

Migration Improved Scheduling Approach In Cloud Environment

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Abstract: This paper defines the complete processing of the users' request that how they are accepted then how they are scheduled to processed, how they are allocate to the clouds according to the scheduling list generated by the scheduler and then how these requests are executed. Different strategies are used for migration of the processes when the under load and overload situations occurred. The middle layer performs the main functions of the cloud computing like, over workload, processes should complete in specified deadlines. For effective allocations and processing the requests priorities are assigned to the clouds. Migration is required when the request is not completely executed in specified deadline.

Keywords: Cloud Computing, Virtualization, Virtual Machine, Migration, Schedulers.

I. Introduction

Cloud consists of Server and Database. Server is also known as the Cloud-Provider because it provides clouds to the requests of the clients, while Database contains the user-details and the applications on which user works. Cloud computing is a phenomena to design a network that allows the users to access the applications that are not resides on their computer while they are resides on another located computers or other internet-connected device. The mains functions like to handle the cost of server, to maintain and to manage the updates of the software are done by the third company because they hosts the applications. The following three services are provided by the cloud computing:

1. Infrastructure as a Service (IaaS)
2. Platform as a Service (PaaS)
3. Software as a Service (SaaS)

Above three services have their own characteristics. The deployment models are used by the cloud computing for the communication with clients. Each model has its own advantages or disadvantages. These models are as follow:

1. Public Model
2. Community Model
3. Hybrid Model
4. Private Model

Different types of virtualizations are used that user thinks that he is only working on the system without knowing the background processing. Different schedulers are used to schedule the incoming requests from the clients.

II. Present Work

The proposed Cloud Computing system is middle layer architecture that performs the cloud allocation in either case of under load or overload. The main functions that are performed by the middle layer of the architecture are:

1. Scheduling the User Requests
2. Monitor the Cloud Server for its capabilities and to perform the process allocation
3. Process Migration in overload condition.

The middle layer exists between the client sand clouds. The requests arise by the clients are accepted by the middle layer and it will analyze the Cloud Server.

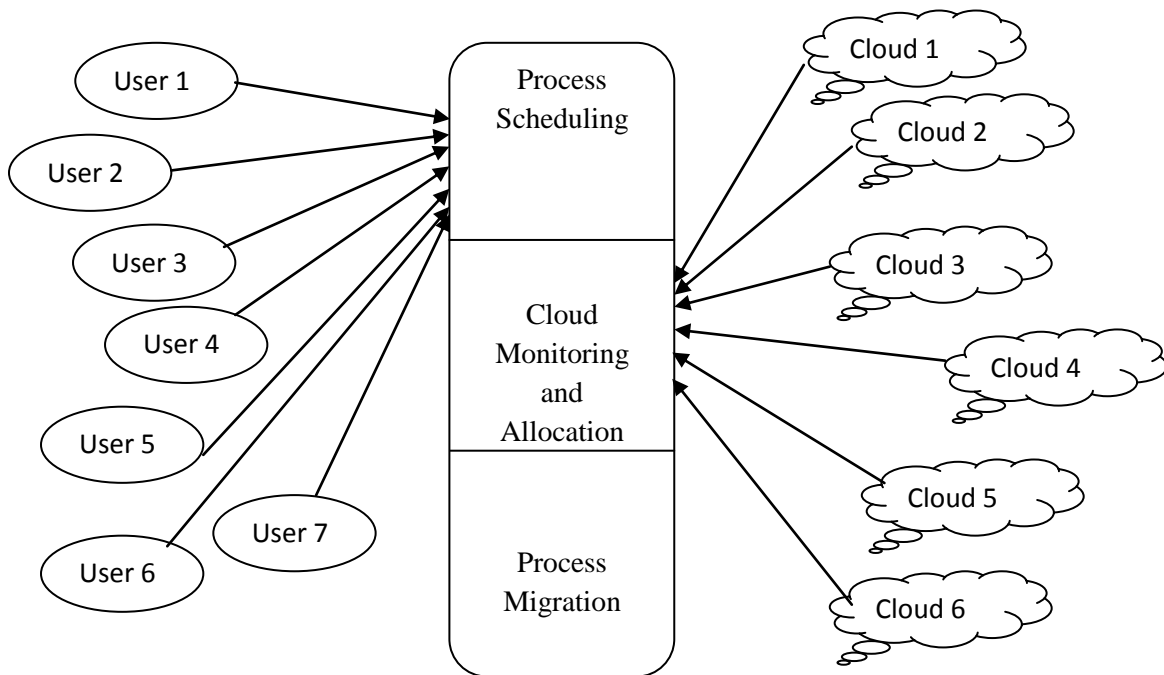


Fig: Process Scheduling in Cloud Computing

Scope:

Cloud demand and cloud resource utilization are factors that most of the IT industries and other organization will demand the most in future. Cloud computing technology is the future of computing and virtualizes and offers many services across the network .Cloud is purely a dynamic environment and the existing task scheduling algorithms are mostly static and considered various parameters like speed, time, throughput, cost, scheduling success rate, make span, scalability, resource utilization and so on. Mostly the available scheduling algorithms are heuristic in nature and time consuming, more complex and do not consider availability and reliability of the cloud computing environment. So we have to implement a scheduling algorithm to improve the availability and reliability in cloud environment. The virtualization technique along with the scheduling algorithm will yield higher system throughput and resource utilization, thus improving the performance of the cloud resources when virtualization techniques are used with these scheduling algorithms.

Problem Formulation:

A scheduling algorithm for resource allocation of tasks, which will take care of live migration and priority of various processes in cloud environment.

Objectives:

1. To improving the availability and reliability in cloud computing environment.
2. The cloud infrastructure sample network will be formed with the server based services for an effective scheduling algorithm which schedules both the task and the resources.
3. Two important factors Priorities and migration of resource will be considered for designing the algorithm.

III. Algorithm

1. Input the C number of Clouds with V number of Virtual Machines associated with each C cloud.
2. Define the available memory and maximum load for each virtual machine.
3. Assign the different –different priority to each and every cloud.
4. Input R number of user process request with some parameters specifications like process time, arrival time, required memory etc.
5. In order to the memory requirement arrange the process requests in order.
6. For i=1 to R
7. {
8. Identify the priorities of Cloud and Associated Virtual Machine having AvailableMemory > RequiredMemory(i)
9. Initially allocate the process to the particular Virtual Machine and the Cloud.
10. }
11. For i=1 to R
12. {
13. To perform the allocation identifies the Free Time slot on priority cloud. As the free slot identify, record the start time, turnaround time, process time and the deadline of the process.
14. }
15. For i=1 to R
16. {
17. If finishtime(process(i))> Deadline(Process(i))
18. {
19. Print “Migration Required”
20. Identify the next high priority cloud, which having the time slot and the free memory and performs the migration of the process to that particular cloud and the virtual machine.
21. }
22. }

IV. Issues with Cloud

During the Cloud Computing some issues are arises regarding to the Economics, Scalability, Resource Utilization, Security Level either of Data or some Technical, Malware Injection Attacks, etc. It doesn't given

any economical benefits because it is primary concern that the resources that are used in the network must be completely utilizable, it should be dynamically scalable and they should be sharable to all the clouds.

It also serves the issues of security level of data like, data should be confidential, data should be safe, privacy of the data, etc.

There are some technical security issues that attacks on the Cloud Computing with the real world examples like: Data Retention, Jurisdiction, Investigation and E-Discovery, Staff Security, Multi-tenancy, etc.

V. Conclusion

In this present work, there is a resource allocation scheme that is applied on multiple clouds in both the under load and the over load conditions. There are some certain parameters (i.e. the process time, arrival time, deadline and the I/O requirement of the processes) that are defined with each and every client request as any request being performed by any client. The cloud environment taken in this work is the public cloud environment with multiple clouds. Each cloud is here defined with some virtual machines. To perform the effective allocation, we have assigned some priority to each cloud. The actual allocation is performed by the virtual machines. These are defined with certain limits in terms of memory, load etc. As the allocation begins, at first the scheduling of the processes is performed respective to the memory requirements. And along with it, the allocation of the process is done to the cloud based on the requirement and the availability analysis. If the allocated process cannot complete its execution in its required time slot, in such case the migration of the process is required. In case of overload conditions, the migration of the processes is defined.

The overload condition is defined in terms of simultaneous processes that are required to execute at particular instance of time. The analysis of the work is done in terms of process time of the processes, wait time of the processes. The obtain results shows the successful execution of all the processes within time limit. The work is performed on a generic system that can have n number of clouds.

VI. Future Work

In the present work, there is to perform the scheduling and the allocation of the processes to the clouds whenever the overload and under load conditions occurred. If over load condition occurs, the migration of the processes is performed from one cloud to other. The Future enhancements of the work are possible in the following directions:

1. In the present work the overload condition is defined in the terms of deadlines as well as the memory limit of the clouds. For future work there may be some more other parameters that can also be taken for the decision of the migration condition.
2. The presented work is defined for the public cloud environment, but in future, the work can be extended to private and the hybrid cloud environment.

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