Chapter 10
An Approach to Cloud Computing for Medical Image Analysis

M. P. Chitra
Panimalar Institute of Technology, India

R. S. Ponmagal
SRM Institute of Science and Technology, India

N. P. G. Bhavani
Meenakshi College of Engineering, India

V. Srividhya
Meenakshi College of Engineering, India

ABSTRACT

Cloud computing has become popular among users in organizations and companies. Security and efficiency are the two major problems facing cloud service providers and their customers. Cloud data allocation facilities that allow groups of users to work together to access the shared data are the most standard and effective working styles in the enterprises. So, in spite of having advantages of scalability and flexibility, cloud storage service comes with confidential and security concerns. A direct method to defend the user data is to encrypt the data stored at the cloud. In this research work, a secure cloud model (SCM) that contains user authentication and data scheduling approach is scheduled. An innovative digital signature with chaotic secure hashing (DS-CS) is used for user authentication, followed by an enhanced work scheduling based on improved genetic algorithm to reduce the execution cost.

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INTRODUCTION TO CLOUD COMPUTING

Cloud computing is a computing model, where a substantial pool of computing frameworks are associated in the private or open systems, to give progressively versatile foundation to the execution of Personal Computer (PC) application and information stockpiling. With the approach of this innovation, the expense of the computational procedure, application facilitating, content stockpiling and conveyance is diminished altogether. The virtual pictures of the physical machines in the data centers are provided to the clients. Virtualization is one of the principle ideas of the cloud computing framework as it basically assembles the reflection over the physical framework. Cloud computing is a prototype for enabling appropriate and on-demand network access to a shared pool of computing resources that can be rapidly stipulated and released with the cloud service provider interaction or minimal management effort. The service provider provides different types of services such as Software as a Service (SaaS), Platform as a Service (PaaS) or Infrastructure as a Service (IaaS) to the customers across the world through the Internet. The cloud resizes the virtualized hardware automatically. Cloud computing system provides the technologies and tools to compute intensive parallel applications with affordable prices when compared to the existing parallel computing techniques. The architecture of cloud computing is shown in the Figure 1. The benefits of cloud computing system are depicted in Figure 2. The advantages of the cloud computing system are described below Ankita Yadav et.al., (2016).

- Cost effective
- On-demand services
- Remote access
- High efficiency and scalability
- Improved flexibility and reliability
- Maximum resilience without redundancy

TYPES OF CLOUD DEPLOYMENT AND SERVICE MODELS

Cloud Deployment Models

Cloud deployment models can be divided into four types: public, private, community and hybrid cloud. Different types of deployment models are described below

- Public Cloud
- Private Cloud