GREEN ENHANCEMENT FOR RESOURCE ALLOCATION IN CLOUD MANAGEMENT

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ABSTRACT: The cloud computing is being emerged in today scenario. There exist an flexibility in services paradigms by allowing the users to require virtual machine resources. In Cloud computing the resources are retrieved from the Internet while these resources are allocated to the servers. In Clous Service Provider, there exist a problem of allocating resources to the servers with the aim of energy minimization.We introduce the decentralized multiagent based VM allocation approach. The MA(Multi Agent) works by first dispatching a cooperative agent to each PM(Physical Machine) to assist the PM in managing VM(Virtual Machine) resources. The auction based mechanism is based on the demand of VM resources and it allocate on cost based approach. The negotiation-based VM consolidation mechanism is devised for the agents to exchange their assigned VMs for energy cost saving. We propose the system using green computation while allocating the VM resources to PM . Optimal Resources Migration methodology used to share or migrate the resources where it reduces the cost of energy and revenue maximization.

Index Terms: Cloud Services Provider, Decentralized Multiagent, Dynamic Resource Allocation.

I. INTRODUCTION

Now a days, Cloud computing has been utilizsed for past few years, where it is changing the way to access and retrieve information from internet [1]. Cloud computing used widely in real-world environments for large-scale resource integration, sharing, and providing the resources efficiently. Where Cloud is becoming an effective and efficient way of allocating computing resources and computing services consolidation [3].

A cloud service provider (CSP) provides a data storage service by utilizing worldwide distributed datacenters. Amazon S3 is providing data storage with least cost, and Windows Azure in the US East region providing data with least price[4].Allocating the data to datacenters consist of different CSPs where it make to minimize the resources reservation. There are some things to thinks and manipulate the cloud services providers. The cost is based on a per-use utility model while there are diferent variation that is to be considered.

Virtualization technology that allows to create multiple system environments or dedicated resources that access from a single system or physical hardware system. The virtualization is been exploited to alleviate some problem, that exists Virtual Machine (VM) instances that is to be executed on the same physical server. Where it is been considered as consolidation of workload, while it allocates the VMs resources in maximum

numbers to PMs servers to the minimum numbers [6].

In Live migration [7] the VM is been migrated from one servers to another without any interruption of the application that is running insidethe system. For example, when the utilization of resources to a servers becoming too high, some of the VMs resources running on the servers can be migrated to other servers that can reduce its utilization load. On the contrary, when the average server utilization is becoming too low, then the VMs can be aggregated to the servers ,so that servers can be put to sleep mode by this power consumption is been saved. [8].

In this paper, we present an approach of Optimal Resources Allocation that is usefull for VM migration.The resources is been shared and allocating to the active server where other server moves to idel state.Thus by sharing and migrating the resources energy cost is achieved and revenue maximization is attained.

II. LITERATURE SURVEY

Sheng Zhang, *Member,* **Zhuzhong Qian, Zhaoyi Luo, Jie Wu, and Sanglu Lu "Burstiness-Aware Resource Reservation for Server Consolidation in Computing Clouds"**
The virtual machine (VM) that allocates to the servers consists of some workload that widely exists with lower frequency and short time. While dynamic runtime, the resource allocating for the VMs in a PM occur ondemand process suppose in that case the VMs resources have to be moved to some other PMs servers, which may lead to performance inflation. Burstiness is an aware for the server minimizing problem for the flexiblty of resource reservation.In this, novel server consolidation algorithm, is been utilized for resources resevation. Resource reservation-QUEUE is present for complete

server consolidation for minimizing the time complexity[11].

Sivadon Chaisiri, Student Member, Bu-Sung Lee, Member, and Dusit Niyato, Member-"Optimization of Resource Provisioning Cost in Cloud Computing"
For computation of the resources there exsist two provisioning plan they are reservation and on-demand plans. In reservation plan, the resource provisioning cost is reduced by the customer. An optimal cloud resource provisioning (OCRP) algorithm is exposed for formulating a programming model. The OCRP algorithm can be provisiond for computing the resources that is been used for several provisioning stages for a long-term plan process. Cloud consumer is successfully minimized the resource provisioning cost in cloud computing environments. OCRP (Optimal Cloud Resource Provisioning) algorithm is mainly utilized for the minimization of resources provisioning cost. [13].

Manel Bourguiba, Kamel Haddadou, Ines El Korbi, and Guy Pujolle-"Improving Network I/O Virtualization for Cloud Computing"
The networking performance is been evaluated with the VMs. For this, a packet aggregation-based mechanism is been utilized to transfer packets from the drives to the VM. By using this aggregation mechanism the tradeoff is been achieved between the delay of the packect and throughput. By using this mechanism the I/O virtualization is been satisfied with the providers that offers for all the cloud computing servers. [15].

Carlo Mastroianni, Michela Meo, and Giuseppe Papuzz"Probabilistic Consolidation of Virtual Machines in Self-Organizing Cloud Data Centers"
In virtualized data centers, the allocation of Virtual Machines (VMs) resources to the

minimization of physical servers is been held on by this approach. The process that is been carried out   in virutalized data center is ecoCloud,by using this the resources is been organized in an flexible manner and VMs is consolidated with an adaptive approach. Eco Clouds is been utilized for the maximization of resources consuming power is reduced[10]

Weijia Song, Zhen Xiao, Sen, Qi Chen, and Haipeng Luo "Adaptive Resource Provisioning for the Cloud Using Online Bin Packing"

Virtualization process makes the running application to move across the physical server. The adaptive resources is mainly used to allocate the data center dynamically that depends uon the demand in a paticular application. Thus by allocating by its demand it is easy to achive green computing , by this the servers is actively been utilized. The Online bin Packing algorithm and efficient algorithm is been carried out in this system. [12].

Minghong Lin, Adam Wierman, Lachlan L. H. Andrew, and Eno Thereska "Dynamic Right-Sizing for Power-Proportional Data Centers"

Energy cost is an significant fraction of data center implementing the cloud services. By using   right-sizing algorithm,the cost is been reduced by accessing only fewer servers in it.And also the power consuption is been maintained with an load balance. Dynamically "right-sizing"- the data center is been turned off when power is used excess for low load and it is achieved by an online algorithm. Thus it is been compared with other data-center workloads and identifies the cost savings from this process. [14].

June Cao,, Kai Hwang, Keqin Li, Albert Y. Zomaya-"Optimal Multiserver Configuration for Profit Maximization in Cloud Computing"

Maximization of the profit depends upon the a service provider that is been allocated with a paticular charge and the cost effectiveness towards bussiness. While the cost effectiveness is been identified only by the utilizaion of multiserver system.These charges is been considered by the amount of servers that is been utilized by consumer and it also depends upon the load balance of the server environment.In multiserver system M/M/m queuing model is used so that the problem while allocating the resources is been solved systematically. Thus Optimal multiserver is been utilized for the maximaziation of profit in cloud environment. [17].

Peng Sun, Yuanshun Dai, Xiwei Qiu "Optimal Scheduling and Management on Correlating Reliability, Performance, and Energy Consumption for Multi agent Cloud Systems"

MACS (Multiagent Cloud System) consists of some agents in it they are   global agent (GA) and multiple local agents (LAs). The request is been processed for scheduling these stratergies and management of the resources strategies for the MACS(Multi agent Cloud System) is been achieved by GA where it is been distributed to all the user requests to multiple LAs, while the LAs is been utilized for   resource management mainly for serving these user requests. Genetic algorithm is designed for GA and main purpose is to search the solution for global request scheduling.The MACS achieves flexiblity and efficient control for scheduling and management capability that is based between the GA and LA[16].

Guoxin Liu and Haiying Shen. "Minimum-Cost Cloud Storage Service Across Multiple Cloud Providers"

In cloud service provider (CSP) provides the data storage service in an cost effective manner for enterprices and organization in it. The cost minimization problem occurs in SLO(Services Level Objective) that has some condition that is been fellowed by integer programming. To reduce the cost of payment and latency in services that are depends on data reallocation, and data transferring. [9].

Survey Table

TITLE OF THE PAPER	ALGORITHM/METHOD USED
Adaptive Resource Provisioning for the Cloud Using Online Bin Packing	Online bin packing is used.
Energy-Aware Autonomic Resource Allocation in Multitier Virtualized Environments	Resource allocation policies methodology is used.
Dynamic Right-Sizing for Power-Proportional Data Centers	New "lazy" online algorithm.

III. EXISTING

During Earlier days an Centralised manner of allocating resources from VM to PM is used. A central resource manager that can monitor and maintain information about all PMs and VMs and thus can allocate VMs to PMs in a centralized manner[18]-[21]. Although centralization can guarantee high system performance, its low robustness with a single point of failure creates a vulnerable cloud system [2]. In decentralized multiagent (MA)-based resource allocation approach by dispatching a cooperative agent to each PM to assist the PM in managing resources. It has two approaches as follows:

1)*Auction-Based VM Allocation:* Theoretical analyses suggest that the auction based VM allocation mechanism has a high performance guarantee on reducing energy cost.

2)*Negotiation-Based VM Consolidation:* To avoid incurring prohibitive VM migration overhead, a local negotiation-based VM consolidation mechanism is devised for agents to exchange their assigned VMs for energy cost savings.

Both Auction based minimize of cost and negotiation based minimize of energy. But, this is not implemented simultaneously.

IV PROPOSED

In this paper, we propose Green Computing Environment while allocating the VM in PM. The resource allocation should be in support of energy efficiency and power. Green computing, also called green technology, is the environmentally responsible to the usage of computers and related resources. The goals of green computing are to maximize the energy efficiency during the product's lifetime. IT departments of many corporate are investing both time and money in green computing initiatives to reduce the environmental impact of their IT operations. We formulate the distributed MA-based resource allocation approach as follows. Dispatch a cooperative agent ai to each PM pi. These agents $A = \{a1, a2, . . . , am\}$ are deployed to assist the PMs in managing resources And then we devise the mechanism for these agents to make decisions on which PMs to host which VMs in pursuit of energy cost minimization. While allocating the resources, the migration cost should be minimized.

In this paper we explore a further benefit allowed by virtualization: that of live migration .Live Migration method is used to avoid the

maximization of the cost usage of resources. By carrying out the majority of migration while OS continue to run, we achieve impressive performance with minimal service downtimes.

V METHODOLOGY

Allocating the resources is done in QUEUE format.Allocating the resources to various tasks, known as job scheduling. In job scheduling the FIRST COME FIRST SERVE scheduling method is used. In First-come First-served Scheduling follow first in first out method. The process in a ready state , will join in the ready queue. The first entered process among the available processes will be in the ready queue.

Allocation depends upon the nature of the request to load the values that are assigned dynamically. The server allocation task will take place in order to moderately manage the workloads. The methodology, used for resources allocation is Dynamic Resources Allocation method. Thus Dynamic Resources Allocation is utilized to manage the workload. So there must be a provision that all resources are made available to requesting users in efficient manner to satisfy customer's need. Dynamic Resource Allocation for Efficient Parallel data processing introduces a new processing framework explicitly designed for cloud environments[5]

For, file security Advanced Encryption Standards technique is used. In AES, security key can never be broken, despite some of the inherent flaws in AES. While uploading or downloading the file cryptography engine is used.To retrive these data decryption format is fellowed. For, allocating VM resources efficiently Optimal Resources Migration method is processed.In VM live migration, optimal resource migration methodology is used for efficient migration of the VM file.In Optimal Resources Migration method, utilization of VM

resources is in a shared manner.The utilization of VM resources is been shared if anothere PM in VM completes it works. While sharing the resources the PM in VM switch over to sleep state.while this process achieves VM resources minimization and revenue maximization.

The process is been described by stages in it they are:
1.File Processing-It is based on Queue format.The file that is been stored in VM resources in First come First Serve method.
2.User Request Analysis-The user input requests, are analyzed by the scheduler before the task is given to the servers. It checks whether the file will be downloaded or uploaded by an programming condition.
3.Server Allocation-Allocation depends upon the nature of the request to load the values that are assigned dynamically.
4.User Security-Encryption and Decryption are done while uploading or downloading the file.
5.Optimal Resources Migration-Optimal resource migration methodology is used for efficient migration of VM file.
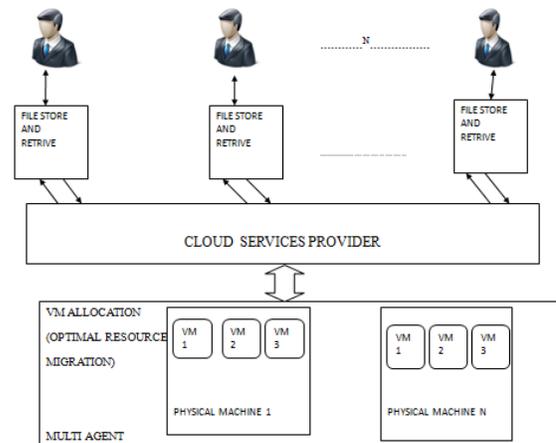
VI RESULT ANALYSIS

The analysis is been carried out for allocating the VM resources to the physical servers. By using OptimalResources Migration methodology

migration cost is reduced due to sharing the resources to other physical servers. Thus by sharing the resources some of servers goes to idel state.There occur a cost effectiveness of allocating a resources.Green computing is attained by cost effectivness and revenue maximization.
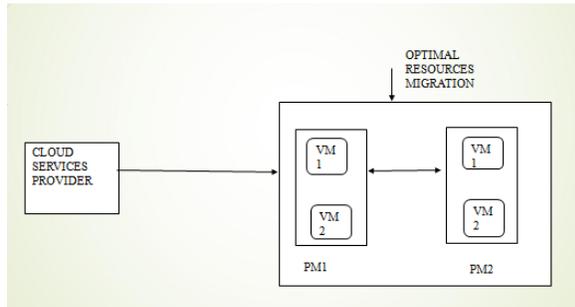
VII CONCLUSION

This paper presents a distributed MA-based resource allocation approach to minimize cloud system energy cost. VMs can be migrated from one PM to any other PM, the proposed decentralized MA approach, where local VM migration is permitted only, generates as little energy cost as they do. This paper works on live migration concept. Thus it obtain a green cloud environment. Where the green cloud environment can be eco friendly with the energy efficiency and power efficiency. The Green cloud is achieved by live migration concept and the methodology used in it dynamic resource allocation. The objectives of the proposed method is for revenue maximization and energy cost minimization simultaneously. Further it cn be enhanced by maximizing the cloud services provider.

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