A Review On Energy Aware Resources Allocation For Cloud Computing

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***Abstract* - Computers is a visible technology which provides metering based services to people. Computers offers ITC based services and provide figuring out/calculating useful things/valuable supplies through virtualization over internet. Data center is heart of computers which contains collection of servers on which Business information is stored and computer programs run. Data center (includes servers, network, cables, air conditioner etc.) uses/eats more power and releases huge amount of Carbon-di-oxide (CO2) to the health of the Earth/the surrounding conditions. One of the most important challenges in computers is optimization of energy use and because of this have green computers. There are many ways of doing things and computer codes used to (make small) the energy use in cloud. Ways of doing things include DVFS, VM Traveling and VM Combining. Computer codes are Maximum Bin Packing, Power Expand Min-Max and Minimization Travels, Highest Potential growth, Random Choice. The main goal of all these approaches is to improve the energy use in cloud. This paper provides summary of book-related survey on approaches to have energy producing a lot with very little waste cloud.**

***Index terms* - Cloud, Figuring out/calculating, Energy, Cloud Center, Energy Consumption, Data Center**

Introduction

Cloud computing is the use of computing resources as a service via internet. The word cloud computing is derived from the word internet. Cloud computing is an evolving technology,

Through which any computing resource could be accessed through internet, and enables secure sharing of resources. It has started to gain insight in corporate data centers. Cloud computing is evolved from grid computing in recent years due to increased utilization of virtualization at datacenter. It provides updated services and online resources required for the clients without changing their existing infrastructure. Due to the increasing demand of cloud services, size of the data center is exponentially increasing and more servers are needed to full-fill this demand. Hence, the data center generates more heat, and therefore more cooling devices are required to keep the data center at a specified temperature resulting in more energy consumption and CO2 emission. Therefore, this is an important research area of Green Cloud Computing and hence there is a need of an energy efficient resources allocation at the data center in order to reduce the total energy cost. Major cloud service providers like Amazon, Facebook, Google etc., and keep data centers in cold places and thus reduces the energy cost. A recent study shows that these data centers will consume 2% of the total worldwide energy consumption by 2020 [1]. The demand for overall energy requirement at data center is rapidly increasing at the rate of 18% every year

Characteristics Of Cloud Computing :

The various characteristic of cloud computing is given as follows

Hardware and Maintenance: - Cloud Computing helps to reduce hardware and maintenance cost because there is no need to be

installed any application on user's computer.

Application Program interface: - API provides accessibility to software that enables interaction with the cloud software in the same way that a traditional user interface. (E.g. A computer desktop) facilitates interaction between user and computer.

On-demand Service: - Cloud provides a large resource pool which allow user to obtain configure and accesses information according to their need.

Up to date:-We need not to worry about the updates to the software's and hardware's that we are using in the cloud. The provider is responsible for the overall update process of all the components.

Ultra-large Scale platform:-The Cloud has large scale platform i.e. The Google Cloud has owned more than one million server... It can produce various applications supported by cloud, and one cloud can support different applications running it at the same time

Services Model of Cloud

The cloud computing service models are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). In Software as a Service model, a pre-made application, along with any required software, operating system, hardware, and network are provided. In PaaS, an operating system, hardware, and network are provided, and the customer installs or develops its own software and applications. The IaaS model provides just the hardware and network; the customer installs or develops its own operating systems, software and applications.

Literature Review

Neeraj Kumar Sharma and G. Ram Mohana Reddy et al. [1] proposed genetic algorithm for energy efficient virtual machine allocation at data center. Genetic algorithm (GA) capable of saving energy of data center and also its helps to avoiding the service level agreement violation. This paper deals with the design of an energy efficient algorithm for optimized resources allocation at data center using combined approach of Dynamic Voltage Frequency Scaling (DVFS) and Genetic algorithm (GA).

Anton Beloglazov, Rajkumar Buyya et al.[2] presented an energy efficient resource manage ment in virtualized cloud data centers... this proposed approach helps to minimize the cost and gives essential quality of services. virtual network topologies established between VMs and thermal state of computing nodes. The results show that the proposed technique brings substantial energy savings, while ensuring reliable QoS.

A.Paulin Florence et al. [3] proposed energy aware cloud computional cloud. In this paper, a new energy aware load balancer is proposed and then implemented in cloud simulator. Proposed approach is implemented by java language. It minimize energy consumption and allocates the job dynamically to a particular VM selected based on best fit strategy and adjust the frequency of the VM depending upon whether job is CPU bound or I/O bound. The VM frequency is adjusted to the maximum if the job is CPU bound or otherwise it is kept to a minimum. Thus proves to be more efficient in terms of energy consumption.

Santanu Dam, Gopa Mandal et al. [4] in this paper load balancing strategy has been presented. This paper proposes a novel ant colony based algorithm to balance the load by searching under loaded node. Proposed load balancing strategy has been simulated using the .Cloud Analyst is used to simulate the load balancing strategy.

Deepak puthal, sambit mishra et al.[5] This paper discussed the emerging research issues that pursued the advance scientific features of cloud computing with layer wise classification of the cloud services, and highlighted the subsequent guidelines of research facing the both industry and academic community. In this study cloud computing architecture and security problem in cloud computing based on its service layer has been discussed.

Zahra Bagheri, Kamran Zamanifar et al.[6] In this paper, an energy-aware resource allocation strategy is presented for real-time tasks in cloud environments. The VM selection policy implemented in the broker makes it possible to specify appropriate VM to run a task. VMs are distributed among the hosts under an energy-aware VM allocation policy which attempts to minimize the number of active hosts. . The simulation results demonstrate that the proposed algorithm improves the performance of data center in terms of energy consumption and deadline constraints in a significant manner.

Manjot Kaur et.al [7] presented an energy producing a lot with very little waste model for cloud to keep track of how much level of atmosphere is getting dirty/containing unwanted things due to the emission of different gases like CO2, CO etc glass building where plants are grown gases by the different data centers and also identifying the amount of pollution that heats up the Earth in atmosphere due to data centers. This helps to put into use different energy producing a lot with very little waste cloud solid basic structure on which bigger things can be built. The paper also presents amount of energy used/ate/drank/destroyed at different levels and different parts/pieces of datacenter.

Kim et. al. [8] presented a problem of useful thing/valuable supply portion in virtualized server (set of machines) leading to more energy use. They proposed a model to improve the energy use; the model (describes the future) performance (not having something wanted or needed) of service when current service is joined with other services. Along with energy optimization, the paper also proposes performance aware useful thing/valuable supply portion. This model uses response time, CPU use as performance numbers and round robin (RR) process scheduler.

Tesfatsion et.al [9] proposed a management way of doing things for datacenter where number of VMs, CPU frequency and number of Cores are all taken into the process of carefully thinking about something to improve the energy wasting very little while working or producing something. Amount of power use by the system can be calculated by these management ways of doing things and they calculate the power use as output for given inputs. A reactions or responses to something/helpful returned information controller is used to well configure the system for energy wasting very little while working or producing something.

Sina Esfandiarpoor et.al [10] proposed a way of doing things of Grouping together VMs based on cooling and network structures so that best use of servers and racks in datacenter and because of this reduce the use of energy in datacenters. Online assignment of VMs to physical machines in the racks based on the useful thing/valuable supply availability is done to increase the CPU use of servers. This can be accomplished or gained with effort through Live Moving from one place to another machine/method/way of VMs. Hence power use in the cloud datacenter can be made something as small as possible/treated something important as unimportant.

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