A Cloud-Based Watermarking Method for Health Data and Image Security

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***Abstract*-The individual health information given to the medical institutions, they keep the record on the internet. Record is kept as an electronic health record which is accessed by cloud computing. About all the security matter of the patient health information is control by cloud computing. Here we are proposing a watermarking method in the architecture of cloud computing. It is design for the purpose of mitigate the risk of insider disclosures. Our design represents all the requirement of the cloud oriented architecture framework.**

***Keywords*- watermarking, cloud computing, health data security**

I.INTRODUCTION

In the medical world, keeping the health information is necessary for both, patient and for practitioners who gives the treatment [2]. For patient it is necessary to keep health information, because patient receives treatment. For analyzing the disease it is necessary for the practitioner to keep the health information. "Keep the record of medical history, persons health in the form of from which person to be identified by a person other than the clinician" is called as Individual Health Information [3]. In the big hospital Electronic Health Record is widely used, there are number reasons for using electronic health record. The reasons are it help the doctors, nurses and the administrator with simultaneous access to healthcare records of all the patient, with the use of these improves decision support [4]. Some healthcare organizations make it publically access to their health via the network.

All this possible to keeping electronic health record, or publically access of the health via network is possible with the concept of cloud computing. It is possible with cloud computing, because it is a style of internet based computing. Cloud computing delivered services to hardware and system software in the infrastructure which provide that services. Cloud computing has a great attention in both commerciallyand academically.

There are numbers of advantage for using cloud computing like it reduced cost, increased the storage, and tremendously improved the level of automation and flexibility. With all this advantage cloud computing is very attractive towards individual, all public sectors, and all commercial organization. Discussing about health record Google offered health portal to individual who wanted electronic health record to be available to their health provider [5]. The main advantage of using cloud computing platform for health security is that it helps to physician to quickly access the information about the patient such as medical record, claims, and medication data gathered from multiple sources to keep detailed record of patient. About the security purpose all the data of the patient kept encrypted, from which it prevent data confidentially.

II.OBJECTIVE

The main objective is to enhance the cloud computing platform with the watermarking component. To keep the record of individual health information in the electronic health record which is accessed by the cloud computing. Address all the requirement of the Cloud Oriented Architecture. Our aim is to provide data security and privacy over cloud.

III.DESIGN and IMPLEMENTATION

In the watermarking method with the cloud computing for keeping the electronic health record the procedure or the work flow for these operation is as follow. Cloud computing method had a different layers like SaaS, IaaS, and PaaS. In the below diagram we discuss about cloud computing layer with the watermarking method.

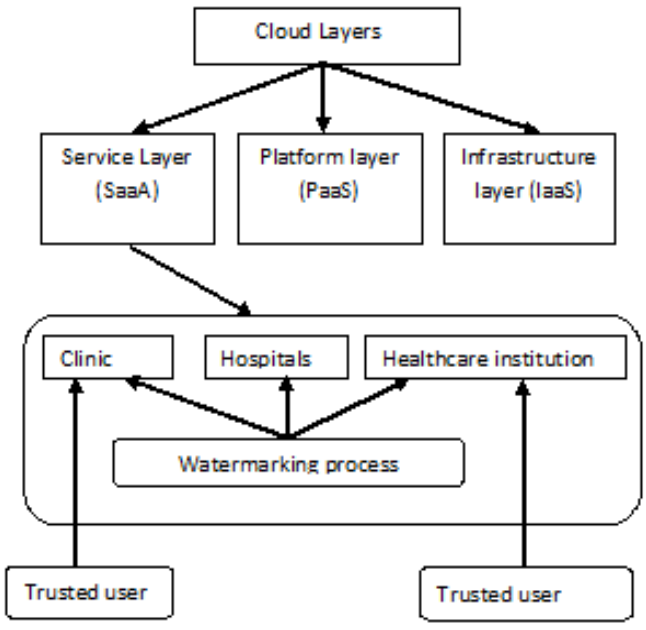

Fig. 1 Watermarking Enhanced Cloud Architecture

In our project watermarking process is done in Service layer of cloud. This layer provides "software as a service" (SaaS) to the users. There will not be any modification to "platform as a service" (PaaS) and "infrastructure as a service" (IaaS). Our watermarking will allow Cleveland clinic to mark all records with label which is having names of allowed readers and stegotext which contains copy of that label as well as name of clinic and name of person who released watermark.

IV. WATERMARKING PROCESS

In our project, Cleveland clinic can perform watermark to all records and store them. For processing method, we suggest the MapReduce, which is a programming model and an associated implementation for processing and generating large datasets in cloud computing. Admin from Cleveland clinic will select records of patients and generate its record as pdf, then he will watermark that record by creating stegotext. This stegotext will contain names of patient, clinic and person who released that watermark. Then watermarking will be done by using this stegotext. After watermarking all records will be stored on cloud. Whenever trusted user wants his data he can get his data by entering some required information like name of patient, clinic name, etc. In this way watermarking will be done and our data will be stored on cloud in secured manner.

V.PROPOSED WORK

In this watermarking architecture, watermarking process inserted into the service layer of a cloud. We know that cloud has a layers like "software as a service" (SaaS), "Platform as a Service" (PaaS) and "infrastructure as a service" (IaaS). In this architecture "software as a service" layer provide to the end user. No need of modification to the other two layers. As shows in the Fig 1. Watermarking method with cloud computing layers. Suppose there is a user or the patient who gives their information to the local clinic or hospitals or the healthcare institutions. Users' health information is saved in the cloud computing service layer in the encrypted form. Health information is necessary for patients to receive right treatment, and for medical practitioners to examine and improve disease propagation. Personal health information is the information that concerns a person's health, medical history or medical treatment in a form that enables the person to be identified by a person other than the treating clinician. The main purpose of embedding watermarking method with cloud because of handling a huge number of records, which set high requirement for both the watermarking technique and the processing method. For processing and generating large dataset in the cloud we use MapReduce method. MapReduce method is a programming model and an associated implementation for processing and generating large datasets in cloud computing. MapReduce paradigm divides large dataset into smaller fragments and distributes them to each of the slave nodes. All slave nodes run the MapReduce executable on their subsets of the data. Then we gather results from all slave nodes to get complete output result. Our watermarking experiments are firstly put into the Hadoop Distributed File System (HDFS). As its name suggests, HDFS is a distributed file system that provides high throughput access to application data), and the large amount of data. The data must be subdivided in a preprocessing step on a master processor, to create many small tasks that will be performed independently by slave processors. A Map task consists of watermarking a list of images. The images are watermarked with different watermarks according to the labels, healthcare providers and doctors, and then put back to the HDFS. After all of the Map tasks have been completed, the Reduce task begins. With these assumptions, amedical record can be watermarked securely and differently by using the MapReduce service.

VI. CONCLUSION

The design represents to keep the security in healthcare data protection using cloud computing platform with the watermarking component. We perform the two main operations first one is, for the mitigation of insider threat watermarking method is employed. Second one is creating a cloud based watermarking method by using the advantage of cloud computing.

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