Safe Data Retrieval Mechanism for Retrieving Personal Health Records (PHRs) in Cloud

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Abstract: Developing strategies to securely store data across cloud is a much focused topic of research in recent days. Cloud computing focuses on maximizing the effectiveness of the shared resources. Cloud storage provides a convenient means of storing and retrieval of huge amount of data. Personal Health Records (PHRs) should remain the lifelong property of patients and should be displayable conveniently and securely to selected caregivers. MyPHR Machine a patient centric system that takes a radically new architectural solution to health record interoperability. Patients Can Upload their Medical data then they access and share through remote Virtual machine. In this paper a safe data retrieval mechanism is proposed and validated for retrieving personal health records stored in cloud in a hospital scenario.

Keywords: Shared Resources, Cloud Computing, Personal Health Records (PHRs), Medical data, MyPHRMachines

I. INTRODUCTION

People suffer from a spectrum of health problems in today’s fast world scenario. Patients frequently go to different hospitals to get appropriate treatments. However they also suffer from certain sensitive health problems they do not wish to share with anyone. So they are in need of a new system to know about their health conditions. Cloud environment provides an excellent service for protecting sensitive medical data referred to as ‘micro data’. Cloud Computing has been intended as the next generation architecture of IT Enterprise. It moves the application software and databases to the centralized large data centres, where the management of the data and services may not be fully trustworthy. When the information is maintained in cloud it has various advantages patient no need to carry medical records where ever they go they can access from any desired place. It also minimizes the time needed to diagnose and treat a patient and ensures speedy recovery with minimal time. The remainder of the paper is organized as follows. The detailed analysis of various problems addressed in literature and the proposed system/solution/methodology is discussed in Section 2. The technical architectural representation of MyPHR Machine housing web portal, Virtual Box Hypervisor, VM Repository, VM Data and Private Network Folders is depicted in Section 3. Section 4 gives the detail about secure data retrieval mechanisms for cloud. Section 5 concludes the paper and outlines the direction for future work.

II. ANALYSIS OF PROBLEMS AND SOLUTIONS IN LITERATURE

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III. ARCHITETURAL REPRESENTATION
The architectural representation of cloud based PHR storage is represented in Fig 1. The portal plays an important role in uploading copy of data, remote access maintenance, start/stop operation. PCAS access is used to provide and show copies. The cloud takes the responsibility of mounting the PHRs. Architectural representation of MyPHR Machine consists of two components evolution and storage with which client directly interacts with MyPHR Machine. The first component of MyPHR Machine consists of web portal which in turn interacts with Virtual Box Hypervisor.
Virtual Machines are connected together with Virtual Box Hypervisor. The second component of MyPHR Machine, storage consists of VM Repository which houses VM Data and Private Network folders as indicated in Figure 2.

**IV. Secure Data Retrieval Mechanisms From Cloud**

To retrieve the details which are encrypted in the cloud can be accessed by the Authenticator If the Cloud user three uploads the patient details the Patient who have bonding relationship with the same cloud user can login with the cloud user three the permission will be granted if the user is an authenticated person. It describe that this level user have permission to access the data. Then the information which stored is visible to the patient so that they can monitor the health status and take necessary preventions. Treatment details can be added by the doctor who enrolled in monitoring the desired patient, whenever additional functionality added they may be added and outsourced in the cloud. The Treatment cost can be reduced when this functionality is used, no need to carry paper format record whenever the patient visit the hospital so secure data processing is handled. Paper format record holding and Electronic based medical storage can be replaced and a cloud based social healthcare system is developed. Thus a cloud based PHR system taking a fundamentally new architectural solution to health record portability.

![Fig. 2. Technical Architectural diagram of Cloud Based PHRs storage](image)

**V. Conclusion**

In this paper a safe data retrieval mechanism is proposed and validated for retrieving personal health records stored in cloud in a hospital scenario. Developing strategies to securely store data across cloud is a much focused topic of research in recent days. Cloud computing focuses on maximizing the effectiveness of the shared resources. Cloud storage provides a convenient means of storing and retrieval of huge amount of data. Personal Health Records (PHRs) should remain the lifelong property of patients and should be displayable conveniently and securely to selected caregivers. MyPHRMachines a patient-centric system that takes a radically new architectural solution to health record interoperability. Patients Can Upload their Medical data then they access and share through remote Virtual machine.

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V.M.Prabhakaran obtained his B.E. degree in Computer Science and Engineering from Hindustan Institute of Technology, Coimbatore, Tamil Nadu, India and currently pursuing his M.E. degree in M.Tech degree in Computer Science and Engineering at Kalaigarn Karunanidhi Institute of Technology, Coimbatore, Tamil Nadu, India. He has to his credit 17 papers in National/International Journals/Conferences. He is the recipient of gold medal and certificate of merit for best journal publication by his host institution for the year 2013-14. He served as a Secretary for CSE Association at Hindustan Institute of Technology, 2011-12. He currently holds the position of student President for CSE Association, Kalaigarn Karunanidhi Institute of Technology. He has secured a best paper award in an International Conference held at Coimbatore Institute of Technology, Coimbatore, Tamil Nadu, India. His areas of research interests include Network Security, Cloud Computing and Database Security.

Prof.S.Balamurugan obtained his B.Tech degree in Information Technology from P.S.G. College of Technology, Coimbatore, Tamil Nadu, India and M.Tech degree in Information Technology from Anna University, Tamil Nadu, India respectively. He is currently working towards his PhD degree in Information Technology at P.S.G. College of Technology, Tamil Nadu, India. At present he holds his credit 8 papers International Journals and IEEE/Elsevier International Conferences. He is currently working as Assistant Professor in the Department of Information Technology, Kalaigarn Karunanidhi Institute of Technology, Coimbatore, Tamil Nadu, India affiliated to Anna University, Tamil Nadu, India. He is State Rank holder in school. He was University First Rank holder M.Tech. Semester Examinations at Anna University, Tamil Nadu, India. He served as a Joint Secretary of IT Association, Department of Information Technology, PSG College of Technology, Coimbatore, Tamil Nadu, India. He is the recipient of gold medal and certificate of merit for best journal publication by his host institution consecutively for 3 years. Some of his professional activities include invited Session Chair Person for two Conferences. He has guided 12 B.Tech projects and 2 M.Tech projects. He has won a best paper award in International Conference. His areas of research interest accumulate in the areas of Data Privacy, Database Security, Object Modeling Techniques, and Cloud Computing. He is a life member of ISTECSI. He has authored a chapter in an International Book “Information Processing” published by I.K. International Publishing House Pvt. Ltd, New Delhi, India, 978-81-906942-4-7. He is the author of book titled “Principles of Social Network Data Security”, ISBN: 978-3-659-61207-7.

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