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Scheduling the Tasks in Cloud Computing to Enhance the System Performance

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ABSTRACT: Wireless Cloud computing transfers the data and computing resources through the internet on the basis of its usage. We can automatically update our software by using this facility. We can use only the space required for the server which reduces the memory usage. Task scheduling is the main problem in cloud computing which reduces the system performance. Scheduling introduces a set of policies to control the order of the work to be performed by a computer system. A good scheduler adapts its scheduling strategy according to the changing environment and the type of task. To enhance the system performance, there is a need of an efficient task-scheduling algorithm. Existing task-scheduling algorithms focus on task resource requirements, CPU memory, execution time and execution cost. However, these do not consider bandwidth of virtual machine. In this paper, we introduce an efficient task scheduling algorithm, which presents divisible task scheduling by considering bandwidth of virtual machine. By this, we can allocate the workflow based on the availability of space in the virtual machine. Our proposed task-scheduling algorithm uses a nonlinear programming model for divisible task scheduling, which assigns the correct number of tasks to each virtual machine. In this research paper we presented an algorithm for efficient execution of task which gives better performance compared to other traditional scheduling algorithm.

KEYWORDS: Cloud Computing, Task Scheduling, Virtual Machine. Cloud Computing, Task Scheduling, Virtual Machine.

I. INTRODUCTION

Cloud Computing is a crucial ingredient of progressed computing systems. Computing concepts, technology and architectures have developed and tightened in the last decades. Many aspects are subject to technological evolution and revolution. Cloud Computing is a computing technology that is rapidly strengthening itself as the next step in the development and deployment of enhancing the number of distributed application. Cloud computing is a kind of supercomputing in an Inter connected mode. It is a type of shared foundation, which simply puts the huge system pools together by using various means: virtualization, distribution etc. It gives users a plenty of storage, networking and computing resources in the cloud computing environment over Internet. Users can put a lot of information and also he can access lot of information.

Cloud is a distributed and parallel computing system which basically includes a collection of virtualized and inter-connected computers that are provisioned dynamically and donated as one or more than one unified computing resources on service-level agreement (SLA) which was established based on the negotiation between the users and service providers of cloud.

Cloud computing is a wide ranging distributed computing model, which rely on the economic size of the operator of cloud that is virtualized, abstract and dynamic. The main theme of cloud computing is storage, to manage resources,

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various kinds of platforms and services which are allocated to the external users on demand via the Internet. Cloud computing is a widely emerging computation paradigm with the motto of freeing up users of cloud from the management of software, hardware ,networks and data resources and shifting these problems to cloud service providers. Scheduling refers to the set of strategies to supervise the order of work to be done by a computing system .There are different types of scheduling algorithm existing in distributed computing system , and Task scheduling is one among them. The main benefit of Task scheduling algorithm is to attain a high performance computing and the best system throughput. Scheduling controls accessibility of CPU memory and good scheduling algorithm gives maximum usage of resource.

II.PROPOSED SYSTEM

The system architecture provides the framework and basic functionalities of Task Scheduling Algorithm.

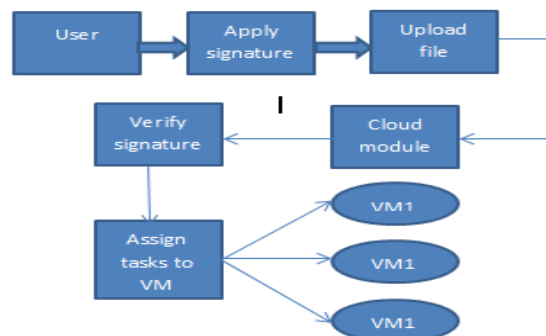


Fig. 1.System Architecture

In the system architecture, there are three important modules: User module, Cloud module and Virtual machine. The user module allows us to sign in and register. Whenever user registers into the cloud he will be provided with a signature which is generated using Signature Generation Algorithm. Registered users need to authenticate by supplying their username and password. The next time, the users are able to login with their same username and password. While uploading the file into cloud, the signature provided to user is sent along with the file name to the cloud. Cloud module verifies the signature by comparing it with the list of signatures it has. Signature Verification Algorithm is used for signature verification. Once the signature verification process is completed, there begins the task of assigning tasks. The tasks are assigned based on the availability of the memory in the virtual machine. The files are encrypted using ECC (Elliptic Curve Cryptography).The users also can browse the files they need. Once the tasks are assigned to virtual machines and executed, the Virtual Machine becomes idle indication the completion of task. The decrypted files can be downloaded by the user.

A.User Interface

The user interface displays user, cloud, and virtual machine module. When clicked on User registration module, sign in and register forms displays where user has to sign in and register. On clicking Cloud Server module, a window displays where user has various options of browse, upload, download, clear and exit. This helps user to upload files, browse and download files. Virtual Machine on click displays three virtual servers which further displays task execution taking place.

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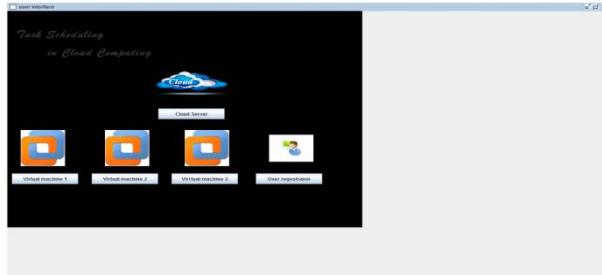


Fig. 2. User Interface

B. User Module

The user module allows us to sign in and register. Users benefit from being able to sign in because this associates content they create with their account and allows various permissions to be set to their roles. Registered users need to authenticate by supplying their username and password. The next time, the users are able to login with their same username and password.

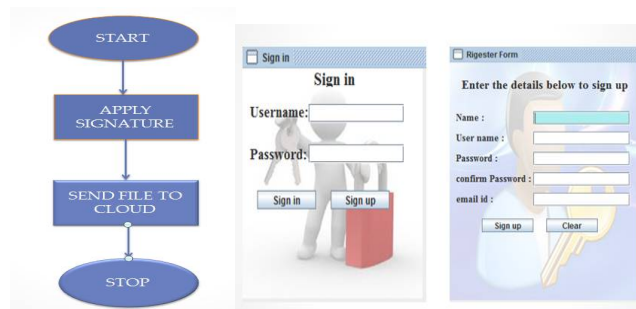


Fig. 3. User Module

C. Cloud Broker

The task of the cloud broker is to receive the request from the user and verify the signature. If the signature is verified the assignment of tasks take place otherwise the process stops.

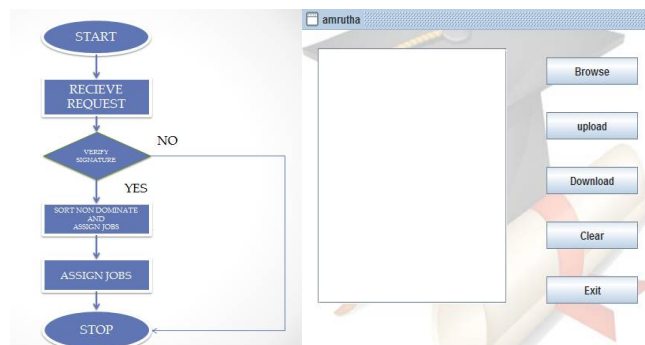


Fig. 4. Cloud Module

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C. Virtual Machine

Virtual machine is an efficient, isolated duplicate of a physical computer used for sharing of resources among various virtual computing environment. The tasks are assigned to these virtual machines based on their memory space availability.

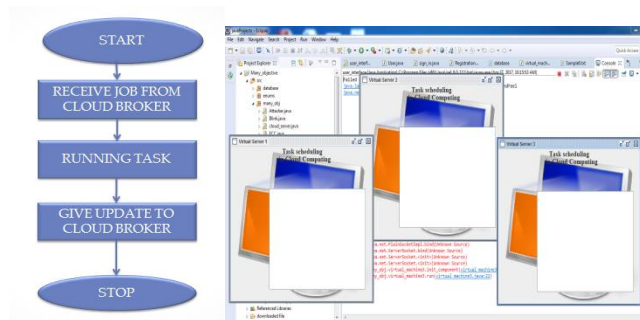


Fig. 5.Virtual Machine

III.RESULTS AND DISCUSSION

Firstly, the registered user can only sign into the cloud. The authorized user can only browse, upload and download the file. When the file is uploaded the file contents will be divided into number of tasks to the virtual machine based on their priorities. Whenever, the user upload or browse the file, the cloud will display the contents in encrypted form. And when the user download the file the encrypted contents will be converted into decrypted content. So that the authorized user can only fetch the file.

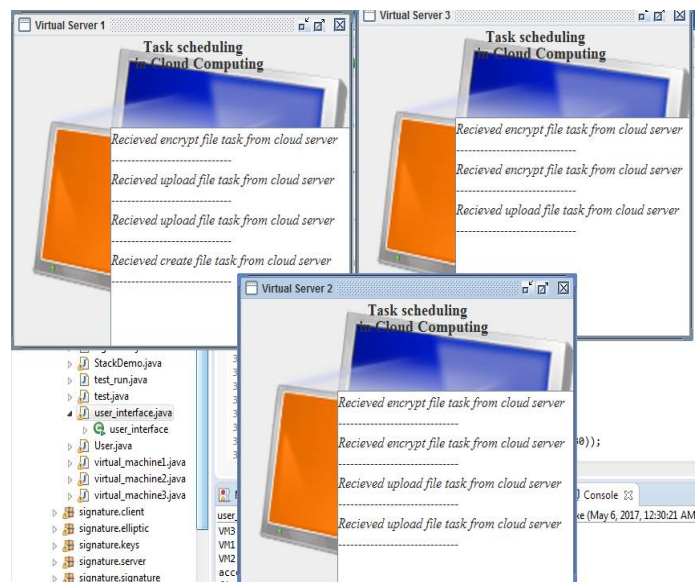


Fig. 6.Execution of tasks in the virtual machine

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IV. ADVANTAGES

The task scheduling algorithm in Cloud Computing is an efficient approach for enhancing the system performance by scheduling and maintaining system resources in an appropriate manner. It supports de-duplication mechanism where files with same contents cannot be uploaded into the cloud thereby avoiding the chances of duplication. The algorithm supports multitasking with single CPU thereby providing a good quality of service. Main advantage of the Task Scheduling Algorithm is user authentication security where only registered users can access the data. This prevents unauthorized users like intruders and attackers from accessing the original files.

V. CONCLUSION

In this paper, we recommend an efficient task scheduling algorithm which minimizes the processing time and boost up the system performance which successfully utilizes the system resources. The preferred algorithm lay down some demands such as all the tasks should be independent to each other. Based on the observations, the proposed algorithm is bandwidth affable and takes less time for accomplishment of tasks. This paper preserves security in many ways. Firstly, it authenticates the user using group signature authentication algorithm. Secondly, the encryption and decryption method is used. Finally, it divides the file contents into five different chunks hence the attacker cannot use the full data. And we have also used the de-duplication concept which eliminates the duplicate copies of replicate data. This technique improves the storage utilization. Therefore the preferred algorithm is authenticated, secured and reliable.

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