Ozlap Babaoglu, Fabio Panzieri.	Active and Passive threads
2	Norman Bobroff ,Andrzej Kochut, Kirk Beaty	MFR algorithm
3	Srikanth Kandula , Sudipta Sengupta, Albert Greenberg, Praveen patel, Ronnie chaiken	TASK sheduling algorithm
4	Ningfang Mi , Giuliaro castale, Ludmila cherkasova	MAP_Sample algorithm
5	Meng Wang, Xiaoqiao meng, Li zhang	Group packing algorithm
6	Dixie, Ning Ding ,y.charlie hu, Ramana Kompella	TIVC Allocation algorithm
7	Sheng Zhang, Zhuzhong Qian, Jie Wu, sanglu Lu	I-DSEN Allocation algorithm
8	Fahimeh Farahankian, Paris Liljeberg, Tapio, Juha	VM Consolidation
9	Gasto keller, Hanan Lutfiyya	MS-ES Relocation policy algorithm

In this module we are going to create a User application by which the User is allowed to access the data from the Server of the Cloud Service Provider. Here first the User wants to create an account and then only they are allowed to access the Network. Once the User create an account, they are to login into their account and request the Job from the Cloud Service Provider. Based on the User's request, the Cloud Service Provider will process the User requested Job and respond to them. All the User details will be stored in the Database of the Cloud Service Provider. In this Project, we will design the User Interface Frame to Communicate with the Cloud Server through Network Coding using the programming Languages like Java/ .Net. By sending the request to Cloud Server Provider, the User can access the requested data if they authenticated by the Cloud Service Provider.

a) CLOUD SERVER DEPLOYMENT

Cloud Service Provider will contain the large amount of data in their Data Storage. Also the Cloud Service provider will maintain the all the User information to authenticate the User when are login into their account. The User information will be stored in the Database of the Cloud Service Provider. Also the Cloud Server will redirect the User requested job to the Resource Assigning Module to process the User requested Job. The Request of all the Users will process by the Resource

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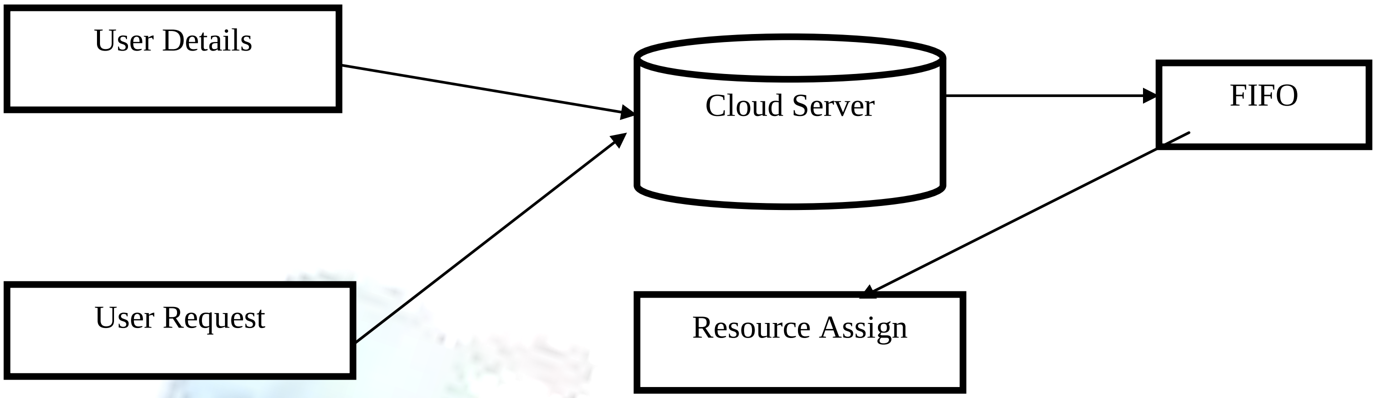
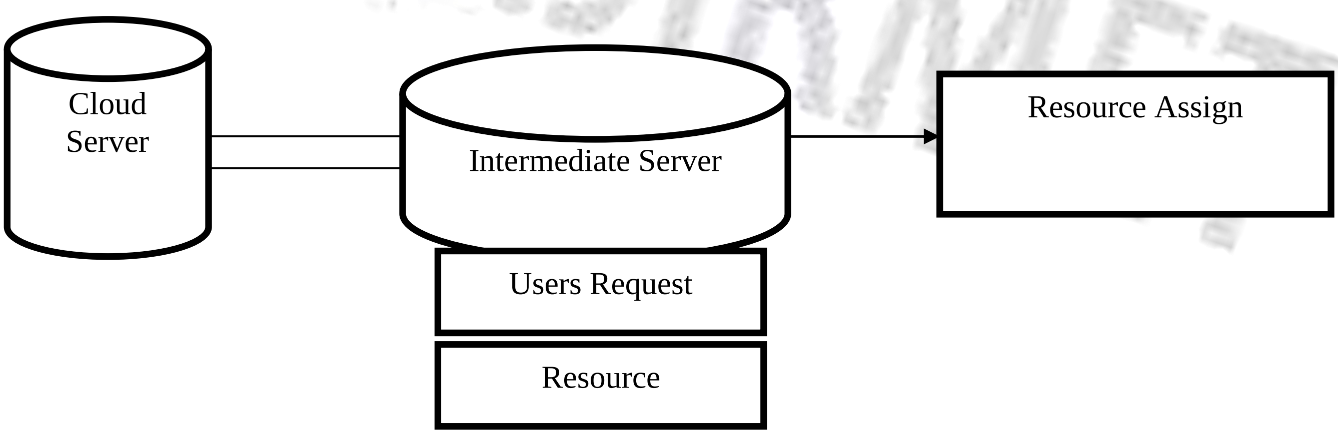
Assigning Module. To communicate with the Client and the with the other modules of the Cloud Network, the Cloud Server will establish connection between them. For this Purpose we are going to create a User Interface Frame. Also the Cloud Service Provider will send the User Job request to the Resource Assign Module in Fist in First out (FIFO) manner. In this project we are using Iaas, Cloud infrastructure services, known as infrastructure as a service (Iaas), are self service models for accessing, monitoring and managing remote data centre infrastructures, such as compute (virtualized) storage, networking and networking services(eg firewall). Instead of having to purchase hardware outright, users can purchase IaaS based on consumption similar to electricity or other utility billing.



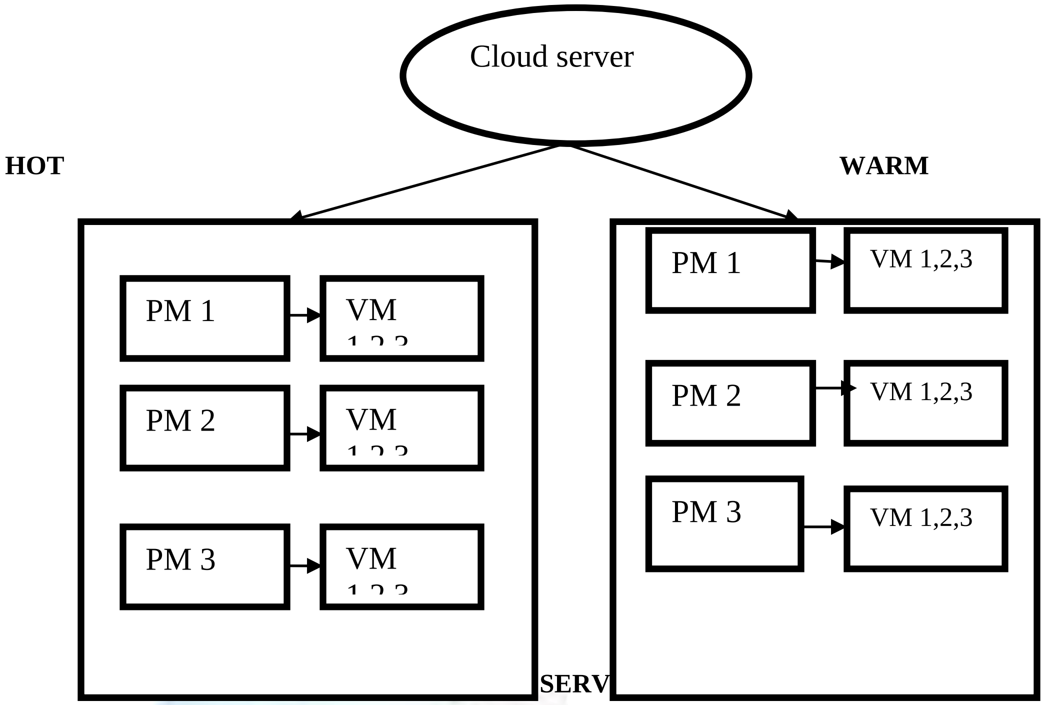
b) INTERMEDIATE SERVER DEPOYMENT

By implementing Intermediate Server the Job Processing Scheme, we can effectively process the User Requested Job and efficiently maintains the Resources of the Cloud Server. So that we can save the Energy of the Resources when they are not process the Job.

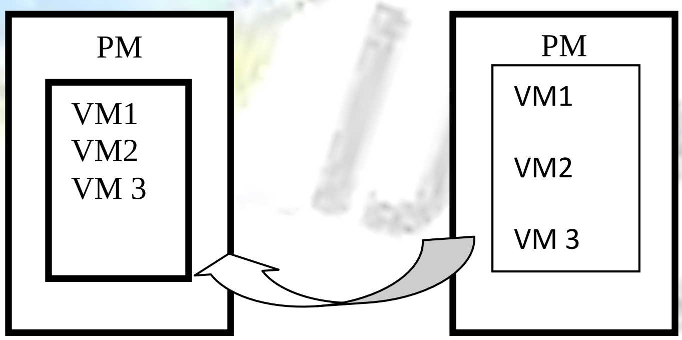


c) GREEN COMPUTING SETUP

Green computing is the term used to denote efficient use of resources in **computing**. It Is also known as **Green** IT . In this Module, we will Process the User requested Job. The User requested Job will redirect to the RAM of the Cloud Server. The RAM will contain three Types of the Physical Servers. 1. HOT Server. WARM Server and COLD Server. These Physical Servers will contain 'n' number of virtual Server to process the User requested Job. So that the Job can be efficiently processed.

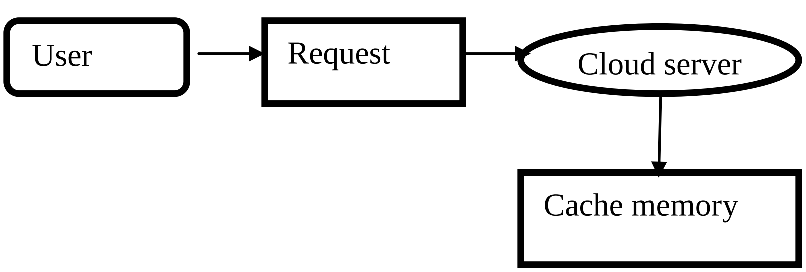


In this module we create the migration server, main use of migration to migrate the job form on virtual serve to another server, so that the energy can be reduce and work load of the server is balanced, by using the Migration we can shift the process from one VM to anther VM without loss of data.



e) CACHE SERVER IMPLEMENTATION

As a modification in this Project, we are creating a Cache Memory in the User requested job will be stored for the period time. If the another User requests the same Job to the Server of the Cloud Service Provider (CSP), the Server will check in the Cache Memory first .So that we can reduce the Job Processing Time. If the request Data is presented, then the Server will provide the Data to the User immediately.If the request Data is not in the Cache Memory, then the Server process the User requested Job by transferring it to the RAM.



VI. CONCLUSION

In a highly consolidated computing cloud, the VM performance is prone to degradation without an appropriate VM placement strategy, if various and distinct burstiness exists. To alleviate this problem, we have to activate more PMs, leading to more energy consumption. To balance the performance and energy consumption with respect to bursty workload, we propose to reserve a certain amount of resources on each PM that form a queueing sytem to accommodate Burstiness. To quantify the amount of reserved resources is not a trivial problem. In this paper, we propose a Burstiness-aware server consolidation algorithm based on the two-state Markov chain. We use a probabilistic performance constraint and show that the proposed algorithm is able to guarantee this performance constraint. The simulation and tested results show that, QUEUE improves the consolidation ratio by up to 45 percent with large spike size and around 30 percent with normal spike size, as compared to those provisioning for peak workload, and a better balance of performance and energy consumption is achieved in comparison with other commonly-used schemes.

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