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TO CONVALESCE TASK SCHEDULING IN A DECENTRALIZED CLOUD COMPUTING ENVIRONMENT

Arun Sangwan[1]† --- Gaurav Kumar[2] --- Sorabh Gupta[3]
[1,2,3]Department of Information Technology, Panipat Institute of Engineering & Technology, Panipat, Haryana, India

ABSTRACT

With the contempo slump and the immutable crush to deliver more services at a lower cost. Delivery model offers lower cost, and can make quick construction services. IT economics are changing rapidly, and large companies, in particular, looking for new ways to secure capital at a lower cost to maintain the viability of the company. Task scheduling problems are first class related to the overall efficiency of cloud computing facilities. Most developed algorithms for automation planning approach in one parameter of quality of service (QoS). However, if we consider more than one QoS parameter then the problem becomes more challenging. To address the problem, we need to introduce a scheduling strategy for multi-workflows with multiple QoS constrained for cloud computing. We need to introduce an optimized algorithm for task scheduling in cloud computing and its implementation. Furthermore, Load Balancing is a method to distribute workload across one or more servers, network interfaces, hard drives, or other computing resources. Use these components with the load balancing, on the one chamber, grow well in redundancy.

Keywords: Cloud computing, Cloud task scheduler, Load balancing, Virtualization.

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Contribution/ Originality

This study contributes in the existing literature of how to improve task scheduling. In this paper we allocate appropriate services for processing the workflow tasks and schedule the tasks on the services according to the requirements and the cloud environment. Efficient task scheduling method can meet users' demands, and Improve the utilization always come across a good deal of the world environment.

1. INTRODUCTION

Cloud Computing, the long-held dream of computing is an effectiveness, has the possibilities to transform a large part of the IT industry, making software even more fascinating as a service and shaping the way IT hardware is designed and purchased. Moreover, companies with large batch-oriented tasks can get results as quickly as their programs can plate, since using 1000

† Corresponding author
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servers for one hour costs no more than using one server for 1000 hours. This suppleness of resources, without paying a premium for large scale, is unprecedented in the history of IT [1, 2]. The degree of technological development of the economy depends on small events under the decision of the experts of the earthquake, which has become unsustainable arts market shares with any degree of certainty [3]. Cloud Computing provides a combination of property and business profit. Property rights lies in the costs and the time to join IT need more work, and this applies to business success. The cloud computing security issues can in general be divided into seven different categories according to Brodkin [4]. These risks are from the customer's point of view [5]. The problem can be divided into two parts; these places are privacy related problems, and (information) security related problems. Cloud computing is a new and promising paradigm delivering IT services as computing utilities [6]. A Cloud, a sign for them, and give the system is a collection of interconnected and virtualized computer that dynamically provision and described him as a more unified computing resource(s) based on the service-level agreement reached in negotiations between the service provider and the buyer [6]. One held an emergency Cabinet declared the efficiency of the whole cloud computing facilities. One Leaving algorithm is NP- completeness problem. And provides services to many users at one time, and some use a different QoS needs. The majority of the algorithms developed for recording workflow focus on Quality of Service (QoS) advertising. However, if we consider more than one QoS parameter then the problem becomes more challenging. To address the problem, we need to introduce a scheduling strategy for multi-workflows with multiple QoS constrained for cloud computing. The traditional way for task scheduling and load balancing cannot meet the cloud market well enough. Therefore, we need to introduce an optimized algorithm for task scheduling in cloud computing and its implementation. Load balancer can provide better service by using processing power of the server intelligently as the end-user shall make application to the small flesh servers, thus providing quick response. More importantly, the load balancer device should be capable of handling the aggregate traffic of multiple servers; otherwise it might represent a bottleneck. Of course most appealing aspect of the load balanced resources is providing high available infrastructure [7]. The proposed scheduling approach in cloud utilizes an enhanced cost-based scheduling algorithm for making productive mapping of tasks to accessible assets in cloud. This scheduling algorithm measures both resources cost and processing execution; it additionally enhances the ratio by grouping the user tasks as per a specific cloud asset's handling capacity and sends the assembled employments to the asset.

2. BACKGROUND

The Cloud computing with a new identity, and so, long story. That is, originates from the late nineties and has developed into the next Millennium, the name, the transmit data can not be taken up again when moving to browse. Have put the world because you can not decide which

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way to pass data package after. With the season and change over time. In the early years of cloud computing, the organization Amazon was active in the area of cloud computing. They were already a large organization investing in cloud computing. They had huge data centers which normally only use about 8 to 12% of their computing power. The rest is reserved for peak usage if necessary. They began to use the world, to save costs in many data centers. This happened in the year of 2006 according to Computer Not long after IBM and Google showed interest in the world, and begin to invest. It seemed that cloud computing showed potential.

In general there are three main components in cloud computing, these are the servers, the data centres and the clients.

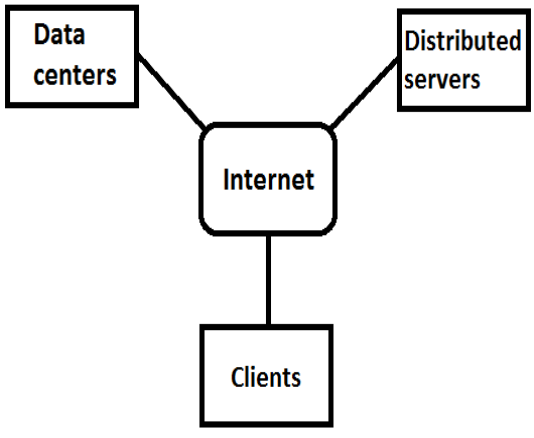

Figure-1. Conventional Cloud computing network

3. METHODOLOGIES

The server has to process the request from the users simultaneously, so the processing time will the high. This way the server cannot process the query from the user in a proper manner.
To overcome these problems we opted the concept called "cloud computing".

a) Task Scheduling and Load-Balancing Technique

The task (sequential) does not use the process of the idea that consciousness processes the report.The fixed set are statically assigned to processors, on a scholarship-time or start-up.

Load balancer can provide superior performance by utilizing processing power of servers intelligently as to direct end-user service requests to least busy servers, thus providing fastest response. More importantly, the load balancer device should be capable of handling the aggregate traffic of multiple servers.

b) Scheduling Strategy

In order to schedule the workflow dynamically and optimize the resource allocation decision, the system we proposed consists of three core components: Preprocessor, Scheduler and

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Executor. The Preprocessor will compute attributes of the ready tasks. In addition, the Preprocessor computes the time and cost surplus of the workflow. Then it submits the ready tasks the Scheduler queue, which is a sorted set containing all tasks from different users waiting to be scheduled. Then the Scheduler re-computes the above attributes of the tasks in the queue and then re-sorts all tasks in the queue. The Executor selects the best service to sequential execute the tasks in the queue. When a task finishes, the Executor notifies the Preprocessor which the task belongs to of the completion status. The collaboration is implemented by the continuous and dynamic event triggered communication among core components.

Our whole Methodologies, considering the aspects discussed above, is shown below:

1. Workflow submission: When a new workflow arrives, it is submitted to the Preprocessor. Then the Preprocessor computes the attributes such as time, cost and availability of all ready tasks.

2. Preprocessing: After computing the attributes such as time, cost and availability of all ready tasks within the workflow, the Preprocessor inserts the ready tasks into the queue. In the very first time, only entry tasks will be submitted. Afterwards, upon notification by the Executor of completion of a task, the Preprocessor will determine if any successor tasks become ready and submit them. The task attributes information is submitted along with the task.

3. Task scheduling: Whenever there are services available and a task is waiting in the queue, the Scheduler will compute all tasks currently present in the queue and sort all tasks and then repeatedly.

4. Task completion notification: When a task finishes successfully, the Executor will notify the Preprocessor of the task completion status.

5. Finally obtain the optimal solution.

4. LITERATURE REVIEW

It consists of –

- Cloud Computing
- Task Scheduling and Load Balancing
- Virtualization

4.1. Transformation of Cloud Computing

In order to reduce the global warming, cloud computing is moving towards virtualization, under this technique, memory, CPU and computational power is provided to clients' virtual machines (VMs) virtually based on reality of the physical hardware [8].

Machine known risk manager (VMM) to hypervisor for cloud providers to regulate the VMs to consume downtime, and provide efficient storage, people like computational power to each VM. There are several hypervisors available in industry such as VMware, Hyper-V, Xen and Kernel Virtual Machine (KVM) [8].

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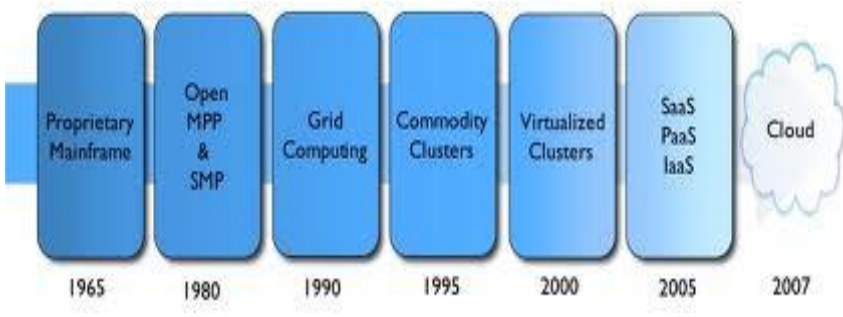

Cloud computing after a new paradigm where motion is provided on the website data and IT services. One Leaving algorithm is NP- completeness problem in the class play in the world. In Hadoop, the open-source implementation of Map Reduce, many scheduling policies such as FIFO scheduling is used by the master node to distribute waiting tasks to computing nodes [9].

Cloud computing aims to power the next generation data centers and enables application service providers to lease data center capabilities for deploying applications depending on user QoS (Quality of Service) requirements. Cloud applications have different composition, configuration, and deployment requirements. Quantifying the performance of resource allocation policies and application scheduling algorithms at finer details in Cloud computing environments for different application and service models under varying load, energy performance (power consumption, heat dissipation), and system size is a challenging problem to tackle. Be Simplified in this process, in this paper, we propose CloudSim: an extensible Simulation toolkit that enables representation and Simulation of Cloud Computing environments. The toolkit supports CloudSim representation and creation of one or more virtual machines (VMs) in the simulated part of the Data Center, work, and their VMs involves ought. It also allows simulation of multiple Data Centers to enable a study on federation and associated policies for migration of VMs for reliability and automatic scaling of applications [7].

Our experiments using real load traces collected on the PlanetLab show that SigLM can improve resource provisioning performance by 30-80% compared to existing approaches. SigLM is scalable and efficient, which imposes less than 1% overhead to the system and can perform signature matching within tens of milliseconds [10]. Cloud Computing has gained popularity in the time. As the world provides services to many users at one time and different users have different QoS needs. For those workflows with different QoS requirements. In this paper, researchers introduce a Multiple QoS Constrained Scheduling Strategy of Multi-Workflows (MQMW) to address this problem. Experimentation shows that their strategy is able to increase the scheduling success rate significantly [11]. Compared with the traditional methods of task scheduling, a new method with an optimized algorithm based on ABC algorithm was proposed in this paper [12].

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5. PROPOSED TASK SCHEDULING AND LOAD BALANCING FLOW CHART

5.1. Task Scheduling

Users first submit workflow with their QoS requirements. The system then allocates appropriate services for processing the workflow tasks and schedules the tasks on the services according to the QoS requirements and the cloud environment. Work flow of task scheduling is shown in figure 2.

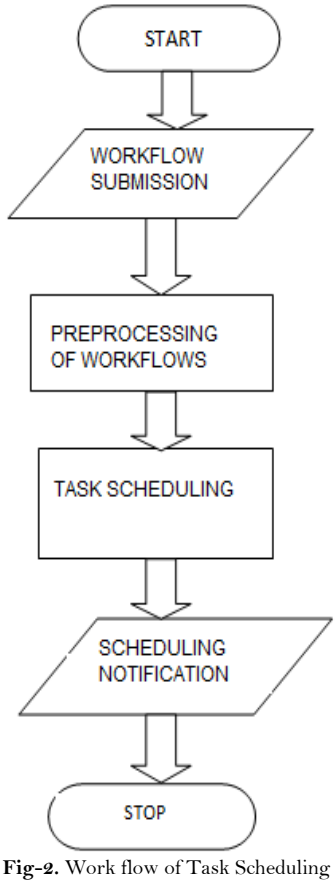

Fig-2. Work flow of Task Scheduling

5.2. Load Balancing

Flow diagram of accommodating request is shown in figure 3. The system's *QoS* metrics to be evaluated are the average waiting time in the load balancer, the distribution of number of requests waiting in the balancer's buffer, and the rejection probability at the load balancer.

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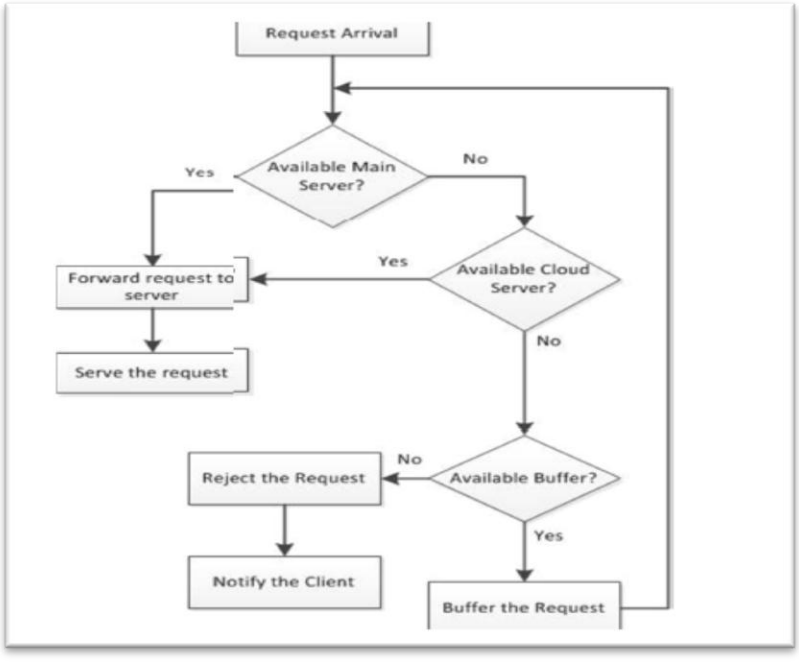

Fig-3. Flow diagram to accommodate request

Time comparison between uploaded image with algo or without algo has been shown in figure 4.

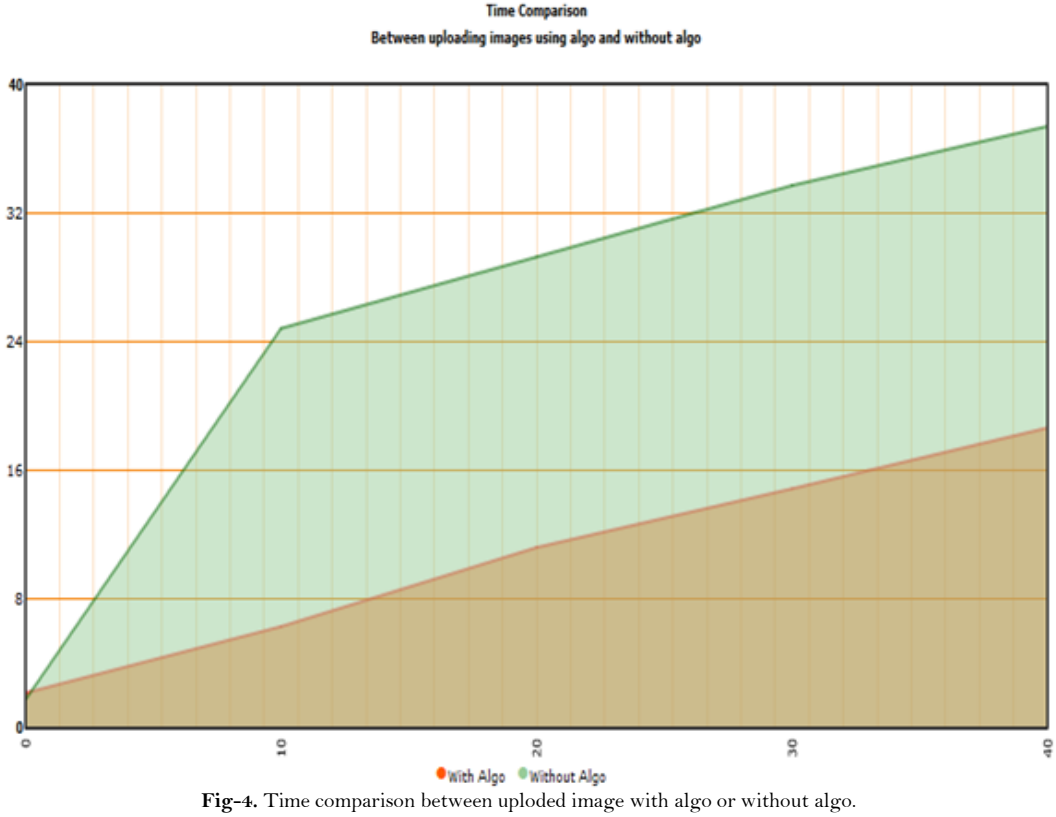

Fig-4. Time comparison between uploded image with algo or without algo.

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6. RESULT& ANALYSIS

In the proposed work over 300 inputs were tested for task scheduling. A graph is plotted between uploading files based on developed task scheduling algorithm and uploading files without task scheduling algorithm. By analyzing the graph a conclusion is made.

7. CONCLUSIONS

Efficient Task scheduling method can meet users' demands, and Improve the utilization always come across a good deal of the world environment. Load balancing is important for networks where it's difficult to predict the number of requests that will be issued to a server. According to the new features of cloud computing, such as flexibility, virtualization and etc, this project discusses task scheduling mechanism based on load balancing in cloud computing. This task scheduling method can not only meet user demand, but also to their high utilization.

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