# Multi objective parameters for real time scheduling in cloud computing

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*Abstract*—**Cloud computing has been portrayed as synonym for distributed computing. It is a type of computing which relies on sharing computing resources on pay per usage basis. Therefore, minimizing cost of the infrastructure is of utmost importance. But minimizing the total cost of the cloud is not only the solution to generate revenue but multiple parameter like response time and efficiency also plays a great role. In this paper we present a model which takes care of cost-effectiveness, response time and efficiency. Simulation results also show the effectiveness of the proposed scheme.**

*Keywords*— **cloud, scheduling, cost**

## I. INTRODUCTION

In computer science, the Cloud Computing describes a type of outsourcing of computer services which are similar to the way in which the supply of electricity is out sourced. The users can simply use it then they do not need to worry from where the electricity is coming from, how it is made or transported from. Every month, they pay for what they consumed. The idea behind cloud computing is similar that the user can simply use storage computing power or specially crafted development environments without having to worry how these work internally. Cloud computing is a system architecture model for internet based computing. It is the development and use of computer technology on the internet. Data centers and cloud computing services providers hope that the extensive adoption of the cloud will bring them more revenue and they are dynamically promoting the technology. The Cloud ranging from the definition of cloud computing talk about energy efficiency one of the main area which needs to be focus. Cloud computing which is a kind of distributed system consisting of a collection of interconnected Data centers which constitutes a numbers of virtual machines obtained by virtualization processes that are dynamically provisioned and accessible as one or more unified computing resources based on service level agreements. A cloud Data center usually deploys many servers, compactly packed to make the most of the space utilization.

Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. The 'cloud' in cloud computing can be defined as the set of hardware, network, storage services and interface that combine to deliver aspects of computing as a service. Cloud service include the delivery of software ,infrastructure & storage over the internet based on a user demand. In computer science Cloud computing is a synonym for distributed computing over a network and means the ability to run a program on many connected computers at the same time. The popularity of the term Cloud computing can be attributed to its use in marketing to sell hosted services in the sense of Application Service Provisioning that run Client server software on a remote location.

## II. RELATED WORK

**Francis et al. [1]** outline previous contributions to the discussion of efficiency of cloud computing, provide a working definition of cloud computing and discuss its importance, which will grow as the technology matures and becomes well known. According to the author the assessment of the efficiency of cloud computing cannot be based only on data centers due to the importance of the intermediate communication networks that support the overall activity of providing cloud computing services and the devices used to access cloud services. The other components should be taken into account when measuring the efficiency of cloud computing. There is the need to improve the efficiency of communication networks and the Internet in order to meet the new levels of demand. In this paper they analyzed the optimization of the network infrastructure should be paramount if the improved energy efficiency of data centers will result in overall benefits. Keville et al. [2] examine the use of ARM-based clusters for low-power, high performance computing. This work examines two likely use-modes: (i) a standard dedicated cluster; and (ii) a cluster of pre-configured virtual machines in the cloud. A 40-node department-level cluster based on an ARM Cortex-A9 is compared against a similar cluster based on an Intel Core 2 Duo, in contrast to a recent similar study on just a 4-node cluster. For the NAS benchmarks on 32-node clusters, ARM was found to have a power efficiency ranging from 1.3 to 6.2 times greater than that of Intel. This is despite Intel's approximately five times greater performance. The particular efficiency ratio depends primarily on the size of the working set relative to L2 cache. Zhang et al. [3] propose a software and lightweight approach to accurately estimate the power usage of virtual machines and cloud servers. It explores hypervisor-observable performance metrics to build the power usage model. To configure cloud resources, it considers both the system power usage and the SLA requirements, and leverage learning techniques to achieve autonomic resource allocation and optimal power efficiency. In this paper they analyzed

that it implements a prototype of the proposed power management system and test it on a cloud test bed. Graubner et al. [4] a novel approach to virtual machine consolidation for saving energy is presented. In this paper they analyzed that it is based on efficient storage migration and live migration of virtual machines to take advantage of the lacking energy proportionality of commodity hardware. Dharwar et al. [5] outlines the state-of-the-art in power-management technology on server hardware and describes how these raw features can be abstracted into a set of energy policies. In this paper they analyzed to explain how these policies or energy-profiles can be used to run cloud datacenter energy efficiently. Kejiang et al. [7] present a virtual machine based energy-efficient data center architecture for cloud computing. It investigates the potential performance overheads caused by server consolidation and live migration of virtual machine technology. In this paper they analyzed the experimental results show that both the two technologies can effectively implement energy-saving goals with little performance overheads. Efficient consolidation and migration strategies can improve the energy efficiency. Yamini et al. [8] propose task consolidation particularly in clouds has become an important approach to streamline resource usage and in turn improve energy efficiency. Based on the fact that resource utilization directly relates to energy consumption, it has modeled their relationship and developed two energy-conscious task consolidation heuristics. The cost functions incorporated into these heuristics effectively capture energy-saving possibilities and their capability has been verified by my evaluation study. In this paper they analyzed the results in this study should not have only a direct impact on the reduction of electricity bills of cloud infrastructure providers, but also imply possible savings(with better resource provisioning) in other operational costs (e.g., rent for floor space).

### III. SYSTEM MODEL

In the Figure 1 users bases generated the requests for the scheduler to get the desired resources over internet. This request is further forwarded to broker and following steps are followed:

1. Virtual Resources are pretreated before going to scheduling.
2. All the tasks are put into buffer.
3. All the N tasks are divided into M classes and after calculation a set is being created since larger tasks are put in one block and smaller tasks in other
4. Choose a task in each queue head; there are M tasks in total.
5. M tasks are scheduled to clouds clusters and local clusters at the same time, the tasks of large amount of calculation are scheduled to resources queue whose calculation ability are strong., the tasks of small amount of calculation are scheduled to resources queue whose calculation ability are weak, the special tasks are scheduled to special resources queue.
6. On the basis of cost, response time, efficiency information available for each virtual machine instance resource is allocated in the corresponding queue.
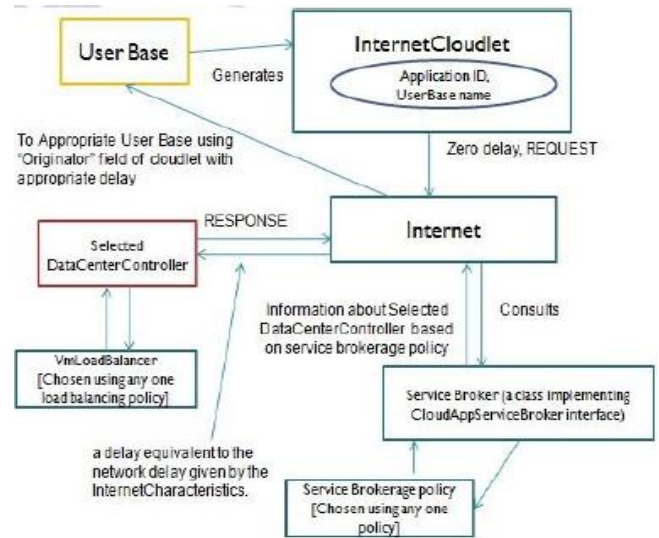


Figure 1: Schematic view

### IV. SIMULATION RESULTS

We have implemented a custom simulator to model the proposed system. In our study we consider a maximum of 5000 task centers belonging to different CSPs. For simplicity we assume that one CSP has only one task center which participates in the federation. The simulator considers 6 different geographical locations and randomly assigns task centers to different locations, such that, the simulator keeps the number of resources available at different task centers as constant.

In Figure 1 we can evaluate that the latency of different locations have different impact on the performance of workload further if we move at the Probability distributive function (PDF) at Figure 2 we can see that the values at which the different strategies are working and the output is coming.
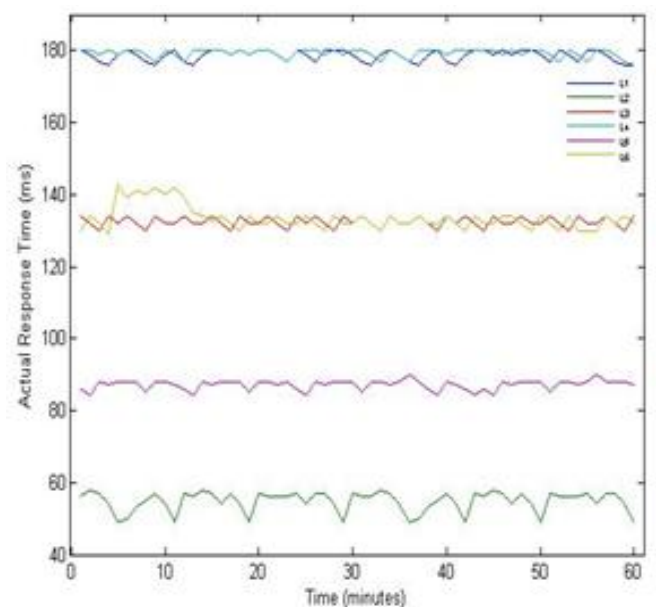

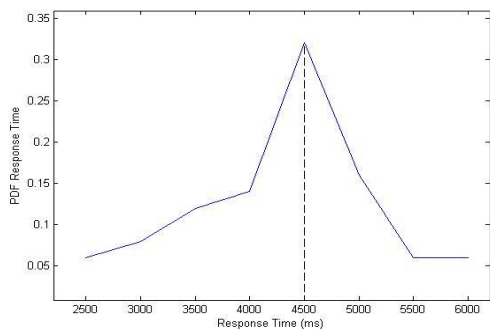
Figure 1: Latency at different Locations (ms)

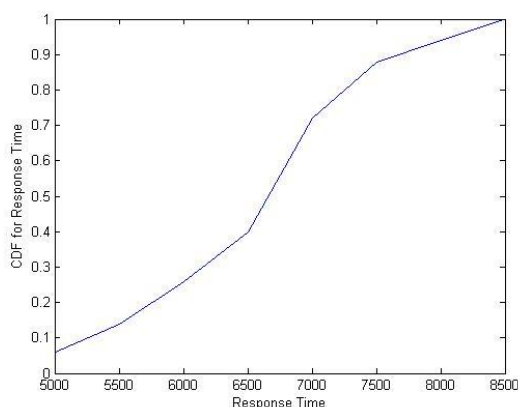Figure 2: Probability distributive Function of Response Time



Figure 3: Cumulative Distributive Function of Response Time

In Figure 3 we can observe that our strategy process all the queries under 8500 ms which is more significant to deal with 500 queries/second.

## V. CONCLUSION AND FUTURE WORK

In this work we have evaluated that workload pre assumption plays a significant role in the management of requests from users end. Further the processing time and hypervisor monitoring needs to be done in order to get more detailed and effective pre-assumption of workload of a virtual machine.

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