

328. ATTRIBUTE BASED ENCRYPTION OF PERSONAL HEALTH RECORDS IN SCALABLE AND SECURE SHARING USING CLOUD COMPUTING

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Cloud computing is a promising computing hypothesis in which resources of the computing infrastructure are provided as services over the Internet. It brings forth to many new challenges for data security and access control when users outsource sensitive data for sharing on cloud servers, which are not within the similar trusted domain as data owners. Personal health record (PHR) is an emerging patient-centric framework of exchanging the patients' sensitive health information, which is often outsourced to be stored at cloud providers, such as third party. However, there have been large privacy concerns as personal health information could be exposed to unauthorized parties. To assure the patients' control over access to their own PHRs, it is a promising method to encrypt the PHRs before outsourcing. In this paper, we propose for data access control to PHRs stored in cloud servers. To accomplish fine-grained and scalable data access control for patients' information, we manipulate attribute-based encryption (ABE) techniques to encrypt each patient's PHR file. We also focus on the various access of data owner scenario, and split the users in the PHR system into multiple security domains in order to reduce the key management complexity for users and owners. Our scheme also Provides dynamic alteration of access policies or file attributes, supports capable on-demand user/attribute revocation and break-glass access under emergency scenarios. Extensive analysis result shows the scalability, security, and efficiency of our proposed scheme.

Index Terms—Personal health records, data privacy, fine-grained access control, attribute-based encryption